Survey Report:

First Nations and Renewable Energy Development in British Columbia

April 2017

prepared for
B.C. First Nations Clean Energy Working Group

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This survey was primarily conducted at the University of Victoria, on the territory of the W̱SÁNEĆ (Saanich), Lkwungen (Songhees), Wyomilth (Esquimalt) peoples of the Coast Salish Nation. Support for the survey was provided by Clean Energy BC and Indigenous and Northern Affairs Canada (INAC). The authors would like to express their gratitude to all of those who took time to complete the survey, to Annita McPhee for her essential contributions to data collection, and to Mike deWit for his editorial and formatting assistance.

Executive Summary

Although First Nations in British Columbia are active participants in the renewable energy sector, very little research has been conducted to assess the scope and implications of their involvement. Seeking to address this knowledge gap, the B.C. First Nations Clean Energy Working Group (FNCEWG) partnered with researchers at the University of Victoria's School of Environmental Studies to conduct a province-wide survey. Support for the survey was provided by Clean Energy BC and Indigenous and Northern Affairs Canada (INAC).

The research team attempted to contact 203 First Nations across the province from October 2016 to February 2017. In total, we received responses from 102 First Nations[1] and three Tribal Councils. The survey results presented in this report thus indicate the minimum level of First Nations' involvement in the renewable industry in B.C. at the beginning of 2017.

How are First Nations currently involved in renewable energy development?

- First Nations are substantially involved in the renewable energy sector, with 49 respondents indicating that they have operational projects or projects under development in all but one development region of the province.
- Thirty respondents indicated having 78 operational projects, with a total generating capacity of 1,836 MW. Run-of-river hydro made up 61% of these projects.
- Thirty-two respondents indicated 48 projects in planning or construction. Run-of-river hydro made up 36% of projects, solar (PV) made up 25% and geothermal and biomass made up 17% each.
- Of operational projects, 42 were selling power back to the grid through BC Hydro's Call for Power program. These projects make up the vast majority (96%) of the generating capacity of operational projects.

How would First Nations like to be involved in renewable energy development?

- First Nations are eager for more involvement. The survey results indicate 98% of respondents are already involved or wish to be involved in the sector.
- Seventy-seven respondents reported having nearly 250 projects under consideration. These include a greater variety of renewable energy technologies than existing projects: 36% run-of-river hydro, 26% solar (PV), 13% biomass, and 12% wind.
- Respondents with no prior involvement in the industry have 61% of projects under consideration.

1. We use the term First Nations throughout the report to refer to First Nation bands as specified by the Indian Act.

What barriers are First Nations experiencing in relation to renewable energy development?

- The majority (75%) of survey respondents indicated that they have projects in mind that they have not yet pursued or been able to pursue.
- Three primary barriers to entry and expansion were identified: lack of opportunity provided by BC Hydro programs (43 respondents), financing (41), and community readiness (40).

What are the potential impacts of a decelerated renewable energy industry?

- First Nations are not only benefitting economically from renewable energy development, but in myriad other ways including increased self-sufficiency, community capacity, and pride.
- If barriers are not addressed, there is a risk of losing momentum and potential for expanding First Nations' involvement in the industry, and its attendant benefits.

Table of Contents

List of Figures

1. Introduction

Although First Nations in British Columbia are active participants in the renewable energy sector, very little research has been conducted to assess the scope and implications of their involvement. Seeking to address this knowledge gap, the B.C. First Nations Clean Energy Working Group (FNCEWG) partnered with researchers at the University of Victoria's School of Environmental Studies to conduct a province-wide survey. Support for the survey was provided by Clean Energy BC and Indigenous and Northern Affairs Canada (INAC).

The survey asked respondents whether they were involved or interested in being involved in the industry, whether they had projects in operation or development, and whether they wished to be further involved. It also asked respondents to identify barriers to involvement and capacity building activities to date.

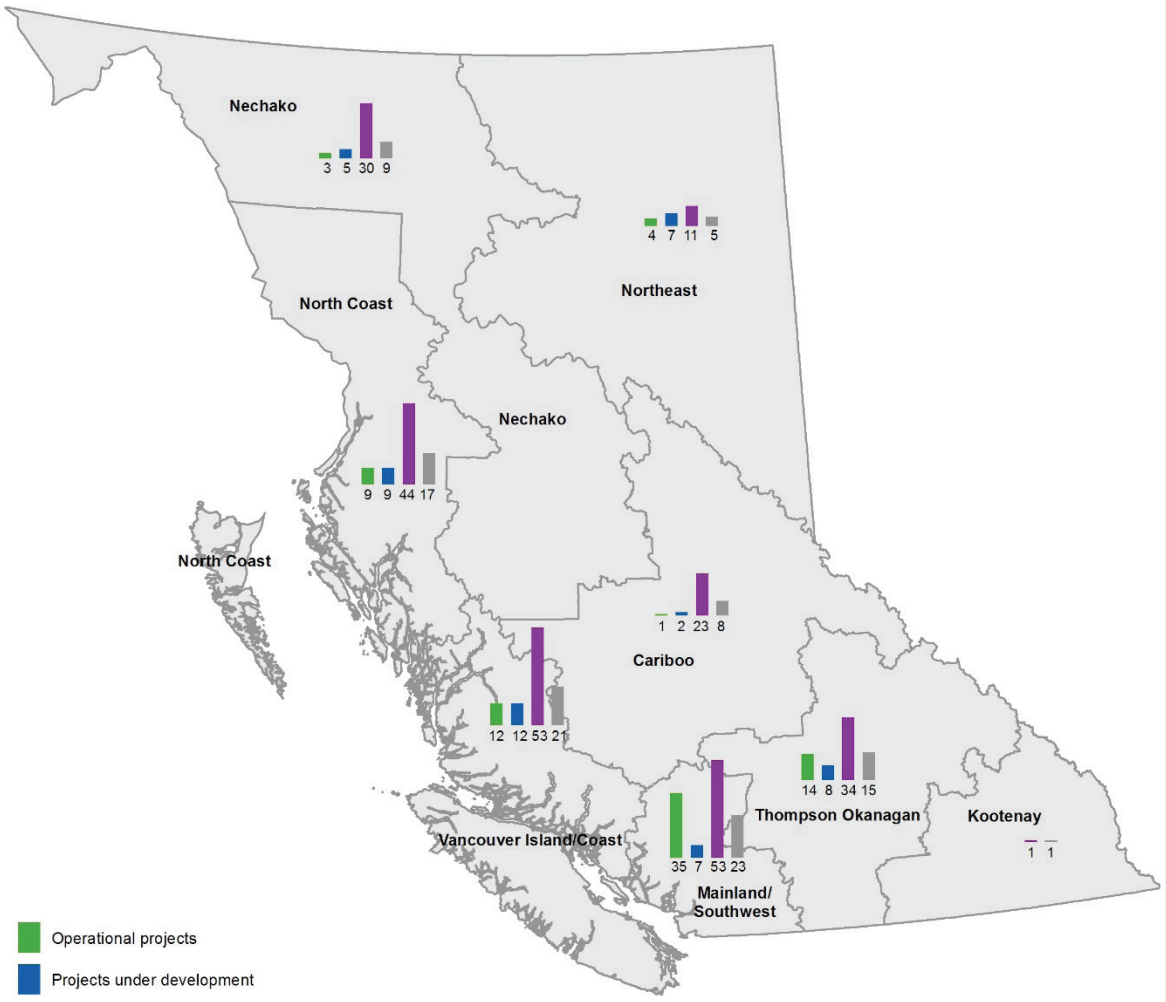
The research team attempted to contact 203 First Nations across the province from October 2016 to February 2017. In total, we received responses from 102 First Nations and three Tribal Councils. The survey results presented in this report thus indicate the minimum level of First Nations' involvement in the renewable industry in B.C. at the beginning of 2017 but do not provide an exhaustive overview. There are First Nations who are involved in the industry who did not complete the survey.

