VOLT CONSULTING

Evaluating Foreign Direct Investment Opportunities in Canada's Clean Energy Sector

PREPARED FOR **BUSINESS ICELAND**

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Executive Summary

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Canada's path towards net zero is complex but teeming with opportunity for innovative technologies to accelerate its transition. Any foreign entity that wishes to participate must first understand the rich history of the people, Canada's governing bodies, and the land in which they seek to develop. Due to Iceland and Canada's mutual involvement in the Arctic Council and the Reykjavik Declaration, Business Iceland has a unique opportunity to strategically enter the Canadian energy sector through its green energy cluster. The merits of strategic alliances with existing players and associations, Indigenous partnerships, and greenfield investments have been thoroughly evaluated and complemented by a robust overview of Indigenous history, government relations, financing opportunities, as well as an overview of current Provincial directives and key competitors. Finally, three recommendations conclude this report.

Paramount to the success of any market entry strategy into Canada's energy sector is authentic and strategic relationship building with Indigenous communities. Their rich history is stained by cultural suppression and genocide leading to the need for reconciliation as well as obtaining a social license to operate before the commencement of any development projects. Given that many of Canada's Indigenous communities remain reliant on fossil fuel energy, there is significant opportunity for government funded projects that employ, support, and work alongside these communities. As such, Business Iceland should consider a thoughtful and pragmatic approach to investing in Canada's Northern territories – a frontier with plenty of reward for companies who can effectively manage the associated development risks.

Furthermore, the province of Alberta has been identified as an attractive opportunity for geothermal expansion as it is the only province in Canada with a fully open electrical market that is also geographically situated in a region with high geothermal capacity. It is recommended that Business Iceland form a strategic alliance with a major oil and gas company to develop in this province as they possess extensive drilling data, long established partnerships with Indigenous communities, as well as bountiful and skilled workforces that can be deployed for renewable energy projects. Alberta is not the only province that is hyper-focused on electrifying their economies. Government-owned utilities across the country are expected to issue Requests for Proposal to Independent Power Producers as the demand for renewable energy increases and evolves. There are some important industry associations and Indigenous groups that Business Iceland should join in order to monitor and bid on newly issued calls to power.

These key development opportunities provide Business Iceland with the most plausible route to success in developing clean energy projects in Canada and should be further contextualized and tailored towards the unique competitive advantages offered by the underlying subsidiaries of its green energy cluster.

Indigenous Relations

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Overview

The importance of Indigenous involvement in Canada's green energy transition should not be understated. Without first establishing deep and mutually beneficial relationships with Indigenous communities, developing projects in Canada are nearly impossible. For example, the TransMountain Pipeline Expansion Project is facing significant delays due to poor management of the complexities surrounding the rights of Indigenous peoples in Canada.[1] Greenfield renewable energy projects will likely take place on traditional Indigenous territory, and without consideration for the unique culture, religion, and traditional ceremonies that have taken place on this land for generations, organizations and government bodies will be exceedingly difficult to access to the land for development projects.

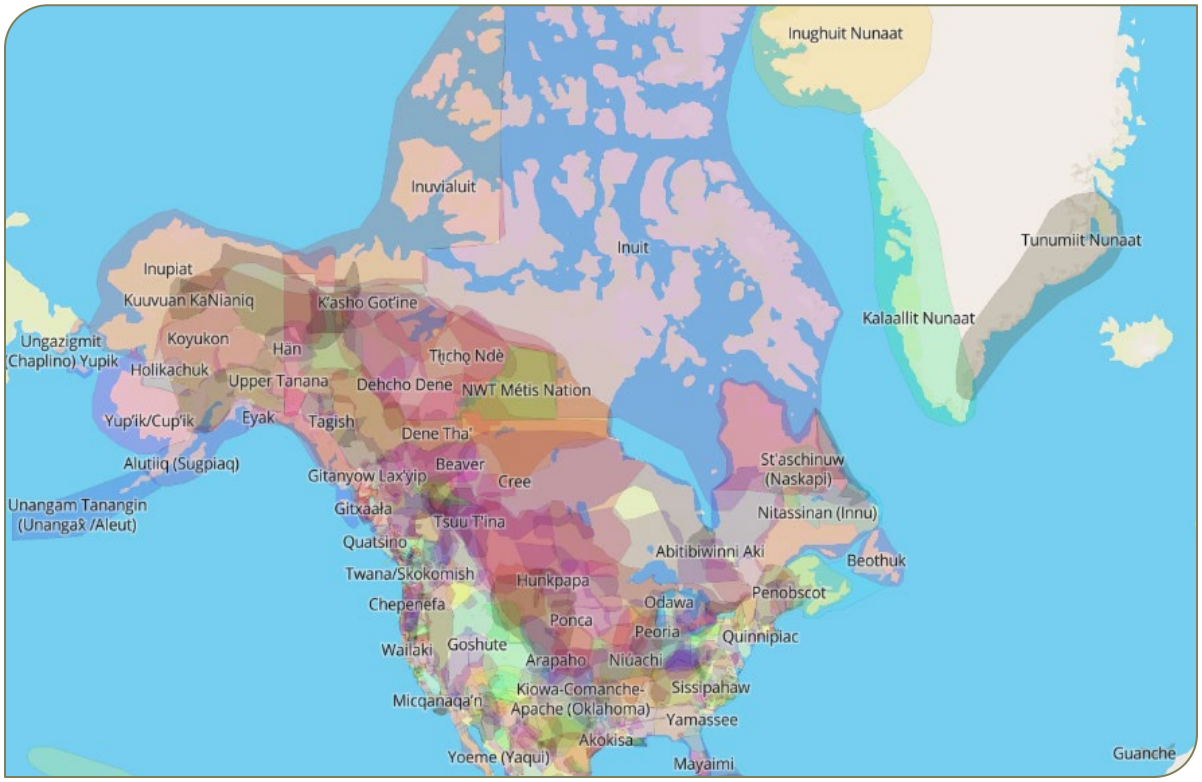
Indigenous led projects are expected to add $100 billion to Canada's GDP by 2024, and it is abundantly clear that Indigenous communities will create the future for Canada's economy.[2] Understanding effective communication and relationship building with Indigenous communities will result in stronger business connections and a greater likelihood for successfully executed energy projects.

In Canada, several terms are commonly heard and used when referring to Indigenous peoples and communities. While some are deemed more politically correct than others and historical terms are becoming culturally insensitive and obsolete, there is still some confusion in Canada. The term "Indigenous" is considered the most inclusive and respectful term to use. The term "Indian", which is seen as offensive and inappropriate, may still be seen in some government documentation but should not be used in everyday language. The term "First Nation" is still more commonly seen and can also be used to describe traditional territories of the first inhabitants of Canada.[3]

[1] (Press, 2020)
[2] (Canadian Council for Aboriginal Business, 2019, p. 6)
[3] (Canadian Council for Aboriginal Business, 2019, p. 10)

The expansive Canadian landscape is comprised of ten provinces and three territories, and while there is a clear definition of land borders between these provinces and territories, First Nations territory in Canada is not as well defined. An interactive map depicting the overlap between traditional lands has been included below and should be referenced prior to engagements taking place with individual communities.

FIGURE 1: TRADITIONAL FIRST NATIONS TERRITORY[4]



Source: native-land.ca

[4] (Native Land, 2021)

To add to the complexities of Indigenous relations in Canada, geographically defined Reserve Lands also exist due to historic treaties and overlap the boundaries of Provinces, Territories, and traditional First Nation Lands. [5] These Reserve Lands should not be confused with traditional First Nations territory as they are distinct. Reserve Land creates confining geographical borders and were forced upon Indigenous people by European settlers in Canada. Many reserve inhabitants today continue to hunt, fish, and hold traditional cultural and spiritual practices that have been passed on through generations on traditional lands outside of their "defined" reserves. An interactive map depicting the locations of Reserve lands in Canada is included below and will be of foremost importance for Business Iceland to reference in relation to potential project development.

FIGURE 2: RESERVE LAND IN CANADA[6]

Source: geo.aadnc-aandc.gc.ca/cippn-fnpim/index-eng.html

[5] (Indigenous Foundations, 2009)
6 (Government of Canada, 2012)

Today, some reserves have alarming living conditions and can be compared to third-world countries with dilapidated housing and no access to clean drinking water.[7] Indeed, there is still a lack of trust in these communities for government and businesses due to previously implemented discriminatory legislation such as the Indian Act and Residential Schools which resulted in gross human rights violations against Indigenous peoples. Respectful relationships that acknowledge this enigmatic history need to exist before discussing any potential project and business opportunities.[8] While several events took place that steered Canada from cultural genocide to truth and reconciliation, the most momentous events are outlined below.

First Nations people existed in present-day Canada long before European settlers arrived. When these settlers arrived, legislation such as the Indian Act (1876) was placed on First Nation peoples, restricting their culture, traditions, trading abilities, and land use.[9] Subsequently, Residential Schools were being built across the country and Indigenous children were separated from their parents and forced to assimilate within the confines of their walls. These Residential schools existed from the early 1800's, with the last one not closing its doors until 1996.[10] Even more recently, the remains of 4,118 children were found in unmarked mass graves surrounding these schools. It is estimated that this represents only one fifth of the number of children on the death register as there are many more mass graves that have yet to be unearthed.[11] The impacts of the Indian Act and Residential schools are profoundly felt in Canada today as they have caused catastrophic effects on culture and generational traumas that have still not been recuperated. This is a dark piece of Canada's history that meaningfully impacts business relationships with Indigenous peoples today.

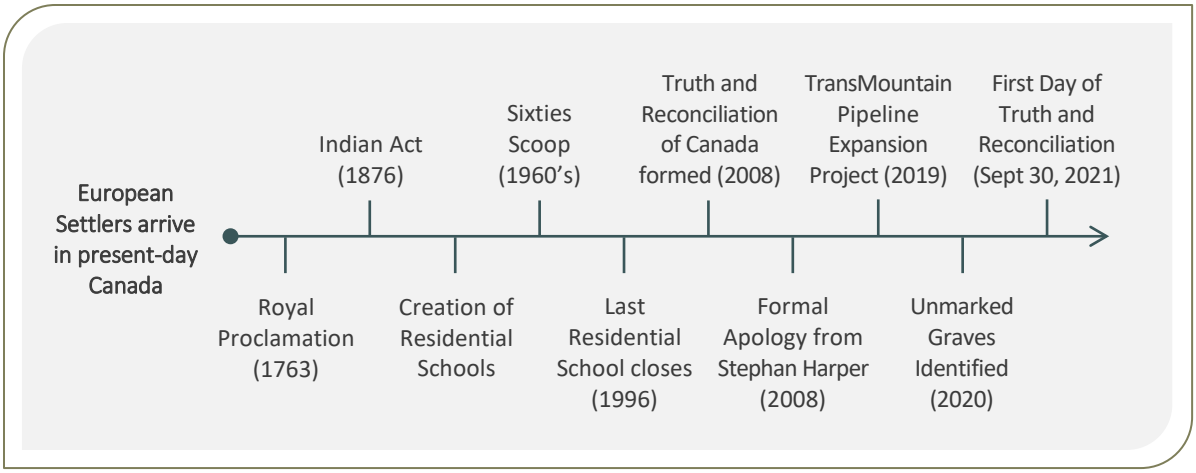
7 (Indigenous Foundations, 2009)
8 (Indigenous Foundations, 2009)
9 (Canadian Council for Aboriginal Business, 2019, p. 14)
10 (Canadian Council for Aboriginal Business, 2019, p. 17)
11 (CBC Canada, 2021)

Recognizing the deleterious impacts following this treatment of Indigenous peoples, Canada created the Truth and Reconciliation Commission in 2008. This Commission called on all Canadians to take action and rebuild trust through meaningful dialogue and action taken to improve child welfare, education, health, justice, language, and culture.[12] Following this Commission's creation, the United Nations Declaration of Indigenous Peoples (UNDRIP) was established in 2021 to provide an outline of minimum standards and collective rights for Indigenous Peoples.[13] This declaration includes the requirement for free, prior, and informed consent (FPIC) for all business development activities taking place on traditional territory. It describes the need for effective and meaningful conversations with Indigenous peoples that are *free* from coercion, *informed* by adequate information, and occur *prior* to a decision being made. FPIC ensures that Indigenous knowledge of culture, language, governance, and history are considered as part of the project and regulatory decisions being made. Fulfilling the FPIC requirement effectively provides organizations with a social license to operate within Indigenous territory.[14]

Below is a timeline to describe key historic dates regarding Indigenous Relations to provide additional context regarding the continued importance of reconciliation in Canada.

12 (Government of Canada, 2021)
13 (Government of Nova Scotia, 2021)
14 (Government of Canada, 2021)

FIGURE 3: HISTORY OF EVENTS CONTRIBUTING TO PRESENT-DAY CANADA



Building Indigenous Relationships

Effective Indigenous relationships are the most important and necessary requirement for project development and execution in Canada. While there are overlapping themes and structures, every Indigenous community is exceptionally unique and must be treated accordingly. Fulsome education pertaining to their unique customs and values, as well as a thorough understanding of the internal pedagogy is expected when engaging with leaders of these communities. Elders are known as the heart of Indigenous pedagogy and are highly revered individuals that hold traditional spiritual teachings.[15]

Given the positive economic trends for Indigenous business previously discussed, there is considerable pressure for businesses to address socio-economic gaps between Indigenous and non-Indigenous peoples. While Indigenous communities have substantial amounts of investment capital, many community members still live in substandard conditions and struggle to sustain their basic needs. Supporting these communities and demonstrating the importance of social responsibility is welcomed

[15] (Indigenous Corporate Training, 2019)

and seen as a positive gesture towards establishing strong relationships. Financial assistance, as well as employment and educational opportunities that can be provided by corporations to improve the livelihood of community members helps in business reconciliation and supports positive interactions.[16]

INDIGENOUS GOVERNMENT

While Indigenous communities fall under federal, provincial, and municipal geographic boundaries, the Government of Canada promotes Indigenous self-government within these communities as a form of reconciliation. While a positive shift in Canada, self-government adds to the complexities of Indigenous relations, as every community varies in their approach to government based on tradition and culture. Not only does each community have a different form of self-government, but these approaches also vary from other existing governance structures at all three levels of government across Canada. It is recommended that Business Iceland understand the self-government dynamic and the responsible members specific to a targeted community before advancing to building relationships. This will ensure that proper protocol is followed and provides Business Iceland with a stronger representation and ability to gain trust and respect from Indigenous elders and their communities.

Northern Canada

While Inuit populations exist within all of Canada, most Inuit people reside within the Northwest Territories, Yukon, Northern Quebec, Labrador, and Nunavut.[17] Similar to other Indigenous populations in Canada, Inuit communities faced gross disregard for human rights resulting in the displacement and loss of culture within these communities. The aforementioned considerations should also be enacted as they pertain to the Inuit populations.

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[16] (Canadian Council for Aboriginal Business, 2019, p. 12)
[17] (Government of Quebec, 2021)

As with other Arctic nations, Canada's north is being impacted by climate change at a rapid rate recognizing the need to achieve Paris Agreement goals. To help facilitate this, the Reykjavik Declaration was signed by representatives of the Arctic Council, including Canada and Iceland. This declaration promotes a commitment to Paris Agreement goals in the Arctic while simultaneously recognizing Indigenous peoples' society, culture, and economy.[18]

GREEN ENERGY IN NORTHERN CANADA

Opportunities for development and generous government funding exist in the highly diesel reliant Northern Territories of Canada. These regions are not connected to the electrical grid and are desirable candidates for new, locally generated, clean energy projects to enter. To further articulate the opportunity within rural and remote communities of Canada, there are over 200 communities across the country that are reliant on diesel fuel for heat and electricity generation.[19] The Pan-Canadian Framework on Clean Growth and Climate Change (PCF) unites the three levels of government in Canada towards the common goal of reducing rural communities' reliance on fossil fuel energy and has been granted significant federal funding to further this agenda. Opportunities and funding are available to further the goals specifically surrounding community owned (Indigenous) green energy projects and will lead to increased security in these regions. The Clean Energy for Rural and Remote Communities program (the CERRC) supports a suite of diverse projects across Canada to reduce the reliance of rural and remote communities on diesel fuel for heat and power.[20]

[18] (Arctic Council, 2021)
[19] (Government of Canada, 2019)
[20] (Government of Canada, 2021)

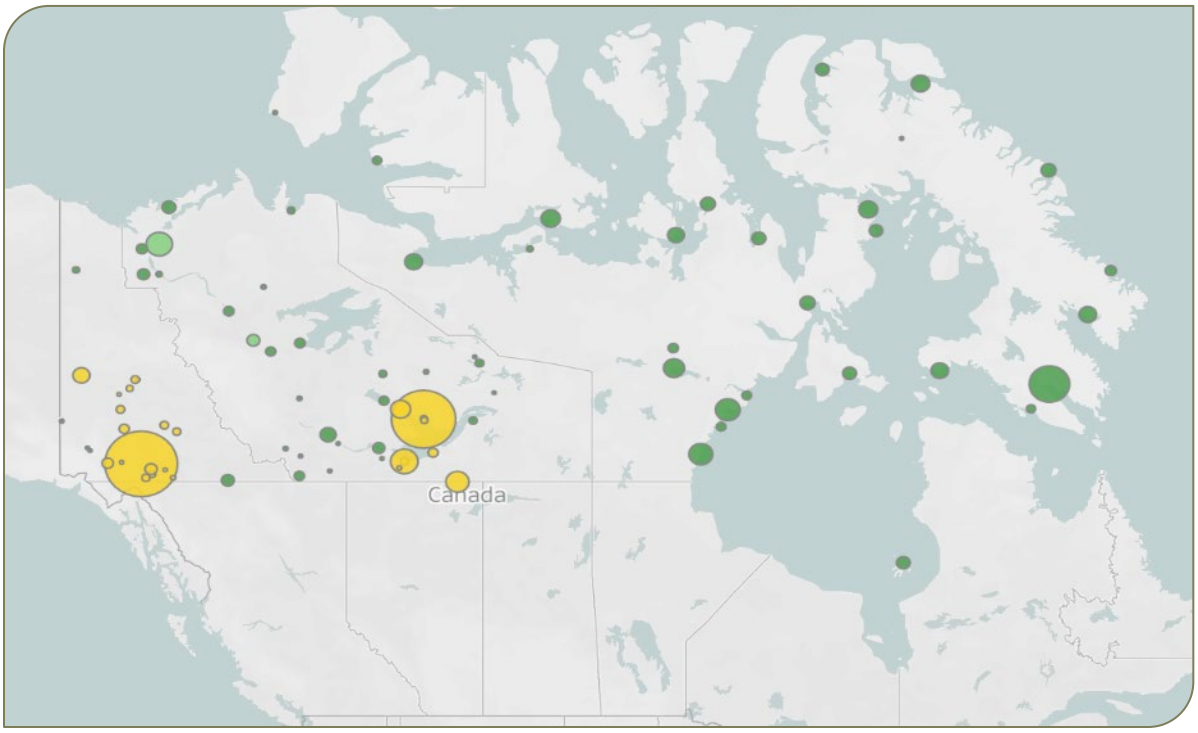
To ensure that Indigenous communities are prepared for project development and can participate in economic development, Indigenous communities in northern Canada can apply for funding through the Community Opportunity Readiness program. In addition to these communities applying for funding, non-Indigenous organizations that plan to provide economic development in these communities can also apply.[21] Business Iceland can provide opportunity for wind, hydro, and geothermal projects, create partnerships in these remote locations and utilize federal funding to start project research and development.

Indigenous Clean Energy (ICE) is the leader for clean energy Indigenous inclusion. Their primary focus is on "stimulating collaboration that facilitates leadership and meaningful cooperation with Indigenous peoples in the transition to a clean energy future".[22] ICE hosts numerous conferences and events annually, and while the association is centered around advancing Indigenous Peoples, membership in ICE offers opportunities to build grassroots relationships with Indigenous communities and leaders through knowledge sharing and collaboration. It is also a good opportunity to highlight Business Iceland's innovative clean energy solutions and build the relationships needed to successfully partner with Indigenous groups. Joining ICE as a "collaborator" would help to unlock opportunities in all clean energy solutions, including hydroelectric, solar, wind, hydrogen, and even transmission. Collaboration with ICE is open to all organizations looking for mutually beneficial partnership opportunities to develop and achieve shared clean energy goals with Indigenous Peoples.[23]

[21] (Government of Canada, 2021)
[22] (Indigenous Clean Energy, 2021)
[23] (Indigenous Clean Energy, 2021)

Provided below is an interactive map highlighting the communities that remain reliant on diesel fuel and natural gas that are not connected to provincial grids. These communities should be targeted sites of development for Business Iceland.

FIGURE 4: DIESEL FUEL RELIANCE[24]



Source: cer-rec.gc.ca/en/data-analysis/energy-markets/market-snapshots/2018/market-snapshot-overcoming-challenges-powering-canadas-off-grid-communities.html

[24] (Government of Canada, 2018)

Opportunity in Canada

Photo by Etienne Delorieux on Unsplash

Worldwide Movements

In November 2021, Glasgow hosted the 26th annual Conference of the Parties otherwise known as 'COP26' or the United Nations Framework Convention on Climate Change (UNFCC). During COP26, the Global Coal to Clean Power statement was released by the UK and 23 countries, including Canada, committed to phase out coal by 2030.[25] It is also worth noting that during the conference, the International Financial Reporting Standards Foundation announced that Montreal, Quebec will serve as the North American Hub for the International Sustainability Standards Board (ISSB).[26] The ISSB is tasked with improving and streamlining Environment Social Governance (ESG) standards and disclosure requirements for corporations. Having this organization co-located in Canada will inevitably cause an increase in the scrutiny for disclosures being made by Canadian companies. It is a positive signal for Canada's transition as well as Business Iceland because alongside the increased focus on financial reporting, companies operating within the Canadian energy sector will want to position themselves as leaders in ESG reporting in order to attract additional investor capital and more attractive financing opportunities. This bodes well for any strategic alliance with publicly traded oil and gas companies that Business Iceland may wish to enter into because these companies are actively seeking ways to reduce climate risk on their respective balance sheets.

