Towards Common Ground: Barriers and Enablers to Low-Carbon Transitions in Oil and Gas-Producing Municipalities of British Columbia and Alberta

by

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We acknowledge and respect the Lək̓ʷəŋən (Songhees and Xʷsepsəm/Esquimalt) Peoples on whose territory the university stands, and the Lək̓ʷəŋən and W̱SÁNEĆ Peoples whose historical relationships with the land continue to this day.

Supervisory committee

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Abstract

Oil and gas-producing municipalities host Canada's highest emitting sector and face significant economic risks in the low-carbon transition. Understanding how these communities envision their economic futures, and the barriers and enablers they encounter in pursuing low-carbon opportunities, can inform decision-makers seeking both emissions reductions and more resilient local economies. This study engages municipal staff with expertise in economic development from oil and gas communities in British Columbia and Alberta to capture their perspectives on transition pathways. Findings demonstrate that these municipalities are actively exploring economic diversification that includes low-carbon opportunities, but face substantial barriers, including the absence of a coherent transition vision, perceptions of being broad-brushed in policy decisions, limited capacity and funding, gaps in expertise, and delays in the regulatory process for new energy projects. Addressing these challenges through place-based industrial development strategies and targeted policy supports would better position federal and provincial governments to support local transitions in communities most affected by energy system change.

Table of contents

List of tables

List of figures

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Chapter 1. Introduction

The transition to a low-carbon economy poses particular challenges for smaller communities whose economies depend on high-emissions sectors, as they are especially susceptible to economic impacts (Samson et al., 2025). In Canada, this is particularly pertinent as nearly 10% of the population lives in communities at risk of workforce and economic impacts as emissions reduction efforts intensify nationally and globally (Samson et al., 2025). As oil and gas is the highest emitting sector in Canada (ECCC, 2025b), municipalities producing these commodities are identified as being highly at risk (Samson et al., 2025). Beyond potential job losses, impacts of transition, both real and perceived, can include economic downturn (Green & Gambhir, 2020), shifts in community identity (Hodge et al., 2025), and reduced municipal tax revenues (Raimi et al., 2022). These impacts would pose significant issues for all levels of government. While the potential (localized) challenges are pertinent, the low-carbon transition promises prosperity and considerable benefits beyond emissions reductions (Green & Gambhir, 2020).

Municipal governments play a central role. Led by staff and elected officials that work with residents, Indigenous governments, businesses, community organizations and partners, municipal governments shape place-based policies and strategies. Municipal staff and officials therefore often have a stronger understanding of the place-based challenges and opportunities of low-carbon transitions than their federal and provincial counterparts, who tend to engage in top-down decision making from a broader perspective (Krawchenko & Gordon, 2021). Understanding how municipal staff envision the low-carbon transition and the barriers and enablers to reaching those visions can aid a proactive approach to addressing questions of susceptibility, centring considerations of justice, and helping build wider support for climate policies. This is of particular importance in the current context of eroding support for climate policy among Canadians (Re.Climate, 2024).

There is an extensive body of academic literature on municipal-level barriers and enablers to climate action in Canada which primarily focuses on corporate greenhouse gas mitigation and climate adaptation (Robinson & Gore, 2005; Burch, 2010; Jaccard et al., 2019; Rhodes et al., 2021; Cappell et al., 2022; Masemann et al., 2024). Substantial literature on planning has examined how municipalities can integrate land-use, energy, and infrastructure planning to support deep decarbonization and green economic development (Linton et al., 2020; McVey et al., 2017). On just transitions, research with a community lens often centres on in-depth case studies of one to three localities (Murphy et al., 2022; Cherry et al., 2025; Hodge et al., 2025) or focuses on one particular region (Gazmararian, 2024). There is a growing body of work on comparative studies of low-carbon and sustainable economic development in Canada's Western provinces of British Columbia and Alberta (MacArthur, 2016; MacArthur et al., 2025). Given this literature landscape, there is a gap for further low-carbon transition research to bring together

staff with expertise in economic development from a larger number of municipalities across British Columbia and Alberta at risk of significant impacts in transition.

This study begins to address this gap by engaging with susceptible communities to hear their concerns, understand their barriers and enablers to transition, and foster collective dialogue on visions for low-carbon economies, with the goal of supporting effective policy development at higher levels of government to advance transitions. Scholars emphasize the importance of engaging more deliberately with communities most likely to be significantly affected by low-carbon transitions, as failing to address local concerns may undermine transition efforts and generate resistance to low-carbon transitions and climate action (Johnstone & Hielscher, 2017). Understanding the motivations, preferences, and constraints of key actors is therefore essential to identifying and addressing barriers to building support for transitions (Rotmans et al., 2001). Broad, inclusive discussions about an economy's future, its assets, and its opportunities are critical for fostering the coalition-building that underpins just transitions (Krawchenko et al., 2025). More specifically, Meadowcroft (2016) calls for research agendas that analyze key regional economic clusters, particularly through the interaction of academics and societal stakeholders, to identify pathways to regional decarbonization and the social forces that can drive these forward locally. Such engagement is particularly salient for oil and gas-producing municipalities in Alberta and British Columbia, where economic structures and cultural identities are closely intertwined with the fossil fuel sector.

The neighbouring provinces of Alberta and British Columbia present interesting comparative cases for transition. The two provinces share many features: both are resource economies, with comparable populations, significant oil and gas sectors, and many smaller communities dependent on resource extraction. However, they present considerable differences. British Columbia has a larger set of compulsory climate policies that have allowed B.C. to reduce its per capita emissions by approximately 20% between 2007 and 2021 (Ministry of Environment and Climate Change Strategy, 2023). The oil and gas industry in Alberta is much larger than that of British Columbia. In 2023 Alberta produced 84% of Canada's total crude oil and 61% of Canada's total natural gas (Canada Energy Regulator, 2024a) whereas British Columbia produced only 3% of Canada's crude oil and 36% of Canada's natural gas (Canada Energy Regulator, 2024b). Additional data reflecting these differences are provided in the comparative statistical descriptions in Appendix A. In this context, this study looks to address the following three objectives:

1. Explore visions for the low-carbon transition among key municipal staff in small and medium-sized oil and gas-producing communities in British Columbia and Alberta;
2. Identify barriers and enablers to low-carbon transitions in these communities; and
3. Identify policy implications that could help reduce these barriers.

Chapter 2. Background

This chapter begins by outlining key contexts for low-carbon transitions in municipalities of British Columbia and Alberta: climate policies, just transitions initiatives and municipal government in Canada. This is followed by an overview of the municipalities involved in the study, before exploring key themes related to visions, barriers and enablers that impact municipalities. The low-carbon transition in this study refers to a societal shift towards a low-carbon emission economy (Meadowcroft, 2016). Low-carbon transition is a broad term which encompasses climate action, defined as efforts to reduce greenhouse gas emissions and to adapt to the impacts of climate change (United Nations, n.d.), and just transitions initiatives, to address socio-economic concerns regarding those impacted by the transition (Hodge et al., 2025). A key element of climate action is climate policy. Climate policy is implemented by governments and includes compulsory policies such as the pricing of carbon and sectoral regulations, and non-compulsory policies such as subsidies for low-carbon technologies (Jaccard, 2020). Just transition as a concept has been defined as "a political imperative, a policy goal, and a set of practices meant to minimize the harmful impacts of industrial and economic transitions on workers, communities, and society at large" (Krawchenko & Gordon, 2021). The term is widely found in discussions around climate initiatives to reduce emissions and the efforts to manage questions of justice in areas impacted by transitions. Four core dimensions of justice are frequently referred to in transitions scholarship: distributional justice, procedural justice, recognition justice and restorative justice. Distributional justice refers to how benefits and burdens are shared across populations. Procedural justice is concerned with inclusion in decision-making processes. Recognition justice looks at past and ongoing inequalities and how to address these (Carley & Konisky, 2020). Restorative justice is often included as a fourth dimension, which aims to address past harms in various ways, such as through compensation (Krawchenko et al., 2025). This study focuses on distributional and procedural justice as the most salient dimensions to economic development in oil and gas-producing municipalities.

2.1. Climate policy context

In order to meet its 2030 and 2050 greenhouse gas reduction targets, Canada has implemented the 2030 Emissions Reduction Plan which includes an industrial output-based pricing system, a methane emissions cap, a clean fuel standard, clean electricity regulations, a zero-emission vehicle sales mandate, and tax credits and incentives for clean technologies such as clean energy development (Environment and Climate Change Canada, 2022).

At the provincial level in British Columbia and Alberta, both governments have established climate targets; but British Columbia has historically been a climate leader in implementing compulsory climate policies. These policies include the first broadly based carbon tax in North

America (Rhodes & Jaccard, 2013), a low-carbon fuel standard, a methane emissions cap for oil and gas production, a clean electricity standard, a zero-emission vehicle sales mandate, an output-based pricing system for industrial emitters, and subsidies for industry and citizens for low-emissions technologies. British Columbia repealed its consumer carbon tax in 2025 at the same time as the removal of the federal backstop, with Minister of Finance Brenda Bailey citing the political divisiveness of the policy (Government of British Columbia, 2025a).

Alberta's climate policies have included an industrial carbon pricing and emissions trading system, low-carbon fuel regulations, building energy efficiency standards, and subsidies for green industry investment. While Alberta regulates methane emissions, it does not set a cap on emissions in the same way as the federal and British Columbian policies, instead focusing on equipment standards, monitoring, reporting and carbon offsets. In recent years, Alberta has increased its resistance to stringent federal climate policies including challenging the proposed federal oil and gas emissions cap (Government of Alberta, 2025a) and Clean Electricity Regulations (Wang, 2025). Additionally, Alberta instated a seven-month moratorium on new renewable energy project approvals from August 2023 to February 2024 and followed this with additional regulatory requirements targeting renewable energy and increasing the barriers to development (Noel et al., 2025). Table 1 below compares climate policies across Canada, British Columbia and Alberta. This comparison finds that British Columbia demonstrates a stronger commitment to climate policy than Alberta, providing important context for this study of municipalities across the two provinces.

Municipalities have a range of climate policy powers available to them, including zoning and land-use planning, development permitting, property taxation, energy efficiency building code adjustments, local transportation, public transit, EV-charging and active mobility infrastructure (Jaccard et al., 2019). While the range of powers municipalities hold is significant, it is limited, with many important levers such as carbon taxation being held at provincial and federal levels (Jaccard et al., 2019; Becklumb, 2019).

Table 1: Selected Key Climate Policies in Canada, B.C., and Alberta, as of August 2025.

Climate Policy Type	Policy	Canada	B.C.	Alberta	References
Carbon pricing policies	Industrial carbon pricing and emissions trading	✓	✓	✓	ECCC, 2025c; B.C. Government, 2025c; Alberta Government, 2019
	Consumer carbon price	X	X	X	
Regulatory policies	Methane emissions cap for oil and gas production	✓	✓	X	ECCC, 2018; Drilling and Production Regulation, 2010
	ZEV sales mandate	✓	✓	X	ECCC, 2023; B.C. Government, 2025h
	Low-carbon fuel regulations	✓	✓	✓	ECCC, 2025a; Low Carbon Fuels Act, 2022; Alberta Government, 2022
	Building energy efficiency standards	✓	✓	✓	CCBFC, 2022; B.C. Government, 2025b; CCBFC, 2023
	Clean electricity standard	✓	✓	X	ECCC, 2024a; *Clean Energy Act,* 2010
Voluntary policies	Subsidies/investment for green industry	✓	✓	✓	ECCC, 2024b; B.C. Government, 2025d; Alberta Innovates, (n.d.)
	Subsidies for citizens for low-emission vehicles	✓	✓	X	ECCC, 2025d; B.C. Government, 2025g

2.2. Just transition initiatives

Canadian communities have a long history of facing economic transitions, primarily in the natural resource sectors. A range of policy supports have been implemented with the aim of addressing these transitions. Most governmental supports in Canada have been reactive to transitions in progress (Krawchenko & Foster, 2021). In British Columbia, for example, the provincial Community Transition Services program (Ministry of Jobs and Economic Growth, 2025) offers supports to community organizations and workers such as skills training and transition planning after the loss of a major employer. In 2017, the Government of Alberta announced programs to mitigate the impacts on communities and workers of its phase-out of coal-fired electricity. This included the $40 million Coal Workforce Transition Fund to assist

workers, many of whom were already laid off prior to the deployment of the fund (Task Force on Just Transition for Canadian Coal Power Workers and Communities, 2019). While these efforts demonstrate leadership, they contrast with a proactive approach which looks to identify and address potential future transitions. A proactive approach has been identified as a leading practice in just transitions and can include actions such as whole-of-economy or sectoral decarbonization planning and the articulation of long-term visions to support the development of alternative industries (Green & Gambhir, 2020).

Centring justice in low-carbon transitions is critical to ensure the well-being of workers, communities, and other stakeholders, to foster public acceptance, and to support a successful shift to new economic structures. Transitions must be carried out in a just way so that rightsholders and stakeholders participate in decision-making processes and there is distributional justice around costs and benefits (Krawchenko and Foster, 2021). Without deliberate attention to justice, transitions risk "replicating, if not worsening, uneven socio-economic and political distributions of power, opportunity and representation," which can lead to disenfranchisement, exclusion, and the disproportionate concentration of costs on those with the least resources (O'Sullivan et al., 2020, p.1).