Our findings suggest that there is widespread involvement and interest in renewable energy developments among First Nations in B.C. (figure 1.1). Out of survey respondents, 79% were connected to the provincial energy grid, with the balance being off-grid. The results demonstrate a wide variety of projects, differing in size, technology, and application. Grid-connected communities are eager to develop renewable energy projects to sell power to BC Hydro. These activities and ambitions range from small projects producing less than 100 kW of electricity to large projects generating over 15 MW. Ownership and involvement also vary considerably depending on whether First Nations are the project proponents or joining projects proposed by others.

Despite this multifaceted involvement and interest, 68% of respondents indicated they are experiencing substantial barriers to entry and expansion in renewable energy development. The three most common barriers included lack of opportunity in BC Hydro programs, financing, and community readiness. These barriers are surmountable through the introduction and implementation of appropriate policies and support.

This report proceeds in three sections: in the next section we describe the survey methods and limitations, we follow this with key findings, and conclude with a discussion of wider implications.

Figure 1.1: Involvement by Development Region



2. Survey Methods

The research team invited 203 First Nations and several Tribal Councils to participate in an online survey requiring approximately 15-20 minutes. We recruited respondents in person, by email, phone, and Facebook, as well as through listservs. We sent formal invitations to First Nation Chiefs in October and called band offices to follow-up. We also made presentations at two different conferences: "Generate" hosted by Clean Energy BC in November and "Links to Learning" hosted by INAC in December. For data collection, we used an online tool, FluidSurveys. The survey was divided into four sections: 1 – Operational Projects, 2 – Projects in Development, 3 – Projects under Consideration, and 4 – Capacity Building. In the majority of cases, respondents filled out the survey independently using the link provided by email. In some cases, we conducted the survey with respondents in person and over the phone. The majority of respondents were employees or elected officials, with each First Nation deciding on the most appropriate representative to complete survey. We then reviewed each survey response for completion and consistency and frequently contacted respondents to clarify details of their involvement. In total we received responses from 102 First Nations and three Tribal Councils.

2.1 Survey Limitations

Although the response rate for the survey was over 50%, the research team is aware of many other First Nations with renewable energy experience who did not complete the survey. Therefore, it is possible that this survey understates the full scope, scale and implications of First Nations' involvement in the sector and that some of the activities, goals, and challenges associated with renewable energy projects may not have been captured.

3. Findings

This section provides an overview of the key survey findings, organized by the four primary questions:

- How are First Nations involved in renewable energy development?
- How would First Nations like to be involved in renewable energy development?
- What barriers are First Nations experiencing in relation to renewable energy development?
- What are the potential impacts of a decelerated renewable energy industry?

3.1 How are First Nations currently involved in the renewable energy industry?

Overall, 47% of respondents who completed the survey currently participate in the renewable energy industry in some way. Respondents indicated that impact benefit agreements (IBAs) were signed for 45 projects in operation. The IBAs commonly included provisions regarding royalties, training and/or employment, and equity. In 19 of these projects, the amount of equity will increase over time.

3.1.1 Operational Projects

Of the 105 respondents, 30 indicated that they have at least one project in operation. We calculated 78 renewable energy projects in total, harnessing energy from several sources. The majority of existing projects are run-of-river hydroelectric (hydro), with solar photovoltaic (PV), geothermal, wind, and solar thermal making up the remainder (figure 3.1).

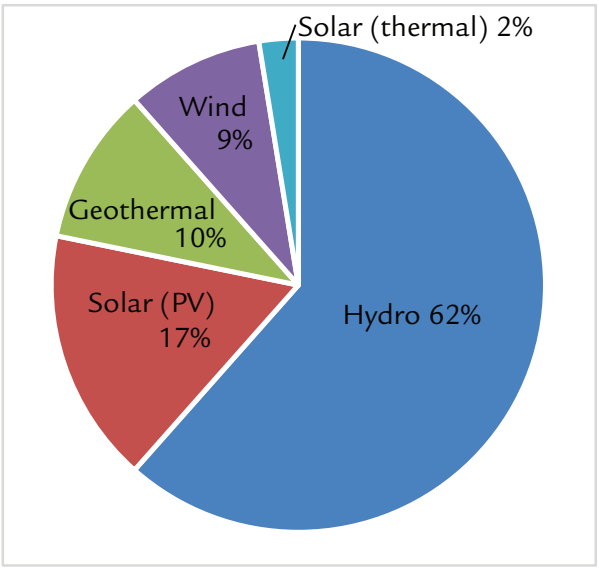


figure 3.1: Technology of Operational Projects by percentage

The total capacity of operational projects listed by respondents is 1,836 MW, which suggests that First Nations are involved in a notable amount of renewable power generation in the province. Among operational projects, we found a wide range of project sizes but large projects (above 15 MW) account for approximately 40% of operational projects (32 projects). The capacities of operational projects are displayed in figure 3.2.