There are many global organizations dedicated to providing support to countries and companies working towards a Net Zero transition. One of the most notable is the International Renewable Energy Agency (IRENA). In conjunction with the United Nations Development Programme (UNDP), Sustainable Energy for All (SEforALL), and the Green Climate Fund (GCF), IRENA has developed the Climate Investment Platform (CIP) that provides tailored technical assistance for renewable energy companies as well as increased capital mobilization and matchmaking of projects to financiers. IRENA has engaged with over 180 countries globally to provide project

[25] (UN Climate Change Conference UK 2021, 2021)
[26] (Global News, 2021)

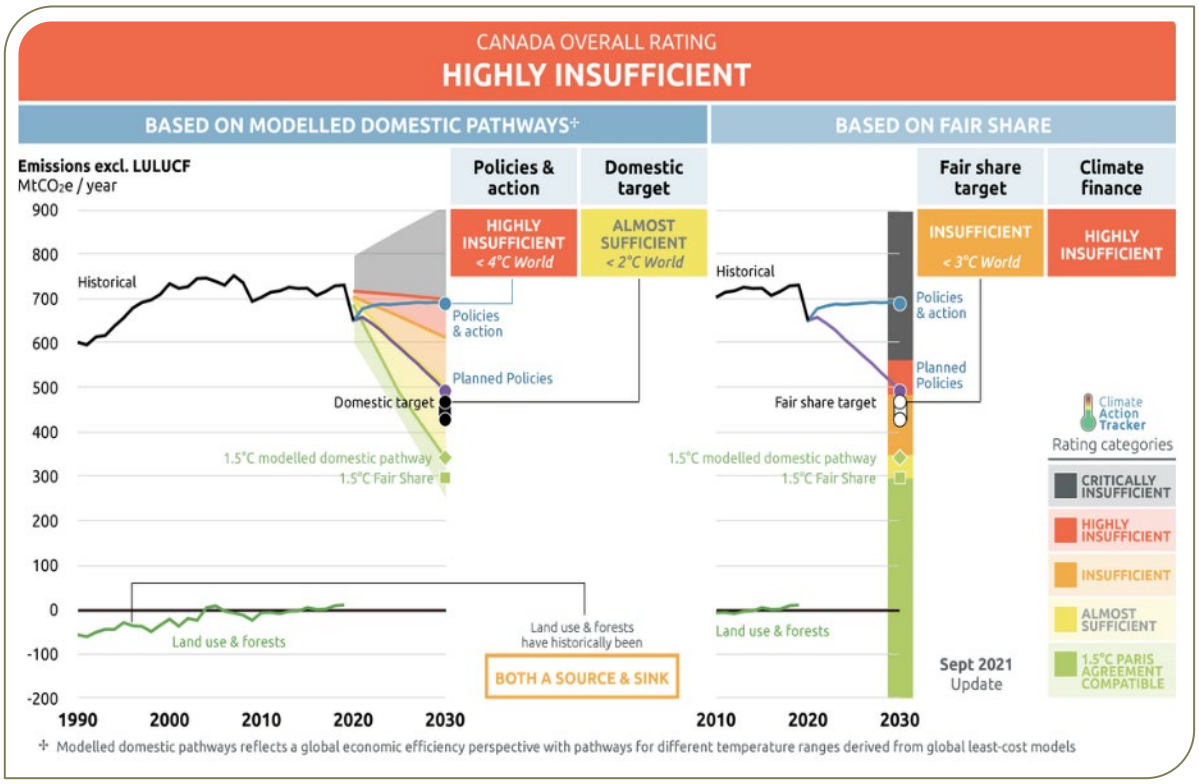
specific resources to green energy companies around the world.[27] During the COP26 conference, Canada announced a $500,000 investment in partnership with IRENA and in conjunction with Indigenous Clean Energy (ICE) focused on supporting renewable energy projects in remote communities.[28] This partnership will provide valuable capital and technical expertise to renewable energy companies working in partnership with Indigenous communities in Canada.

Canada's Net Zero Commitments

To analyze Canada's current state in the big picture of Net Zero, the brainchild of Climate Analytics and New Climate Institute (CAT) was consulted. CAT is an independent scientific analysis tool that is commonly used to quantify climate change mitigation efforts around the world and tracks 39 countries as well as the European Union (EU) and covers approximately 85% of global emissions.[29] CAT has ranked Canada's pathway to Net Zero as highly insufficient towards meeting the requirements for a 1.5-degree world, and more accurately equates to an alignment with a 4-degree warming pattern.

[27] (International Renewable Energy Agency, 2020)
[28] (Government of Canada, 2021)
[29] (Climate Action Tracker, 2021)

FIGURE 5: COUNTRY SUMMARY – CANADA[30]



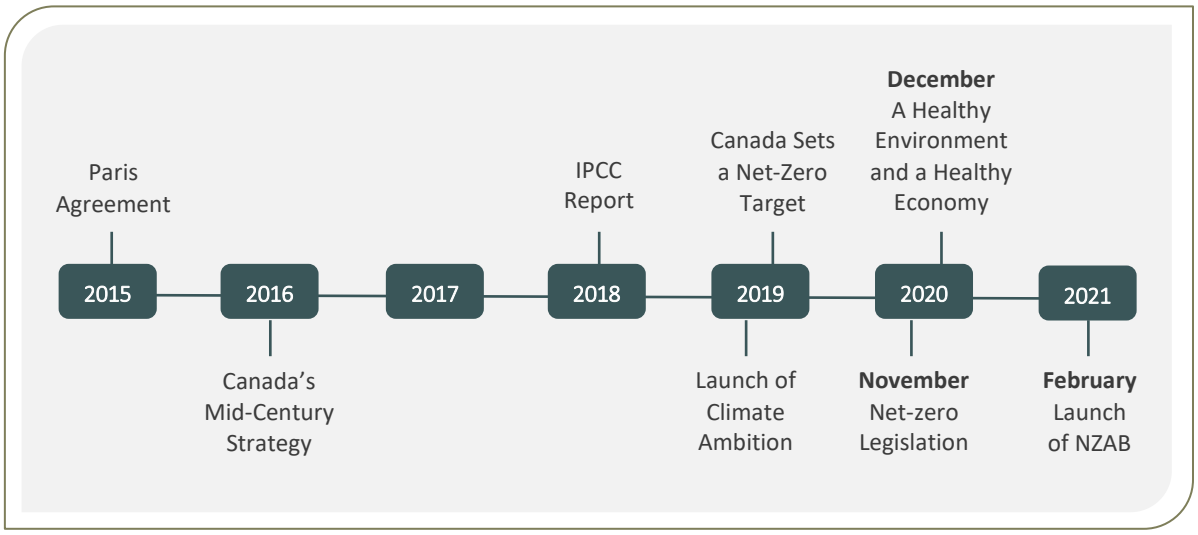
Source: climateactiontracker.org/countries/canada

The Government of Canada has committed to achieving net-zero emissions by 2050 in line with the Paris Agreement and the Canadian Net-Zero Emissions Accountability Act.[31] In April 2021, the Canadian federal government announced their intentions to further reduce emissions from 30% of its 2005 levels to 40-45% by 2030.[32] This represents a significantly more powerful commitment to align Canada's emissions with a 1.5-degree temperature increase and demonstrates that the Government of Canada is willing to take swift and deliberate action to mitigate the effects of Climate Change. In February of 2021, Canada composed the Net

[30] (Climate Action Tracker, 2021)
[31] (Policy Options Politiques, 2021)
[32] (Martin & Riordan, A Capital Modernization Plan Refresh: Commitments in Context, 2021)

Advisory Body (NZAB) which is comprised of a volunteer based Advisory Committee of 14 independent experts to consult with the Government of Canada on key pathways to Net Zero.[33] As shown in Figure 5, The future publications from NZAB are important for Business Iceland to monitor as they will highlight any key policy developments affecting the future of Canada's Net Zero Transition. [34]

FIGURE 6: KEY MILESTONES ON 2050 AMBITIONS



Source: nzab2050.ca/publications

Provincial Net Zero Commitments

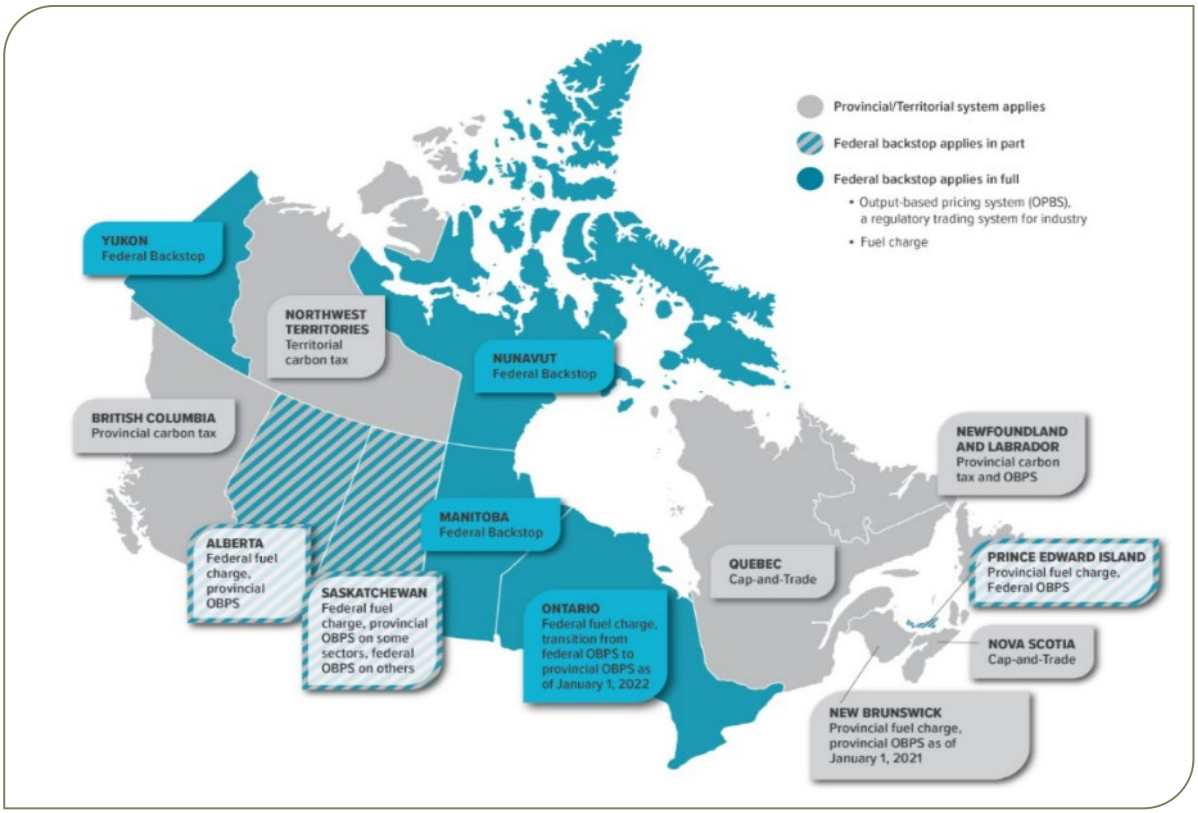
Since 2019, there has been a carbon price of $50/tonne of CO_2 in Canada. Following the commitments of COP26, Prime Minister Justin Trudeau has stated that this price will be increased to $170/tonne by 2030, increasing at a rate of $15 per tonne each year.[35] What this means for each of the Canadian provinces is that the federal benchmark will be imposed should the standards of carbon pricing not be met at the provincial level. The pan-Canadian approach to carbon pricing gives each province

[33] (Government of Canada, 2021)
[34] (Net Zero Advisory Body, 2021)
[35] (Net Zero Advisory Body, 2021)

the freedom to implement their own pricing system using either a carbon tax system as seen in British Columbia, a hybrid approach leveraging both a carbon tax and an output-based pricing system (OBPS) as seen in Alberta or a cap-and-trade system as seen in Ontario and Quebec.[36] Based on current levels, the federal backstop will not apply to British Columbia, NWT (Northwest Territories), Quebec, Newfoundland & Labrador, Nova Scotia, and New Brunswick.[37] The provinces where the federal backstop applies are denoted in the figure below and represent the most significant regions of opportunity for clean energy development as they stand to witness the most significant increases in levies. Specifically, Nunavut, the prairie provinces, as well as Ontario and PEI (Prince Edward Island) will have some level of backstop apply to them.

[36] (Government of Canada, 2019)
[37] (Government of Canada, 2021)

FIGURE 7: CARBON PRICING ACROSS CANADA



Source: canada.ca/en/environment-climate-change/services/climate-change/pricing-pollution-how-it-will-work.html

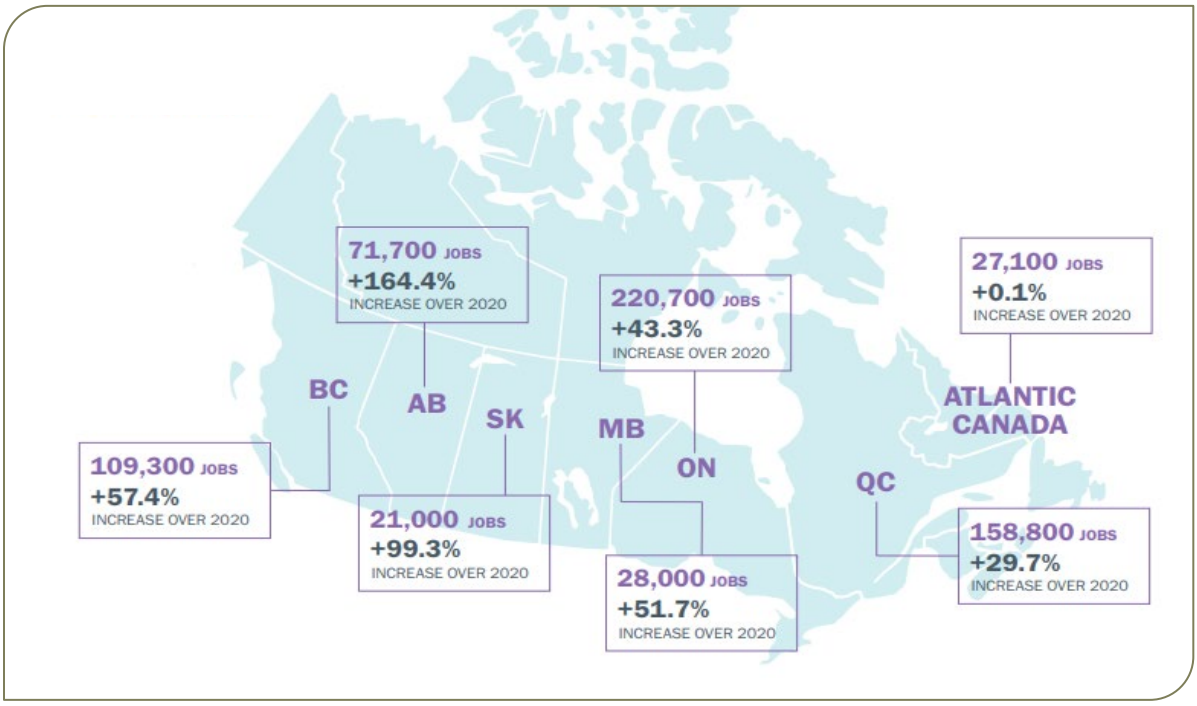
Specific Opportunities

Today, there are 430,500 people employed in the clean energy sector in Canada. By 2030, this number is projected to increase by almost 50% and within the same period there is expected to be a 9% decrease in fossil fuel sector employment.[38] This trend is indicative of meaningful and swift action being taken towards the green energy transition in Canada. To further distill this trend onto a provincial level, there is expected to be a 164% increase in clean energy jobs in Alberta, as well as a 100% increase in Saskatchewan, most notably within hydrogen production.[39] This represents significant opportunity for Business Iceland to develop within the prairie

[38] (Clean Energy Canada, 2021)
[39] (Government of Canada, 2021)

provinces as there will be a higher concentration of skilled workers present to support this growth. Alberta's existing workforce has a high concentration of workers with skills relevant to the oil and gas sector. While Alberta works towards greener energy initiatives, this provides an opportunity for emerging companies to tap into these existing skills. These workers are familiar with existing infrastructure and major energy organizations and would therefore offer valuable insight to Business Iceland. The Gross Domestic Product (GDP) within the three prairie provinces (Alberta, Saskatchewan, and Manitoba) are above the national average and are inextricably linked to the demand for energy.[40]

FIGURE 8: CLEAN ENERGY JOBS ACROSS CANADA



Source: cleanenergycanada.org/wp-content/uploads/2021/06/Report_CEC_CleanJobs2021.pdf

[40] (Policy Options Politiques, 2021)

Capital Mobilization

According to the former Bank of Canada Governor, Mark Carney, approximately $130 trillion of capital funding is needed to finance the global transition to Net Zero.[41] To distill that down to a National level, it has been estimated by Royal Bank of Canada (RBC) that Canada will require $2 trillion of that funding for its own transition.[42] According to research completed at the Institute for Sustainable Finance in association with the Smith School of Business at Queens University the baseline estimated cost for reducing emissions in Canada by 42.5% from its 2005 level by 2030 equates to roughly $200 billion Canadian dollars.[43] These required capital estimates are disproportionately divided between the various provinces and territories with Alberta requiring the most capital and the Northern territories requiring the least. An overview of the required capital per province as it relates to total emissions and absolute investment requirements is referenced below.

[41] (PWC, 2021)
[42] (Royal Bank of Canada, 2021)
[43] (Martin & Riordan, Institute for Sustainable Finance, 2021)

FIGURE 9: INSTITUTE FOR SUSTAINABLE FINANCE CAPITAL MOBILIZATION PLAN[44]

Region	Proportion of Total Emissions (%)	Average Cost ($/t CO_2eq)	Abatement Required (Mt. CO_2eq)	Required Investment ($ millions)	Investment Proportional to GDP (%)
Alberta	37.8	146	466	67,819	2.14
Ontario	22.4	173	276	47,661	0.59
Quebec	11.5	179	141	25,287	0.61
Saskatchewan	10.3	151	126	19,027	2.55
British Columbia	9	176	111	19,554	0.7
Manitoba	3.1	160	38	6,135	0.92
Nova Scotia	2.2	204	27	5,592	1.33
New Brunswick	1.7	182	21	3,811	1.11
Newfoundland and Labrador	1.5	187	19	3,500	1.1
Prince Edward Island	0.2	178	3	527	0.78
Northwest Territories	0.2	213	2	466	1.14
Yukon	0.1	238	1	278	0.98
Nunavut	0.1	251	1	241	0.73

Note: Proportion of GDP column uses total annual required investment and 2019 GDP at current market prices

Source: smith.queensu.ca/centres/isf/pdfs/ISF-CapitalMobilizationPlan-Refresh.pdf

To address the immense need for capital mobilization to fund the transition to Net Zero, there are significant government funding opportunities available pertaining to the development of clean energy systems. The most plausible and pertinent opportunities for Business Iceland to explore have been summarized in Appendix A.