The term "just transition" has its roots in the American labour movement in the 1970s, which focused on protecting the rights and livelihoods of workers in industries facing potential negative impacts from government environmental initiatives (Krawchenko & Gordon, 2021). The concept of a just transition first emerged in Canada in 2002 in response to job losses in forestry in British Columbia (Krawchenko et al., 2025). More recently, Canada enacted sectoral just transition mechanisms to support the transition away from coal. Recommendations from a 2019 report from *Canada's Task Force on Just Transition for Canadian Coal Power Workers and Communities* resulted in funded transition centres located in communities experiencing impacts (Krawchenko & Gordon, 2021).

The concept of a just transition is highly salient to oil and gas-producing municipalities. This is due to the often outsized role the oil and gas sector plays in typically less economically diversified economies and the sector's large existing infrastructure and environmental liabilities (Krawchenko & Gordon, 2022). An oil and gas transition could entail community decline (Green & Gambhir, 2020), shifts in local identity (Hodge et al., 2025), and loss of municipal tax revenues (Raimi et al., 2022). The high level of local employment in the oil and gas sector in participating municipalities is one indicator of this risk. The most granular available Statistics Canada employment data for Canadian municipalities, *NAICS 21 Mining, Quarrying and Oil and Gas Extraction*, provides an indication of the extent to which their economies depend on oil and gas production. In participating municipalities in Alberta, *NAICS 21* employment share ranges from 13.1% to 31.5%, and in British Columbia, the range is 8% to 39.2% (Statistics Canada, 2022; see

table in Appendices B and C for community-level data). These high levels of employment represent a significant proportion of the local community. Ensuring just transitional assistance policies are in place to support workers can mitigate the considerable potential impacts of transition, such as laid-off workers leaving the community.

Green and Gambhir (2020) identify six different types of transitional assistance policies: grants and cash payments (e.g. worker training subsidies, consumer rebates), provision of public goods and services "in-kind" (e.g. worker education, community infrastructure projects, regional economic diversification planning), "sui generis" policy programs or schemes to manage the orderly restructuring or decline of an industry (e.g. the multi-stakeholder initiative to phase out coal for electricity generation in Ontario), exemptions or cross-subsidies within a climate law or policy (e.g. allocation of carbon tax revenues to green economy projects), fiscal policy packaging (e.g. tax breaks to attract investment to declining regions) and expressive acts (e.g. public acknowledgement of an industry).

The Government of Canada has made efforts under the *Canadian Sustainable Jobs Act* (2024) to address the regional dimensions of transitions. These efforts include the establishment of Regional Energy and Resource Tables, an effort to convene multi-stakeholder groups to "identify and advance many of Canada's most promising low-carbon opportunities in the energy and resource sectors" (Natural Resources Canada, 2025). One such table has been established in British Columbia, while Alberta has chosen an alternative approach for collaboration, the Alberta-Canada Working Group. Under the Act, the Government of Canada also aims to support workforce development for a low-carbon economy through the development of Sustainable Jobs Action Plans and the establishment of the Sustainable Jobs Secretariat and Sustainable Jobs Partnership Council (Natural Resources Canada, 2024).

There is growing acknowledgement in Canada that there are communities facing transition and that a broader range of place-based approaches is needed to manage these transitions. Canada has seen some relatively successful examples of transitions, such as the management of the 2014 phase-out of coal in Southern Ontario (Green & Gambhir, 2020). However, different types of local and regional economies face very different types of transitions (Krawchenko & Gordon, 2022). Canada is yet to see a completed oil and gas transition. In fact, there are very few cases globally where an oil and gas transition has been attempted. Compared to coal, the management of oil and gas transitions is "a new challenge with features that are unique to both the industry, workers, and communities where these activities take place" (Krawchenko & Gordon, 2022). For transitions to be successful, understanding and responding to the dynamics at the community level is critical, which has led to growing recognition of the need for place-based just transitions policies (Cherry et al., 2025).

2.3. Municipal government in Canada

In Canada, federal and provincial governments are the only constitutional orders of government, with powers set out in the *Canadian Constitution Act* (Government of Canada, 2025a). Municipalities are situated constitutionally under the exclusive powers of provincial legislatures and are subsequently delegated powers by provinces (Government of Canada, 2021). As such, municipalities are often referred to as "creatures of the provinces" (Good, 2019). For municipalities, this creates limitations in agency and certain restrictions on municipal activities, making them in many ways *policy-takers* who largely depend on higher levels of government for regulatory powers in economic development (Brail et al., 2022), energy governance (MacArthur et al., 2020) and climate action (Robinson and Gore 2005). Municipalities, however, can also be *policy-makers*, for example demonstrating innovation and leadership in climate action (Touchant, 2022) and community energy (MacArthur et al., 2025).

While the Canadian Constitution sets out the commitment of federal and provincial governments to further economic development to reduce disparity in opportunities, it does not provide a concrete division of responsibilities or executive powers over economic development (Brail et al., 2022). Overall, municipalities "assume a supportive, rather than regulatory, role in economic development policy" (Brail et al., 2022). Municipalities in Canada do have some powers regarding economic development; for example, in certain provinces including British Columbia and Alberta, municipalities can offer property tax incentives such as exemptions to attract businesses (Kitchen et al., 2019). Other avenues for action include creating partnerships with local economic development entities such as chambers of commerce to support start-ups with training programs, or assisting commercial enterprises in identifying appropriate sites (Brail et al., 2022).

Comparing British Columbia and Alberta, there are provincial differences in the Acts as they relate to economic development. Alberta's *Municipal Government Act* (2000) gives municipalities comparatively broad authority and strong incentives to promote economic development, especially through investments and services that support industry and infrastructure, relying heavily on property taxes to fund development activities. In contrast, British Columbia's *Community Charter* (2003) and *Local Government Act* (2015) position economic development within a wider set of regional and sustainability goals, imposing stricter legal limits on direct business incentives and requiring economic initiatives to align with social and environmental priorities and regional growth strategies. As such, while Alberta municipalities tend to pursue aggressive, industry-focused development, municipalities in British Columbia are mandated to balance economic growth with the broader objectives of sustainability and integrated planning, leading to notable differences in how economic development is operationalized in each province's municipal legislation.

2.4. Overview of participating municipalities

Ten municipalities were selected for this study, providing a range in geographic location, economic make-up and population size (see map in Figure 1). The tables in Appendices B and C provide comparative statistical descriptions for the ten communities drawing from Statistics Canada 2021 census data (Statistics Canada, 2022). All participating communities share an economic foundation rooted in resource extraction, particularly oil, gas, forestry, and mining, which historically generated high wages and local prosperity but also left communities exposed to the boom and bust cycles caused by global commodity pricing fluctuations.

The five participating municipalities in British Columbia are located in the north-east of the province, with Tumbler Ridge, Fort St. John, Taylor and Chetwynd clustered in the Peace Region, and Northern Rockies Regional Municipality (NRRM) located in the Northern Rockies. According to the Institute for Research on Public Policy (IRPP), both regions are considered more susceptible to workforce disruption, ranking within the top 2 - 5% of Canadian communities on at least one indicator measuring exposure to policy, technological, and market shifts associated with global decarbonization (Chejfec et al., 2025). Compared to the province as a whole, the participating communities are characterized by younger populations, reflecting their histories as resource-based centres attracting a mobile labour force. While 20.3% of the population of B.C. are over the age of 65, participating communities sit between 8.3% (Fort St. John) and 15.4% (Tumbler Ridge) (Statistics Canada, 2022). The centrality of resource economies is underlined by employment shares in mining, quarrying and oil and gas extraction far higher than the provincial level of 1%, ranging from 8% (NRRM) to 39.2% (Tumbler Ridge) (Statistics Canada, 2022).

The communities in Alberta are more geographically dispersed, however all five are situated within regions deeply connected to the province's oil and gas sector. Fort McMurray in the Regional Municipality of Wood Buffalo anchors the Athabasca oil sands, while Bonnyville and Elk Point in the east combine agricultural activity with oil and gas development. Fox Creek sits along Highway 43 in west-central Alberta. In the same region, Edson is on the Yellowhead Highway and serves as a long-standing service hub for surrounding energy activity. All five communities are in regions classified by the IRPP as "most susceptible" to impacts in transition under at least one metric, ranking in the top 2% of communities in Canada (Chejfec et al., 2025). Labour force data underscores higher average percentages of workers in mining, quarrying, oil and gas extraction compared with communities in British Columbia. While the sector accounts for 5% of provincial employment, it represents 31% in the Regional Municipality of Wood Buffalo, 28% in Fox Creek, and 13 - 16% in Bonnyville, Elk Point, and Edson (Statistics Canada, 2022).

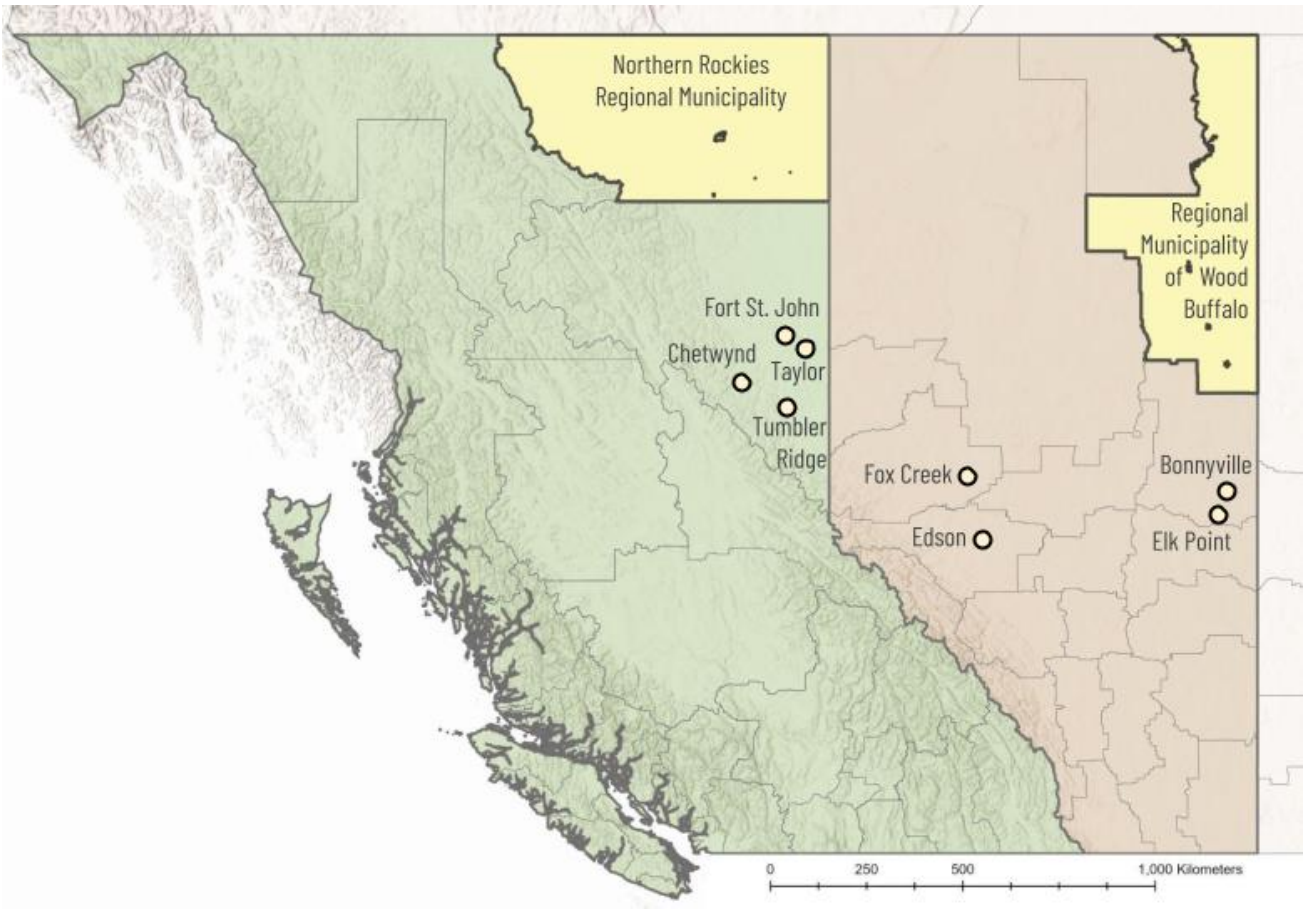

Figure 1: Map of participating communities. (Credit: Lindsay Barbieri).

Participating municipalities are highlighted in yellow within provincial boundaries of British Columbia (green) and Alberta (pink). Census division boundaries are marked. The respective areas of the two Regional Municipalities are highlighted to indicate the significant difference in size between these and the other participating municipalities, which are represented by standardized dots due to scale.