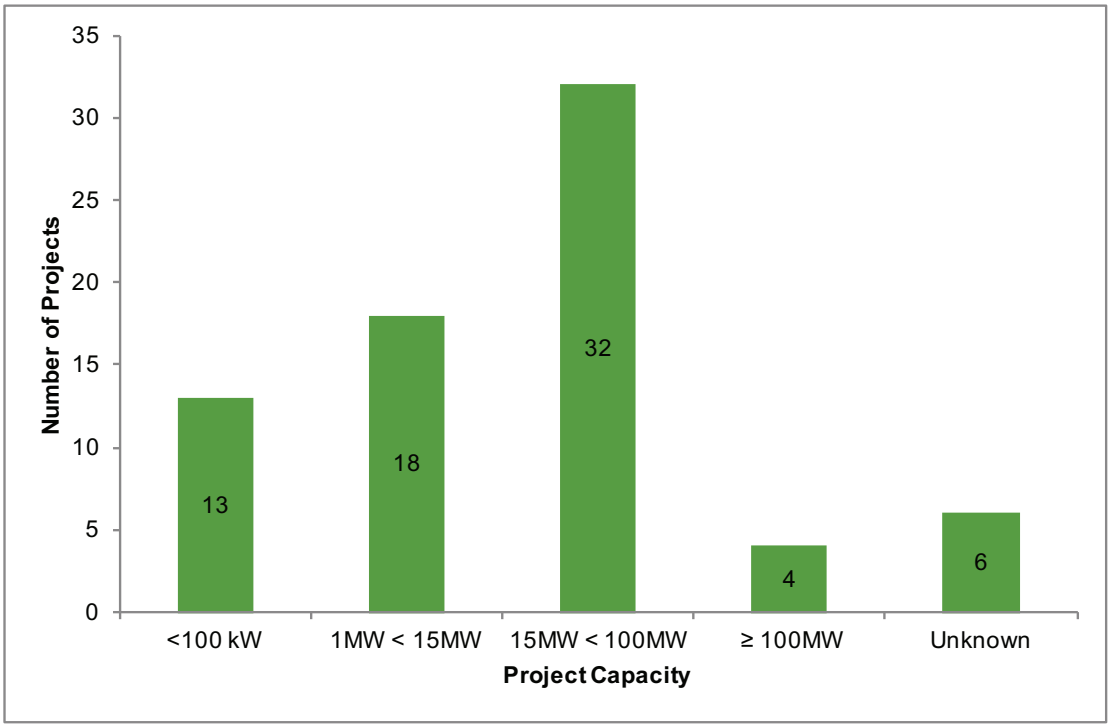


figure 3.2: Capacity of Operational Projects

Of the operational projects reported in the survey, at least 50 are connected to the North American electricity grid. For grid-connected communities, the opportunity to sell power to BC Hydro is key to the commercial viability of a project. BC Hydro has four main distributed generation programs in which First Nations may participate as energy project proponents: 1 – periodic tender calls for power, 2 – the standing offer program, 3 – the micro-standing offer program, and 4 – the net metering program. First, BC Hydro can issue a Call for Power in which they seek proposals from private power producers to meet a certain acquisition target. The last Call for Power was in 2008 and no new Calls for Power are expected. Second, BC Hydro has a Standing Offer Program (SOP) that accepts submissions for small renewable energy projects (over 100kW and up to and including 15 MW). By contrast, the micro standing offer program deliberately targets community groups and First Nations and only accepts project proposals above 100kW and up to and including 1MW. Lastly, the net metering program is designed to purchase energy from BC Hydro's residential and commercial customers with small renewable energy units (under 100kW) in excess of what they use themselves. Aside from these four programs, First Nations have also been able to secure electricity purchase agreements (EPAs) from BC Hydro through bilateral agreements with the provincial government, but these are not well documented. See figure 3.3 for a comparison of operational projects by program.

Of BC Hydro's distributed generation programs, Calls for Power have historically generated the most opportunity for First Nations who wish to participate in the renewable energy sector. The operational projects that were developed under a Call for Power produce 1,756 MW, or 96% of the power currently produced by survey respondents.

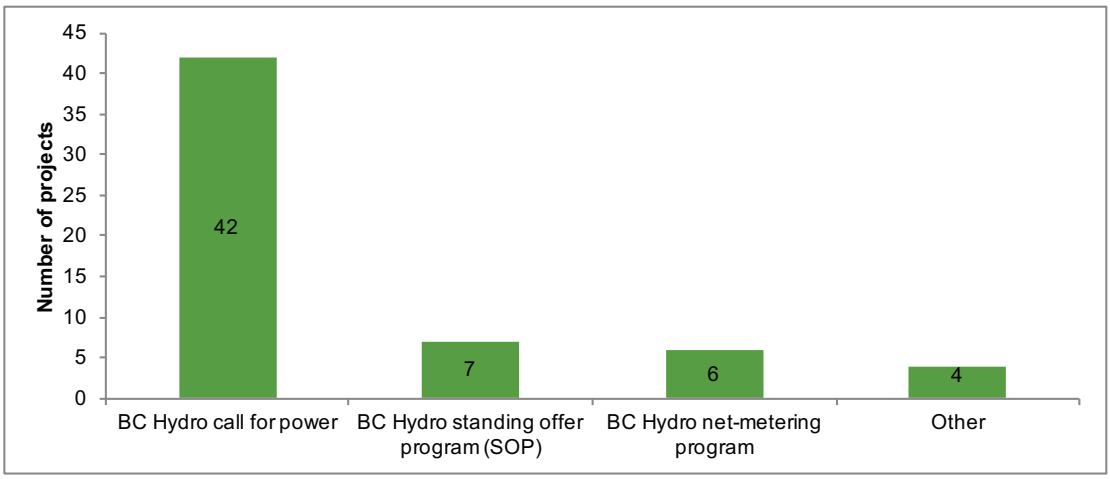


figure 3.3: Operational Projects by BC Hydro Program

First Nations have made substantial financial investments in renewable energy projects. There was a wide range of investment in operational projects, ranging from respondents investing under $100,000 on 17 projects, to greater than $1 million on 16 projects (figure 3.4).