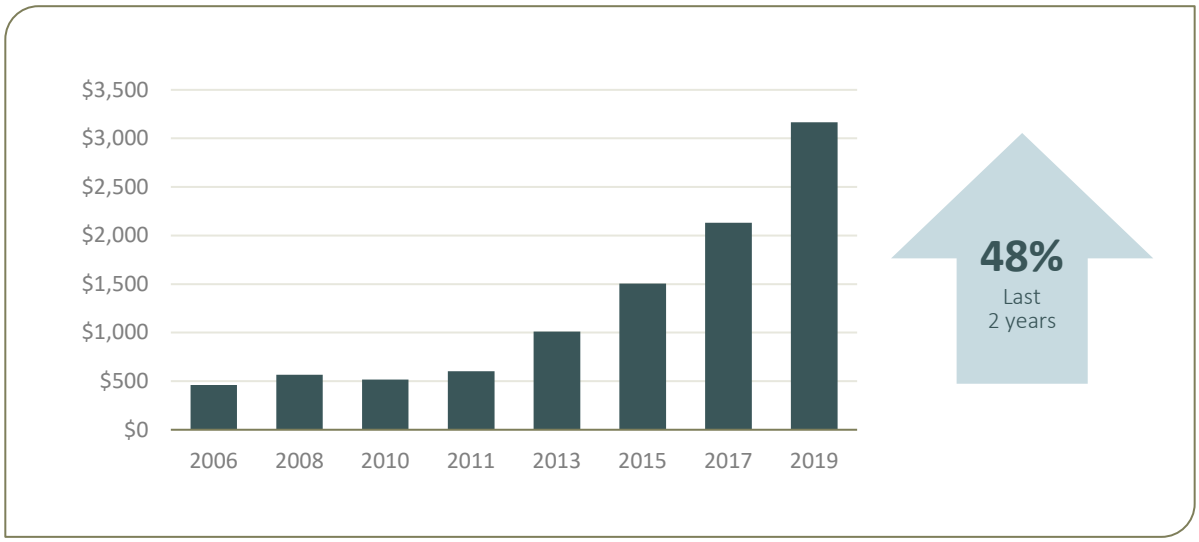
[44] (Martin & Riordan, Institute for Sustainable Finance, 2021)

Other Sources of Funding

ESG AND RESPONSIBLE INVESTING

Today, the investment community is seeing tremendous growth within responsible investment (RI) products and strategies. Companies and investment managers alike are acknowledging the top line growth, cost reductions, subsidy opportunities and enhanced return on investment that comes along with incorporating Environmental, Social, and Governance Factors into the investment process. Responsible investment growth in Canada has achieved a Compound Annual Growth Rate (CAGR) of 15% since 2006, and total assets have exceeded $3.2 trillion.[45]

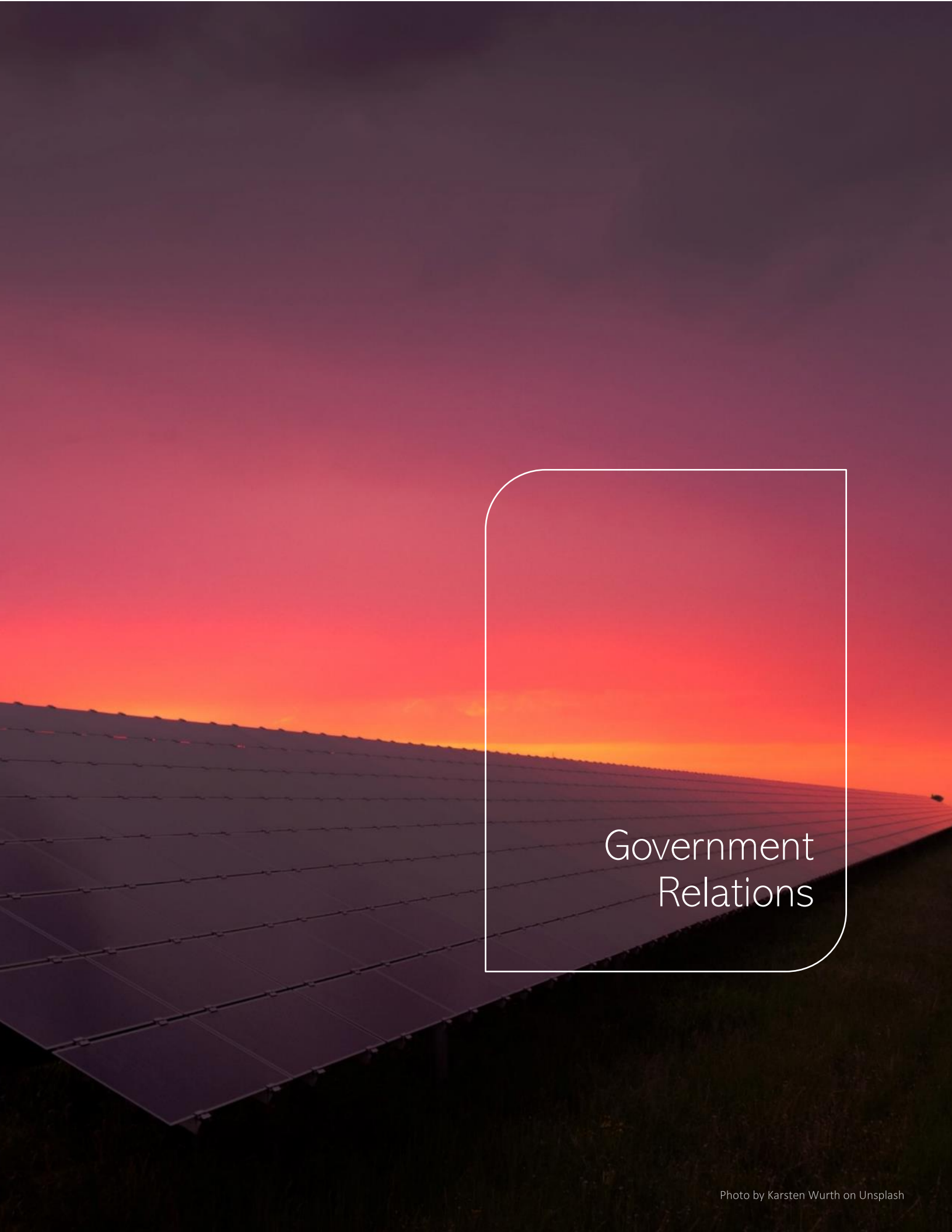
FIGURE 10: CANADIAN RESPONSIBLE INVESTMENT ASSETS (BILLIONS)[46]



[45] (RIA Canada, 2020)
[46] (RIA Canada, 2020)

There has been a 335% year-over-year increase in Canadian cleantech financing in 2021, which equates to over $3.09 billion in equity.[47] In line with these trends, investors are exceedingly exercising their rights as shareholders and putting pressure on carbon-intensive companies and financial institutions alike to better their sustainability practices or direct capital away from fossil fuel producers, distributors, utilities, and operators. There have also been several notable divestitures by financial institutions from higher-carbon oil and gas assets including the Harvard University Endowment Fund, Vancity Investment Management, and the world's largest asset manager, Blackrock, has pledged to reach net zero across its entire portfolio by 2050.[48] Energy companies are divesting and decarbonizing their balance sheets with notable transactions including BP offloading its global petrochemicals business to INEOS, and most recently Cenovus Energy Inc (Cenovus) selling $660 million of its Husky retail fuel assets to Parkland Corporation and Federated Cooperatives Ltd.[49] This capital is being redirected towards low-carbon energy sources which can significantly benefit Business Iceland through a strategic alliance formation with large energy conglomerates such as these.

[47] (Financial Post, 2021)
[48] (Hortibiz, 2020)
[49] (Global Newswire, 2021)



Government Relations

Photo by Karsten Wurth on Unsplash

In September of 2021, Justin Trudeau of the Liberal Party was re-elected as Prime Minister of Canada. The Canadian government consists of three levels: Federal, Provincial/Territorial, and Municipal. Each of these three governmental arms has its own delegation of responsibilities and operating procedures that are important for Business Iceland to consider. Government bodies provide funding and support for initiatives that support their goals. A large portion of government funding in Canada is currently being used to support green energy transition across the country. Understanding Canada's political landscape and key players at all levels of government is essential for project success in Canada. The information below provides a breakdown of government and key decision makers within each level to aid in this understanding.

Federal Government

The federal government of Canada is located in Ottawa and has oversight over all provinces and territories, including renewable energy policies and fund allocation. There are appointed Ministers dedicated to specific national issues within the federal government that drive positive change both nationally and internationally.[50] Key federal departments that Business Iceland should consider when expanding in Canada are identified below. These departments oversee policies, funding, and programs related to Environment, Natural Resources, and Innovation. It is important that Business Iceland understand these departments and lobby to gain support for project development and funding.

While Ministers are key to each department and will have authority to make decisions related to their Departments, communication with these individuals will be challenging. It is recommended that the Chief of Staff of Ministers be contacted to make an initial connection, as they can prepare additional meeting arrangements with the Minster's office. Contact information for both the Department Minister and their Chief of Staff for is provided below.

[50] (Government of Canada, 2017)

DEPARTMENT OF ENVIRONMENT AND CLIMATE CHANGE

The Department of Environment and Climate Change, also known as Environment Canada, ensures a sustainable environment for present and future generations.[51] This department will mandate policies and legislations as Canada continues to battle climate change.

STEVEN GUILBEAULT
Minister of Environment & Climate Change
steven.guilbeault@parl.gc.ca
1-613-992-6779

MARLO RAYNOLDS
Chief of Staff
marlo.raynolds@canada.ca
1-819-938-3813

DEPARTMENT OF NATURAL RESOURCES CANADA

The Department of Natural Resources Canada is responsible for ensuring that natural resources within Canada are developed sustainably and remain competitive in the global market. Canada has an abundant supply of natural resources including minerals, forests, and fossil fuels that all contribute to national and international energy consumption.[52] As the transition towards green energy continues, the Department of Natural Resources Canada will remain responsible for appropriate allocation of current and future use of existing resources.

JONATHAN WILKINSON
Minister of Natural Resources
jonathan.wilkinson@parl.gc.ca
1-613-995-1225

CLAIRE SEABORN
Chief of Staff
claire.seaborn@canada.ca
1-343-292-6837

[51] (Government of Canada, 2021)
[52] (Government of Canada, 2021)

DEPARTMENT OF INNOVATION, SCIENCE, AND ECONOMIC DEVELOPMENT (ISED)

The Department of Innovation, Science, and Economic Development is responsible for enhancing Canada's innovation performance through research and development funding, business grants, and protection of intellectual property to sustain Canada's local and international trade competitive marketplace.[53]

FRANCOIS-PHILIPPE CHAMPAGNE
Minister of Innovation, Science
& Economic Development
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DEPARTMENT OF CROWN-INDIGENOUS RELATIONS AND NORTHERN AFFAIRS CANADA (CIRNAC)

Department of Crown-Indigenous Relations and Northern Affairs Canada works collaboratively with Indigenous partners in areas such as healthcare, education, social programs, and community economic development while incorporating traditional values to ensure needs are met to improve and sustain quality of life.[54]

MARC MILLER
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[53] (Government of Canada, 2021)
[54] (Government of Canada, 2021)

Provincial and Territorial Governments

While oversight from the federal government exists, governance of issues including economic development, electricity markets, and electricity regulations are managed at a provincial level, with variations among each province and territory. Each province has its own governing body that act as key decision makers and play an important role in transitioning Canada at both a federal and provincial level to renewable energy solutions. Similar to the federal level, each province has its own governing bodies consisting of Departments and Ministers that are considered key decision makers and should be part of Business Iceland's entry strategy.

Typically, Provincial governments handle the generation, transmission, and distribution of electricity[55] however, the Alberta energy market is unique in that electricity is generated, sold, and bought on the wholesale electricity market[56]. The government of Alberta does not own or operate any utility companies, and the market completely transitioned to a deregulated structure in 2001.[57] This is a benefit for Business Iceland as it provides opportunity for entry due to a less restrictive energy market.

As Alberta represents a strategic market entry location for Business Iceland to develop, the contact information for the key Ministers in Alberta and their teams are outlined below. Similar to the Federal level, it is recommended that Business Iceland reach out to each Minister's Chief of Staff and allow them to arrange for further communication with the Minister to discuss Department goals, objectives, and funding that will benefit Business Iceland.

[55] (Government of Canada, 2020)
[56] (Alberta Electric System Operator, 2016)
[57] (Alberta Electric System Operator, 2016)

ALBERTA'S MINISTRY OF ENERGY

This Ministry or Department is responsible for using Alberta's existing resources for energy production. The Minister, Sonya Savage has extensive knowledge in the energy industry including regulations, indigenous reconciliation, and climate change.[58] Connecting with Sonya and her team will provide Business Iceland insight into energy policies and initiatives in Alberta.

SONYA SAVAGE
Minister of Energy
minister.energy@gov.ab.ca

JERRY BELLIKKA
Chief of Staff
jerry.bellikka@gov.ab.ca

Within the Ministry of Energy, Alberta also has a Minister of Natural Gas and Electricity, Dale Nally, who is responsible aids in the attraction of energy investment in Alberta. Dale Nally has extensive knowledge of Alberta's electricity market and has recently spearheaded a strategic plan that will create an industry supported plan to grown Hydrogen in Alberta.[59] Contacting the Minister of Natural Gas and Electricity will provide Business Iceland with insight into both electricity investments and development of Hydrogen projects and funding in the province.

DALE NALLY
Minister of Natural Gas & Electricity
aminister-natgas@gov.ab.ca

FILIP PALASZ
Chief of Staff
filip.palasz@gov.ab.ca

Consideration to both the Energy Operations Division and Energy Policy Division in Alberta are essential for development in the province as they manage policy development for the resources within the province along with promoting additional investment to create jobs and economic prosperity.[60] These divisions are smaller and makeup the above mentioned Ministry's and Divisions, so their organizational structure varies. Contact with Minister's will remain challenging in these smaller

[58] (Government of Alberta, 2021)
[59] (Alberta's Industrial Heartland, 2021)
[60] (Government of Alberta, 2021)

divisions, so contact with Executive Advisor or Administrator is recommended as these divisions do not have a Chief of Staff.

ENERGY OPERATIONS DIVISION

DOUG LAMMIE
Assistant Deputy Minister
780-422-6656

TRACEY MASON
Executive Advisor
780-422-9078

ENERGY POLICY DIVISION

WADE CLARK
Assistant Deputy Minister
780-427-7426

TERESA STYKALO
Executive Administrator
780-422-7186

Municipal Government

The third level of government is the Municipal government, which is responsible for governance of individual cities and towns across the country. While each municipal government is self-sufficient to their local residents, municipalities often work together on initiatives such as energy and climate change due to overlapping jurisdictional boundaries.[61] It's important for Business Iceland to build relationships at a Municipal level because municipalities and their governing bodies will have the final approval on project development in their jurisdictions.

An organization called Edmonton Global, headquartered in Edmonton, Alberta is an economic development corporation that promotes foreign direct investment and trade in the Edmonton area. This includes 14 municipalities and associations including, Alberta's Industrial Heartland Association.[62] Business Iceland can utilize Edmonton Global's municipal relationships to promote Icelandic energy and technologies for project development.

[61] (Alberta's Industrial Heartland Association, n.d.)
[62] (Edmonton Global, 2021)

Trade Commissioner of Canada

Trade Commissioner Services can be a great resource for international companies looking to invest in Canada. These services include market information, government funding program information, statistics, and trade missions. The Canadian Embassy in Iceland, led by Ambassador Jeannette Menzies, can aid Icelandic companies looking enter the Canadian market.

JEANNETTE MENZIES
Ambassador to Iceland
jeanette.menzies@international.gc.ca
354-575-6500

XAVIER RODRIGUEZ
Trade Commissioner & Public Affairs Officer
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354-575-6514

Government Programs/Funding

All levels of government provide funding and programs that act as incentive for project development. Primary sources of funding available in Canada related to renewable and clean energy initiatives are identified below. While only the key programs are provided, Appendix A outlines several other programs and sources of funds that Business Iceland could utilize as they become more established in Canada.

STRATEGIC INNOVATION FUND

Strategic Innovation Fund (SIF) supports the growth of Canadian firms and aims to attract investments to Canada that will support research and development advancements to innovation. Given Business Iceland's ambition to enter the Canadian market through innovation and project investment, they are well suited to apply for this funding.

CLEAN ENERGY FOR RURAL AND REMOTE COMMUNITIES

As the Government of Canada takes actions to reduce diesel dependencies in remote northern communities, funds are being allocated to projects that will support this transition. Specifically, the First Nation Infrastructure Fund which is available for First Nations communities to help increase infrastructure and improve the quality of life within these communities.[63] The Northern REACHE Program also provides funds for northern communities that promote wind and heat recovery projects. [64]

PRAIRIES ECONOMIC DEVELOPMENT

Prairies Economic Development (PrairiesCan) is responsible for diversifying and building economic growth across the Canadian Prairie provinces (Alberta, Saskatchewan, Manitoba). This is a federal program to support provincial initiatives by providing support to start-up business through capital and resource investment. Connecting with the PrairiesCan would allow Business Iceland to apply for funding and government support to pursue green energy initiatives in Alberta.

CANADIAN NORTHERN ECONOMIC DEVELOPMENT AGENCY

Like PrairiesCan, the Canadian Northern Economic Development Agency (CanNor) provides funding and economic development opportunities to Indigenous communities in Northern Canada. This agency provides funding on an annual basis for development in Canada's Northern Territories, and while applications for 2022 are currently closed, there will be future opportunity for Business Iceland to apply for funding through this program. Business Iceland could use CanNor for funding support to bring wind projects into remote communities in Northern Canada.

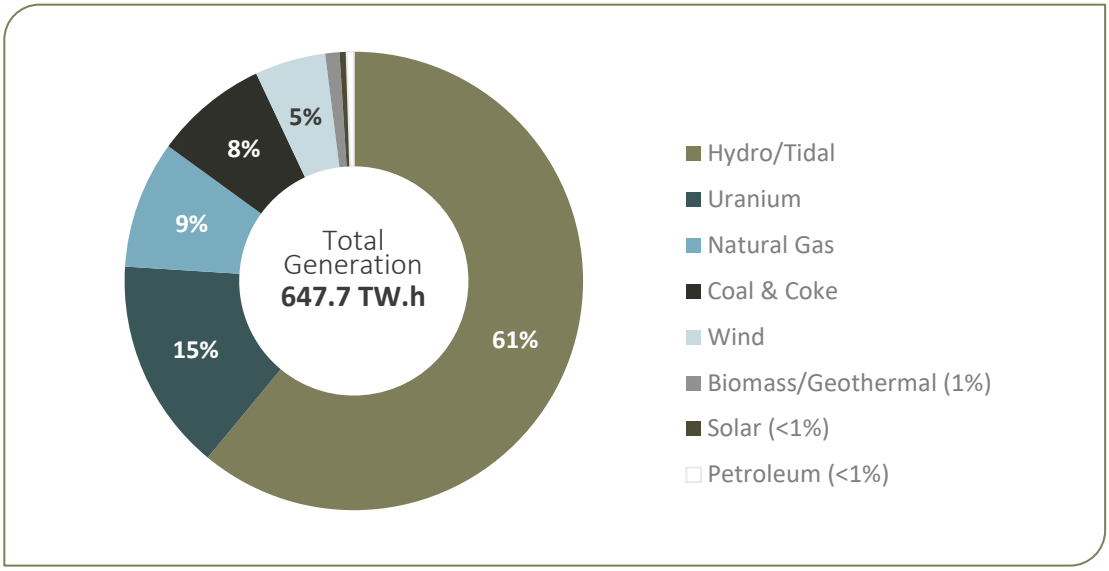
[63] (Government of Canada, 2021)
[64] (Government of Canada, 2020)

Canadian Electricity Market Regulations Overview

Photo by Jeremy Vessey on Unsplash

Canada

FIGURE 11: CANADIAN ELECTRICITY GENERATION BY FUEL TYPE[65]



Canadian electricity markets are governed under the jurisdiction of their respective Provincial and Territorial governments. Apart from Alberta and Ontario, Provincial and Territorial markets are non-liberalized, meaning that in most cases, the generation, transmission, and distribution of electricity comes from vertically integrated and provincially owned utilities.[66] A regulator in each province and territory is responsible to set the rules and rates for the generation, transmission, and distribution of electricity. While this market structure limits competition, provincially-owned utilities such as Hydro Québec or BC Hydro are required to purchase supply from Independent Power Producers (IPP's) to meet consumer demand.[67] To manage energy purchases, Provinces and Territories will issue a "call to power" which is a formal Request for Proposal (RFP) in which IPP's can submit a bid for approval. In many cases, provinces and territories will issue RFP's that can last over 20 years.[68] With the increased focus on achieving Net Zero and

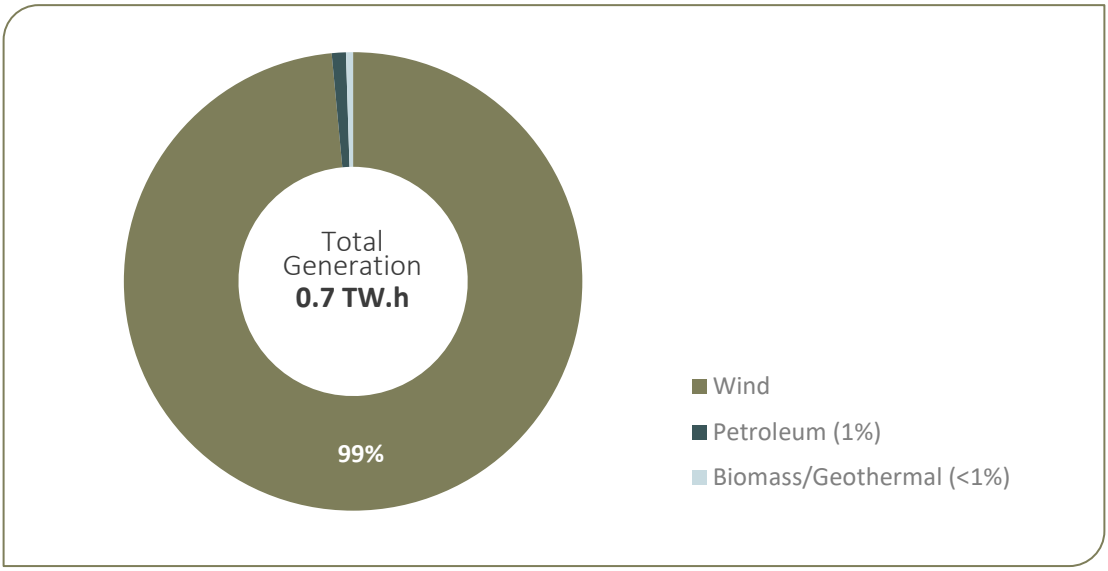
[65] (Canada Energy Regulator, 2021)
[66] (Market Line, 2020, p. p.16)
[67] (Market Line, 2020, p. p.19)
[68] (Canadian Renewable Energy Association, 2021)

electrification targets, there is anticipation that the provinces in Canada will have a capacity gap resulting in increased call to power issuance in the coming years. To further distill the electrical opportunities presented to Business Iceland within each province, an overview and assessment has been included below in order of geographical location from East to West.