2.5. Visions for low-carbon economies

Visions of the desired future state of the energy-economy are a critical driver for transitions (Meadowcroft, 2016). Examining these visions at the municipal level forms a central objective of this study. Visions present an important tool for governments at all levels to influence the low-carbon transition by providing direction for actors to coalesce around, mobilizing capital and sending signals to the market. In Canada's multi-level governance system, strategies and plans that address decarbonization and relate to economic development exist at multiple scales, and forms can vary between provinces. These include economic, climate, energy, spatial development, and regional development strategies. Federal and provincial governments all present visions for their desired futures, and these can align or contrast, impacting policy coherence between levels of government.

As per Canada's Net-Zero Advisory Body (NZAB) (2025), the federal government's general vision is laid out in *Canada's Plan for a Clean Economy* in Budget 2023 (Department of Finance Canada, 2023). The vision is of a sustainable, clean economy capitalizing on clean electricity, critical minerals, and at the heart of the global supply chain for the goods and resources needed in a net-zero world (Department of Finance Canada, 2023). NZAB, however, describes Canada's goals for the low-carbon transition as "vague" and a source of confusion across federal departments and agencies (Net-Zero Advisory Body, 2025).

The vision proposed by the Government of British Columbia for its economy of the future is set out in *The CleanBC Roadmap to 2030* and built on the backbone of the province's clean electricity generation, pitched as a critical driver of economic growth into the future (Government of British Columbia, 2021). The release of *Energizing our Economy: B.C.'s Clean Power Action Plan* (Government of British Columbia, 2025e) details new electrification initiatives including the new 1100-megawatt Site C dam on the Peace River, new renewable energy projects through calls for power from BC Hydro, the provincial utility, and investments in energy efficiency and clean technology innovation, further advancing this vision.

The Government of Alberta's primary strategic vision for the low-carbon transition is outlined in the *Emissions Reduction and Energy Development Plan* (Government of Alberta, 2024) and centres on diversification built upon fossil fuel production. The vision clearly pictures strong fossil fuel production and exportation into the future, arguing that production in Alberta will be more sustainable and equitable than in other parts of the world. Diversification is envisioned both within the oil and gas sector with carbon capture, utilization and storage, methane reduction, and emissions intensity reductions, and in alternative energy, with a major focus on hydrogen.

Economic development strategies for participating communities in British Columbia focus on economic diversification to create more stable futures in comparison to the boom and bust cycles of resource economies (NRRM, 2019; City of Fort St. John, 2023; District of Tumbler Ridge, 2018). Strategies emphasize tourism, renewable energy, small business and entrepreneurship, and agriculture as areas to expand, on a foundation of continued stable resource industries.

In the participating Albertan communities, economic development strategies consistently frame economic diversification as essential to sustainable prosperity, but with a stronger emphasis than participating communities in British Columbia on building this on the core oil and gas sector. For Fort McMurray Wood Buffalo Economic Development & Tourism (FMWBEDT) and Edson, diversification is viewed as complementing oil and gas by buffering against the population, revenue, and workforce fluctuations of past boom and bust cycles (FMWBEDT, 2022; Town of Edson, 2021). Notably, FMWBEDT's inaugural five-year economic development

strategy outlined the intention to refresh economic priorities, respond to changing economic conditions and new opportunities, and focus on diversification in addition to oil and gas, signalling a shift in direction from past economic visions (FMWBEDT, 2022). Fox Creek's strategy acknowledges a new economy and ongoing global change, noting its reliance on oilfield activity while seeking to expand other sectors for a more balanced regional economy (Town of Fox Creek, 2023). Edson describes itself as "experiencing a period of transition," linking diversification to liveability, stability, and participation in the growing net-zero economy (Town of Edson, 2023). Across all communities, none outline a plan to reduce reliance on oil and gas; instead, diversification is framed as expanding the economic base around the sector.

2.6. Barriers and enablers in municipalities

This review examines the literature on barriers and enablers encountered by municipalities across the interrelated domains of climate action, economic development, and just transitions. These areas all play a role in shaping low-carbon transitions, and the review highlights the considerable commonalities in barriers and enablers that emerge across these domains. Barriers are limitations that obstruct municipalities from achieving an objective, whereas enablers drive them forward. The framing of barriers and enablers municipalities face has been used frequently across Canadian climate action literature (Robinson & Gore, 2005; Burch, 2010; Oulahen et al., 2018; Dale et al., 2020; Masemann et al., 2024). Robinson and Gore's study (2005) was the first Canadian study to apply the framing to guide the exploration of climate-related challenges and opportunities from the perspective of municipal staff.

Limited capacity is frequently identified as a barrier at the municipal level (MacArthur et al., 2025). Economic development practitioners are often limited by human resource constraints (Sutton et al., 2022) and this is equally the case for staff focusing on climate action (Robinson & Gore, 2005; Oulahen et al., 2018), often emerging as a lack of dedicated staff (Rhodes et al., 2021; Masemann et al., 2024). Notably for this study, smaller communities often experience more acute impacts of human resource constraints (Dale et al., 2020). A prominent barrier in the literature closely related to limited capacity is a lack of funding (Robinson & Gore, 2005; Dale et al., 2020; Rhodes et al., 2021; Masemann et al., 2024; MacArthur et al., 2025), which can be the cause of human resource constraints.

Limited access to information is a barrier identified particularly in relation to effective climate action at the municipal level, including both public lack of knowledge and, for municipal staff, gaps in technical understanding (Robinson & Gore, 2005). Conversely, government investment in research and science to improve access to high-quality climate information was shown to boost capacity in a longitudinal study of British local government between 2003-2013, functioning as an enabler for climate adaptation (Porter et al., 2015).

Municipalities also experience significant internal and multi-level governance barriers to climate action, including a lack of jurisdiction (Jaccard et al., 2019; Rhodes et al., 2021), mandate shifts due to political change creating issues with policy coherence and policy congruence (Dale et al., 2015), and public acceptance of policies (Dale et al., 2020). Jaccard et al. (2019) found that lack of authority at the municipal level to completely transform the energy system was a barrier to climate action. Cities with powers comparable to Vancouver "are dependent to some degree on complementary GHG and energy policies from senior levels of government" (Jaccard et al., 2019) and lack the authority to implement key policy instruments such as levying carbon taxes, installing emissions caps or regulating energy and technology options (Jaccard et al., 2019). Electoral cycles and changes in leadership can result in new mandates out of alignment with climate action goals and plans set out by prior governments. This can upset both policy congruence, which is internal policy alignment within a municipal government, and policy coherence, external alignment between levels of government. Challenges with both policy congruence and policy coherence can create barriers to effective climate action (Dale, 2015; Dale et al., 2020). Public acceptance of change was identified as a key requirement for climate innovation at the local government level, with a study on municipalities identified as leaders on climate action in British Columbia finding that a lack of public support, particularly prominent around behaviour change, presented a critical barrier (Dale et al., 2020).

The Meeting the Climate Change Challenge project (MC^3), an investigation of 11 municipalities in British Columbia characterized as climate innovators, identified multiple enablers to climate action (Dale et al., 2020). These included leadership by multiple levels of governance to drive forward climate action, for example through the provincial 2007 *Climate Action Charter* (Government of British Columbia, 2007) and the support and guidance on innovation offered by the provincial government; extreme weather events and associated impacts experienced by the communities which prompted attention and underlined the importance of action; access to funds from provincial and federal bodies; access to skills and resources through partnerships, particularly with intermediary organizations such as the Columbia Basin Trust and Fraser Basin Council; and mainstreaming climate policies through integration with other policy areas (Dale et al., 2020).

A study on rural governance in small resource towns in British Columbia found that local governments have been required to assume increasing responsibilities around community and economic development over time, and yet concurrently have been "constrained by outdated structures of fiscal, policy power, and authority for supporting rural renewal" (Ryser et al., 2018). This increasing responsibility without the authority to act effectively upon it presents a barrier for economic development staff. In addition to managing these barriers closer to home, municipal economic development practitioners must also contend with broader external barriers such as global economic challenges, economic uncertainty and heightened

competitiveness internationally (Sutton et al., 2022). Furthermore, when normal challenges are exacerbated in turbulent times, practitioners must handle “an array of economic upheavals, such as plant closures, mass lay-offs, out-migration, economic shocks, among others” (Sutton et al., 2022). These challenges are particularly prominent among resource communities dependent on global commodity pricing and impacted by boom and bust cycles (Markey et al., 2012).

Regarding just transitions, creating a collaborative process for the shaping and provision of transitional supports for communities was found to have been a key enabler in a case study of coal-dependent communities in Spain (Bolet et al., 2023). Collaborative dialogue led to labour unions and businesses supporting the Just Transition Assistance package negotiated with the Spanish Socialist Party (PSOE) national government. The intermediary role played by labour unions built support among workers and the study showed the PSOE’s vote share increased at the subsequent election relative to comparable municipalities, reflecting public acceptance in these communities (Bolet et al., 2023). A 2015 study of B.C. natural resource workers’ experiences with transitions found that collaboration between unions, industry, government, and citizens was viewed as “the primary way to bridge constituencies and reduce failures” in securing a just transition (Cooling, 2015).

A further important enabler of just transitions is the development of policies that are place-based, reflecting the unique dynamics of each community. Researchers emphasize that just transition supports must be tailored to local contexts, as each community will experience the transition differently (Krawchenko & Gordon, 2021; Gazmararian, 2024). Factors such as economic structure, infrastructure, identity, and social networks shape local transition pathways (Dale, 2020; Krawchenko, 2022). A paper from the Canadian Labour Congress and Pembina Institute similarly advocates for initiatives designed around the “unique values, circumstances, challenges, and strengths” of each community to avoid exacerbating disparities (Gordon & Callahan, 2023). Place-based approaches to prosperous futures for communities also respond to evidence that fossil fuel and natural resource workers often wish to remain in their communities to preserve social ties and a sense of belonging (Cooling, 2015; Gazmararian, 2024). By contrast, top-down policymaking can overlook community perspectives and fail to provide locally appropriate supports (Krawchenko & Gordon, 2021; Gazmararian, 2024). Exploring the visions for the transition to low-carbon economies held by municipal staff and the barriers and enablers in pursuing these visions builds on this literature by engaging with key actors in susceptible communities.

Chapter 3. Theoretical insights

Low-carbon transitions are more than purely technological shifts. They are *socio*technical in nature, requiring significant changes in the interwoven social and economic landscapes surrounding the production and consumption of energy, including markets, cultural norms and behaviours, policies, and regulations (Rip & Kemp, 1998; Miller et al., 2013). Scholars have therefore argued for attentiveness to the social, political, economic, and cultural dimensions of transitions (Laird, 2013; Miller et al., 2013). The sociotechnical approach situates technological innovation within system hierarchies, highlighting how systems-level change is impacted by multidimensional interactions between industry, technology, markets, policy, culture and civil society (Geels, 2012), and the dynamics of structural change (Geels, 2011). The central issue of structural change is overcoming the stability of existing systems. Stability is reinforced by a range of lock-in mechanisms such as sunk costs on infrastructure investment, economies of scale, political power of incumbents, and consumer behaviour (Geels, 2011). The sociotechnical approach is a tool for tackling the analytical challenge of understanding how innovations develop and can overcome these mechanisms of stability to change existing systems. Low-carbon transitions receive significant attention in the sociotechnical transitions literature due to the global prominence of climate action and decarbonization of energy-economies (Rip & Kemp, 1998; Geels, 2012; Meadowcroft, 2016; Araújo, 2023). The sociotechnical approach is valuable for contextualizing municipal barriers and enablers to the low-carbon transition within the forces and interactions that drive, accelerate, and slow these system level changes. It also provides a lens to examine the roles of governments at all levels in supporting transitions. Within this approach, the Multi-Level Perspective (MLP) offers a framework to situate municipalities within these multidimensional interactions and dynamics of structural change.

MLP, visualized in Figure 2 below, is an analytical framework within the sociotechnical approach that frames the relationships to stability and change between three levels that interact in transitions: niches, regimes, and landscapes (Geels, 2002; 2012). This study does not test the MLP framework but instead draws concepts from and is informed by MLP as a useful approach to situate municipal barriers and enablers to the sociotechnical low-carbon transition.

The niche, at the micro level, consists of individual actors and technologies, and local practices, operating with a degree of freedom from the conformity of existing regimes. It is from the niche level that innovation breaks out, through the development of new technologies, techniques, and social practices (Rotmans et al., 2001).

The regime, at the meso level, consists of the dominant practices, rules, and shared assumptions of incumbent powers that guide private action and public policy (Rotmans et al., 2001). The concept of the sociotechnical regime helps to highlight that regime-level actors are often motivated to preserve the status quo and the economic and political benefits it brings for

the maximum possible duration (Laes et al., 2019). At this level, markets, business models, and regulations are designed to maintain the technological trajectory, making it challenging for new technologies to emerge (Johnstone & Hielscher, 2017). Today, the existing fossil fuel regime drives the greenhouse gas emissions causing climate change, and is often strongly resistant to change (Burch, 2010). This is illustrated by regime-level climate delay discourses, which can slow climate action, perpetuate inaccuracies and decelerate transition (Lamb et al., 2020; Lloyd & Rhodes, 2025). These discourses advance in sophistication beyond climate denial by accepting climate change but providing reasons not to act, or not to act at the level climate solutions require.