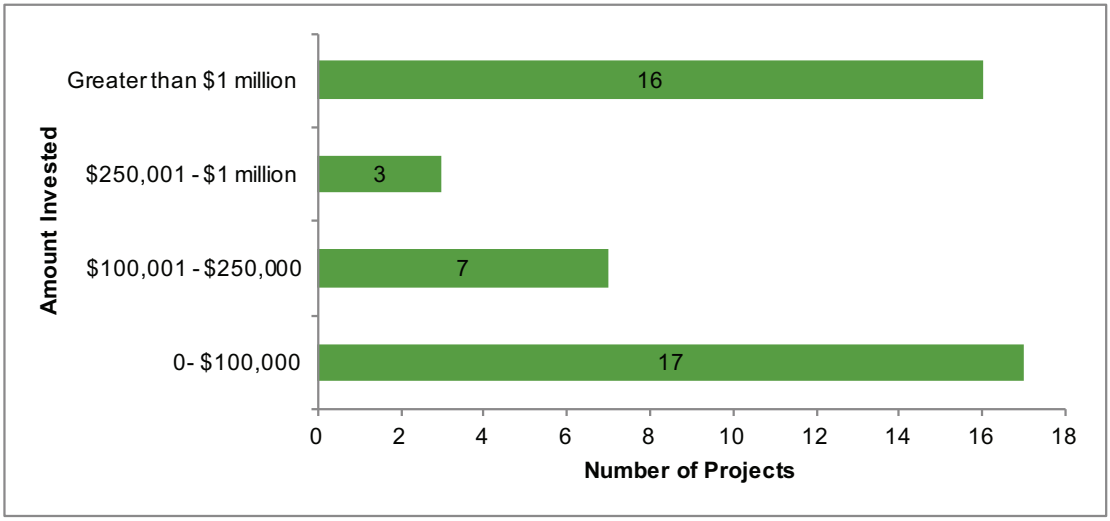


figure 3.4: Investment in Operational Projects

3.1.2 Projects in Development

In addition to operational projects, many First Nations are involved in developing new renewable energy projects. The development phase includes both planning and construction. A total of 32 respondents indicated that they are cur-

rently participating in the planning or building of 48 projects. These projects are well beyond the feasibility stage, with 15 projects already under construction. For some First Nations, this represents their first foray into the sector, while for others, this is the sixth or seventh project on their territory.

The reported projects under development include a range of technologies, as shown in figure 3.5. Compared to the energy sources of operational projects, these findings suggest that First Nations are interested in a greater diversity of renewable energy technologies than previously. For instance, the percentage of hydro projects in development is considerably smaller (35%) than operational hydro projects (61%). Additionally, the mix of technologies now includes biomass (17%) whereas no biomass projects were reported as being in operation.

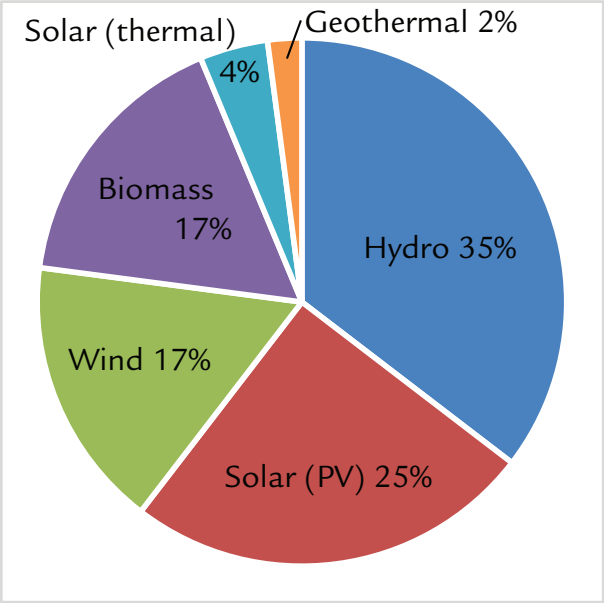


figure 3.5: Technology of Projects in Development by percentage

3.2 How would First Nations like to be involved in the industry?

The survey results indicate a strong interest in the renewable energy industry on the part of First Nations, with 98% of respondents indicating existing involvement or a desire to be involved.

Collectively, 77 respondents reported having nearly 250 projects under consideration. These include projects in the pre-planning phase, without the requisite permits and financing, as well as more developed projects that have been stalled. The survey identified various reasons for project delays (see section 3.5). Importantly, the majority (61%) of undeveloped or stalled projects are being considered by First Nations without prior experience in the renewable energy sector. This finding suggests the potential to significantly expand the number of

First Nations who are benefitting from involvement in renewable energy development (figure 3.6).

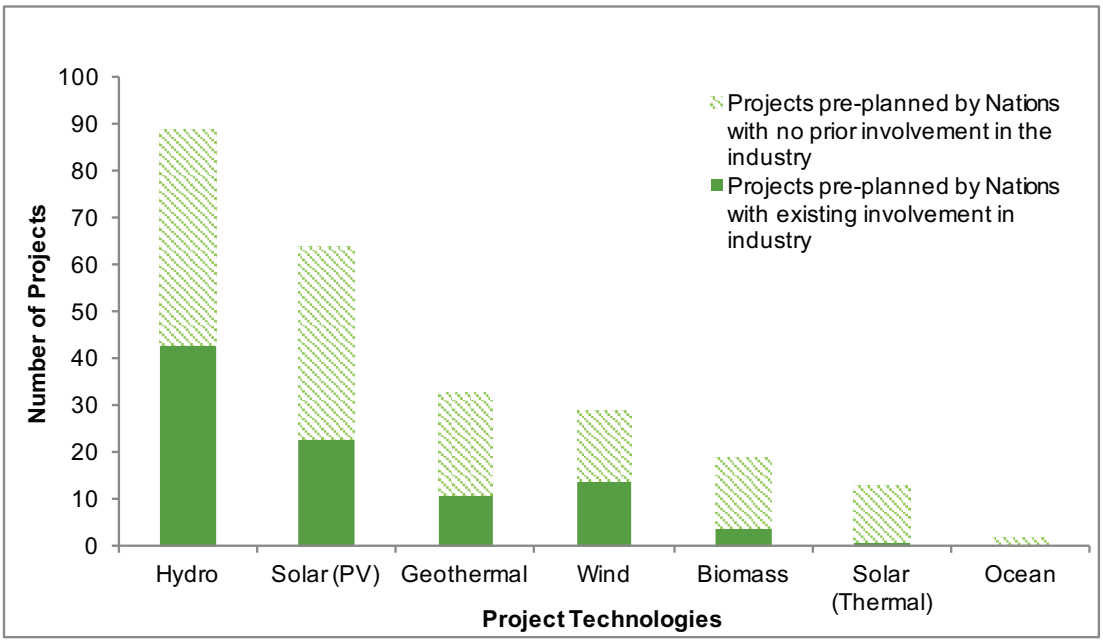


figure 3.6: Projects in Pre-Planning

Much like projects in development, the projects under consideration include a greater variety of renewable energy technologies than existing projects (figure 3.7).