Prince Edward Island

Market Type: Regulated
Population: 164,318[69]

FIGURE 12: PEI ELECTRICITY GENERATION BY FUEL TYPE[70]



[69] (Statistics Canada, 2021)
[70] (Canada Energy Regulator, 2021)

Generation, transmission, and distribution of electricity in Prince Edward Island (PEI) is provided by Maritime Electric Company Ltd, a wholly owned subsidiary of Fortis Inc.[71] The majority of electricity distributed by the Maritime Electric Company is imported from New Brunswick. About 30% of electricity in New Brunswick is generated using carbon intensive fossil fuels but on Prince Edward Island, 98% of electricity generation comes from wind. Energy costs on PEI are significant at around 14.37 ¢/kW.h.[72] Power on the island is distributed through 6,000 km of transmission and distribution lines, which are owned by the Maritime Electric Company Ltd.[73]

OPPORTUNITY

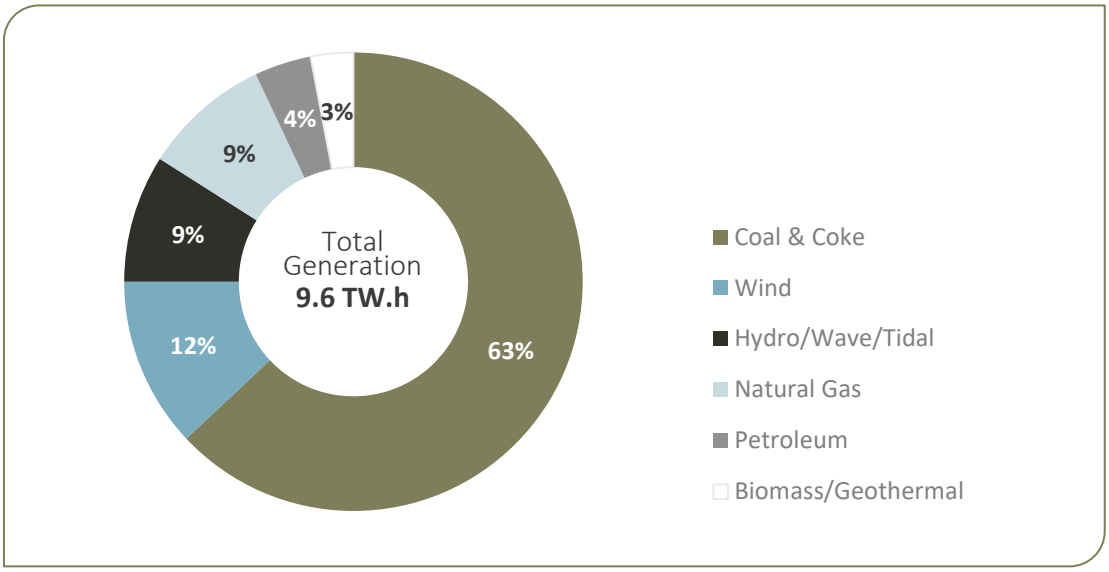
The PEI Energy Corporation, a crown corporation under the purview of the provincial government, is looking to reduce its dependence on the New Brunswick grid. As previously noted, approximately 30% of electricity in New Brunswick is derived from very cost-effective fossil fuel sources. The PEI Energy corporation has contracted some of its in-land wind generation with Maritime Electric. Current projects developed, owned, and operated by the PEI Energy Corporation are wind farms at Elmira (30 MW), Hermanville (30 MW), and North Cape (13.6 MW). As recently as 2020, the PEI Energy corporation has requested proposals for 10MW of storage. PEI's in-land electricity generation is 99% wind, making it one of the highest levels of wind integration in North America.[74]

[71] (Government of Prince Edward Island, 2017, p. p.7)
[72] (Canada Energy Regulator, 2021)
[73] (Canada Energy Regulator, 2021)
[74] (Maritime Electric, 2021)

Nova Scotia

Market Type: Regulated
Population: 992,055[75]

FIGURE 13: NOVA SCOTIA ELECTRICITY GENERATION BY FUEL TYPE[76]



In Nova Scotia (NS), independently owned Nova Scotia Power is responsible for the generation, transmission, and distribution of electricity in the province with a generating capacity of 3,061 MW[77]. Nova Scotia Power is owned by Emera[78], a global energy company, with its head office located in Halifax. Nova Scotia Power has contracts with Independent Power Producers that provides 456 MW of capacity.[79] Nova Scotia Power is regulated by the Nova Scotia Utility and Review Board and the current rate of electricity in the province equates to 15.60 ¢/kW.h.[80] With over 60% of its energy derived from coal and coke, Nova Scotia's electricity generation

[75] (Statistics Canada, 2021)
[76] (Canada Energy Regulator, 2021)
[77] (Canada Energy Regulator, 2021)
[78] (Emera Energy, 2021)
[79] (Emera, 2020, p. p.26)
[80] (Canada Energy Regulator, 2021)

represents 42% of the Province's total green house gas (GHG) emissions.[81] Nova Scotia Power delivers its electricity across 32,000 km of transmission and distribution lines.[82]

OPPORTUNITY

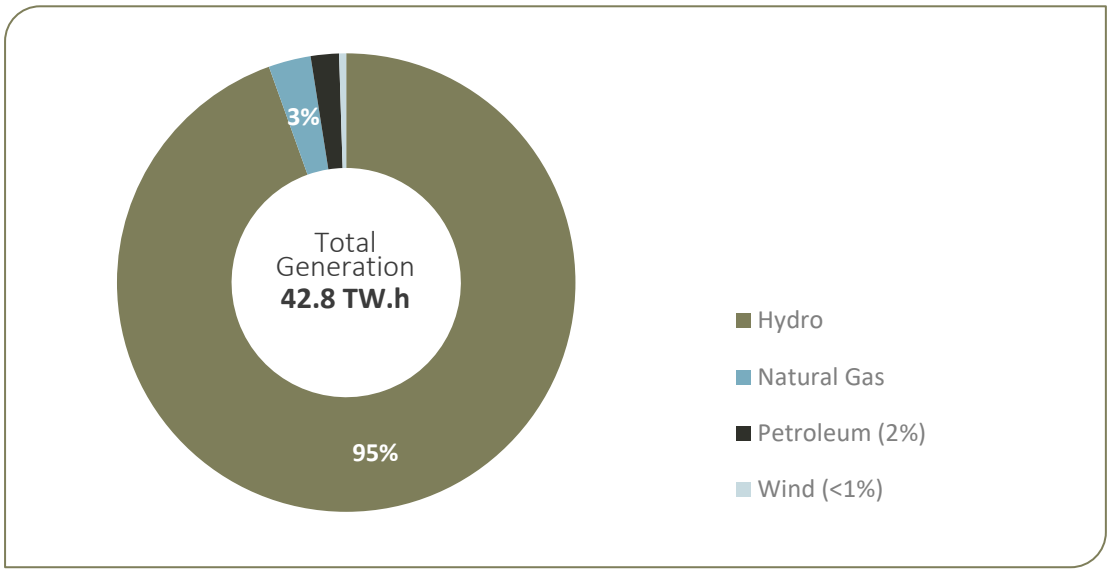
A report commissioned by the provincial government of Nova Scotia entitled "The Deep Decarbonization in Nova Scotia: Phase 1" sets ambitious goals for green house gas reductions within the province. The report recommends 80% reductions in greenhouse gases by 2050.[83] To do so, the report recognizes that wind and hydropower should both be considered viable solutions. Nova Scotia Power issued a Request for Proposal (RFP) in August 2021 to procure 350 MW (1,100 GWh) of electricity from Independent Power Producers (IPP's). The purpose of the RFP is to help the province lower its GHG emissions to attain its 2050 target.[84]

[81] (Canada Energy Regulator, 2021)
[82] (Nova Scotia Power, 2021)
[83] (Nova Scotia Power Inc., 2020, p. p.2)
[84] (Government of Nova Scotia, 2021)

Newfoundland and Labrador

Market Type: Regulated
Population: 520,533[85]

FIGURE 14: NEWFOUNDLAND AND LABRADOR ELECTRICITY GENERATION BY FUEL TYPE[86]



In Newfoundland and Labrador (NL), generation, transmission, and distribution falls under the responsibility of both Newfoundland Power which is a subsidiary of Fortis Inc. and Newfoundland and Labrador Hydro (Government Owned - Nalcor). The electricity rates are regulated by the Newfoundland and Labrador Board of Commissioners of Public Utilities. Current cost of energy in this Province is 12.20¢/kW.h.[87] In 2010, the government in power announced the construction of the Muskrat Falls hydroelectric project. At an expected cost of $6.2 Billion, the project includes an 824MW hydropower facility and 1,600km in transmission lines.[88] In 2021, the project is still under construction with a revised cost of more than

[85] (Statistics Canada, 2021)
[86] (Canada Energy Regulator, 2021)
[87] (Canada Energy Regulator, 2021)
[88] (Nalcor Energy Lower Churchill Project, n.d.)

double the projected cost at $13 Billion.[89] This project is a major political and social issue as costs to taxpayers funding the project have more than doubled and it is expected to increase the costs of electricity for residents significantly. Newfoundland Power owns 12,000 km[90]of transmission lines and while unspecified in research conducted Newfoundland & Labrador Hydro owns "thousands" of kilometers of transmission lines.[91]

OPPORTUNITY

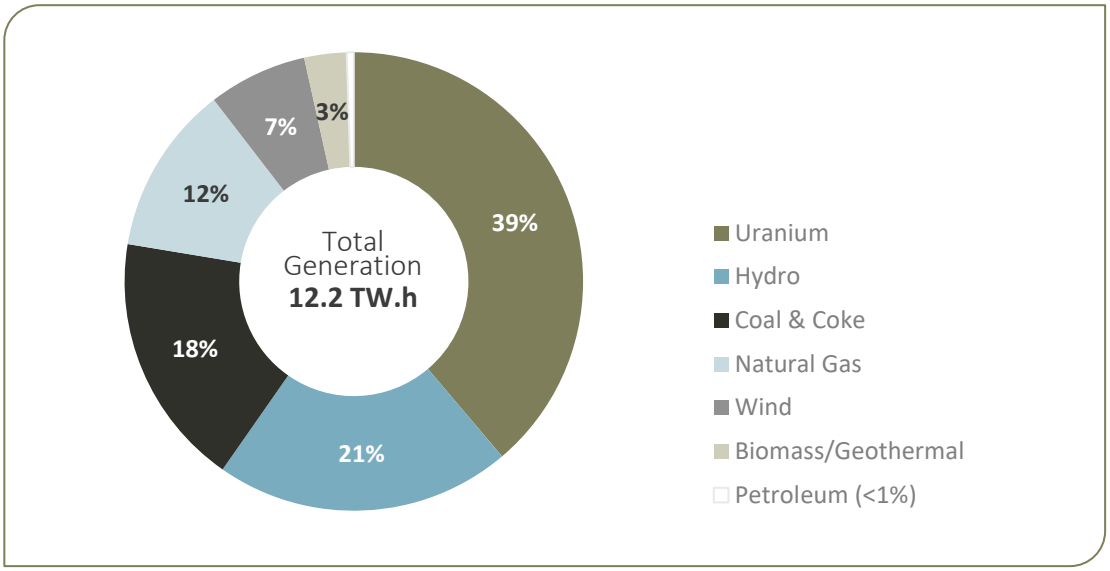
Due to the Muskrat Falls project, the province will be at over capacity. This over-capacity is a potential opportunity to consider for projects that will require a significant load, such as the production of green hydrogen. The province has many deep ports, making it an ideal location for exporting products.

[89] (Salter, 2020)
[90] (Newfoundland Power, a Fortis Company, 2017, p. p.4)
[91] (Newfoundland Labrador Hydro, 2021)

New Brunswick

Market Type: Regulated
Population: 992,055[92]

FIGURE 15: NEW BRUNSWICK ELECTRICITY GENERATION BY FUEL TYPE[93]



In New Brunswick (NB), NB Power is owned by the provincial government and is responsible for generation, transmission, and distribution of electricity in NB. NB Power has a capacity of 3,790 MW and 13 generating stations.[94] NB Power has 15 PPA's, for a total generation of 608 MW.[95] NB power is regulated by the New Brunswick Energy and Utilities Board. Energy rates in the province are 11.18 ¢/kW.h.[96] NB Power owns 6,875 km of transmission lines.[97]

[92] (Statistics Canada, 2021)
[93] (Canada Energy Regulator, 2021)
[94] (Energie NB Power, 2021)
[95] (Energie NB Power, 2020, p. p.43)
[96] (Canada Energy Regulator, 2021)
[97] (Energie NB Power, 2020, p. p.2)

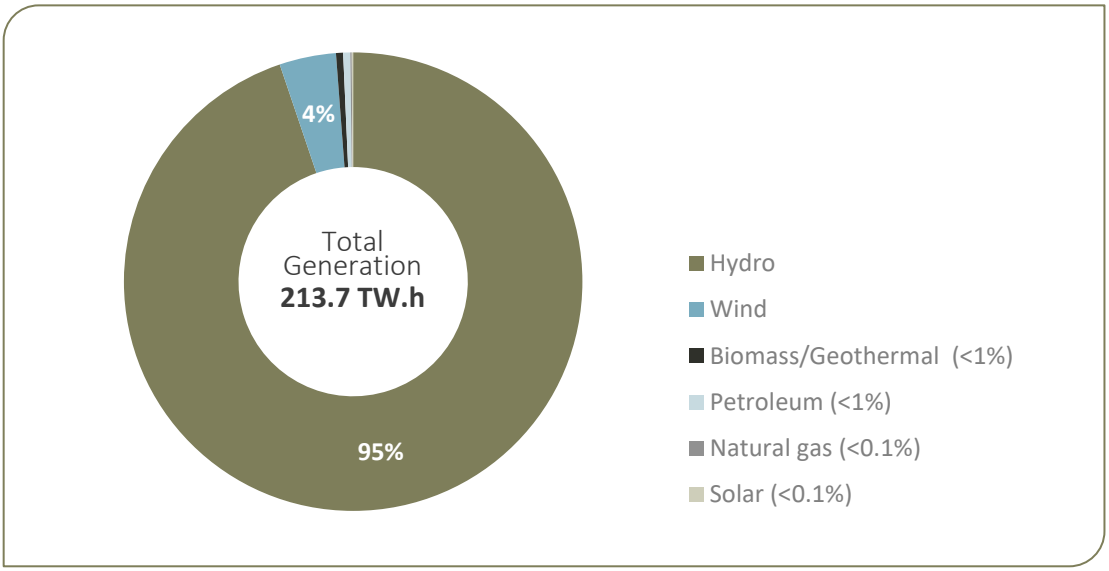
OPPORTUNITY

The Federal Government has imposed a 2030 deadline to phase-out coal in Canada, so given that 18% of New Brunswick's electricity generation is still derived from coal fired plants, the province will be looking for solutions. An RFP to IPP's is one potential avenue to consider for the provincial government, however New Brunswick has strong wind resources that could be leveraged to meet this demand as well.

Quebec

Market Type: Regulated
Population: 8,604,495[98]

FIGURE 16: QUEBEC ELECTRICITY GENERATION BY FUEL TYPE[99]



[98] (Statistics Canada, 2021)
[99] (Canada Energy Regulator, 2021)

Hydro Quebec (HQ) is a government-owned utility provider and is responsible for generation, transmission, and distribution of electricity within the province. Hydro Quebec has an installed capacity of 46,176 MW, and over 34,000 km of transmission lines. [100] This capacity level makes Hydro Quebec the largest in Canada and in addition to its high capacity, it is also the most cost effective in the country with a price of 6.08 ¢/kW.h.[101] The Régie de l'énergie is the provincial regulator and is responsible for ensuring equal and fair treatment between both consumers as well as public utilities. Part of the reason for Quebec's lower cost of electricity is due to the Labrador-based and highly controversial 1969 Churchill Falls agreement between Hydro Quebec and Newfoundland and Labrador. The contract is for roughly all of the 5,428 MW Churchill Falls generation, which represents 31B kW/h annually and is valid at a price of 2 mills (tenths of a cent) per kW/h until 2040 when it expires. This contract is a source of major resentment between Newfoundlanders and Labradoreans and towards Quebecers. Furthermore, Hydro Quebec purchases 4,335 MW of capacity from Independent Power Producers, of which 3,882 MW is wind generation.[102]

OPPORTUNITY

In 2021, Hydro Quebec signed a $20 Billion agreement to provide 1,250MW of renewable power to the state of New York annually. This agreement coupled with the general increase in demand for renewable power in Quebec following the push for electrification, Hydro Quebec anticipates a 1,400MW capacity gap between 2021 and 2029.[103] To fill this predicted gap, Hydro Quebec is expected to issue multiple Requests for Proposal to Independent Power Producers in the next few years with a sizable portion reserved for wind generation. Hydro Quebec has already commenced this process and will be issuing an RFP to IPP's for 300MW of wind generation before the end of 2021.[104]

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[100] (Hydro Quebec, n.d.)
[101] (Canada Energy Regulator, 2021)
[102] (Hydro Quebec, 2020, p. p.100)
[103] (Hydro Québec, 2021)
[104] (Ministere de l'Energie et des Ressources Naturelles, 2021)

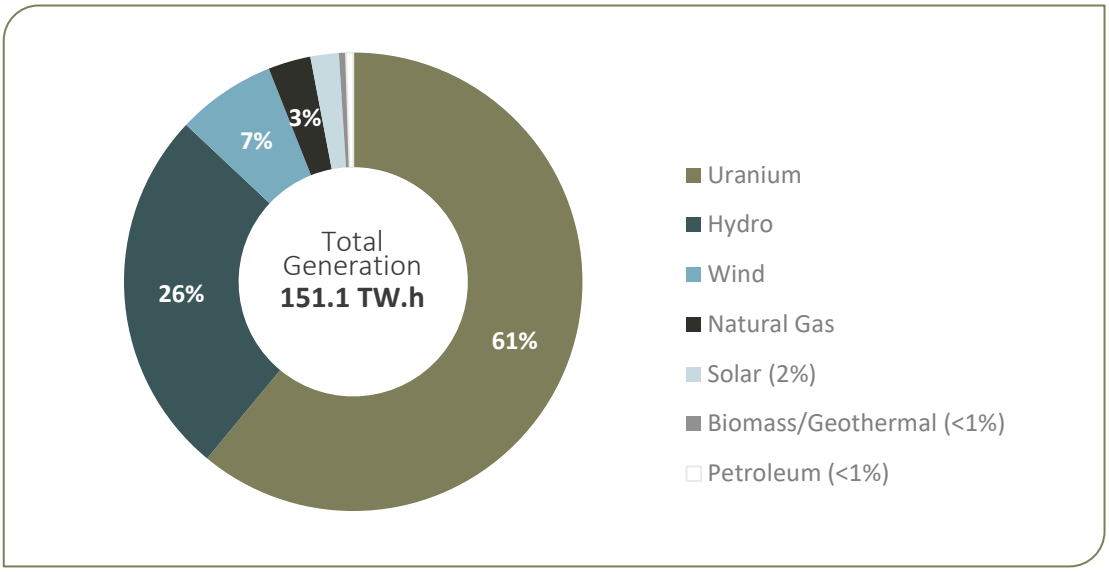
The Association québécoise de la production d'énergie renouvelable (APQER) is a long-standing Quebec-based association. Its progressive mission is “to increase independent production of renewable energy and maximize its use in Quebec's energy portfolio”.[105] They are focused on promoting sustainability and responsible energy development projects that supply clean solutions while enhancing economic develop in the province of Quebec.[106] The APQER’s main energy sources are hydro, wind, bio, and solar[107] but other clean energy companies might benefit from membership. Their large membership base is a testament to the importance of being part of this organization if looking to operate in the province of Quebec. APQER will inform their members when a request for proposal is issued by government owned utility providers such as Hydro Quebec.

[105] (Association Québécoise de la Production D'énergie Renouvelable , 2021)
[106] (Association Québécoise de la Production D'énergie Renouvelable , 2021)
[107] (Association Québécoise de la Production D'énergie Renouvelable , 2021)

Ontario

Market Type: Hybrid
Population: 14,826,276[108]

FIGURE 17: ONTARIO ELECTRICITY GENERATION BY FUEL TYPE[109]



Ontario's (ON) hybrid electricity market is unique in Canada. The Independent Electricity System Operator (IESO) is responsible for ensuring the reliability and flow of electricity across the grid and manages Ontario's wholesale electricity market. Hydro One, a publicly traded company on the Toronto Stock Exchange (TSX)[110] owns approximately 97% of the 30,000km of transmission lines across the province.[111] Other transmission companies include Great Lakes Power, Canadian Niagara Power, Five Nations Energy and Cat Lake Power Utility Limited.[112] Local Distribution Companies (LDC's) are responsible to deliver power to both residential and small

[108] (Statistics Canada, 2021)
[109] (Canada Energy Regulator, 2021)
[110] (Hydro One, n.d.)
[111] (Hydro One, 2020)
[112] (Hydro Ottawa, n.d.)

business customers.[113] In Ontario, there are over 60 LDC's. Major industrial consumers are able to purchase electricity directly from the wholesale electricity market and are connected to the high voltage transmission lines. The Ontario Energy Board regulates electricity prices in the province and the average price of electricity in Ontario is 8.98 ¢/kW.h.[114]

Wholesale consumers in Ontario that consume more than 250,000 kW of electricity per day, pay the wholesale price for electricity. The IESO manages the price of electricity, which changes every 5 minutes and the market price is set using principles of supply and demand.[115]

The Global Adjustment (GA) is a controversial issue in the Ontario electricity market that any new entrant should consider. In the early 2000's, the government in Ontario implemented Feed-in-Tariffs (FIT)[116] to encourage the development of new renewable energy sources. The objective of the tariffs was to reduce Ontario's dependence on coal generation focusing instead on renewable sources of energy. The subsidized contracts through the FIT program provided above-market prices to new renewable energy generators. To pay for these contracts, the provincial government implemented the GA, which is passed on to residential and industrial consumers. In fact, large-power industrial consumers in Ontario pay 65% more for their electricity than similar consumers in other provinces.[117] For instance, according to the Fraser Institute, large-power consumers in Toronto paid 13.23 ¢/kW compared to 5.66 ¢/kW in Montreal, Quebec[118] in 2019. These high electricity costs present a serious risk for attracting new investments in Ontario.