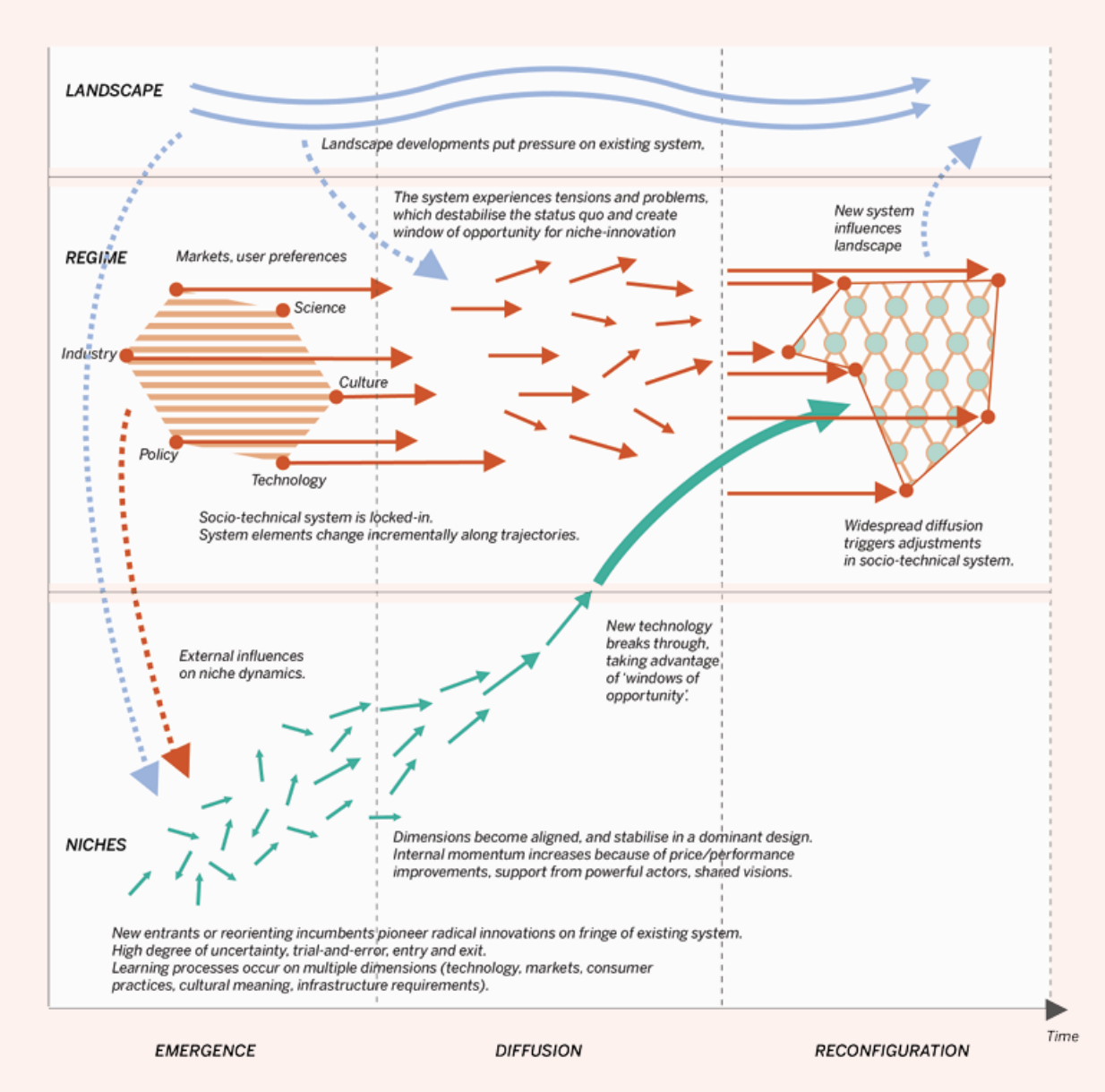

Figure 2: Explanatory visualization of the MLP framework. (Credit: Victor et al., 2019).

The macro-level landscape conceptualizes the slow-moving, external forces and contexts beyond the influence of individual actors, which provide the setting for regimes and niches (Raven et al., 2010). This can include slow-changing developments such as social values, macro-economic trends, climate change, geo-politics and demographics as well as external shocks such as wars, oil price shocks, and global pandemics (Geels, 2019).

As per MLP, sociotechnical change, or transition, occurs when there is alignment across all three levels: innovative new technologies arise from the niche level while the landscape is creating adequate pressure for change, and the regime is open enough or ready to adapt (Raven et al., 2010). The central idea to MLP is that change occurs "through processes of co-evolution and mutual adaptation within and between the layers" (Shove & Walker, 2007). As Figure 2 indicates, MLP is a temporal framework which focuses on changes through three phases: emergence, diffusion and reconfiguration (Victor et al., 2019). Niche innovations are developed in the emergence phase, begin to spread in the diffusion phase as performance improves, costs are reduced, and social acceptability increases, and in the reconfiguration phase, the system is adjusted and the transition is complete (Victor et al., 2019).

In relation to the MLP framework, municipalities are actors at the regime level of oil and gas production, contributing to the rules, infrastructures and discourses that maintain regime stability. For example, municipalities facilitate enabling infrastructure such as roads, rely on industrial property taxes for operating revenues, and reinforce social legitimacy through framing of oil and gas production as central to community identity and prosperity in public-facing media. In many instances, municipalities, particularly smaller municipalities, hold less power than other regime-level actors such as provincial and federal governments and fossil fuel companies, who hold far greater fiscal or financial resources and ability to implement or influence impactful policy.

To a more limited extent, municipalities can also be seen as hosts and conveners for niche-level innovations, for example through creating protected spaces for innovation through pilot projects. In Canada's innovation system, municipalities occupy a connective and enabling role rather than a primary policy-setting one. Federal, provincial, and territorial governments shape the core policy architecture and major funding streams for innovation and entrepreneurship. Niche-level innovation is driven federally through multiple actors including government departments such as Innovation, Science and Economic Development Canada (ISED), funding from national research councils such as NSERC, and programming delivered by regional development agencies such as PacifiCan and PrairiesCan. For example, ISED administers the Strategic Innovation Fund (SIF) which aims to provide transformative investments across all sectors of the economy to drive innovation (ISED Canada, n.d.). As of February 2025, SIF has distributed over $10 billion in funding to 143 projects (ISED Canada, 2025). At the provincial

level, innovation is supported by government programs such as the Innovative Clean Energy Fund in British Columbia (Government of British Columbia, 2025f) and Alberta's Major Innovation Fund (Government of Alberta, 2025b). Provincial agencies such as Innovate BC and Alberta Innovates offer grants and advisory services to support innovation, often with a focus on priority sectors such as agriculture, transportation, and natural resources. While much funding targets businesses and research institutions, there is also funding available for municipalities to progress their own innovative projects, such as through the Federation of Canadian Municipalities' Green Municipal Fund which provides grants, knowledge transfer, and skills development to support municipalities in transitioning to sustainable practices (OECD, 2024).

While rarer, municipalities can also take more of a leading role in driving innovation. This has been demonstrated by Nelson, B.C., in its role as implementer of its Community Solar Garden project, and by Banff, Alberta, as the enabler of its Banff Solar Feed-in Tariff project, both driven by "the first local policies of their kind in Canada" (MacArthur et al., 2025, p.4). These innovations were developed through local government-driven partnerships, community engagement and innovative financing mechanisms.

It is important for this study to note that the relationship in Canada between rural municipalities and innovation is often problematic. Rural municipalities are defined by the OECD as those outside of Census Metropolitan Areas or Census Agglomerations (OECD, 2024) which includes all municipalities in this study. While there are many examples of innovation in rural and remote regions in Canada, rural communities do not see as much innovation as urban communities (OECD, 2024). One commonly used, but limited, innovation metric, new patents, puts non-metropolitan rural remote regions at approximately a quarter of the new patents of metropolitan regions, with 0.03 patents per 1,000 inhabitants compared with 0.11 per 1,000 inhabitants between 2016 - 2020 (OECD, 2024). Challenges faced by innovators in rural areas can include a lower level of access to essential infrastructure and services than in urban places, a lack of a local formal innovation system including limited access to local universities, limited market access for firm-firm solution purchasing, and low marketability of innovations (OECD, 2024). These challenges should be considered when situating small and medium-sized rural municipalities in the MLP framework.

MLP has been described as overly functionalist and "too descriptive and structural, leaving room for a greater analysis of agency" (Smith et al., 2005, p.1492). The structural orientation of MLP risks failing to account for the diversity of stakeholder perspectives and lived realities, including those of marginalized groups or local users impacted by transition pathways. Some scholars have proposed modifications to the framework, such as integrating a "user" level (Deviney et al., 2023) or adding a city-scale lens (Hodson and Marvin, 2010), to better capture these dynamics and ensure diverse stakeholder voices are represented in both analysis and

scenario planning. In Deviney et al.'s research on farm technology innovation, they argue that a successful niche-level innovation "must somehow accommodate, integrate into, or supplant the existing regime without negatively impacting…the farm" (Deviney et al., 2023, p.125). Deviney et al. introduce MLP+F as their modified framework, where the 'F' represents farms, to "give designers and decision-makers a more nuanced understanding of what an innovation or change must be able to do, and how it is constrained by the complex relationships within the system" (Deviney et al., 2023, p.125). Communities, as sites of social practice, identity, and cultural negotiation, can be marginalized or treated as passive recipients of top-down transitions, rather than as active agents of change within the system. While MLP is used as a reference framework and source of key concepts in this study, it is done so with these critiques and modifications in mind, with the research designed to ensure that participant voices are foregrounded in analysis and that the agency, lived reality, and local needs present in municipalities are recognized.

The speed of change is a core system dimension of transitions, dictated by a range of forces including government policy (Rotmans et al., 2001). Government policy can accelerate transitions by alleviating barriers and strengthening enablers. Low-carbon transitions will need to accelerate to hit global emissions reduction targets (IPCC, 2022). Accelerating this transition is highly relevant and topical in Canada, exemplified by the objectives of Canadian-based initiatives such as the Accelerating Community Energy Transformation (ACET) initiative hosted at the University of Victoria and The Transition Accelerator national non-profit. Building from MLP, transitions management is a strategy for policy-makers and private actors to guide, influence, and accelerate change to advance new technological developments in transition and reach societal goals (Schot & Geels, 2008; Raven et al., 2010). Transitions management depends on the articulation of broad, long-term, multi-domain, multi-level visions around which a range of actors is willing to coalesce (Rotmans et al., 2001).

To identify pathways for Canadian provincial and federal governments to alleviate municipal barriers and bolster enablers to low-carbon transitions, it is crucial to listen to the people on the ground. Municipal staff with expertise in economic development are among those at the heart of this community work.

Chapter 4. Methodology

The project employs qualitative research methods to foreground the perspectives and understanding of local experts in municipal economic development as actors with lived experience of their community, to listen to their views on visions, barriers and enablers to the low-carbon transition. This study draws upon the constructivist grounded theory (CGT) methodology (Charmaz, 2014). CGT was selected as it promotes the investigation of action and the social world from the point of view of the actors themselves (Clarke, 2019) and assumes the complexities of particular worlds, views, and actions (Creswell, 2007). This research project underlines that, while there are shared perspectives and experiences, each oil and gas-producing municipality studied is a distinct entity, with its unique socioeconomic and geographic contexts, opportunities, and limitations. A CGT-inspired approach respects these differences while allowing for participant-driven insights to emerge. Rather than utilizing CGT comprehensively, principles and practices were deployed with the focus on data analysis. A literature review and a consultation with experts were drawn upon for sensitizing concepts to orient the study and set the focus group questions, in alignment with an "informed" approach to grounded theory (Thornberg, 2012). This follows the approach of Murphy et al. (2022) and aligns with the view of Sandelowski that studies can be conducted with a "hue" of a qualitative approach, including grounded theory (2000, p.337).

A CGT approach recognizes the element of co-creation between the researcher and participants, through the setting of questions and moderation by the researcher, the responses provided by participants, and the participant-participant and participant-moderator interactions within focus groups. The researcher's contributions to the study are imbued with their subjectivity, background, and values. CGT recognizes that data and analyses are social constructions and thus researchers must take a reflexive approach to the work (Murphy et al., 2022). As the author of this Master's thesis, I am a white, British, male graduate student living in Victoria, the capital and administrative centre of the province of British Columbia. I bring professional experience in the economic development space in British Columbia, having lived in a small municipality far from a metropolitan centre and worked at the Chamber of Commerce. While I have lived in a small municipality in one of the two provinces included in this study, I have never lived in an oil and gas-producing municipality in either British Columbia or Alberta. Awareness of this background informs the lenses I bring to the co-creation of meaning through this CGT analysis.

4.1. Data collection: Community and participant selection for focus groups

Focus groups with municipal government staff were deployed for primary data collection. Inclusive dialogue and collaborative approaches are important to managing just transitions

(Canadian Rural Revitalization Foundation, 2024). Focus groups contribute to this need for inclusive dialogue by providing participants with an opportunity to connect with peers and to communicate their concerns to provincial and federal decision-makers through robust academic research. Social sciences scholars have underscored the value of focus groups for capturing the human dimensions of transition, as they allow participants to generate, discuss, and express perceptions and meanings collectively (Sovacool, 2014; 2018).