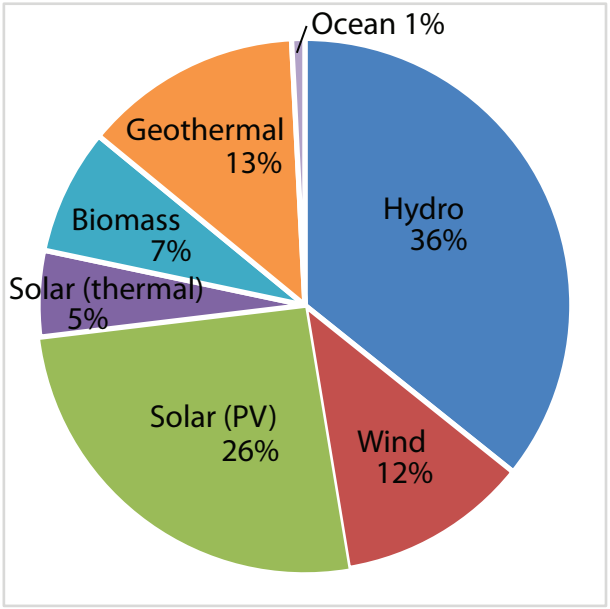


figure 3.7: Technology of Projects in Pre-Planning

Along with the large number of projects under consideration, the high response rate to this question indicates that there is an appetite among respondents for greater involvement in the industry. If offered the potential to sell the power from these projects to the grid, 96% of those who responded to this question said they would. Facilitating opportunities for new and experienced First Nation power producers to sell power to the grid is an essential part of supporting their renewable energy ambitions.

3.3 How have technology choices changed over time?

As mentioned, the survey results indicate shifts in favoured renewable energy technologies among First Nations. In particular, the responses reveal an increase in the percentage of solar PV, solar thermal, biomass and micro-hydro projects under development compared to operational projects (figure 3.8). These increases may be partly due to the growing affordability of certain technologies (especially solar PV), as well as their greater flexibility in terms of location (they are less site constrained than hydro, wind or geothermal). Conversely, the survey results reveal a decline in large hydro from operational projects to projects in development or pre-planning (from 36% to 6%, respectively), which may reflect both financial and siting limitations.

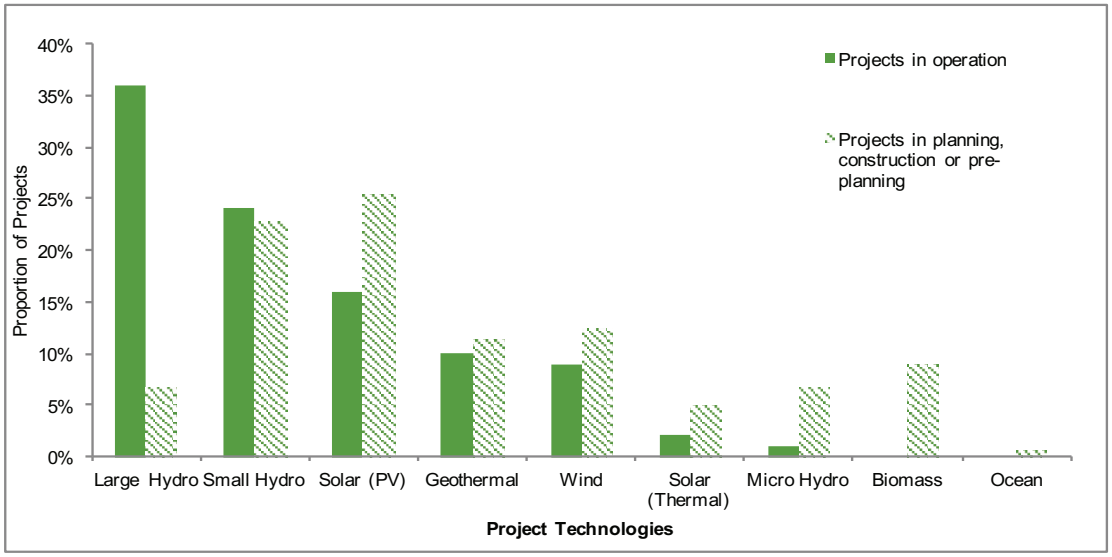


figure 3.8: Comparing Renewable Energy Technologies between Operational Projects and those at Earlier Stages of Development

3.4 How have benefits changed over time?

Survey results revealed that operational projects are delivering benefits to communities in terms of resource royalties, training and employment, and equity involvement. The survey found a slight shift in anticipated benefits for projects under development, however, with a heavier emphasis on training and employment and equity rather than royalties (figure 3.9). This shift could be a function of the technology shift identified in the previous section, with communities anticipating smaller-scale projects with deeper community involvement. However, because these are anticipated benefits, the differences could also reflect the immaturity of the projects under consideration.