[113] (Independent Electricity System Operator, 2021)
[114] (Canada Energy Regulator, 2021)
[115] (Independent Electricity System Operator, 2021)
[116] (Independent Electricity System Operator, 2021)
[117] (Fraser Institute, 2019, p. p.8)
[118] (Fraser Institute, 2019, p. p.8)

OPPORTUNITY

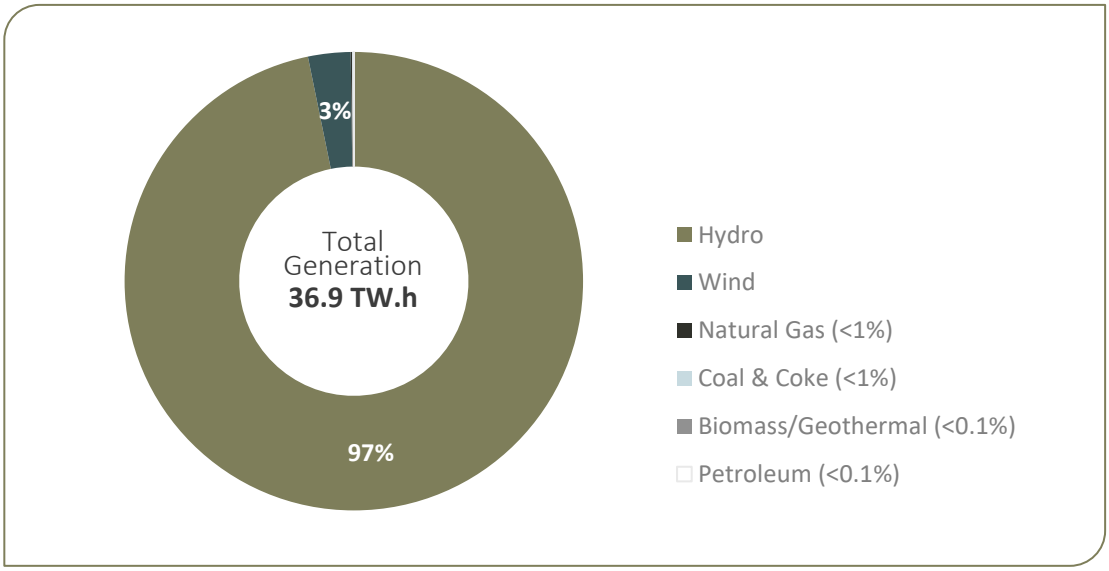
As a result of economic activity and electrification targets, as well as the decommissioning of the Pickering Nuclear Station planned for 2028, the IESO has identified a short-term supply shortage by 2026.[119] The 3,100 MW Pickering Nuclear Station is responsible for 14% of Ontario's total electricity production. To mitigate this capacity gap, the IESO is expected to launch RFPs in the short term. Furthermore, Ontario municipalities are pushing the IESO and the Ontario government to phase-out gas generation. A recent study from the IESO states that decommissioning gas will cost the province $27 Billion in new sources of power and will increase consumer's electricity costs by 60%[120]. The IESO and the government are facing increased public pressure to find solutions that will lower the carbon footprint of its electricity grid. Ontario should be monitored closely as opportunities to provide power to this market will arise in the short-term.

[119] (Ontario Power Generation, 2021)
[120] (Independent Electricity System Operator, 2021, p. p.2)

Manitoba

Market Type: Regulated
Population: 1,383,765[121]

FIGURE 18: MANITOBA ELECTRICITY GENERATION BY FUEL TYPE[122]



Manitoba Hydro is a government of Manitoba crown corporation and is responsible for generation, transmission, and distribution of electricity in the province, with a total capacity of 6,141 MW, and owns 11,045km of transmission lines.[123,124] Electricity rates in Manitoba fall under the responsibility of the Public Utilities Board and behind only Quebec, Manitoba has the most cost-efficient electricity rates in Canada at 8.740 ¢/kW.h.[125] Manitoba Hydro exports its excess power to the United States, Saskatchewan, and Ontario. Between 2010 and 2019, Manitoba exports accounted for over $3.9 Billion in revenue.[126]

[121] (Statistics Canada, 2021)
[122] (Canada Energy Regulator, 2021)
[123] (Canada Energy Regulator, 2021)
[124] (Manitoba Hydro, 2021, p. p.15)
[125] (Canada Energy Regulator, 2021)
[126] (Manitoba Hydro, n.d.)

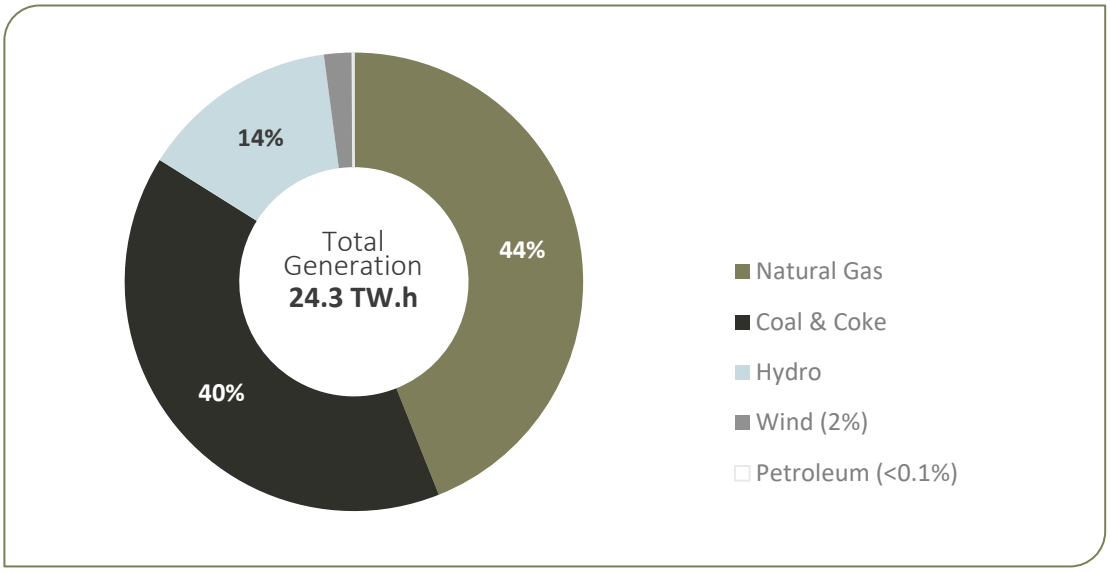
OPPORTUNITY

Given the abundant renewable energy capacity currently available in Manitoba, and the fact that it possessed the least carbon intensive grid in Canada at just 0.88 tonnes of GHGs per GW/h, Business Iceland should not direct its focus on this Province as opportunity is extremely limited.[127] According to Manitoba Hydro "the 2018 GHG emission intensity of electrical generation across Canada as a whole was approximately 120 t/GWh, with Ontario at 29 t/GWh and Québec 1.3 t/GWh."[128]

Saskatchewan

Market Type: Regulated
Population: 1,179,844[129]

FIGURE 19: SASKATCHEWAN ELECTRICITY GENERATION BY FUEL TYPE[130]



[127] (Manitoba Hydro, n.d.)
[128] (Manitoba Hydro, n.d.)
[129] (Statistics Canada, 2021)
[130] (Canada Energy Regulator, 2021)

SaskPower is a government of Saskatchewan crown corporation that is responsible for the generation, transmission, and distribution of electricity in the province. SaskPower generates about 80% of the electricity in the province and has a total generation capacity of 4,987 MW and owns over 14,600 km of transmission lines.[131] The remaining power generation comes from Power Purchase Agreements (PPA's) between SaskPower and IPP's.[132] According to SaskPower's annual report, SaskPower contracts 878 MW of generation capacity through PPA's.[133] Electricity Rates in Saskatchewan are reviewed every five years and are set by the Saskatchewan Rate Review Panel.[134] As of 2021, the electricity rates in Saskatchewan are 14.228 ¢/kW.h.[135]

OPPORTUNITY

With Canada's announced regulations to phase out traditional coal-fired electricity by 2030. Currently, SaskPower owns three coal-fired facilities with a net capacity of 1,530 MW. Furthermore, SaskPower recently announced that it will lower its GHG emissions 50% below 2005 levels[136] and is exploring scenarios to reach Net Zero by 2050.[137] To do so, SaskPower will need to replace its coal-fired fleet with clean energy alternatives providing an opportunity for Independent Power Producers to step in. In fact, SaskPower was recently awarded a 25-year 200 MW wind farm contract to global IPP, Renewable Energy Systems[138].

If a new entrant was looking to gain market entry into Saskatchewan or establish a Canadian Indigenous relationship, another excellent Indigenous association that is focused on matching Indigenous organizations with industry partners to develop clean energy projects is the First Nations Power Authority.[139] With over 90 successful

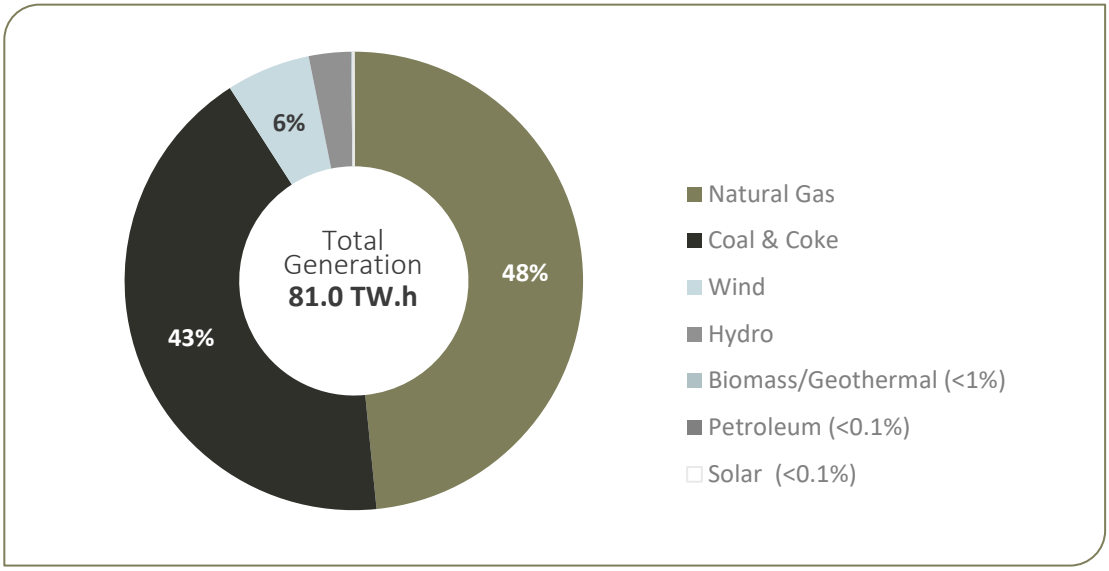
[131] (SaskPower, 2020-2021, p. p.5)
[132] (Canada Energy Regulator, 2021)
[133] (SaskPower, 2020-2021, p. p.4)
[134] (Canada Energy Regulator, 2021)
[135] (Canada Energy Regulator, 2021)
[136] (SaskPower, 2021)
[137] (SaskPower, 2019-2020, p. p.4)
[138] (Canadian Renewable Energy Association, 2021)
[139] (First Nations Power Authority, 2021)

projects under their portfolio[140], this is a proven avenue that can be considered for breaking out in the Canadian clean energy market. One of their core service offerings, available only to members, is the Partnership Identification Process (PIP). This service is designed to "assist an Indigenous organization or Industry member in finding a suitable partner for a renewable energy project".[141] Wind and solar energy have been the focus of their projects to date, although there are opportunities for other clean energy solutions. While not a national association, this is an excellent avenue to gain experience in the Canadian market and establish knowledge in partnerships with Indigenous groups.

Alberta

Market Type: Liberalized
Population: 4,442,879[142]

FIGURE 20: ALBERTA ELECTRICITY GENERATION BY FUEL TYPE[143]



[140] (First Nations Power Authority, 2021)
[141] (First Nations Power Authority, 2021)
[142] (Statistics Canada, 2021)
[143] (Canada Energy Regulator, 2021)

Alberta is the has the only fully liberalized electricity market in Canada and is the third largest electricity producer in the country, with a generating capacity of 16,332 MW.[144] Currently, 91% of electricity in Alberta is produced from fossil fuels and there are eight regulated electricity retailers in Alberta, who's prices vary on a monthly basis and are set by the Alberta Utilities Commission (AUC).[145] There are currently 48 competitive retailers that consumers may enter into a contract with depending on the type of energy service they desire.[146] Regulated rates change every month and as of November 2021, ENMAX, one of Alberta's notable regulated energy retailers, had a rate of $0.10669/kWh.[147] Furthermore, it is worth noting that Electricity demand in Alberta has increased by 15% since 2005[148] and is expecting to increase by 1% annually for the next 20 years.[149]

The Alberta Electricity System Operator (AESO) is a not-for-profit organization responsible for managing and operating the Alberta electricity grid.[150] The AESO dispatches the power that is sold by Alberta generators to ensure the reliability of the grid at all hours of the day. The AESO operates 26,000 km of transmission lines across the province.[151]

OPPORTUNITY

Unlike other regulated markets in Canada, Alberta has the advantage of allowing Power Purchase Agreements (PPA) and Virtual Power Purchase Agreements (VPPA) between generators and industry. As suggested by EnergyRates, "Alberta is the best Province in Canada for VPPAs and PPAs."[152] Furthermore, according to Level 10 Energy, "PPA offers were less than CAD $48.46/MWh for wind projects and CAD $68.69/MWh for solar projects."[153] Alberta should be an area of focus for any IPPs that want to enter the Canadian market.

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[144] (Canada Energy Regulator, 2021)
[145] (Utilities Consumer Advocate, n.d.)
[146] (Utilities Consumer Advocate, n.d.)
[147] (Utilities Consumer Advocate, n.d.)
[148] (Conference Board of Canada, 2019, p. p.5)
[149] (Alberta Electric System Operator, 2016)
[150] (Alberta Electric System Operator, 2016)
[151] (Alberta Electric System Operator, 2016)
[152] (Energy Rates, 2021)
[153] (Barron, 2020)

Consisting of over 100 members who supply most of Alberta's power supply[154], the Independent Power Producers Society of Alberta (IPPSA) is geared towards assembling power producers and giving them a voice to advocate in favor of "competition in Alberta's electricity market".[155] The IPPSA caters more towards companies with existing projects but might prove to be valuable for networking or partnering. The IPPSA does not have an Indigenous focus, but membership benefits in this association are primarily related to policy development.[156] The IPPSA also provides a newsletter printed five times per year as well as access to events like luncheons and annual conferences.

Alberta's Industrial Heartland Association is a key association for organizations that are looking to enter the Alberta energy market. While historically focused on hydrocarbon extraction, the association is moving towards supporting a low carbon future through clean energy sources like hydrogen.[157] Alberta's Industrial Heartland Association represents over 40 organizations, has over $40 billion (CAD) in existing capital investment, a land size of 582 square kilometers, and is actively trying to entice foreign direct investment into the energy cluster, with a goal of attracting $30 billion (CAD) by 2030.[158] An example of a recent clean energy initiative within Alberta's Industrial Heartland is Shell and Silcon Ranch's November 9, 2021 announced 58 MW solar farm which will be used to support Shell's transformation to a lower carbon future.[159] While geothermal, hydro, wind and other energy sources are not specifically represented with Alberta's Industrial Heartland Association, this is an incredible opportunity to enter the Canadian market to support one of Canada's largest industries in its transformation to a low carbon future through the goal of Net Zero by 2050.

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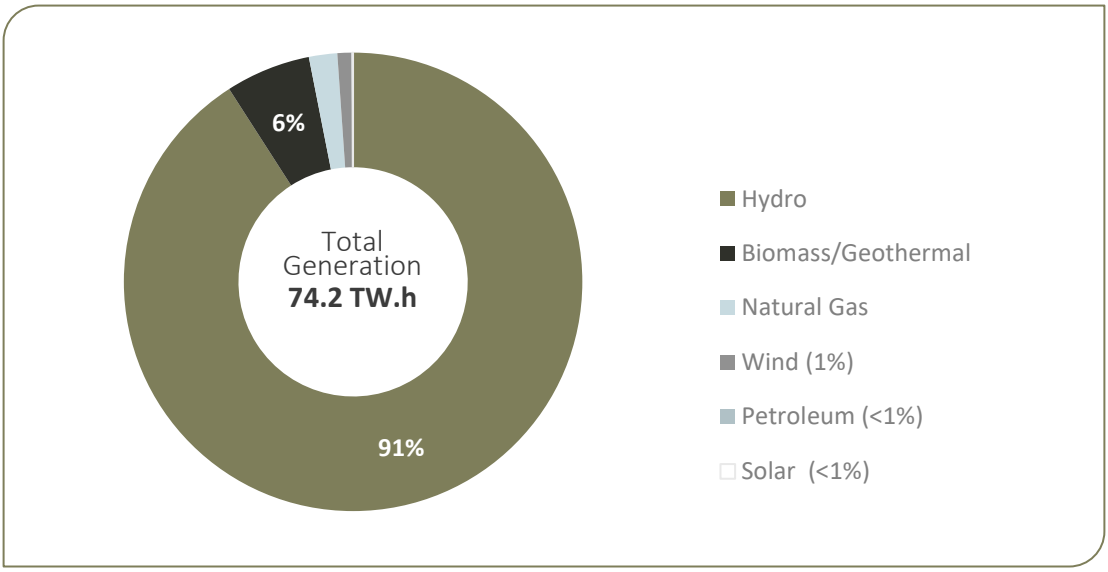
[154] (Independent Power Producers Society of Alberta , 2020)
[155] (Independent Power Producers Society of Alberta, 2020)
[156] (Independent Power Producers Society of Alberta , 2020)
[157] (Alberta's Industrial Heartland Association, n.d.)
[158] (Alberta's Industrial Heartland Association, n.d.)
[159] (Alberta's Industrial Heartland Association, 2021)

British Columbia

Market Type: Regulated
Population: 5,214,805[160]

FIGURE 21: BRITISH COLUMBIA ELECTRICITY GENERATION BY FUEL TYPE[161]



BC Hydro is a government-owned crown corporation and is the province's primary generator, transmitter, and distributor of electricity across British Columbia (BC). BC Hydro has a total generating capacity of 12,098 MW.[162] While BC Hydro generates the majority of the province's electricity, the corporation ensures that the electricity needs for BC are met and has 125 Electricity Purchase Agreements (EPA's) with IPP's, totaling 5,396 MW of capacity.[163] Electricity rates in BC are regulated by the British Columbia Utilities Commission, an independent agency of the government of British Columbia. The rate can vary depending on consumption. For the first

[160] (Statistics Canada, 2021)
[161] (Canadian Energy Regulator, 2021)
[162] (BC Hydro, n.d.)
[163] (BC Hydro, 2021)

675kw/h, the rate is 9.45 ¢/kW.h and if the consumption surpasses 675kw/h, the rate increases to 14.17 cents/kW.h.[164] BC Hydro owns 80,000 km of transmission and distribution lines.[165]

In 2014, the Provincial Government announced the development of the infamous 1,100 MW Site C[166] hydroelectric dam. At the time, the costs associated with building the dam were estimated to be $8.76 Billion, but since then the costs have more than doubled to over $16 billion dollars.[167] In February 2021, a technical report commissioned by the Provincial Government identified that cancelling the project would result in a sunk cost totaling over $10 Billion and would subsequently result in an increase in BC Hydro's rate by 26% or $216 per customer per year.[168] Site C has caused major disapproval by BC residents and furthermore, considering the significant capacity of the hydroelectric dam, BC Hydro is not expected to renew current PPA's with IPP's when contracts end as BC Hydro is expected to be at overcapacity in the short term because of the dam.