Two virtual focus groups were arranged, one with participants in British Columbia on February 24, 2025, and one with participants in Alberta on March 7, 2025. The sample size was five (5) participants per focus group representing five different municipalities, to provide a suitably broad range of perspectives while creating space in the sessions for all participants to exchange ideas and experiences relating to visions of, and barriers and enablers to, the low-carbon transition. Focus groups are a strong approach for the creation of rich data, as through the exchange of ideas among participants, "individual response becomes sharpened and refined, and moves to a deeper and more considered level" (Ritchie et al., 2014). Focus groups were conducted virtually via one-hour Zoom meetings to lower barriers to participation by reducing the travel and time burden for participants. Video and audio of the focus groups were recorded and the data securely stored. The audio was transcribed using Zoom's automatic transcription function and reviewed for corrections.

The focus groups began with an icebreaker for participants followed by five open-ended questions (see Appendix D). All questions were pre-tested by researchers and professionals in the climate policy and low-carbon transition fields at a workshop in Victoria, British Columbia, on November 22, 2024. This process allowed for valuable input from a diverse range of experts from across Western Canada and Oregon. The lead researcher moderated the focus groups, ensuring that each participant had the chance to answer every question, and making space for discussion. This ensured that the value of focus groups in creating rich conversations was leveraged, leading to greater depth and insights than a series of individual interviews might.

This research project received standard ethics approval from the University of Victoria Human Research Ethics Board. Data from the focus groups has been stewarded using best practices of anonymity and confidentiality. As per the ethics approach agreed with participants, participant names are not used in research outputs. Participants are referred to as municipal staff with expertise in economic development. To prevent identification of participating individuals, the list of participants was split into two provincial groupings, randomized, and assigned a reference from P1 through to P10. Their respective province is included when referring to participants (e.g. P1, B.C.) to ensure anonymity while retaining cross-provincial comparisons.

This study focuses on small to medium-sized oil and gas-producing communities susceptible to economic disruption in a low-carbon transition. To identify oil and gas-producing municipalities,

Statistics Canada 2021 census data on oil and gas employment share was utilized (Statistics Canada, 2022). The use of fossil fuel employment share to support identification of susceptible communities aligns with existing research in the field (Mertins-Kirkwood, 2018; Canadian Climate Institute, 2021; Raimi & Pesek, 2022; Stanford, 2021; Samson et al., 2025). Employment share is a key metric as it represents the number of people whose livelihoods may be impacted by transitions away from fossil fuel industries (Mertins-Kirkwood, 2018). Small and medium communities are defined by Statistics Canada as having populations ranging between 1,000 - 29,999 and 30,000 - 99,999 respectively (Statistics Canada, 2017). To align with study parameters, Statistics Canada geographical areas with populations outside of these ranges were excluded.

Statistics Canada uses the term Census Subdivision for municipalities and areas considered equivalent to municipalities for statistical purposes (Statistics Canada, 2021a). In Census Subdivisions, the most granular employment share data for oil and gas extraction jobs is under the bundled North American Industry Classification System (NAICS) code *NAICS 21 Mining, Quarrying, and Oil and Gas Extraction*. *NAICS 21* was used as the best available reference, recognizing the limitation that oil and gas extraction employment is aggregated with mining and quarrying employment. A list of communities with high employment share in *NAICS 21* relative to the provincial level was created to guide invitations to focus groups. In addition to considering employment share, where possible, geographic diversity and variation in community population size were prioritized to create dynamic, inclusive conversations.

Additional steps were taken to bolster the use of *NAICS 21*. First, the selected communities were cross-referenced with the Institute for Research on Public Policy's (IRPP) interactive map of community susceptibility, a tool created through the IRPP's Community Transformations Project (IRPP, 2025b). The map uses three metrics to assess the level of local susceptibility to policy, technology and market changes that can be expected to occur as Canada and the world decarbonize. The three metrics used are *Facility Susceptibility*, which ranks communities by emissions from large facilities divided by the size of the labour force in the community; *Intensity Susceptibility*, which ranks communities by the average emissions intensity of sectors with employment in the community, weighted for the share of the local labour force in those sectors, and *Market Susceptibility*, which ranks communities by the proportion of employment in export-oriented sectors that are undergoing or are expected to undergo major global market transformations (Chejfec et al., 2025). A review of the interactive map confirmed that all participant communities are located in regions classified as "most susceptible" or "more susceptible" to workforce disruption in transition towards low-carbon economies in at least one of the three metrics (IRPP, 2025b). Secondly, municipal economic development strategies and webpages were reviewed to check that each municipality self-identifies as having a prominent local oil and gas sector.

A purposive sampling approach was used to select participants with topic-relevant expertise who are well placed to share their vision for a transition to a low-carbon economy in their oil and gas-producing community. Municipal staff with expertise in economic development contribute to economic development planning, investment attraction and business development for their local government. Through economic development strategies, staff are instrumental in setting visions and conditions for municipal economic futures, influencing the direction of growth. Economic development efforts at the municipal level bring together council, economic development staff, Chambers of Commerce, businesses and residents. Municipal staff in this space are well connected to community perspectives, goals, opportunities and challenges regarding the local economy. Staff with expertise in economic development were therefore selected for participation in this study.

Potential participants were identified through reviews of municipal website contact lists, supplemented by internet searches for publicly available information. All participants were sent an invitation via email by a representative from the Accelerating Community Energy Transformation (ACET) initiative housed at the University of Victoria, the funding body of this research project. Fourteen participant invitations were sent out via email, comprising six in British Columbia and eight in Alberta. Follow-up emails were sent to most participants to secure attendance from those interested and available.

The choice of municipal staff rather than elected officials or staff from local community organizations aligns with Robinson and Gore's approach of participant selection based on the important contribution of staff to the municipal policy and program development process (2005). This participant selection also aligns with a criterion for empirical novelty in energy social science from Sovacool et al. (2018, p.20): "new data from exceptional groups or populations." Exceptional groups include elites, or "people in a position of power, influence or expertise regarding energy decision-making" (Sovacool, 2018, p.20), a definition fitting for municipal staff with expertise in economic development.

4.2. Data analysis

The approach to coding transcripts was informed by Charmaz's (2014) guidelines on coding in constructivist grounded theory. This grows from acknowledging that codes are constructed by the researcher, defining what the researcher identifies as meaningful in the data, capturing action and bringing forth the tacit meanings in the words of participants (Charmaz, 2014).

The first step after transcripts were reviewed for corrections was to complete initial, or open, coding, using the NVivo 14 software package. Following guidance from Charmaz, transcripts were coded line-by-line to "fracture the data" (Charmaz, 2014), using gerunds to preserve

action and constantly comparing data, codes and ideas within and across the two transcripts and between different participants. As coding was undertaken, the CGT method of analytic memo-writing was used to capture early conjectures regarding these comparisons (Charmaz, 2014). The coding resulting from this process was organized under eight broad themes.

Reflection upon these themes and the emerging analytic memos set direction for the second step, focused coding. Focused coding involved reviewing and comparing all codes under and across headings, combining and grouping codes to build a higher level of abstraction. The connections and relationships between segments of data were explored and analyzed through further memo-writing to identify patterns and relationships, gathering these around axes to discover themes emerging from the data. This inductive process involved working closely with the data throughout, including returning frequently to the initial codes, transcripts, and focus group recordings to ensure that focused codes appropriately drew together themes, as recommended by Charmaz (2014). The final coding step was selective coding, the refinement of focused codes into final concepts, resulting in analytical insights born directly from the data.

Chapter 5. Results

Analysis of the focus group data uncovered eight key themes. Analysis of the first research objective, exploring municipal governments' visions for low-carbon transitions, coalesced into a single theme of *Envisioning the future: economic diversification*. The remaining seven themes identified barriers and enablers to the low-carbon transition perceived by participants:

1) Lack of a coherent overarching vision for transition
2) Regional unsuitability of climate policies and low-carbon technologies
3) Mixed community member attitudes to transition
4) Capacity and education
5) Complex regulatory processes and permitting delays
6) Costs and funding
7) Oil and gas optimism (or pessimism).

Grouping barriers and enablers together into themes reflects that a barrier can be reversed to become an enabler, and a barrier to one participant may be seen as an enabler to another.

5.1. Envisioning the future: economic diversification

All participants identified economic diversification playing a key role in their communities' economic futures. Diversification featured alternative and low-carbon fuels and technologies, and was largely seen as being built on a strong, even growing, foundation of continued oil and gas production. Participants from Alberta specifically emphasized the continued role of oil and gas in their communities, while noting that the sector has moved into an operational phase rather than a construction boom. Responses from participants in British Columbia focused less on the state of oil and gas, and more so on exploring alternative energy opportunities such as geothermal and hydrogen. The two most divergent positions on the future of oil and gas in their community came from participants in the Alberta focus group. P6 (Alta.) shared that a post-oil and gas future is top of mind, whereas individual P8 (Alta.) noted that from a growth perspective, they are "all in" on fossil fuels.

All participants indicated that their ongoing work to bolster economic diversification is an important contributor to their vision for their community's future. Diversification was noted by participants as supporting a prosperous community that provides a range of employment opportunities to those that may not wish to work out in the oil patch and bolsters economic resilience to natural resource sector boom and bust cycles. Opportunities being pursued included clean energy, manufacturing, data centres, tourism, rare earth mineral extraction and processing, retail, and warehousing and distribution. Within alternative energy opportunities, small modular nuclear, geothermal, hydrogen, and solar were all specifically highlighted. During

the conversations around diversification, members of the Alberta group noted they were exploring oil and gas sector innovations such as carbon capture and storage (CCS) and waste to energy facilities, and were interested in opportunities to tie into the Pathways project.

Diversification was also noted as necessary due to the shift in the oil and gas sector from the construction boom to the slower growth of an operational phase, as P7 (Alta.) highlighted:

> Historically…we have been focused on one industry that grew so rapidly, we did not have to look for investment or attract business...Now we have moved into an operational phase, and are better positioned for growth. We are focused on future growth and being proactive rather than reactive. We have an economic diversification action plan which we are in the process of executing.

Responses from participants across Alberta and British Columbia underlined that they are currently in an exploratory and planning phase for new economic and energy opportunities in this time of global change. In the British Columbia group, this came with considerable uncertainty about the local potential for different energy technologies, particularly around hydrogen, and hope that new initiatives will come to fruition, such as geothermal for P3 (B.C.) and small modular nuclear for P8 (Alta.). Focus group members from several communities highlighted existing infrastructure that will support exploration of nascent or growing economic sectors. For example, proximity to a major regional airport was highlighted as a benefit to be leveraged in diversification by a participant in each focus group.

The prevalent mood for the future could be classified as cautious optimism. While many challenges communities are experiencing were shared, overall, there was hope for continued growth, a sense that communities were “currently on an upward trend” (P1, B.C.), and a belief that economies would stay healthy. Creating prosperous communities with high-quality infrastructure and amenities to attract and retain residents was a shared goal across participants which underpinned these visions for the future. This quote from P10 (Alta.) illustrates this: “We're a small community. We want to grow. We want to provide the best for our current residents and attract new residents to us.”

For participants, having a strong economic base to provide both quality jobs for residents and tax revenue to support community development was at the heart of achieving this vision. For many, the oil and gas sector was seen as the economic engine to drive this forward. Subjects that received limited direct discussion included the impact of fossil fuel growth on climate change, and how climate change may affect the sustainability and health of communities, or of the potential for drastic reductions in future demand due to global transition away from fossil fuels. Of note, direct questions on these topics were not asked.

5.2. Barriers and enablers to low-carbon transitions

Table 2 categorizes participants' views on barriers and enables to low-carbon transitions into six themes: lack of a coherent overarching vision for transition; regional unsuitability of climate policies and low-carbon technologies; mixed community member attitudes to transition; capacity and education; complex regulatory processes and permitting delays; costs and funding; and oil and gas optimism (or pessimism). The table also highlights whether these themes were seen primarily, but not solely, as a barrier, enabler, or balance of both.

Table 2: Barriers and Enablers to Low-Carbon Transitions.

Theme	Participants in British Columbia	Participants in Alberta
Lack of a coherent overarching vision for transition	Barrier	Barrier
Regional unsuitability of climate policies and low-carbon technologies	Barrier	Barrier
Mixed community member attitudes to transition	Barrier and Enabler	Barrier and Enabler
Capacity and education	Barrier (Capacity) Enabler (Education)	Enabler (Education)
Complex regulatory processes and permitting delays	Barrier	Barrier
Costs and funding	Barrier (Costs)	Enabler (Funding)
Oil and gas optimism (or pessimism)	Barrier	Barrier and Enabler

5.2.1. Lack of a coherent overarching vision for transition

While individual threads of low-carbon economies were present and seen positively across the focus groups, a key barrier in both focus groups was the lack of clarity over how these could be woven together into a coherent, comprehensive strategic vision for a low-carbon economy of the future. Emerging elements of a low-carbon economy across both focus groups included interest in specific opportunities such as geothermal electricity generation and lithium extraction, broad efforts to pursue economic diversification, and expressing positive sentiment towards the co-benefits of low-carbon projects. However, initiatives were often in the earlier stages of exploration, and did not form a core portion of a comprehensive, clear strategy for future economies.