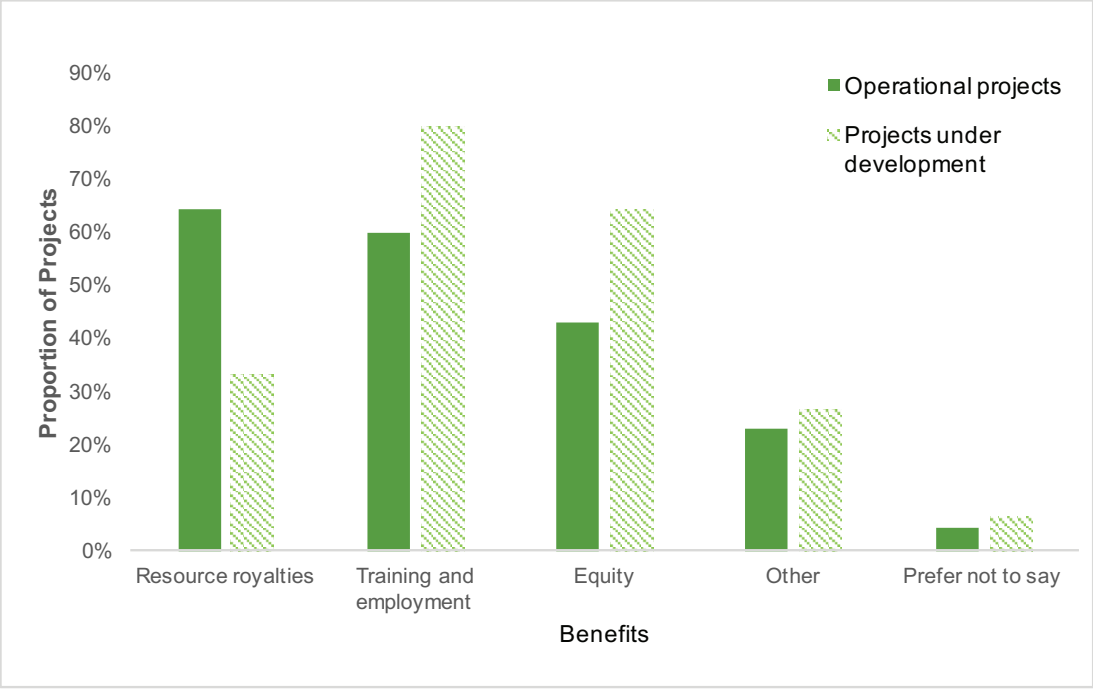


figure 3.9: Benefits of Operational Projects vs. Projects in Development

3.5 What barriers are First Nations experiencing in relation to renewable energy developments?

The majority (75%) of survey respondents indicated that they have projects in mind that they have not yet pursued or been able to pursue. They identified three primary barriers to developing projects: lack of opportunity provided by BC Hydro's programs (61%), lack of community readiness (59%), and difficulty securing financing. The financial barriers were expressed as difficulty with soft costs (57%), difficulty with equity (47%), and difficulty with long term financing (44%). Other frequently mentioned barriers included: inability to secure a suitable partner (27%), environmental concerns (20%), and difficulty securing permits (17%). See figure 3.10 for a comparison of barriers. Respondents were also given the opportunity to identify other barriers and one of the most commonly raised issues was the difficulty of connecting to the grid.

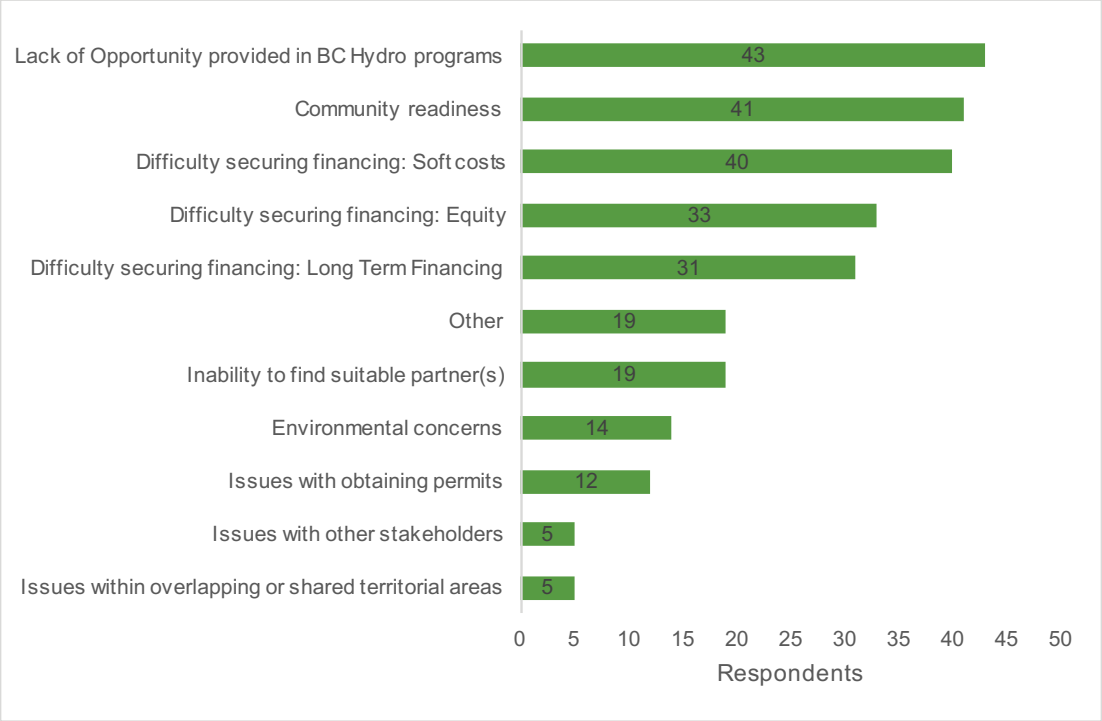


figure 3.10: Barriers to Involvement

With regards to the lack of opportunity in BC Hydro programs, many respondents elaborated in their comments about the difficulty of securing electricity purchase agreements (EPAs) for renewable energy projects. Even small energy projects often require EPAs from BC Hydro to be viable but respondents indicated that there are fewer and fewer ways to obtain them.

The second most commonly cited barrier was community readiness, which was interpreted differently by different respondents. For First Nations who have not yet participated in the industry, knowing where to start and what capacity a community needs was identified as a barrier. Addressing this would require education for community members and employees in renewable energy options and development process. For communities who have already pursued renewable energy projects, community readiness also meant the community's response to a particular project, or that they had not yet consulted the community about a project.

Lastly, respondents indicated several issues in relation to financing renewable energy projects. The majority of respondents (57%) indicated a struggle to fund pre-planning activities. Pre-planning involves investigating the applicable environmental, technical, commercial and permitting aspects of project development. Although there are a few programs available to address this need, survey responses indicated that some First Nations have difficulty accessing limited funding sources and struggle with heavy reporting requirements.

Obtaining long term financing is also a challenge, with 44% of respondents identifying this as a barrier. Long term financing is easier with an EPA from BC Hydro, a guaranteed source of revenue, and a good financial track record. One of the biggest hurdles in obtaining long term financing is experience. If the community has not built a project before, they need to show they have a partner or experienced advisors.

Similarly, 47% of survey respondents listed obtaining equity as a financial barrier to renewable energy developments. There are a few First Nations funds or capital corporations that support equity financing, but these are limited. Industry partnerships have been instrumental to many First Nations who are looking for assistance with equity.

3.6 What are the potential impacts of a decelerated renewable energy industry?

First Nations have been investing in pre-planning, planning, and capacity building activities for renewable energy development within their communities. The survey found a range of financial investment on the part of First Nations with projects in the pre-planning and planning stages (figure 3.11). The majority of respondents (38) declared investments under $10,000 but a handful of respondents (6) reported spending over $250,000. These significant financial investments will likely be lost if the projects do not move ahead.