OPPORTUNITY

In September 2021, BC Hydro announced its electrification plan: A clean future powered by water.[169] The plan expects that economic diversification and an increase in demand in renewables will add 3,100 gigawatt hours of load[170]. To meet this load, BC Hydro will need change its position on IPP's as the Site C dam will not be enough to meet the forecasted demand. Clean Energy BC, an association that represents IPP's in BC, is attempting to position its members as a solution to the forecasted increased demand.[171]

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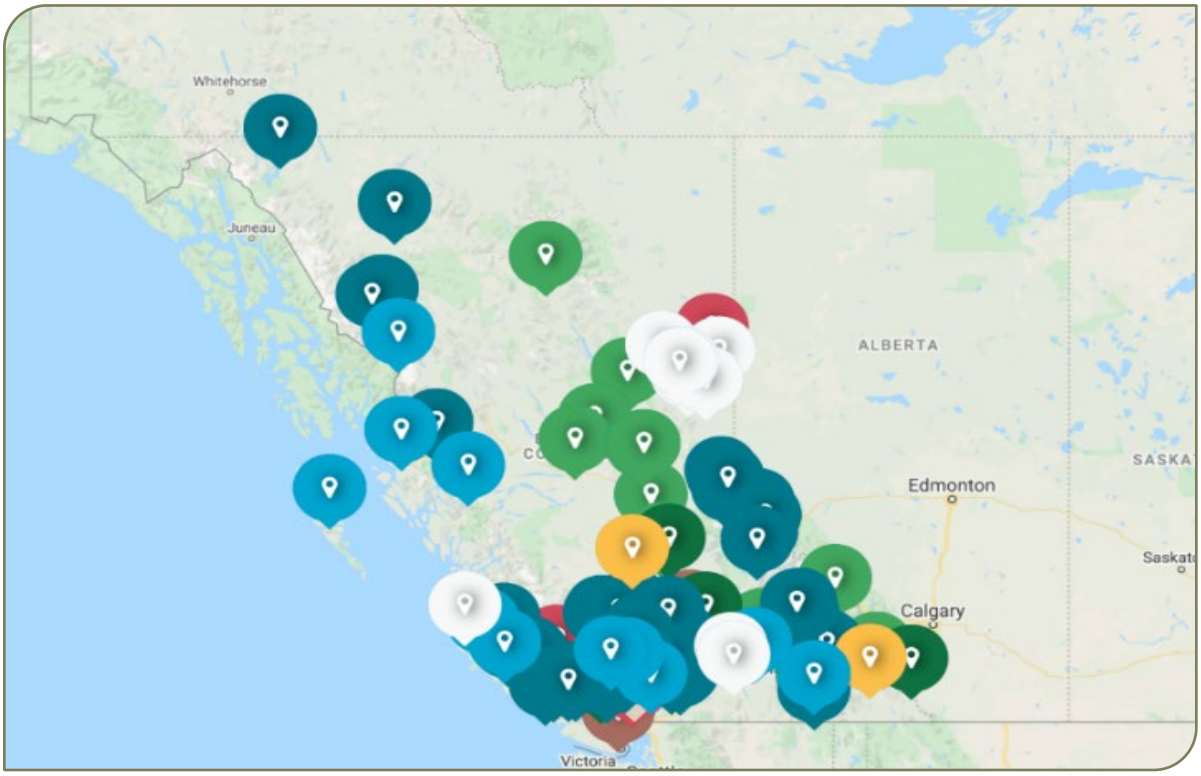
[164] (Canadian Energy Regulator, 2021)
[165] (BC Hydro, n.d.)
[166] (BC Hydro, 2017)
[167] (Andrew Kurjata, Meera Bains, 2021)
[168] (Andrew Kurjata, Meera Bains, 2021)
[169] (BC Hydro, 2021)
[170] (BC Hydro, 2021, p. p.2)
[171] (Clean Energy BC, 2021)

Clean Energy BC is a diverse association that caters to most clean energy sources, including wind, solar, geothermal, and hydro.[172] BC has numerous active clean energy projects represented by Clean Energy BC (see below map of current projects).[173] They are a leader in Indigenous relations within the province of BC and provide key events like the First Nations Energy Summit, which draws national participation. Membership benefits include networking opportunities that "facilitate industry growth and access to innovative technologies and approaches through collaboration with other associations".[174]

FIGURE 22: MAP OF CURRENT CLEAN ENERGY BC PROJECTS



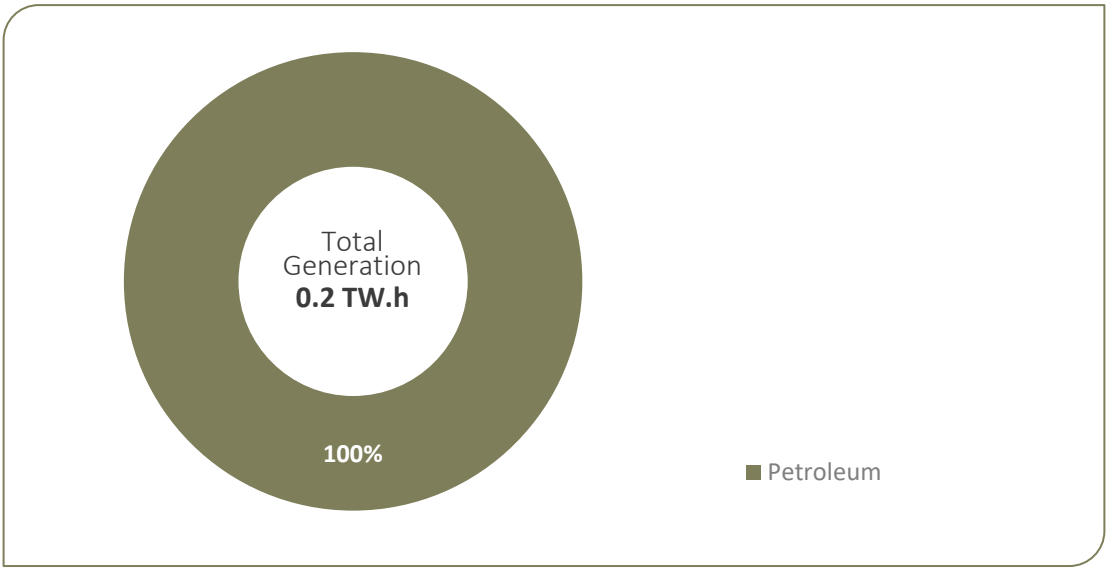
Source: cleanenergybc.org/current-projects/

[172] (Clean Energy BC, 2021)
[173] (Clean Energy BC, 2021)
[174] (Clean Energy BC, 2021)

Nunavut

Market Type: Regulated
Population: 39,403[175]

FIGURE 23: NUNAVUT ELECTRICITY GENERATION BY FUEL TYPE[176]



Qulliq Energy Corporation (QEC) is a government-owned company responsible for generation, transmission, and distribution within the territory. Nunavut does not have an electricity grid and instead relies on community-based power generation.[177] Due to its location, harsh weather and sparse communities, the territory is solely dependent on diesel generation. Qulliq Energy Corporation owns and operates 25 diesel power plants with a total capacity of 76,000 kW.[178] Electricity rates in Nunavut are largely location dependent and determined by Qulliq Energy Corporations Minister, Honorable Jeannie Ehaloak and through the recommendations from the Utility Rates Review Council. The non-subsidized rate of

[175] (Statistics Canada, 2021)
[176] (Canada Energy Regulator, 2021)
[177] (Canada Energy Regulator, 2021)
[178] (Qulliq Energy Corporation, n.d.)

electricity for consumers in in Nunavut is 29.28 ¢/kW.h.[179] and considering that QEC operates 25 stand-alone plants in 25 communities, the corporation does not own any transmission lines.[180]

OPPORTUNITY

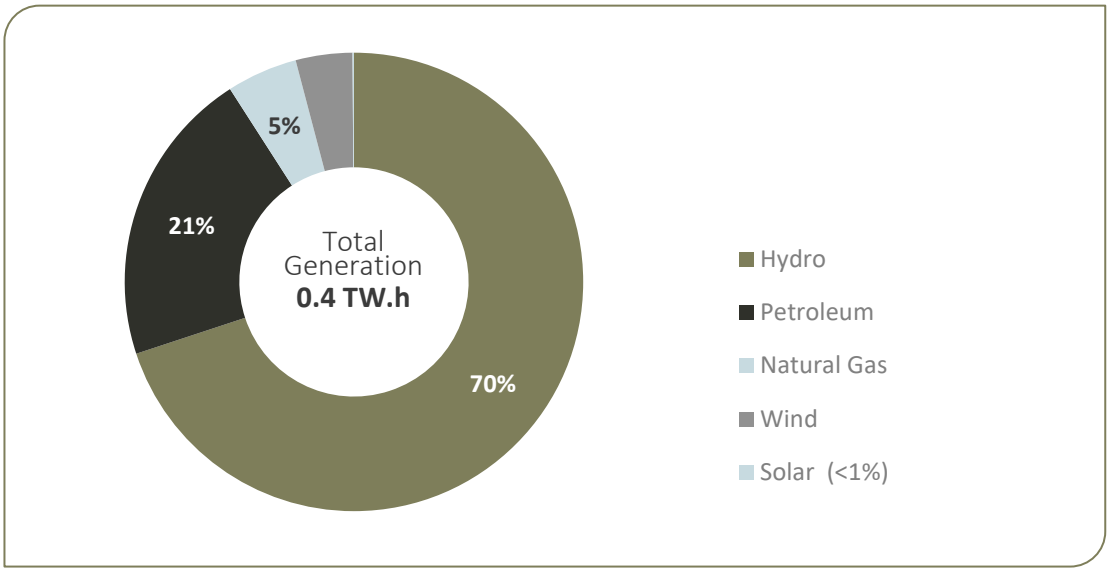
Indigenous communities in Nunavut rely on diesel as their only source of energy. In fact, Nunavut consumes 55 million liters of diesel annually.[181] A 2018 report from the World Wildlife Fund found that the government of Nunavut is spending $60.5 million annually on subsidizing diesel fuel.[182] As diesel is costly and produces significant greenhouse gas emissions, both the Government of Canada and the Government of Nunavut are looking for renewable energy solutions to reduce its dependence on diesel. In April 2021, the Government of Canada announced an investment of $7.6 million for community led clean energy projects in Nunavut.[183]

[179] (Canada Energy Regulator, 2021)
[180] (Qulliq Energy Corporation, n.d.)
[181] (Thomson, 2019)
[182] (World Wildlife Fund, 2021)
[183] (Government of Canada, 2021)

Northwest Territories

Market Type: Regulated
Population: 45,504[184]

FIGURE 24: NORTHWEST TERRITORIES ELECTRICITY GENERATION BY FUEL TYPE[185]



The Northwest Territory Power Corporation (NTPC) is responsible for much of the generation, transmission, and distribution in the Northwest Territories (NWT). NTPC is government owned, provides electricity to 43,000 residents, and owns a total of three hydroelectric facilities, 26 diesel plants, five solar arrays, one battery storage system and one natural gas plant for a total generating capacity of 133 MW.[186] It also owns 565km of transmission lines.[187] Electricity supplied to the cities of Yellowknife and Hay River is provided by Northland Utilities, which is a partnership between ATCO and 27 Indigenous communities connected through Denendeh

[184] (Statistics Canada, 2021)
[185] (Canada Energy Regulator, 2021)
[186] (Northwest Territoties Hydro Corporation, Northwest Territories Power Corporation, 2018-2019, p. p.4)
[187] (Northwest Territoties Hydro Corporation, Northwest Territories Power Corporation, 2018-2019, p. p.4)

Investments Inc. NWT electricity rates are determined by the NWT Public Utilities Board and current electricity rates for NTPC are set at 21.7 ¢/kW.h[188]

OPPORTUNITY

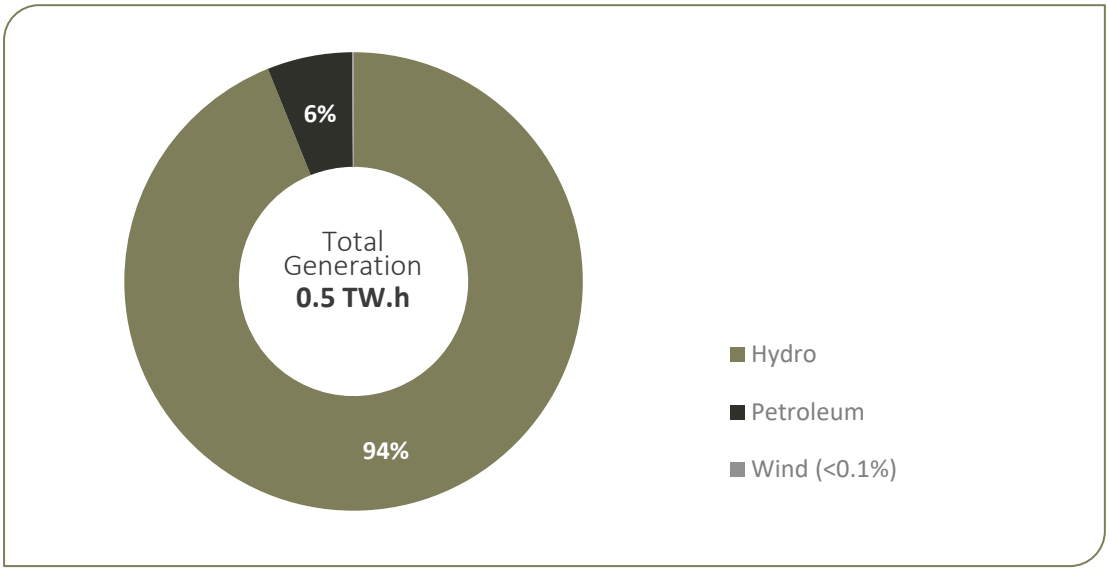
In 2018, the government of NWT released its 2030 energy strategy.[189] A priority included within this strategy is to reduce GHG emissions from electricity generation in diesel-powered communities by an average of 25%. According to the strategy, the government of NWT will find alternative renewable energy solutions which "might include wind, solar, mini-hydro, liquefied natural gas, geothermal, transmission lines, combined heat and power, energy storage, variable speed generators, more efficient generators, and other solutions as they become available."[190] In fact, in September 2020, the Government of Canada announced an $8 million dollar investment for eight community-led renewable energy projects to reduce NWT communities' dependence on fossil fuels.[191]

[188] (Northwest Territories, 2021)
[189] (Government of Northwest Territories, 2018, p. p.1)
[190] (Government of Northwest Territories, 2018, p. p.20)
[191] (Government of Canada, 2020)

Yukon

Market Type: Regulated
Population: 42,986[192]

FIGURE 25: YUKON ELECTRICITY GENERATION BY FUEL TYPE[193]



Yukon Energy is a government of Yukon crown corporation responsible for most of the generation and transmission of the electricity within the province. Yukon Energy has a total capacity of 133 MW[194] and sells its power to ATCO Electric Yukon, a private company, who distributes most of the electricity to Yukon residents.[195] ATCO Electric Yukon and Yukon Energy are regulated by the Yukon Utilities Board and current electricity rates in the Yukon are 12.14¢/kW.h.[196] Yukon energy owns 1,100 km of transmission lines.

[192] (Statistics Canada, 2021)
[193] (Canada Energy Regulator, 2021)
[194] (Government of Yukon, 2018)
[195] (Yukon Energy, 2020, p. p.2)
[196] (Canada Energy Regulator, 2021)

OPPORTUNITY

In 2019, the Yukon opened power generation to IPPs for wind, hydro, geothermal, biomass and solar energy.[197] Power from IPPs must be sold to either the Yukon Energy Corporation or to ATCO Electrical Yukon. In line with its openness to work with IPP's, the government of the Yukon released *Our Clean Future: A Yukon strategy for climate change, energy and a green economy.*[198] As part of that strategy, the government of the Yukon is planning to have "97% of the electricity on Yukon's main electricity grid to come from renewables."[199]

[197] (Government of Yukon, 2018, p. p.1)
[198] (Government of Yukon, 2020)
[199] (Government of Yukon, 2020)

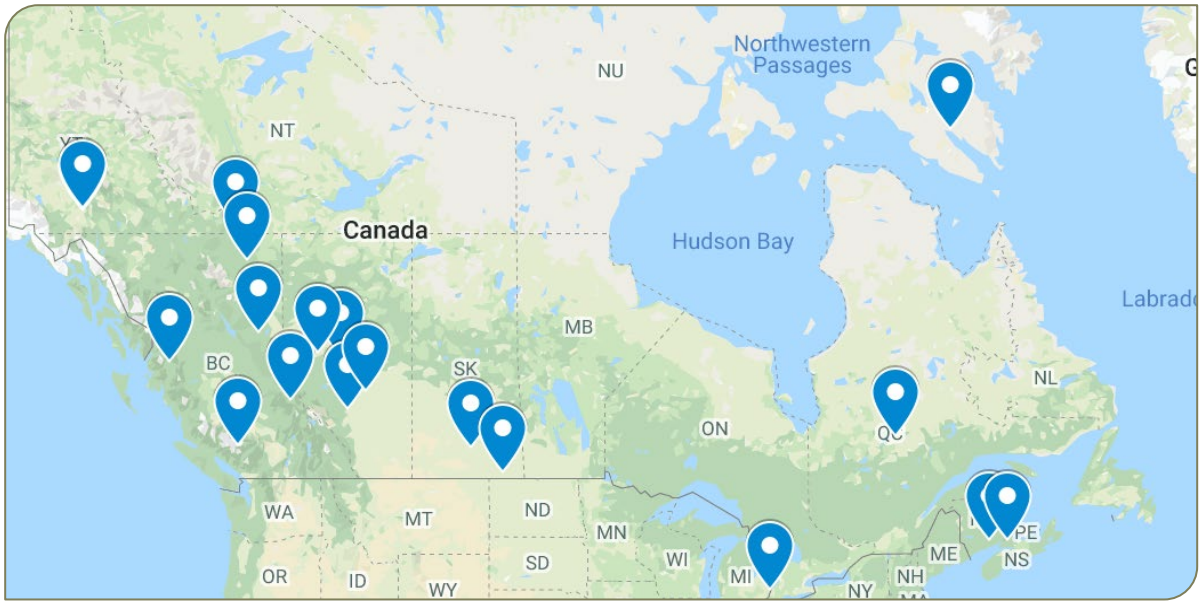
Technologies & Competitor Analysis

Photo by JP Valery on Unsplash

Geothermal

Geothermal energy is a relatively new technology within Canada and is still an expensive alternative to traditional power generation. The key incumbent players in geothermal energy production include Eavor Technologies (Alberta), DEEP Earth Energy (Saskatchewan), FutEra Power, a subsidiary of Razor energy Corp. (Alberta)[200], and Terrapin Geothermics (Alberta)[201]. Western Canada is the most promising area for exploration and future geothermal development as it is situated on the Pacific Ring of Fire.[202] The highest feasibility of success currently exists in Alberta and the Northwest Territories, with future feasibility along coastal locations in British Columbia and the Yukon Territory. The map below shows existing geothermal sites and feasibility studies that exist in Canada.

FIGURE 26: CURRENT GEOTHERMAL PROJECT DEVELOPMENTS[203]



Source: cangea.ca/project-map.html

[200] (Christopher W. McLelland, Viviana Berkman, Neil Bunrside, 2021)
[201] (Ogden, 2020)
[202] (Canada Energy Regulator, 2021)
[203] (Canadian Geothermal Energy Association (CanGEA), 2021)

In 2020, Alberta passed a Geothermal Resource Development Act that provides a regulatory framework to reduce risk and increase the attractiveness for new investment to enter the Alberta market. Prior to this act, geothermal development in Alberta was completed on a case-by-case basis with little interest, although there is significant geothermal resource potential in the province. [204]

The Government of Canada recently allocated $20 million to reduce diesel dependencies in remote northern communities.[205] While the primary focus in these communities has been on wind and hydro power generation, there is substantial opportunity in the area for geothermal energy development. The Northwest Territories have seen significant oil and gas exploration, with an existing 1,500 wells that can be refurbished to provide district heating and electricity generation.[206] A pilot project in Fort Liard, Northwest Territories, was developed to show the potential of geothermal power in Northern communities.

In 2017, SaskPower and a geothermal developer, Deep Earth Energy Production (DEEP) signed a Power Purchase Agreement with the goal to produce a geothermal facility in Saskatchewan. Similar to its Alberta counterparts, this facility will leverage existing oil and gas drilling technologies to develop geothermal power. To date, this facility is still in development, but has a long-term goal to produce low emission energy across the province.[207] While there is some development in Saskatchewan, government-owned, SaskPower, regulates the energy production in the province, which poses as a barrier to entry for Business Iceland.