A key question remained for participants: what could replace oil and gas as the economic foundation of their communities? Focus group members struggled to see a sector that would be viable in their rural communities and could provide the municipal tax revenues, high paying jobs, and the quality of life that oil and gas currently provides. The strongest opposition to transition on this basis came from participants in Alberta: "Transitioning to me suggests somebody sitting in an office somewhere….without knowing the full realities of living in…a rural community. It suggests we all pack up and live in a big city somewhere" (P8, Alta.). This indicates a view that transition is an idea generated by external actors, rather than being community driven. The lack of a perceived suitable alternative to the oil and gas sector was apparent in the visions of the future shared by participants which largely centered on oil and gas as the economic foundation. Focus group members all shared the same central goal for economic development in their municipality: building an economically prosperous and healthy community that is attractive to new long-term residents and, in many cases, relies less on fly-in fly-out workers and camps. When asked to envision the future, there was little sense of urgency to undertake a major shift away from oil and gas to achieve this goal, or of the risk of being left behind or economically stranded.

A major barrier to participants seeing any strategic vision for transition as coherent was the perceived threat that transition poses to the identity, culture and quality of life for residents of oil and gas-producing municipalities. There were clear concerns that the lifestyle and incomes that oil and gas jobs provide for residents could not be matched by low-carbon jobs, and that asking residents to change their lifestyle would be highly unpopular. Others shared that, in addition to these material challenges, there would be cultural pushback to moving away from oil and gas from both residents and elected local officials. P8 (Alta.) spoke out vehemently on the devastating impacts they felt that transition away from oil and gas would have on their community:

> If you took oil and gas out of our community, I would suggest that there would be no hospital. There would be no schools. There would be no town. There would be nothing. The only reason our community exists is to service the oil and gas industry.

5.2.2. Regional unsuitability of climate policies and low-carbon technologies

In both focus groups, a further barrier to transition was the sense that climate and energy policies and low-carbon technologies are not always designed for the geographic, climatic and economic contexts of participants' communities and regions. In the B.C. group, EV charging stations powered by propane were pointed to as an example of a provincial emissions reduction initiative that felt counterproductive when deployed in their region. This spoke to the broader

sentiment that Northern B.C. is different from the South, and its needs are not prioritized. This was seen as a barrier to transition. As per P4 (B.C.):

> Policy's not keeping up from a provincial or federal level to overcome those questions. I've been to many sessions with various members of council for each one of these communities that are here and we've asked… So how do you plan on making that work in a minus 40 environment? And they just look at you: Oh, well. But have you tried it? No. So how do we transition? How do you gain the support… from your communities to want to venture into a market that even the Province isn't actually addressing.

A similarly strong opinion was expressed in the Alberta group by P8 (quoted in the previous section), highlighting the urban-rural divide and the lack of understanding from decision-makers regarding the lived realities of people in rural communities.

For participants in the B.C. group, the perception of unworkable policy and technologies in their region extended to the activities of provincial entities. Participants questioned how they could be expected to advance the low-carbon transition in their community if provincial entities were not setting a strong example or leading the way. P3 (B.C.) felt that BC Hydro's long-term resource plan for local energy generation was seen as lacking in genuine low-carbon options, a demotivating force for the local community to pursue low-carbon efforts.

In both groups, calls for the transition to happen rapidly were not seen to align with the needs of oil and gas-producing municipalities and were therefore perceived as a barrier. Calls for swift change felt like a threat to a locally viable, thoughtful approach in communities The inverse was seen as an enabler: communities favoured slowing down and taking a more gradual, industry-driven approach to transitions:

> It's really helped to not have that rapid shift away from oil and gas. And I think that I'm hearing that from other communities as well. So that gradual industry driven approach is a lot more successful in our community (P10, Alta.).

Indigenous communities were seen to play an enabling role in regional transition in both focus groups, built on stewardship of the land, exploration of sustainable commercial initiatives and the creation of partnerships. Both focus groups highlighted the important contributions of Indigenous governments, enterprises and communities to the regional economy, for example through the leadership of low-carbon initiatives such as the innovative Tu Deh-Kah geothermal electricity generation project by Fort Nelson First Nation.

In the British Columbia group, misalignment of objectives between municipal and provincial levels of government led to a lack of trust in the provincial government. When asked to describe their communication with the Government of British Columbia regarding challenging provincial demands on municipal staff time, P5 (B.C.) felt that the Province was listening but could not

change anything, and P4 (B.C.) said that the Province was only listening to what they felt would work for them. In contrast, increasing collaboration between communities and the Province to better shape policies and technologies to suit regional contexts, and ensuring communities have a seat at decision-making tables, were enablers suggested multiple times in the B.C. group.

Increased engagement and input for rural municipalities in policymaking was presented as a countermeasure to the sentiment that "the province has swiped us with this paintbrush of the one size fits all and without necessarily looking at the whole bigger picture" (P3, B.C.). Participants felt that policies and technologies were designed for urban, Southern B.C. communities and environments, and greater participation and consideration for Northern B.C. communities could improve impact and public acceptability in the North.

5.2.3. Mixed community member attitudes to transition

When asked whether they felt community residents would be for or against transitioning to a low-carbon economy, participants across both focus groups shared that in general they understand their communities to be divided on this controversial issue, but with stronger views held on the side opposed to the transition. As expected, asking participants this question was met with a level of uncertainty and mixed responses. Making a decisive judgement on the public opinion of a controversial idea without conducting a representative citizen survey is challenging. However, while not providing a concrete answer, the question prompted insightful responses which demonstrated that community member attitudes can act as an enabler to transition when in favour, and as a barrier when opposed.

Municipal staff from both focus groups shared that community members are divided on this issue along demographic lines (P1, B.C.; P6, Alta.). Younger people were seen to be more concerned about the environment, a sustainable future, and being more open to new opportunities, and therefore more likely to support transition. Conversely, older generations, with ties to the industry going back many years, were perceived likelier to oppose transition. As such, the attitudes of community members towards transition presented both a barrier and enabler.

Several participants, such as P6 and P10, Alta., shared their view that community members were supportive of new technologies and open-minded regarding innovation. Reasons for this support included the recognition of the need to diversify for an economically sustainable future, new jobs created by recent initiatives, energy security, and economic opportunity.

Multiple times across both focus groups, participants raised the threat that transition poses to the job security of residents working in the oil and gas sector as a key motivating factor for those against transition. Participants also noted that they felt many local oil and gas workers are

likely to oppose change as they benefit from the status quo and the prosperity the sector continues to bring, for example: “We also have a segment of the community that made all the wealth from oil and gas. And they are just truly trying to stay in the same lane” (P6, Alta.). Change was seen as a “hard sell” (P9, Alta.) for those enjoying high incomes from oil and gas jobs and the lifestyles they bring, and several participants saw transition as potentially bringing into question the future viability of the community itself. In the Alberta focus group, there was widespread agreement that community members are more supportive of innovation that can complement, rather than replace, conventional energy industries, and that takes a gradual, industry-driven approach.

Several participants listed factors that they believed influence, or could influence, community member attitudes towards the low-carbon transition. These included the outside view of fossil fuel producers as “the bad guys” (P4, B.C.), the role of education on the energy sector in schools, the impact to the physical landscape that new energy projects have and supports that provincial and federal governments may provide in future.

5.2.4. Capacity and education

Limited capacity for municipal staff and the local workforce to advance transition was seen as a multifaceted barrier, to which education was proposed as an enabling response. Limited capacity among economic development staff in particular was highlighted prominently and repeatedly as a barrier by all five participants in the British Columbia focus group. In contrast, lack of capacity among economic development staff did not arise as a barrier to exploring low-carbon opportunities in the Alberta focus group. British Columbia focus group members agreed that economic development staff at their municipality manage an array of files, often lack sufficient human resources, and must focus on responding to urgent issues. The issue in the B.C. group was partly attributed to administrative demands from the Province such as the completion of reports or the compilation of plans which were sizeable, often unanticipated, and took capacity away from municipally-driven initiatives. This lack of economic development staff capacity was seen as a factor that would limit the time, bandwidth and resources to pursue low-carbon opportunities:

> As you've even seen around this table, I think every single one of us has multiple areas and topics that we all look after, right? Or are filling positions…So the capacity staff wise, whether or not that's permitting or even just keeping up with the stuff that the province is pushing out or we're changing or saying we need a new plan for this or by this date, all those things impact our capacity as well as the capacity to actually install or make changes (P3, B.C.).

Keeping up with provincial government requirements and challenging timelines was pointed to in the B.C. focus group as a capacity-limiting factor for already stretched economic development staff. Demands relating to CleanBC, greenhouse gas reduction action planning, and housing incentives were named specifically:

> It happens fairly regularly where… all of a sudden everybody has to have a housing plan and it has to be complete by this date. So even though we may have planned our next couple years of workload... now something has to get bumped off because the province has bumped something on… to meet with their requirements of dates and timings, right? (P3, B.C.).

The Alberta group did not highlight the provincial government absorbing municipal staff capacity as a barrier to pursuing low-carbon opportunities, conversely highlighting the Alberta Drilling Accelerator as a helpful initiative that can support geothermal projects across the province.

The lack of low-carbon workforce training opportunities was also identified as a capacity gap in the British Columbia focus group. A participant noted that there were considerable options for programs in oil and gas at local colleges, and that adjusting the scope of educational offerings to include opportunities in low-carbon sectors is needed. In response to capacity gaps, education was raised as an enabler in both focus groups, with unanimous support in the British Columbia group. Multiple forms of education were seen as needed or beneficial. These included new college training courses targeting low-carbon jobs, education for municipal staff and council to better understand the range of new economic opportunities, and a balanced approach to energy education in schools which creates space for understanding legacy energy systems and exploring low-carbon alternatives. Additionally, a participant called for educational opportunities for those outside of oil and gas-producing communities to understand the value and contribution of these communities and to move away from seeing them as “the bad guys” (P4, B.C.).

5.2.5. Complex regulatory processes and permitting delays

Lengthy permitting delays and complex regulations were identified as barriers in both focus groups, as they were seen to risk holding up major project developments and deterring potential investors, undermining provincial and federal narratives around economic growth and new opportunities. Examples of untenable delays were given from both conventional energy and alternative energy projects. One participant asked: “How do we expect to grow and diversify our economies if it's taking 16 years to get the regulatory process done for a new

mine?" (P8, Alta.). This was also a challenge for a small modular nuclear reactor project they were exploring:

> Small modular reactors…they're looking in our community…it would be a massive boost for us. Again, I don't think that small modular technology has been either approved or is on the regulatory path somewhere… If it takes 15 years… what are we doing?... The regulatory process seems to be holding up a lot of potential (P8, Alta.).

P1 (B.C.) shared that recent permitting delays for a new mine almost resulted in damaging layoffs of workers. Complications from regulations are exacerbated by incoherence between provincial and federal levels of government: "It should be united views at the provincial and federal levels" (P6, Alta.). It was noted in the Alberta focus group that steps being taken by the province to mainstream geothermal was seen as an enabling factor for exploring opportunities with this technology.

5.2.6. Costs and funding

Financing low-carbon opportunities was a prominent theme across both focus groups, with high costs for equipment and infrastructure being seen as a barrier among B.C. participants, and funding for training and feasibility studies noted as an enabling factor across both groups. The cost to businesses of investing in new equipment and technologies, on top of already elevated costs in rural areas, was noted as a challenge in the B.C. group. Concerns were also raised regarding costs of building the required infrastructure to support future growth, including new housing for communities. Cost and the importance of affordability more broadly was notably a more prevalent concern in the B.C. group.

While there was no mention of cost as a barrier in the Alberta group, funding was highlighted as an enabler by P6 (Alta.), seeing this a necessity for large projects such as facilities for local energy generation. The participant commented positively on the available funding opportunities for alternative energy sources:

> We're going to need to tap into alternative energy resources. With current government funding, it's a great time to try to go after those initiatives, because there is funding available, the feasibility engineering studies can be completed almost for free for municipalities with very minimal investment needed. And at the same time, there is federal funding available to build infrastructure for geothermal energy, and even for lithium projects, as we know, which happened in Mountain View County, E3 (P6, Alta.).

5.2.7. Oil and gas optimism (or pessimism)

Participants' perspectives on the future of oil and gas were both barriers and enablers to transition, subject to where they stood on the question. All participants recognized that global markets play a pivotal role in the future economic direction of their local energy sectors. The belief that demand for oil and gas was either stable or growing created a barrier to transition, as this removed the perceived necessity of transition for building a prosperous community into the future: "While energy transitions, the global demand for oil continues to rise. There's still going to be a need for the product" (P7, Alta.). One participant expressed a counter opinion, stating their view that local oil and gas production will cease one day and therefore it would be a necessity to explore low-carbon alternatives: "It opens those opportunities to look a little bit differently into energy and keep minds open that the resources, oil and gas, they'll end one day and that we're going to need to tap into alternative energy resources" (P6, Alta.). It is notable that the two most divergent views on the future of oil and gas both came from participants in the Alberta group. This contrast highlights the regional differences across the province regarding oil and gas reserves, and how that can influence perspectives on alternative energy.