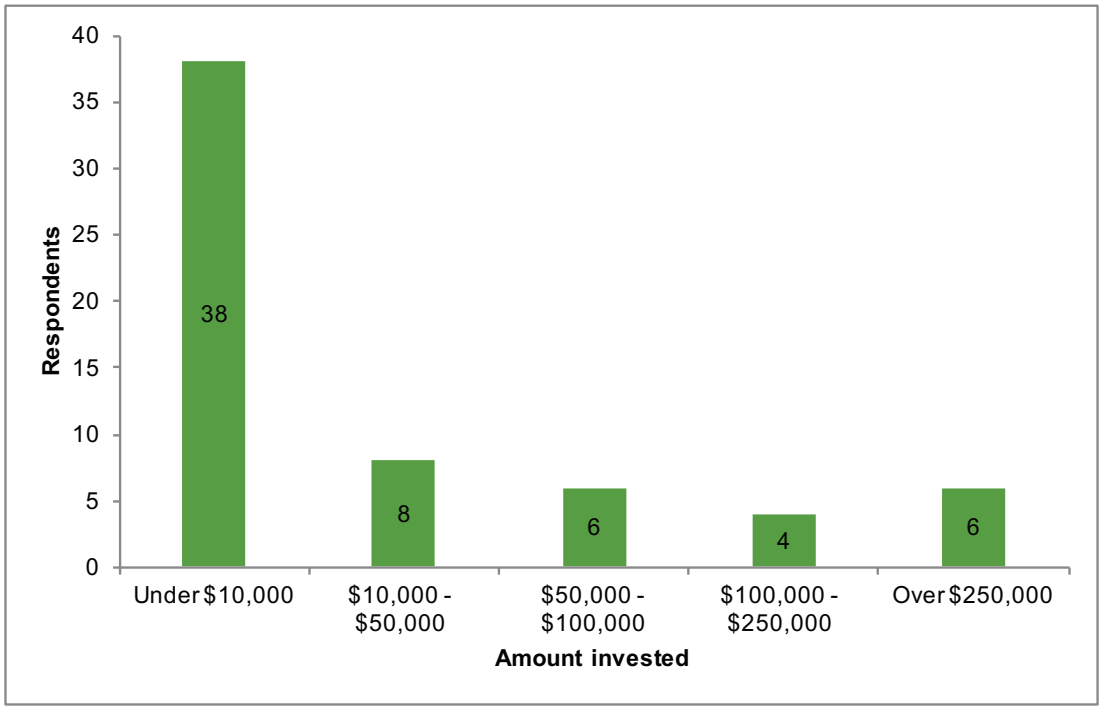


figure 3.11: Financial Investments in Projects in Pre-Planning

Just under half of respondents (47%) indicated that they have been actively building capacity among their members to strengthen participation in the renewable energy industry. Capacity building activities have primarily focused on educating community members about renewable energy, training Chief and Council, and training members in construction. See figure 3.12 for more detail. Capacity building often requires a great deal of time, effort and coordination given the diversity of tasks associated with renewable energy developments. Some activities may prompt the development of transferable of skills and generally contribute to the community's well-being but others are specific to the sector.

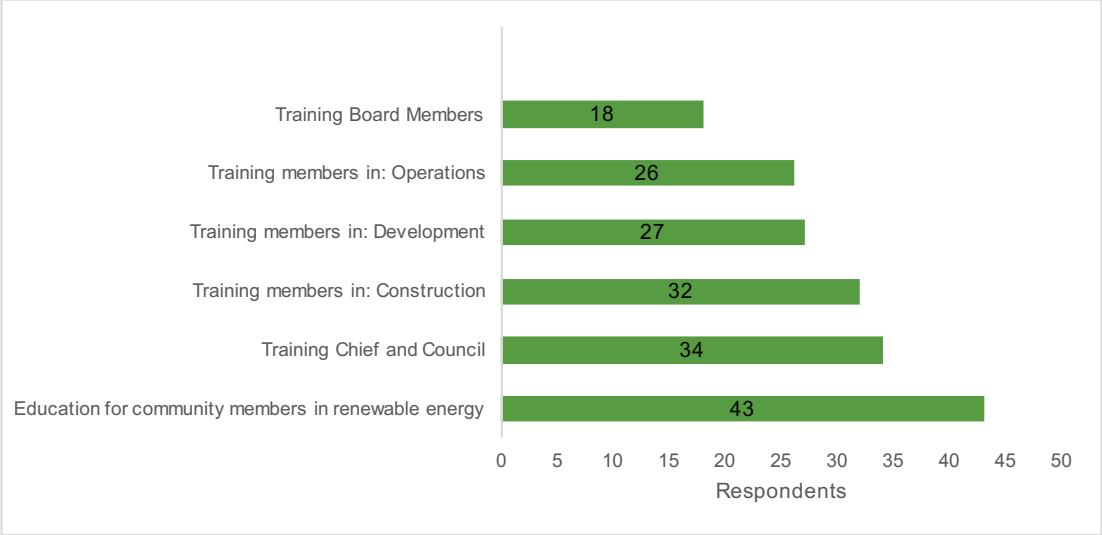


figure 3.12: Capacity Building Activities

When asked how much more it would cost to build the projects they had envisioned, the majority of respondents (31) indicated that it would be under $25 million but a few respondents (8) predicted that it would be greater than $250 million (figure 3.13). These are preliminary calculations mostly based on preplanning efforts and likely underestimate the amount required to operationalize projects. Even as estimates, these figures represent significant potential contributions to regional economies.

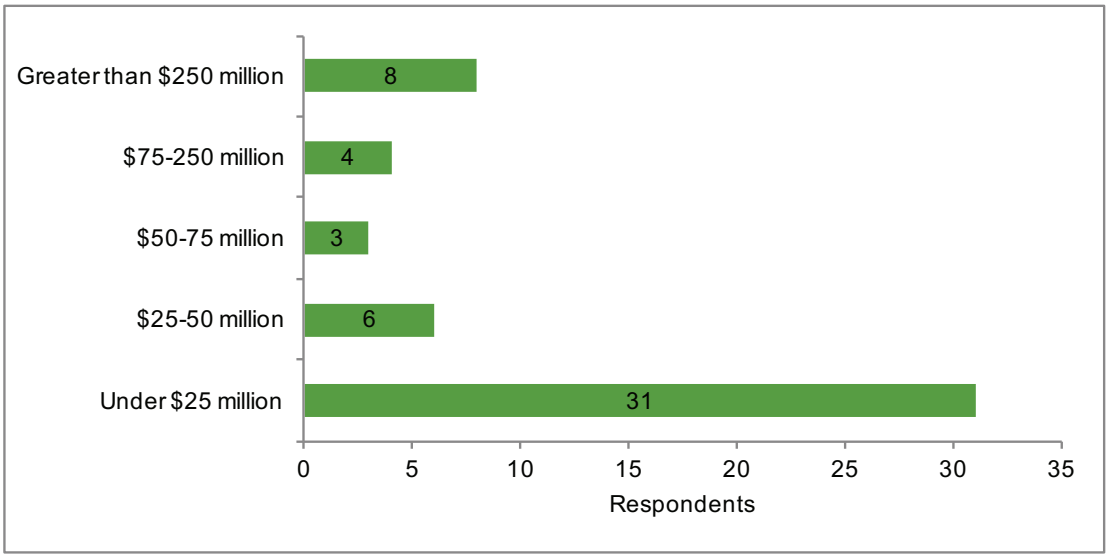


figure 3.13: Predicted Financial Investment Required

3.7 How can capacity-building support First Nations' involvement in renewable energy development?

The survey found that 88% of respondents are eager to develop more capacity in the renewable energy sector. From most to least interest, respondents indicated a desire to focus on the following capacity building activities: planning projects, operations, community energy planning, project management, and board training for members. Taking into account the above mentioned finding that community readiness is a barrier to participation in the industry for almost 60% of respondents, it is important to prioritize capacity building in the ways outlined by respondents if First Nations are to realize their ambitions in the sector.