The Canadian Geothermal Energy Association (CanGEA) is an option for geothermal focused companies looking to enter the Canadian geothermal energy market. Membershi includes opportunities to present at events, network with key players, share business insights.[208] CanGEA represents several successful geothermal

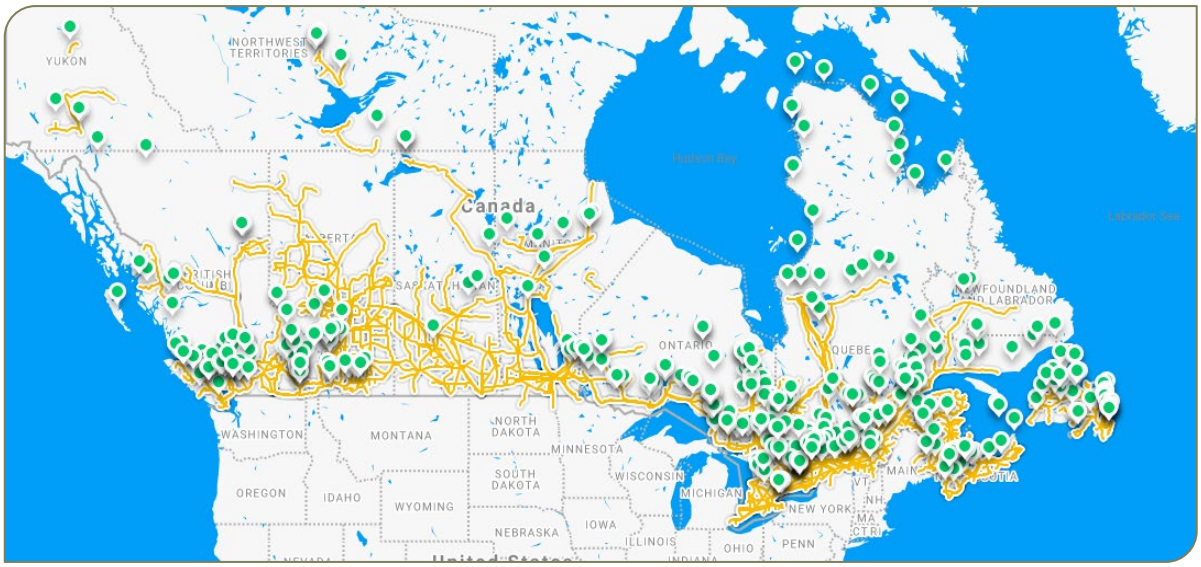
[204] (Duncanson, Kennedy, & Baker, 2020)
[205] (Government of Canada, 2019)
[206] (Patel & Dowdell, 2019)
[207] (Deep Earth Energy Production, 2021)
[208] (Canadian Geothermal Energy Association, 2021)

projects or companies looking to enter the Canadian geothermal market, the knowledge and exposure that can be gained through this association could help.[209]

Hydropower

In Canada, hydropower represents 60% of the country's total electricity generation.[210] Existing hydropower in Canada is widely accepted and will be paramount to Canada reaching its 2050 Net Zero objectives.[211] However, hydropower often faces public backlash when constructing new major hydropower facilities. Hydropower in Canada is dominated by provincially owned corporations, such as Hydro Québec, BC Hydro, Nalcor, Manitoba Hydro and others.[212]

FIGURE 27: CANADIAN HYDROPOWER PROJECTS[213]



Source: hydro.canadiangeographic.ca/

[209] (Canadian Geothermal Energy Association, 2021)
[210] (WaterPower Canada, 2021)
[211] (Government of Canada, 2021)
[212] (Market Line, 2020, p. p.3)
[213] (Waterpower Canada, 2016)

IPP's such as Brookfield Renewable, BluEarth Renewables, Innergex, Boralex, and Fortis are owners, developers, and operators of hydropower facilities in Canada. In most cases, these facilities were either purchased previously from Crown Corporations who were looking for capital or developed as a result of a call to power from Provincial utilities. Hydropower in Canada has been a source of electricity for more than a hundred years. These facilities rarely change hands because of their immense value and the policy emphasis on renewable energy today.

WaterPower Canada is another valuable industry association that Business Iceland could consider joining as it represents the national interests of 95% of the hydro capacity in Canada, and 60% of the total electricity generated in Canada.[214] The primary benefit of membership with WaterPower is to access the organizations established community to help in developing partnerships and new project opportunities.[215] Members also get access to exclusive research, reports, surveys, and data that is helpful to succeed in the Canadian hydro market.[216] Additionally, WaterPower Canada also holds popular conferences and events which in turn provide excellent networking and promotional opportunities.[217] For companies that focus on hydro power, this is an excellent organization to be included. Membership is costly, but there are distinct categories that may suit specific needs.

Major government-owned utilities in Canada, such as Hydro Quebec, Manitoba Hydro, SaskPower, BC Hydro and Ontario Power Generation (OPG), tend to specialize in large hydropower (and nuclear in the case of OPG). Since wind development and wind operation are not part of these utilities' expertise, they tend to outsource wind projects via calls to power. As previously suggested, Hydro Quebec is currently working on a call to power for 300 MW of wind energy.[218] These calls to power represent opportunities for new market entrants into Canada.

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[214] (WaterPower Canada , 2021)
[215] (WaterPower Canada, 2021)
[216] (WaterPower Canada, 2021)
[217] (WaterPower Canada, 2021)
[218] (Gazette Officielle du Québec, 2021)

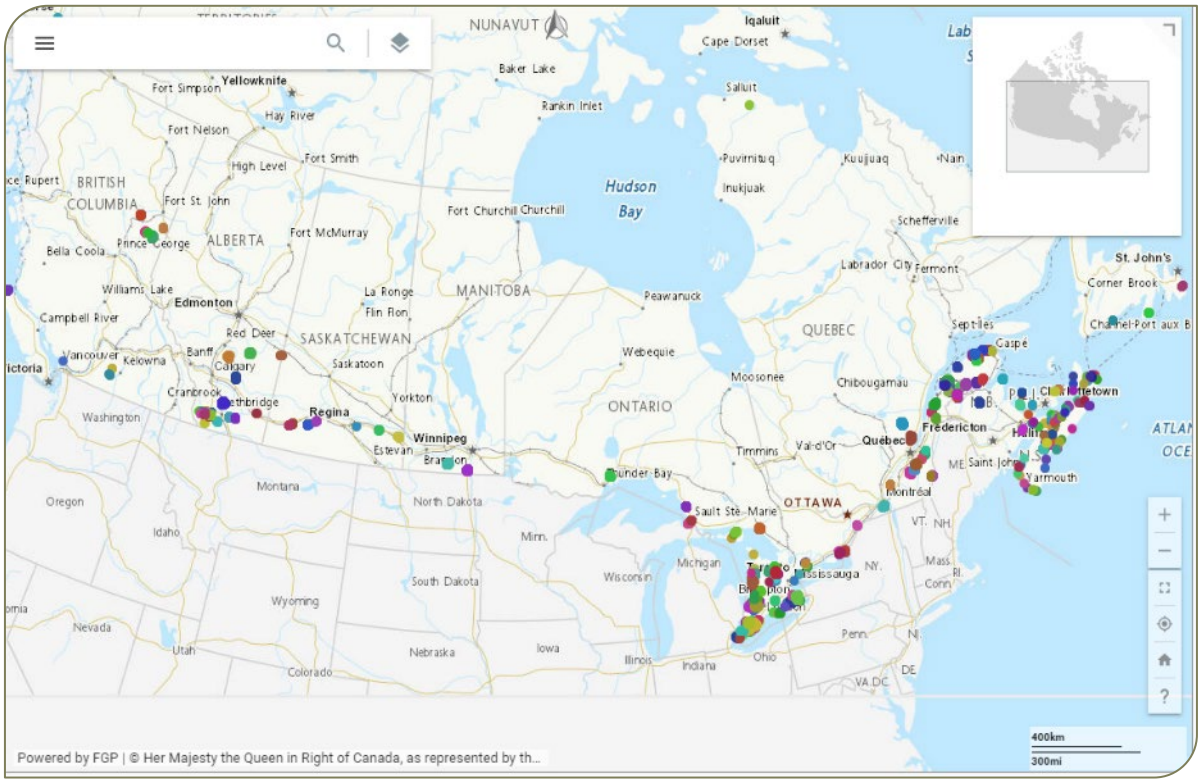
Wind Power

While still in relative infancy, wind power does contribute approximately 5% to Canada's electricity production through multiple wind farms in operation across Canada. [219] Wind generation became increasingly popular in Canada in the early 2000's, when the federal government at the time introduced the Wind Power Production Incentive Program[220] until it ended in 2007. As indicated by the Government of Canada, the program "was set up to help establish wind energy in Canada by providing a financial incentive of about one cent per kilowatt-hour produced from the installation of up to 1,000 megawatts (MW) of new wind power capacity in Canada by 2007."[221] According to the Canadian Renewable Energy Association, and depicted in Figure 26, the largest wind farm in Canada is the Blackspring Ridge Wind Project[222], which totals 300 MW in generation and is co-owned by Enbridge and EDF Renewables.

Furthermore, wind power as a smaller, newer energy production source when compared to existing, non-renewal energy sources does create opportunity for new entrants and partnerships with existing conglomerates – like Suncor, Cenovus, and Imperial Oil – who must pivot away from traditional green-house-gas emitting energy sources. These existing players will be looking for ways to grow quickly and harness wind power predictably.

[219] (IBISWorld, 2021, p. p.17)
[220] (Government of Canada, 2016)
[221] (Government of Canada, 2016)
[222] (EDF Renewables North America, 2021)

FIGURE 28: CANADIAN WIND TURBINE DATABASE[223]



Source: search.open.canada.ca/openmap/79fdad93-9025-49ad-ba16-c26d718cc070

In addition, the Government of Canada, through its CanmetENERGY[224] research center, is exploring wind energy solutions for harsh conditions, like in northern Canada. This research supports the Government of Canada's objective to reduce northern communities' dependence on diesel.

The main competitors in the wind energy sector in Canada are similar to those in hydropower, including Brookfield Renewable, Innergex, EDF Renewables, Northland Power, and BluEarth Renewables.

[223] (Government of Canada, n.d.)
[224] (Government of Canada, 2021)

A CASE FOR LAKI POWER

As a powerline surveillance and information technology supplier, Laki Power should consider Alberta and Ontario as markets for potential entry and minority, joint-venture opportunities. The Canadian electricity sector will spend $1.7T between 2020 and 2050 to upgrade its powerline infrastructure.[208] Coupled with the fact that Ontario and Alberta energy markets are two examples of provinces who have undergone transmission line "unbundling" which allows access to energy generators[209]. Laki Power could benefit from developing Canadian case studies with smaller energy producers in Alberta or Ontario – companies that need the competitive intelligence and data to save on cost which Laki Power's equipment provides – in order to scale and expand its entry strategy in the long run. Partnering with Indigenous communities and smaller joint-venture products could be a good first step.

Potential Partnership Synergies

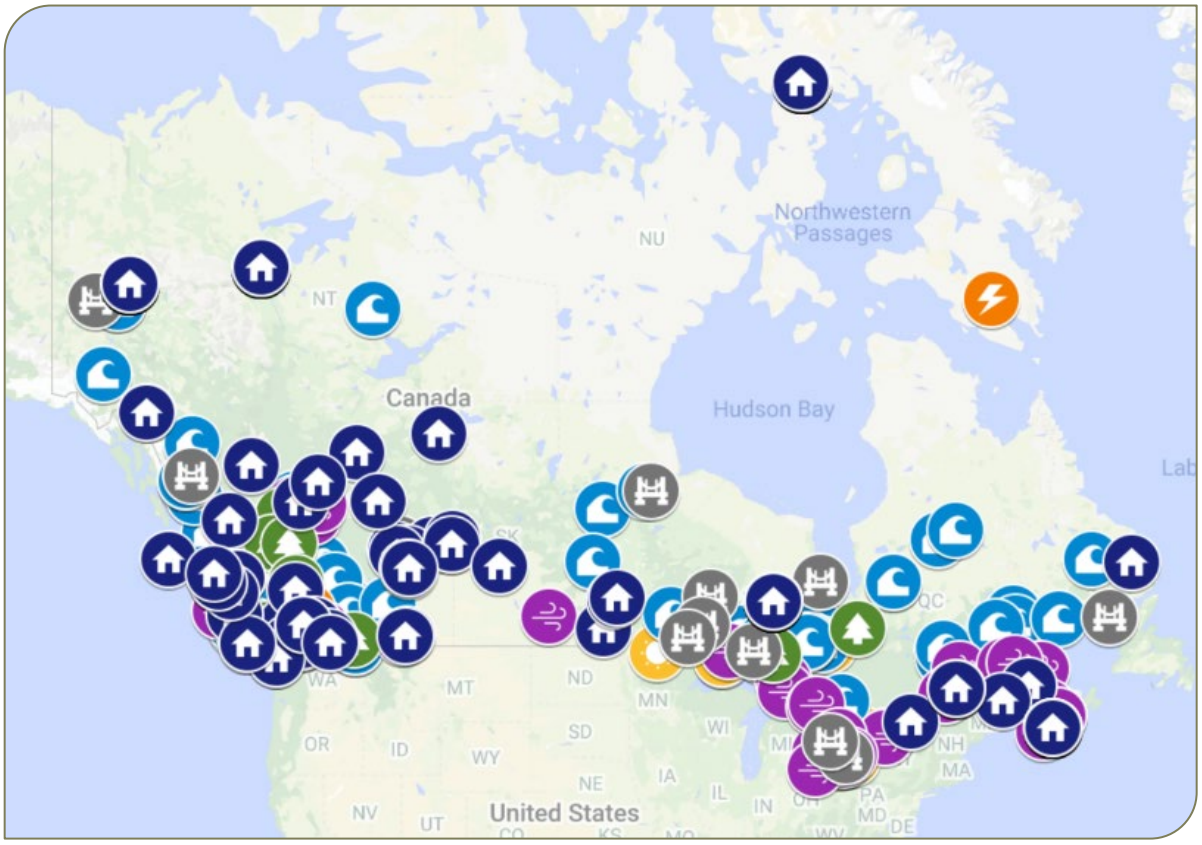
Photo by Tandem X Visuals on Unsplash

The Canadian clean energy market offers partnership opportunities that may accelerate entry for Icelandic companies. With public demand for clean energy and government funding on the rise, this is an excellent time to establish partnerships in this growing market. Partnership opportunities, while advantageous, can be complex and take time to establish.

A leading partnership path to the clean energy market in Canada can be developed through Indigenous partnerships. However, establishing these partnerships is incredibly competitive with companies vying for elusive opportunities developed through lengthy relationships with specific First Nations groups. Developing substantive relationships with Indigenous communities to market technology and sign partnerships can be challenging. There are renewable energy associations specific to Canada that can be used as pathways for facilitating this relationship building. With close to 200 clean energy projects over 1 MW in Canada that have had Indigenous involvement (see below map of ICE projects) and with the heavy funding directed towards both Indigenous communities and clean energy, there is a strong future for Indigenous partnered clean energy projects.[225]

[225] (Indigenous Clean Energy, 2021)

FIGURE 29: MAP OF ICE CLEAN ENERGY PROJECTS



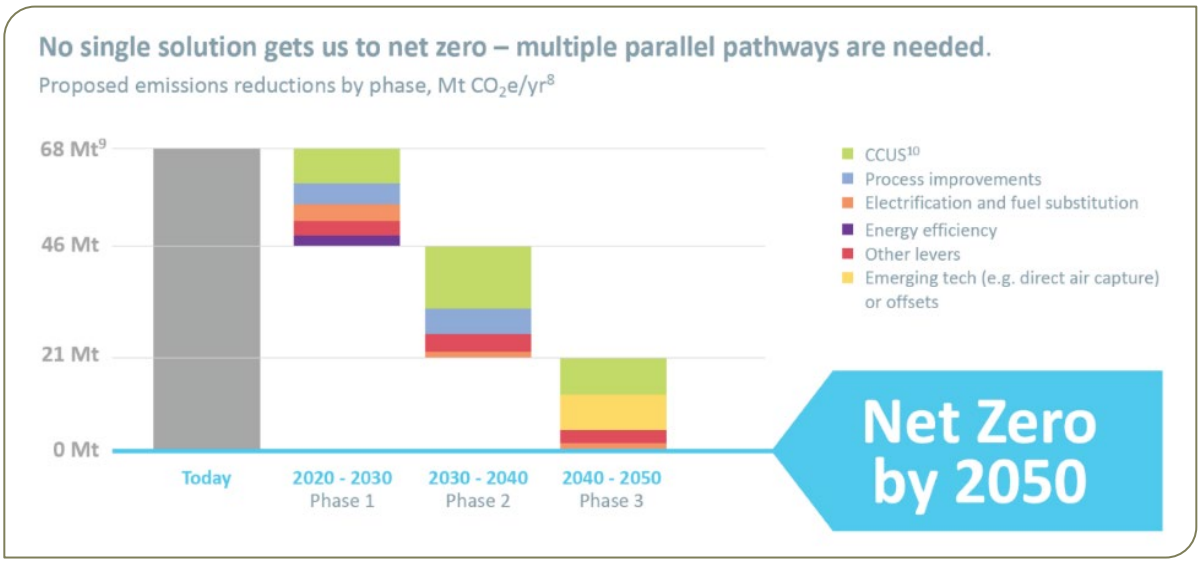
Source: indigenouscleanenergy.com/ice-projects/

Another trending partnership opportunity is with Canadian energy companies who have historically focused on oil and gas and are now diversifying their product mix to include clean energy solutions or looking to reduce their GHG emissions. Canadian oil and gas firms are collaborating with the federal and Alberta governments in a shared vision called the Oil Sands Pathways to Net Zero. This three phased initiative aims to see net zero emissions from all oil sands operation by 2050 (see below chart depicting path to Net Zero).[226] While the vision is "anchored by a major carbon capture utilization and storage (CCUS) system and transportation line"[227], to achieve success, companies will need to leverage many targeted

[226] (Oilsands Pathways to Net Zero, 2021)
[227] (Oilsands Pathways to Net Zero, 2021)

solutions. Canadian Natural Resources Limited (CNRL), Cenovus Energy, Conoco Phillips Canada, Imperial, MEG Energy, and Suncor are the key players in Oil Sands Pathways to Net Zero initiative and it is important to note that many of these projects also rely on Indigenous involvement.[228]

FIGURE 30: OIL SANDS PATHWAYS TO NET ZERO



Source: oilsandspathways.ca/the-pathways-vision/

While some energy producers build their own clean energy solutions or directly partner with organizations, most companies are following the Canadian Indigenous focus and purchasing power from Indigenous groups who have partnered with clean energy organizations. In their reported ESG targets, Canadian firms are focusing on reducing their GHG emissions and developing Indigenous relationships. Initiatives that will address both focus areas are seen as the most value-add solutions and are prioritized by firms. An example of this can be seen in MEG Energy's 2021 ESG priorities[229] (see below MEG Priority graphic).

[228] (Oilsands Pathways to Net Zero, 2021)
[229] (MEG Energy, 2021)

FIGURE 31: MEG ENERGY'S 2021 PRIORITY ESG TARGETS

Source: megenergy.com/sustainability/our-business-model-resilience

Cenovus Energy is a Canadian-based multinational energy company. While the company is focused on oil, natural gas, and natural gas liquids (NGLs) as energy product offerings, they are committed to net zero by 2050.[230] In July 2021, Cenovus announced a deal to purchase 150 MW of solar power from Cold Lake First Nations, who partnered with Elemental Energy Inc. to construct the infrastructure.[231] This illustrates the importance of Indigenous Partnerships for entering the Canadian market. Other companies in the Oil Sands Pathways to Net Zero initiative, such as Conoco Phillips, are not actively pursuing clean energy projects, but are "open to developing and using renewable energy as a component of our portfolio of energy offerings, as and when these technologies can be deployed in a sustainable manner for our stakeholders".[232]

There may be opportunities for joint ventures with a company like Conoco Phillips that has market access in Canada but does not have the technology in place to build clean energy projects. Another similar company is Canadian Natural Resources Limited (CNRL), which is more aggressively pursuing clean energy compared to Conoco Phillips. CNRL lists renewable energy sources as part of their GHG emissions reduction program, stating "Canadian Natural is exploring opportunities in biodiesel, geothermal, solar and wind".[233] As its core offering will continue to be natural gas,

[230] (Cenovus Energy, 2021)
[231] (Cenovus Energy, 2021)
[232] (Conoco Phillips, 2021)
[233] (Canadian Natural Resources Limited, 2021)

crude oil and NGLs, the best option for a clean energy partnership with CNRL might be through selling power to them. This opportunity to sell power to CNRL will only be realized if an Icelandic entrant partnered with an Indigenous group to build a clean energy generation facility in Alberta.

Suncor is a Canadian integrated energy producer who has historically focused on oil sands production. In recent years, they have added "low-carbon power" to their core portfolio through four partnership wind projects, including the recent Adelaide Wind Power Project partnership with the Aamjiwnaang First Nation. In addition to the 100 MW of generating capacity from their partnership projects, Suncor will be completing phase two of their 200 MW Forty Mile project.[234] While this project indicates that Suncor is not a good partner for wind technology today, their continued focus on supplying low-carbon power might be an opportunity for other clean energy partnerships.[235] It also further highlights the benefits of partnering with First Nations to build market access and accelerate clean energy solutions.

Imperial Oil (Imperial) is also a member of the Oil Sands Pathways to Net Zero initiative, although they appear to be primarily focused on carbon capture and process improvement,[236] which may be a common theme in Alberta based on the current Oilsands Pathway to Net Zero focus on CCUS[237]. While this might appear to be a barrier to market entry, there also might be an opportunity to develop early partnerships with Canadian energy companies that have not yet made initial investments into clean energy offerings or power purchases. Again, the approach most likely to be successful is through an Indigenous partnered initiative.

There are seven key players in the Oil Sands Pathways to Net Zero initiative. However, many other major non-oil sands Canadian firms like Enbridge,

[234] (Suncor, 2021)
[235] (Suncor, 2021)
[236] (Imperial Oil, 2021)
[237] (Oilsands Pathways to Net Zero, 2021)

TC Energy, and Pembina are also increasing their clean energy mix.[238] Enbridge is a leader in clean energy, with wind farms, solar operations, waste to heat facilities, a power transmission project, and a hydroelectric facility all located in Canada[239]. It should also be noted that they have many other renewable and clean energy projects in other countries, including a geothermal project in the United States.[240] All these projects were completed through partnerships. While this indicates that Enbridge is already well established, companies like TC Energy, who are "seeking low-carbon energy sources to support operations"[241] could be interested in partnerships to support their ESG strategic goals.