Participants discussed how much preparation for community growth was wise, given global geopolitical flux and uncertainty in international markets. Their views placed their community's position on a scale between balancing risk and positioning for opportunity. Some participants, such as P7 (Alta.), were bullish about the future. This was reflected by their account of the community's positioning for major growth, with a significant investment in infrastructure to accommodate over three times the existing population. Other focus group members displayed less confidence in future growth with wariness of a lapse back into downturn outweighing the risk of being unprepared to fully capitalize on a boom period:

> With some recent announcements from the States and the way the world is going…we're just (considering as a) community if now is the right time to be focusing on those housing developments or if we want to pause (P10, Alta.).

When asked about past transitions, all participants shared challenges of previous periods of downturn, including decreasing populations, loss of workers, schools facing closures, lack of housing, high local costs, and infrastructure limitations. Participants shared their view that, for some communities and residents, these memories seemed to be closer to the surface, prompting a more cautious approach: "We're currently on an upward trend, but many long-time residents remain cautious due to the community's history of boom-and-bust cycles, which tend to occur about every 10 years — and we're nearing that mark again" (P1, B.C.).

Chapter 6. Discussion

Canada's resource-dependent economies face uncertain futures. This uncertainty is highly pertinent to the oil and gas-producing municipalities of British Columbia and Alberta involved in this study, which are located in regions highly susceptible to economic impacts as Canada and the world decarbonizes (Chejfec, 2025). This research draws upon the Multi-Level Perspective (MLP) to explore visions of, and barriers and enablers to, low-carbon transition. Understanding the views of municipal staff on these topics can support community-focused action towards a sustainable, just future, despite this uncertainty. The discussion that follows reflects on the analysis of focus group findings and draws out key policy implications.

Diversification is seen by participants as a primary feature of the vision of the economic future in the studied communities. This is consistent with Hodge et al. (2025), who found that oil and gas workers in Alberta also desired economic diversification for their communities, indicating a level of community support. The participating municipal staff in this study who were vocally against the idea of transitioning entirely away from oil and gas were still exploring the expansion of alternative economic sectors in their community. Participants described the focus on diversification as linked to the shift in the oil and gas sector from a construction to an operational phase, entailing less jobs and less capital investment. This builds on the finding of McKenzie and Gordon (2025), that the levels of employment in the Canadian oil and gas sector have not recovered from the crash in global oil prices in 2014, a landscape-level shock that multiple focus group participants identified as challenging for their communities. McKenzie and Gordon find that the crash led to a lower risk tolerance among investors leading to a lack of new investment in oil and gas projects (2025). While it is often assumed that the oil and gas sector in Canada can still be an engine of rich economic growth, ongoing diversification efforts in oil and gas-producing municipalities indicate an interest in developing economic resilience through alternative sectors. Advancing diversification can therefore be seen as holding potential for common ground between the goals of oil and gas-producing municipalities and those eager to accelerate transitions to low-carbon economies.

Researchers with independent sustainability-focused think-tanks and non-profits argue that, given the risk that a declining Canadian oil and gas sector could present to workers, communities and governments, diversification of provincial and national economies is urgent (Cosbey et al., 2021; Mertins-Kirkwood & Hulse, 2024). Earlier diversification efforts would align with the best practice of proactivity identified in a study of transitional assistance policies (Green & Gambhir, 2020). Taking action before the downturn of an industry can significantly alleviate impacts to local workers and communities. Hodge et al. argue that this desire for diversification in oil and gas-producing communities prompts a need to overcome polarization around the fossil fuel industry and focus attention on the community and individual levels to

work with those willing to explore diversification into low-carbon sectors and jobs (2025). Scholars have noted that diversification is just one of a range of transition pathways available to communities, and the options should be reviewed and assessed in a participatory manner and based on the nature of local regional economies (Krawchenko & Gordon, 2022).

Across Canada, economic diversification is an explicit policy objective supported through a suite of federal and provincial programs. The Government of Canada supports economic diversification primarily through place-based strategies and tailored investments, with a central role played by the seven Regional Development Agencies (RDAs) including Prairies Economic Development Canada (PrairiesCan) and Pacific Economic Development Canada (PacifiCan). RDA programs aim to fund community-driven projects to address distinct regional challenges and opportunities. Provincially, British Columbia supports diversification through programs such as the *Rural Economic Diversification and Infrastructure Program (REDIP)* (Ministry of Jobs and Economic Growth, 2025) which supports projects in rural and resource-dependent communities including for workforce and skills development and local infrastructure. Alberta similarly targets diversification and growth through initiatives such as the *Northern and Regional Economic Development (NRED) Program* (Ministry of Jobs, Economy, Trade and Immigration, 2025), which aims to foster growth in northern and rural areas. While there is a strong base of economic diversification programs in Canada, there is scope to target supports specifically to communities at risk of impacts from transitions, in line with a more proactive just transitions approach.

While diversification offers a pathway into low-carbon opportunities, participants identified a range of barriers to pursuing transition. A clear barrier surfaced in focus group discussions was the struggle participants felt to see a coherent vision for the low-carbon transition that would lead to prosperity and did not threaten local identity, culture, and in some cases, even the future existence of the community. Other research has found this lack of clarity in the vision for a low-carbon economy in Canada, not least due to a reluctance from both the federal government and the Province of Alberta to officially discuss transition away from the oil sands, instead focusing on allowing for growth (MacArthur et al., 2020). The Net-Zero Advisory Body posits that the Government of Canada put forward a general vision for a clean economy under Budget 2023, but that “there needs to be specific goals as well” and that “clear direction” is required to resolve divergent views of net-zero industrial policy held across the federal public service (Net-Zero Advisory Body, 2025). Chen described Canada’s approach towards the future of its fossil fuel sector at international climate forums such as United Nations climate conferences as “strategic ambiguity” (2023). This study found that the term “transition” was divisive and even threatening for participants from oil and gas-producing municipalities in Canada. A coherent vision is an essential regime-level tool to drive alignment for transition, and the lack of willingness to discuss transition may be a sign of the power of regime incumbents.

A barrier highlighted in both focus groups was the view that climate and energy policies and low-carbon technologies were often designed without the socioeconomic, geographic and climatic contexts of participants' regions front of mind. This finding speaks to the extensive literature on the potential for low-carbon transitions to distribute costs and benefits unequally (MacArthur et al., 2020) and therefore the importance of procedural justice and place-based policies to achieve more equitable, collaborative low-carbon transitions (Krawchenko & Gordon, 2021; Cherry et al., 2025). Research has identified multi-actor collaborative processes and social dialogue to be key factors in successful transition policy development (Bolet, 2023). This research contributes to a better understanding of this known barrier in the context of British Columbia and Alberta, highlighting the impact it is having on municipal staff connected to economic development in oil and gas-producing municipalities.

Participants shared that community members often oppose transition due to fear of job losses and negative economic impacts to the community, creating a barrier to transition. This finding aligns with the literature that notes the "job killing" argument against transitions as a widespread and persistent narrative (Vona, 2019) and builds on this by identifying this narrative as impacting municipal staff in participating communities. While studies have shown that the transition to a low-carbon economy will increase energy jobs both globally (Pai et al., 2021) and in Canada (Clean Energy Canada, 2023), scholars underline the importance of the spatial dimensions of low-carbon transitions for employment impacts, to understand what this may mean at the regional and community levels (Bazilian et al., 2021).

The participants in the British Columbia focus group were clear that their own lack of capacity was impeding their bandwidth to explore new low-carbon opportunities. Strained capacity frequently ranks highly among barriers municipal staff face across the literature (Robinson and Gore, 2005; Oulahen et al., 2018; Sutton et al., 2022; MacArthur et al., 2025) and is noted as a particular challenge faced by smaller communities (Dale et al., 2020; Rhodes et al., 2021). The CleanBC Roadmap to 2030 notes that in consultations for its development, local governments highlighted the need to address capacity constraints through coordinated action, funding, and tailored support (Government of British Columbia, 2021). Surfacing this barrier in this study provides a valuable touchpoint with key local government staff in British Columbia four years on from the CleanBC Roadmap to 2030 and indicates that this remains an issue to be solved. Previous studies have suggested partnerships can provide a solution to support capacity building, both between communities (Rhodes et al., 2021) and "intra-local" collaboration with community organizations, businesses, and other municipal departments (Sutton et al., 2022).

Participants across both focus groups highlighted permitting and regulatory requirements as key sources of delay and uncertainty for new energy projects. Participants' comments referred to these processes in broad terms and did not identify specific challenging permitting pathways or

regulatory processes. These barriers align with the wider literature documenting how planning and regulatory delays across diverse permitting frameworks can impede the timely development of major energy initiatives. A study in Ireland found that delays associated with regulatory processes for new energy generation infrastructure represent "a bottleneck for policy ambition to decarbonise the economy" (Longoria et al., 2024). Recent bills in Canada aim to tackle the issue of regulatory process delays for major projects. The federal *One Canadian Economy Act* (2025) and British Columbia's *Renewable Energy Projects (Streamlined Permitting) Act* (2025) and *Infrastructure Projects Act* (2025) aim to centralize and fast-track permitting for selected projects. This demonstrates awareness and interest at the provincial and federal levels in addressing this issue. However, these acts will only accelerate permitting for those projects determined to be a priority, limiting the potential benefits to smaller projects or those deemed to be of less strategic value. The identified barrier of permitting delays among participants in this study is timely in the context of these controversial new bills in Canada. Bills have seen significant opposition, for example from First Nations concerned by the implications to their rights, including to consultation, both federally (CBC, 2025) and in British Columbia (Union of B.C. Indian Chiefs, 2025).

High costs for equipment, services and infrastructure were highlighted as a barrier in focus groups, with British Columbia participants noting that their rurality elevated costs. The views of focus group participants were consistent with the extensive literature that regularly places financial hurdles including a lack of funding high on the list of municipal barriers (Robinson & Gore, 2005; Oulahen et al., 2018; MacArthur et al., 2025). Scholars in British Columbia have noted that municipalities in the province have gained increasing responsibilities over time, yet have not been granted the commensurate fiscal powers to handle those authorities (Ryser et al., 2018). Mirroring this barrier, access to funds was seen to enable low-carbon transitions, a finding consistent with the literature (Dale et al., 2020). This study adds depth to the literature as participants highlighted that funding currently available from federal and provincial governments for feasibility studies in Alberta is a powerful boost to exploring low-carbon opportunities including niche-level innovations such as geothermal electricity generation.

The range of views among participants from robust optimism to evident pessimism on the outlook of the oil and gas sectors aligned with the diversity of views found among residents in a case study by Canadian researchers of one oil and gas-producing community (Murphy et al., 2022). Focus group members in this study with a high degree of optimism about future demand for oil and gas tended to show less aversion to risk when discussing planning for the future, while the participant who shared that their community is experiencing declining local oil and gas production expressed the greatest urgency in pursuing low-carbon transitions. The variation in relative optimism between participants is a finding that underscores the importance of

higher-level governments taking a place-based approach to policy implementation and considering the unique sectoral dynamics across communities.

Two key implications of this research for low-carbon transition policy and programs can be drawn from this discussion. Firstly, place-based industrial development strategies (PBIDS) could be explored to support communities identified as most susceptible to impacts in transition. PBIDS are policy approaches that align national industrial goals with the specific local capabilities and needs of regions (OECD, 2025). Participants shared visions of a diversified economic future on the foundation of continued oil and gas production. While much federal and provincial support exists for diversification and innovation, enhanced supports are required to counter the potential risks faced by oil and gas-producing municipalities in transitions. Canada has a history of reactive transition policies, and these could be complemented with additional targeted proactive policy packages, built on sound indicators of at-risk communities, to mitigate the impacts of future landscape-level shocks. Such policy packages must be place-tailored and can include financial incentives, public investment, regulatory tools and supports for capacity building (OECD, 2025). Other jurisdictions are ahead of Canada in offering targeted supports to transitioning and susceptible regions and communities. The United States' *Inflation Reduction Act* programming provided additional funding to projects in defined energy communities, for example through investment tax credits (Internal Revenue Service, 2025). The European Union's *Just Transition Mechanism* is leveraging €55 billion between 2021-2027 to support the most affected regions in transition through tools including investments in renewable energy, affordable loans for local governments, and the provision of technical assistance (European Commission, n.d.). Designing targeted support must be undertaken in a way that foregrounds community participation and procedural justice, as MacArthur et al. note: "Governance of energy transitions is too often left to central technocrats when policy coherence between multiple competing stakeholders across the economy is crucial" (2025, p.22). Such strategies could respond to participants' perceived lack of a coherent strategic vision for transition and their uncertainty regarding viable sectors and industries for their communities to transition to. This partnership driven, regime-level action could counter the forces of lock-in present in incumbent regimes and have a significant impact on prosperity and justice outcomes as landscape trends shift and new shocks emerge in the future.