4. Discussion

The survey results demonstrate that First Nations in B.C. are participating in renewable energy developments in substantial and diverse ways and are eager to expand their involvement. The vast majority of respondents (98%) are involved or interested in being involved in the industry, with nearly 50 respondents reporting new or existing projects on their territory. Projects vary considerably in size, technology, and application. Some projects are intended to provide electricity to community buildings while others are meant to generate revenue through power sales.

First Nations experience myriad benefits from these projects, with many respondents declaring renewable energy development as an economic venture that is consistent with their values and priorities. For some, commercial scale projects have the potential to provide much needed revenue and jobs within communities with minimal environmental impacts. For others, project benefits include energy self-sufficiency and reducing their diesel or BC Hydro expenditures.

4.1 Barriers to Participation

Despite growing momentum and interest within the industry, the survey identified three main barriers to entry and expansion within the industry. The barriers indicated include 1 – lack of opportunity provided by BC Hydro programs, 2 – financing, and 3 – community readiness.

The identification of a lack of opportunity points to a significant decline in BC Hydro's interest in facilitating independent power production. The largest program through which BC Hydro acquires electricity are Calls for Power, which can lead to signing EPAs for projects producing over 15 MW. There has not been a Call for Power since 2008, and there are none scheduled for the next 20 years. Likewise, the Standing Offer Program has filled up all opportunity until 2019, with the government creating a waiting list pending any program availability past 2019. This decline in BC Hydro's interest is due to the provincial government's decision to build Site C, a 1100MW dam in the Northeast of the province, which it is anticipated will more than meet demand for power in the province. Unfortunately, this leaves many First Nations unable to advance projects that sell power to the grid, which is what makes many projects commercially viable. Without this possibility, their potential benefits are lost. Respondents spoke of projects that are "…still viable and feasible and desirable. We want them to proceed [as] we've invested a lot of time and energy in advancing our needs, what we need is BC Hydro to free up the opportunity."

Respondents also identified transmission line accessibility and capacity as a barrier to their projects. One respondent commented, "In [our] case the relationship with BC Hydro is key to viability. If they are unwilling to negotiate access, then no project will succeed no matter how desirable or feasible."

In addition to the lack of opportunity within BC Hydro programs, survey respondents identified financing as a barrier to involvement in the industry, with one respondent emphasizing that financing involved a: "…huge learning curve. Funding initiatives are not easy to access, and take time to receive responses; [this] creates timeline challenges for planning." Finance challenges extended across the lifespan of projects, from soft costs for pre-planning to obtaining equity.

Community readiness was identified as a third barrier to renewable energy development. One respondent commented, "We don't know how to proceed – what skills and capacity do we need? How do we get them?" with another commenting, "Everyone from leadership to individuals are interested, [we] simply don't know how to start. The band is interested in the different forms for economic development standpoints and from a stewardship standpoint."

Respondents indicated key ways they would like support overcoming capacity barriers to renewable energy development. These included education for community members about renewable energy, training Chief and Council and board members, and training First Nations members in construction, development and operations. One respondent commented: "The type of capacity that we're adding at this point is in planning and community engagement and the community engagement portion is not insignificant. It's not just about organizing a meeting – it's a big project for the community. Where I would like to see more capacity is the technical and construction side...It's a great opportunity for our members to get experience in this area."

4.2 Beyond Economic Development

Commentary from survey respondents clearly suggests that many First Nations view renewable energy projects as a means to achieve multiple social, political and environmental objectives, beyond economic development. Survey respondents expressed the desire to use such projects to become energy self-sufficient, minimize environmental impact, decrease electricity expenditures, and foster pride in their communities. Responses also indicate that several First Nations view renewable energy as much more than industrial development. For example, one respondent noted, "We need to think holistically about energy from an Indigenous perspective. In local languages, the equivalent term for energy has a much deeper meaning and context than simply power production."

Given the diversity of potential benefits, the renewable energy sector offers a unique opportunity, and one that merits the attention and support of policy-makers. The survey was not able to assess the full value (in economic terms or otherwise) of benefits of renewable energy development to communities, but this is an important question for future investigation, with the following comment at its core:

"Our first project is a model of environmental, financial, and community benefit. The social side has been fantastic because it has engendered pride in people who were challenged to be proud given the history of [First Nation] relations with the general population and media in Canada and the ongoing effects of residential school. This refound pride allows for foundational skill development

in those that so dearly need to be lifted, with support and with their own energy, out from the pit in which they exist. The idea that we are working on another larger project that will generate revenues for generations to come is also rippling through our community. Success will engender success."

5. Conclusion

Renewable energy development offers an important opportunity for First Nations, one with the potential to provide myriad economic, social, political, and environmental benefits. Several respondents emphasized that it offers a unique opportunity: "This is the only sector that offers any hope of current and future economic opportunities." Others emphasized the way it complements their values and goals: "We want to see our community empowered and equipped to generate our own energy and to gain the maximum benefit from development in [our] local area."

Without the appropriate policy and support, however, opportunities will be lost. One respondent commented that the "Clean Energy business is dying right now. Opportunities aren't there like they once were," highlighting the need for support to facilitate success in the industry. What this support should look like is not straightforward: one of the key findings from the survey is that First Nations are involved, and want to be involved, in renewable energy development in a variety of ways. Some seek to develop large-scale projects that will deliver substantial revenue benefits; others are primarily focused on self-sufficiency and or energy independence, and are open to smaller-scale technologies that offer maximum community control and benefit. Some Nations have extensive experience in the industry, while others are not sure how to get started. There is no "one size fits all" policy option to support First Nations' involvement in renewable energy generation.

This challenge, however, has a silver lining: there are many opportunities for policy approaches that will facilitate First Nations' ambitions. The key barriers of a lack of opportunities, financing and community readiness can be tackled at a variety of scales, and as the technologies mature, options for community involvement should also increase. The benefits of commercial scale projects, however, cannot be understated. They provide a sustainable source of revenue to communities where economic opportunities that do not deplete resources and damage the environment are limited. There is strong momentum from First Nations to build on this potential, and clear benefits both to their communities and beyond if this momentum can be met with an effective and supportive policy framework.