These are just a few of many energy companies in Canada that are moving towards a more sustainable future and achieving net zero by 2050. The mining, quarrying, and oil and gas extraction industry is the third largest industry by GDP in Canada.[242] With most companies adopting stringent ESG targets that include both GHG reductions and increases in Indigenous collaboration and counsel, there is an increased demand trend for clean energy products that will continue to grow well into the foreseeable future.

[238] (Oilsands Pathways to Net Zero, 2021)
[239] (Enbridge, 2021)
[240] (Enbridge, 2021)
[241] (TC Energy, 2021)
[242] (Statista, 2021)

Associations

Photo by Karsten Wurth on Unsplash

There is broad clean energy representation from associations across Canada. Memberships in these organizations can help to establish the knowledge and key relations needed to succeed in the Canadian clean energy market. Each association tries to cater to a different segment. However, there is some overlap, so costs can be reduced by aligning memberships to strategic priorities. Many of these associations offer incredible networking, knowledge sharing, and promotion opportunities. Most also offer shared professional services for their members. Many of these associations play a vital role in lobbying provincial and federal governments and play critical roles in the future of clean energy in Canada. Highlighted below are a few key opportunities.

FIGURE 32: EXAMPLES OF RELEVANT INDUSTRY ASSOCIATIONS THAT MAY BE OF BENEFIT TO JOIN

Association	Region	Indigenous Presence
Alberta Industrial Heartland Association	AB	Low
Association of Power Producers of Ontario	ON	Low
Association québécoise de la production d'énergie renouvelable	QC	Low
Business Renewables Centre Canada	National	Low
Canadian Renewable Energy Association	National	Low
Canadian Electricity Association	National	Low
Canadian Hydrogen and Fuel Cell Association	National	Low
Canadian Geothermal Energy Association	National	Low
Clean Energy British Columbia	BC	Medium

FEDERAL ASSOCIATIONS

The Canadian Renewable Energy Association (CanREA) is a nationally connected group focused on wind and solar energy as well as energy storage.[243] While membership prices may be at a premium, CanREA offers sponsorship and exhibitor opportunities at their events. The organization is designed to appeal to a broad spectrum of companies, from "industry leaders looking to solidify their position atop of the market, to emerging companies looking to make waves and gain market share, and new companies trying to break onto the scene and connect with new customers".[244] CanREA hosts numerous events in various locations across the country annually. While membership in this association has many appealing benefits like knowledge sharing, profile and brand strengthening, and cost saving programs[245], it should be noted that there is no focus on Indigenous partnership opportunities, which is what limits many companies from progressing with Canada's go forward focus on Indigenous inclusion.

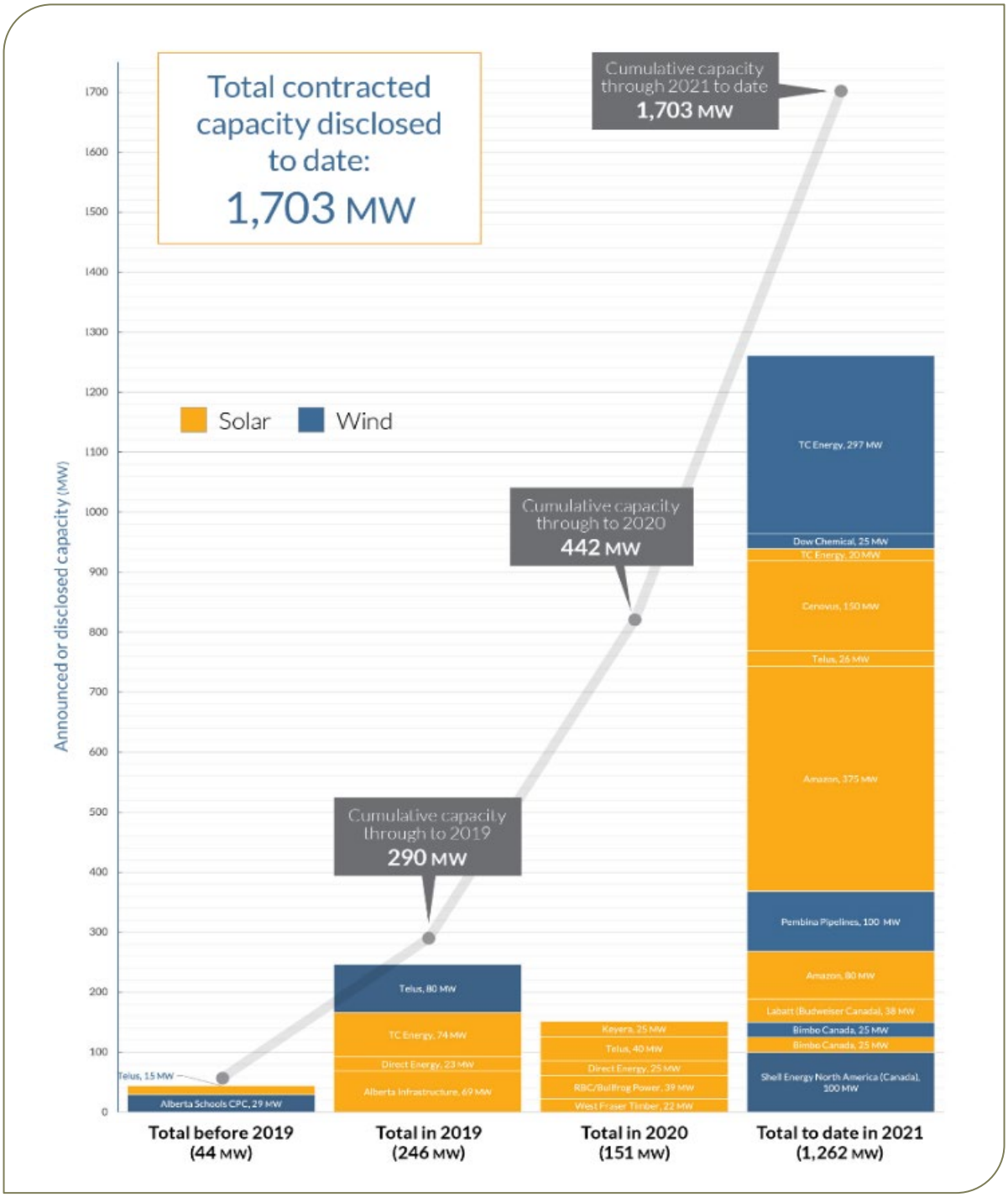
For hydrogen and fuel cell companies, the Canadian Hydrogen and Fuel Cell Association (CHFCA) is an excellent resource. They provide members with valuable networking and market development opportunities.[246] The CFHCA also hosts industry leading events and advocates for advancing the use of clean hydrogen and fuel cell technologies.[247] The partnerships that have formed through the CHFCA have resulted in many successful projects throughout the organizations 40 years of experience.[248]

[243] (Canadian Renewable Energy Association, 2021)
[244] (Canadian Renewable Energy Association , 2021)
[245] (Canadian Renewable Energy Association, 2021)
[246] (Canadian Hydrogen and Fuel Cell Association , 2021)
[247] (Canadian Hydrogen and Fuel Cell Association , 2021)
[248] (Canadian Hydrogen and Fuel Cell Association , 2021)

Business Renewables Centre Canada is geared towards acting as a "modern marketplace where corporations and institutions can learn how to buy renewable energy directly from developers".[249] While catered more towards energy buyers or energy sellers (organizations with existing projects), membership in this association could be of benefit for organizations looking to enter the Canadian market - especially through partnership agreements. In the first three quarters of 2021, Business Renewables Centre Canada has been instrumental in 1,262 MW of contracted capacity.[250] This is a large step from the 2020 total of 151 MW and demonstrates the growth in the sector (see below capacity chart) and this association.[251] A highlight of membership in this association is the 'Bi-monthly Buyers Call'.[252] During this call, there is an excellent opportunity to gain knowledge, network, collaborate, and to share and promote technologies.

[249] (Business Renewables Centre Canada , 2021)
[250] (Business Renewables Centre Canada, 2021)
[251] (Business Renewables Centre Canada, 2021)
[252] (Business Renewables Centre Canada , 2021)

FIGURE 33: BUSINESS RENEWABLES CENTRE CANADA CORPORATE RENEWABLE ENERGY DEALS IN CANADA (Q3 2021)



f Source: businessrenewables.ca/deal-tracker

Recommendations

Photo by Ian Wagg on Unsplash

The below listed recommendations should not be considered a sequence of events and do not need to be completed independently of one another. Instead, consideration for several areas of interest and strategic plans should be underway congruently. To summarize what events should take place as Business Iceland and their partners expand in the Canadian market, refer the "Steps for Expanded Development in Canada" following this section. These steps are provided in a recommended order where Business Iceland will recognize the most success.

RECOMMENDATION ONE

Alberta

Business Iceland should explore geothermal opportunities in Alberta. Alberta is home to the world's fourth largest oil reserves.[253] The oil sands industry emits approximately 70 Megatonnes (Mt) of GHG per year,[254] which accounts for approximately 11% of Canada's total GHG emissions.[255] At the same time, the Canadian Association of Petroleum Producers (CAPP) estimates that "Canadian oil and natural gas provided $105 billion to Canada's gross domestic product (GDP) in 2020 and supported more than 500,000 jobs across the country in 2019."[256]

As previously mentioned, Alberta recently passed Bill 36, which introduces a regulatory framework to develop geothermal energy in the province.[257] In addition, Alberta is the only province in Canada with a fully open electricity market, making it an ideal location for foreign companies to enter. Icelandic energy companies should start by joining or connecting with associations such as the Canadian Geothermal Association of Canada, Alberta's Industrial Heartland Association, and the Alberta Chamber of Commerce. These associations will connect Icelandic energy companies with industrial oil and gas partners who are looking to decarbonize.

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[253] (Government of Alberta, 2021)
[254] (Government of Alberta, 2021)
[255] (Canadian Association of Petroleum Producers, 2021)
[256] (Canadian Association of Petroleum Producers, 2021)
[257] (Legislative Assembly of Alberta, 2020)

Major Canadian oil and gas companies such as Suncor, Cenovus, and Enbridge have made Net Zero commitments for 2050 and will be looking for renewable energy solutions to help them achieve their decarbonization goals. Oil and gas production companies already have extensive geological knowledge and drilling expertise, which can be used to access optimal geothermal opportunities. Redirecting these companies' preexisting knowledge and resources is not only smart business – it will also preserve employment opportunities amid a generational shift to a low-carbon technology sector. While small geothermal projects in Alberta are currently under construction, there are no geothermal plants in operation, making it an untapped market to newcomers.

Finally, Icelandic geothermal energy companies should consult and engage with Indigenous communities to build local support for their projects. Associations like ICE, can help identify Indigenous partners. Building strong working relationships with Indigenous communities can also help Icelandic energy companies obtain government funding, including various programs identified in this report. These programs have the potential to reduce capital expenditures for new renewable energy development projects.

RECOMMENDATION TWO

Request for Proposals

Provincial and territorial governments are increasingly focused on electrifying their economies. Government-owned utilities are expected to issue RFPs to IPPs as the demand for renewable energy increases. This process has already started in Quebec with a recently announced 300 MW call to power for wind energy. Ontario is also expected to issue calls to power in the short to medium term as some of the province's major nuclear power plants are decommissioned. The decommissioning of these plants will create a capacity gap in Ontario.

Therefore, Icelandic energy companies should monitor and bid on these calls to power as appropriate. The associations identified herein are great resources for this type of information, as they keep their members up to date when new RFPs in all energy markets in Canada are issued. Specifically for Quebec, membership to AQPER will ensure Business Iceland is aware of new RFP's being issued.

RECOMMENDATION THREE

Northern Communities

Icelandic energy companies should set their sights on Canada's North. As previously mentioned, Canada's North is home to remote communities who rely on diesel as their main energy source. Not only is diesel fuel exceedingly expensive for these remote communities, but it also produces significant GHG emissions which challenges Canada's Net Zero ambitions. The government of Canada has provided significant funding opportunities for decarbonization solutions in these regions. Often, these remote communities are not connected to the provincial and/or the territorial grid, making it difficult to introduce renewable energy sources. In addition, these grids are expensive to operate.[258] Business Iceland should plan to meet with both the federal department of Crown-Indigenous Relations and Northern Affairs Canada and the department of Natural Resources, identified in this report, to express its interest in providing renewable energy solutions to Canada's North. The Government will be in a position to provide data and assist Business Iceland in connecting with communities in the North.

New market entrants in the Canadian North should expect high transportation costs due to the lack of infrastructure and can expect low electricity load due to the small size of these communities. These factors will result in initial low returns; however, the government funding can offset these returns and it is highly recommended that applications for these grants be submitted by Business Iceland or their partners.

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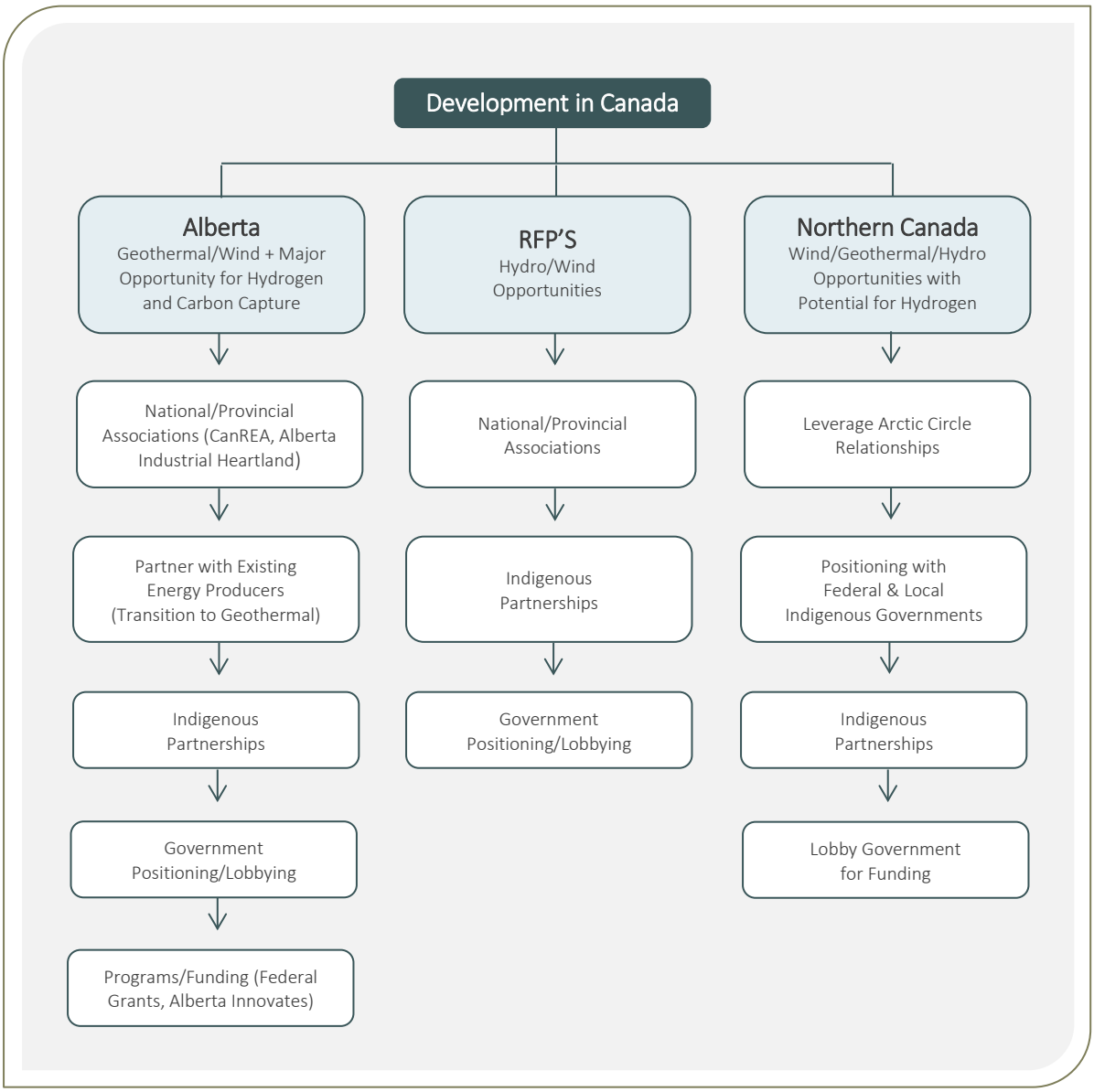
[258] (Standing Senate Committee on Energy, 2014, p. p.1)

Icelandic energy companies will reap the long-term benefits of having an established presence in this challenging but strategic region of Canada. Canada's North provides opportunity for small scale hydro, geothermal, and wind projects given the existing infrastructure and need for an energy transition. Given Iceland's involvement with the Arctic Circle and the Reykjavik Declaration, this is an opportunity for Iceland to leverage these existing relationships.

FIGURE 34: STEPS FOR EXPANDED DEVELOPMENT IN CANADA



Appendix A

Government Funding

CLEAN ENERGY FOR RURAL AND REMOTE COMMUNITIES: NATURAL RESOURCES CANADA[259]

$220 million over 6 years

Supporting clean infrastructure projects demonstrating innovative technologies to reduce diesel use, building capacity projects and forest-based biomass heating solutions.

NORTHERN RESPONSIBLE ENERGY APPROACH FOR COMMUNITY HEAT AND ELECTRICITY (NORTHERN REACHE)[260]

$53.5 million over 10 years

Deployment of renewable energy projects in northern communities through local renewable energy sources.

LOW CARBON ECONOMY FUND: ENVIRONMENT AND CLIMATE CHANGE CANADA (LCEF)[261]

$2 billion

Federal commitment to projects that will generate clean growth, reduce greenhouse gas emissions, and Canada meet Paris Agreement targets. Within this, funding will be provided at provincial levels to support green energy transitions. This fund provides an opportunity for Business Iceland to accessing monies available for provincial development in Alberta and northern Territories.

BUSINESS DEVELOPMENT BANK OF CANADA (BDC)[262]

Variable

Resource that will provide capital investment into small start-up companies. While BDC supports all types of growing businesses, they are currently focused on providing capital and advisory services to high potential cleantech firms. Given BDC's commitment to growing green energy opportunities in Canada, they are a funding resource for Business Iceland to consider when growing their presence in the Canadian market.

[259] (Government of Canada, 2020)
[260] (Government of Canada, 2020)
[261] (Government of Canada, 2021)
[262] (Business Development Bank of Canada, 2021)

ALBERTA INNOVATES[263]
Variable

Funding and Grants within Alberta for start-ups, growing companies, and new technology.

EMERGING RENEWABLE POWER PROGRAM (ERPP)[264]
Variable

The Emerging Renewable Power Program (ERPP) provides funding for companies that are established abroad buy not yet in Canada to execute projects in renewable energy that will promote the reduction of greenhouse gas emissions. While applications are currently closed for this program, funding has been provided to two major geothermal projects that are discussed in detail in the Technologies and Competitor Analysis of this report. In addition to this program, the Government of Canada has also committed $155 million to research and development through the Clean Growth Program. Business Iceland would benefit from this funding, by providing technology and expertise to support these geothermal projects.

EMISSIONS REDUCTION FUND[265]
$750 million

As Canada works toward achieving environmental commitments, the federal government has provided oil and gas companies with a $750 million Emissions Reduction Fund (ERF) to help them invest in greener solutions to energy production. As mentioned in the Recommendations section of this report, Business Iceland should approach existing oil and gas companies in Alberta to develop geothermal capabilities and utilize this available funding.

ENERGY INNOVATION PROGRAM[266]
Variable

The Energy Innovation Program (EIP) leads research and development for energy innovation and cleantech programming in Canada. EIP supports funding opportunities through the federal government to create partnerships in green energy and greenhouse gas emissions. Business Iceland can apply for funding through expressions of interest with EIP as they emerge in the Canadian market and support green energy initiatives.

SMART RENEWABLES AND ELECTRIFICATION PATHWAYS PROGRAM[267]
$964 million

Smart Renewables and Electrification Pathways Program (SREPs) will provide up to $964 million over four years to renewable energy projects in both established renewables (wind, small hydro) and emerging technologies (geothermal). Applications are still being accepted, providing Business Iceland an opportunity to apply for funding to support their entrance into the Canadian market through wind, hydro, and geothermal technologies.

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[263] (Alberta Innovates, 2021)
[264] (Government of Canada, 2021)
[265] (Government of Canada, 2021)
[266] (Government of Canada, 2021)
[267] (Government of Canada, 2021)

STRATEGIC PARTNERSHIPS INITIATIVE[268]

Variable

Strategic Partnerships Initiative (SPI) is a program in place to support Indigenous communities through coordinating efforts of several federal partners, including Environment and Climate Change Canada, Natural Resources Canada, and Innovation, Science and Economic Development Canada. Given that this fund is available to any organization or partnership, this program provides an opportunity for Business Iceland to collaboratively work with several federal departments that are responsible for green energy initiatives.

NET ZERO ACCELERATOR INITIATIVE[269]

$8 billion dollars

Federal Government to support projects that will reduce greenhouse gas emissions. These funds are available to Canadian organizations that are committed to decarbonization and green energy projects. This funding is only available to organizations that are incorporate in Canada, so Business Iceland will need to establish a Canadian presence before applying for this funding.

[268] (Government of Canada, 2021)
[269] (Government of Canada, 2021)

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