Federal and provincial programming is only as strong as the ability for actors to deliver on it. As *policy takers*, municipalities are to an extent beholden to funding, policy direction and infrastructure investment driven by higher levels of government to support economic change at the local level. Additionally, smaller, rural communities face a series of barriers to driving innovation locally. A second policy implication can be drawn from the findings of this study. Addressing the barriers identified by participants can unlock more potential for community-driven niche-level innovation. This could include integrating susceptible communities more

proactively into policy development and funding program design, and ensuring communities have the capacity, funding and access to expertise to effectively engage in these programs. The start-up E3 Lithium's mineral extraction project in Mountain View County, Alberta, is an example of how effective supports that address local barriers can drive alignment between the landscape, regime and niche levels to unlock innovative low-carbon opportunities. This project was noted by a participant in the Alberta focus group as having benefitted from the funding available for low-carbon opportunities.

The growth in interest in lithium extraction in Western Canada is driven by cross-sectoral landscape pressures, such as macro-economic trends and climate change, surrounding the increasing global demand for batteries. Regime-level shifts are occurring in response. The federal government has included lithium on Canada's critical minerals list and implemented a $3.8 billion, eight-year Canadian Critical Minerals Strategy aimed at increasing domestic extraction and production of critical minerals including lithium (Government of Canada, 2022). Alberta's 2021 Mineral Strategy and Action Plan aligns with the federal government strategy (Alberta Energy Regulator, 2025). E3 Lithium, a private enterprise, received $27 million in funding from the federal Strategic Innovation Fund to advance electric vehicle production in Canada (E3 Lithium, 2022). The municipal district of Mountain View County leveraged its authority under the Municipal Government Act to sell land to E3 Lithium at market value without advertising in response to a specific request to purchase (Ferensowicz, 2024). There is currently no commercial lithium production in Alberta. This will rise to 5700 tonnes of lithium from 2027 under E3's plans for commercial production. Such results require a coherent vision, community capacity, and access to expertise to effectively engage in these processes, all factors identified by participants as barriers. Recognizing and addressing the barriers impeding susceptible oil and gas-producing communities from pursuing low-carbon opportunities could result in many more innovative projects like E3 Lithium expanding in protected niches in the future.

Chapter 7. Conclusions

This study deployed focus groups with ten municipal staff with expertise in economic development from small- and medium-sized oil and gas-producing municipalities in British Columbia and Alberta to identify visions for the low-carbon transition and barriers and enablers to achieving it. This research finds participants are envisioning diversified economies in the future which include low-carbon opportunities to complement strong oil and gas sectors. Focus group discussions highlighted key barriers and enablers to reaching these visions. Participants' view that a coherent vision for transition is lacking and that their communities are being broad-brushed in policy decisions presented prominent barriers in policy coherence between multiple levels of government. Operational barriers included limitations on municipal staff capacity, expertise gaps pertaining to newer technologies, opposition to transition from community members concerned by job losses in the oil and gas sector, disrupted development projects due to permitting delays, and high costs in rural areas. Funding programs for exploring emerging sectors and pessimism regarding the future of the local oil and gas sector presented enablers for the low-carbon transition.

While the use of the focus group method for data collection and constructivist grounded theory (CGT) for data analysis brought considerable strengths to the study, both presented limitations. Firstly, the study does not claim to be representative, as the findings from participants from these ten oil and gas-producing municipalities may not necessarily be congruent with all small and medium-sized communities across British Columbia and Alberta, given the range of place-based dynamics across communities. Furthermore, as only one participant represented each community, this opens space for individual bias, and it cannot be said that the results represent views beyond those of the participating experts. The social context of focus groups may have created social desirability bias, where participants tailor their responses to align with the most dominant voices in the group. Future research could address these limitations by involving more communities through additional focus groups, building upon this research with more in-depth case studies of communities, and complementing focus groups with interviews with other municipal staff from participating communities to reduce social desirability bias. Participants in both focus groups said that they found the experience of learning from staff in other municipalities valuable, indicating the benefit of further research projects employing focus groups. Secondly, the study had further limitations pertaining to the use of a hue of CGT in data analysis. Steps Charmaz recommends were omitted, including moving iteratively and repeatedly between data collection and data analysis and *theoretical sampling*, seeking out additional data based on emerging theoretical categories (2014). These were omitted due to time and capacity limitations for this research project and could be addressed through a more fulsome application of CGT in future studies.

Despite these limitations, this study offers valuable insights for academic and policymaking audiences. Participants shared their view that economic diversification is a priority for their communities, and that low-carbon opportunities are of great interest. A key driver for opposition to transition among community residents is fear of job losses in the oil and gas sector, which can be addressed through research, communication and local programming. There is an evident need for a coherent strategic vision for the low-carbon transition in Canada that unites provincial and federal levels, as participants demonstrated that current visions are not resonating. This vision should be co-created with communities and could be supported by place-based industrial development strategies to proactively leverage a range of critical policy supports to the most susceptible communities. Lack of capacity, high costs, and regulatory process delays for new energy project developments are barriers impeding municipalities from pursuing low-carbon opportunities. Decision-makers aiming to accelerate transition could look to alleviate these challenges and enable more niche-level innovation. The facilitation of cross-municipal partnerships offers an additional solution to bolster capacity. Finally, efforts to better understand the level of optimism municipal staff have for the future of oil and gas in their region can provide an indicator for readiness to approach conversations around transition.

This research underscores that accelerating just and inclusive low-carbon transitions in oil and gas-producing municipalities will benefit from further consideration of local perspectives on the barriers and enablers they face. Moving past polarization towards the common ground that exists around economic diversification, clean energy opportunities, and the desire for prosperous communities, could bolster economic resilience in oil and gas-producing municipalities while simultaneously advancing the low-carbon transition in Canada. Through targeted support for susceptible communities, increased collaboration, capacity building efforts and the setting of clear visions, further steps can be taken towards realizing the socioeconomic and environmental benefits of the transition to a low-carbon economy in British Columbia and Alberta.

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Appendix A: Oil and gas production, emissions and revenue for B.C. and Alberta

Table 3: Oil and Gas Emissions and Revenue for British Columbia and Alberta.

Statistic	British Columbia	Alberta	References
Crude oil production (2023)	113.2 thousand barrels/day (3% of Canada's total)	4.3 million barrels/day (84% of Canada's total)	CER, 2024b; CER, 2024a
Natural gas production (2023)	6.7 billion cubic feet/day (36% of Canada's total)	10.9 billion cubic feet/day (61% of Canada's total)	CER, 2024b; CER, 2024a
Total GHG emissions (2022)	64.3 MT CO_2e	269.9 MT CO_2e	CER, 2024b; CER, 2024a
Per capita emissions (2022)	12 t CO_2e	59.8 t CO_2e (over triple national avg. of 18.2 t)	CER, 2024b; CER, 2024a
Change in total emissions (2005–2022)	+3%	+7%	CER, 2024b; CER, 2024a
Oil & gas share of emissions (2022)	24%	59%	CER, 2024b; CER, 2024a
Government revenue from oil & gas (2019)	$575 million	~ $5 billion from oil sands	CAPP, 2020; Cosbey et al., 2021

Appendix B: Comparative statistical description of participating communities in B.C.

Table 4: Comparative Statistical Description of Participating Communities in British Columbia.

	British Columbia	**Tumbler Ridge**	**Northern Rockies**	**Taylor**	**Chetwynd**	**Fort St. John**
Type	Province	DM*	RM**	DM*	DM*	City
Total population (2021)	5,000,879	2,399	3,947	1,317	2,302	21,465
Age 15-64 years (% of total)	3,267,615 (65.3%)	1,550 (64.6%)	2,660 (67.3%)	875 (66.5%)	1,645 (71.4%)	15,110 (70.4%)
Age 65+ (% of total)	1,016,360 (20.3%)	370 (15.4%)	500 (12.7%)	150 (11.4%)	265 (11.5%)	1,775 (8.3%)
Employed labour force distribution by sector (selected)						
Accommodation and food services	6.2%	4.4%	6.3%	0%	8.5%	8.8%
Construction	8.9%	6.2%	10.5%	14.8%	5.5%	12.1%
Educational services	7.6%	4.4%	8.8%	6.6%	3.4%	6.8%
Health care and social assistance	12.7%	5.3%	8.5%	9%	9.7%	8.4%
Manufacturing	5.9%	2.2%	1%	5.7%	21.2%	4.1%
Mining, quarrying and oil and gas extraction	1.0%	39.2%	8%	15.6%	11%	10.7%
Professional, scientific, technical and other services	13.7%	5.3%	8%	14.8%	6.8%	10.6%
Public administration	5.7%	6.2%	8.5%	0%	3.8%	6.5%
Retail trade	11.6%	11%	11.8%	12.3%	6.4%	12.3%
Transportation and warehousing	5.5%	4.4%	10.3%	3.3%	8.5%	4.6%
Other	21%	11%	18%	18%	25%	15%
Employed labour force (age 15+) distribution by occupational categories						
Art, culture, recreation and sport	4.1%	2.2%	2.3%	2.4%	0.8%	1.6%
Business, finance and administration	17.5%	10.2%	16.5%	10.6%	10.2%	14.2%
Education, law, social, community and government services	12.2%	8%	15.3%	8.9%	8.5%	10.6%
Health	8%	4.4%	3.3%	4.9%	5.5%	5.0%
Legislative and senior management	1.3%	0.9%	1.0%	0%	0.8%	0.4%
Manufacturing and utilities	3.4%	3.5%	5.0%	4.9%	15.3%	4.7%
Natural and applied sciences and related	8.3%	3.5%	2.8%	5.7%	3.8%	8.1%
Natural resources, agriculture and related production	2.7%	11.1%	3.5%	5.7%	5.9%	4.8%
Sales and service	24.6%	19.9%	23.1%	22.8%	19.5%	27.4%
Trades, transport and equipment operators and related	18%	37.2%	27.1%	33.3%	30.1%	23.1%

**DM = District Municipality | **RM = Regional Municipality*

(Statistics Canada, 2022).

Appendix C: Comparative statistical description of participating communities in Alberta

Table 5: Comparative Statistical Description of Participating Communities in Alberta.

	Alberta	**Regional Municipality of Wood Buffalo**	**Fox Creek**	**Bonnyville**	**Elk Point**	**Edson**
Type	Province	SM*	Town	Town	Town	Town
Total population (2021)	4,262,635	72,326	1,639	6,404	1,399	8,374
Age 15-64 years (% of total)	2,823,770 (66.2%)	52,640 (72.8%)	1,135 (69.2%)	4,130 (64.5%)	870 (62.4%)	5700 (68.1%)
Age 65+ (% of total)	629,225 (14.8%)	3,145 (4.3%)	195 (11.9%)	930 (14.5%)	275 (19.7%)	1,140 (13.6%)
Employed labour force distribution by sector (selected)						
Accommodation and food services	5.2%	4.8%	7.6%	8.6%	6.4%	7.3%
Construction	9.2%	7.8%	4.7%	7.4%	5.6%	9.7%
Educational services	6.9%	5.7%	2.4%	5.7%	8.8%	4.1%
Health care and social assistance	13.4%	6.7%	5.3%	12.2%	18.4%	12.2%
Manufacturing	5.4%	2%	5.3%	1.9%	3.2%	8.4%
Mining, quarrying and oil and gas extraction	5.0%	31.5%	28.2%	15.9%	14.4%	13.1%
Professional, scientific, technical and other services	12.7%	7.6%	8.2%	9.8%	11.2%	7%
Public administration	5.6%	5.1%	5.3%	4.7%	2.4%	4.4%
Retail trade	11.4%	8.5%	7.1%	13.2%	7.2%	13.9%
Transportation and warehousing	5.7%	5.2%	11.8%	4.7%	7.2%	5.8%
Other	20%	15%	14%	16%	15%	14%
Employed labour force (age 15+) distribution by occupational categories						
Art, culture, recreation and sport	2.2%	0.9%	0%	1.2%	0%	1.6%
Business, finance and administration	17.2%	13.2%	13%	16.6%	9.5%	13.3%
Education, law and social, community and government services	11.5%	9.5%	4.7%	8.1%	10.3%	7.2%
Health	8.7%	4.0%	3.6%	7.1%	16.7%	6.8%
Legislative and senior management	1.1%	0.6%	1.2%	0.5%	1.6%	0.7%
Manufacturing and utilities	3.8%	6.4%	12.4%	4.1%	4.8%	8.3%
Natural and applied sciences and related	8.4%	8.7%	4.7%	4.2%	4.8%	4.6%
Natural resources, agriculture and related production	4.4%	3.9%	5.9%	8.8%	6.3%	6.2%
Sales and service	23.1%	20.5%	20.7%	25.7%	22.2%	28%
Trades, transport and equipment operators and related	19.5%	32.3%	32.5%	23.8%	23.8%	23.1%

**SM = Specialized Municipality*

(Statistics Canada, 2022).

Appendix D: Focus group questions

1. (Icebreaker) Share with us one great thing about serving your community.
2. What have the experiences of past economic transitions in natural resource sectors been like in your communities?
3. Thinking of the local economy, and in particular the energy sector, how do you envision the future in your community?
4. Would you say people in your communities are generally supportive or averse to the idea of transitioning to a low-carbon economy?
5. What are the main barriers to transitioning to a low-carbon economy in your communities?
6. What is working or could be implemented to help your communities build a low-carbon economy?