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Framing Indigenous Bioenergy Partnerships

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Abstract
The rapidly expanding forest bioenergy sector in Canada promises to support low carbon energy options that also support economic development and Indigenous involvement. Little empirical research has been conducted on Indigenous participation in forest bioenergy in Canada, which points to the need for a nuanced and reliable knowledge base to foster innovation in bioenergy that will contribute to community and economic development. However, before empirical research can be conducted it is important to understand the issues that influence Indigenous participation in the bioenergy sector. We therefore look to and conduct a frame analysis of allied sectors to develop insights about the policy and participatory landscape in which forest bioenergy in Canada is situated. Our analysis illustrates that identities and perspectives linked to energy and forestry can be complex and can shift depending on how business is done around such projects. Strengths in the current state of knowledge include the breadth of research regarding participatory natural resource management in Canada, particularly with regard to northern and Indigenous communities and territorial lands. Our review indicates that even the emerging bioenergy literature that exists now, when paired with that of allied sectors, can help analysts understand and make sense of energy and energy-related issues.

Keywords
bioenergy, energy partnerships, framing, Indigenous, renewable resources

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Framing Indigenous Bioenergy Partnerships

Canada is a top five global energy producer and thus in a leadership position with respect to how it engages with international markets and, increasingly, in energy partnerships. Furthermore, local and global energy markets are growing, and domestic and international firms are pressuring Indigenous communities to participate in energy development because of their proximity and access to energy resource rich areas, and their rights to natural resources (Eckerberg, 2015). Running in parallel with increased demand, firms are more aware of the need to obtain social license to operate[1] (Haley & Nelson, 2007). In addition, they must seek licences from provincial and territorial governments, which have fiduciary obligations to consult and accommodate Indigenous Peoples about development projects that could have an impact on their traditional territories and livelihoods (Krupa, 2012). Such is the case with the rapidly expanding forest bioenergy sector, which promises to support low carbon energy options that also support economic development and Indigenous involvement (Henderson & Sanders, 2017). This promise of industry growth must be carefully considered alongside the benefits to be realized by would-be partners, such as Indigenous communities or businesses. How Canada's Indigenous forest bioenergy partnerships unfold will signal its policy and leadership preferences to the world, and ultimately, shape alternative energy progress and reconciliation efforts.[2]

Indigenous issues and engagement in energy development are being heavily promoted in Canada (Gris, 2013), and there is acknowledgement that more needs to be done to design and conduct proper engagement processes, build cross-cultural partnerships, and understand similarities and differences in views and values (Coates & Crowley, 2013). Within energy partnerships, there are several possible social and economic benefits (e.g., employment, infrastructure development) for communities (Bristow, Cowell, & Munday, 2012); however, local agendas and views may differ from domestic and international strategic agreements. Establishing an advanced forest bioenergy industry in Canada will not occur with only basic information about Indigenous partnerships. There has been little empirical research conducted on Indigenous participation in forest bioenergy in Canada, which points to the need for a nuanced and reliable knowledge base to foster innovation in bioenergy that will contribute to community and economic development (Bullock & Zurba, 2017). However, before empirical research can be conducted, it is important to understand the issues that influence Indigenous participation in the bioenergy sector. It is therefore imperative to look to allied sectors to develop insights about the policy and participatory landscape in which forest bioenergy in Canada is situated.

Our analysis focuses on the nuanced discourse that exists in published literature on energy and allied renewable resource (i.e., forestry) partnerships with Indigenous communities and organizations, thus providing new insights on existing knowledge. We use the literature on Indigenous participation in global and local partnerships in forestry and energy development to create a deeper understanding of the different frames relating to ongoing forest bioenergy development in Canada. In particular, we probed

[1] Social licence to operate is a term emerging in the mid-1990s regarding how companies respond to social risk. It refers to the acceptance of a company's business practice by invested parties, such as employees, communities, or the general public (Moffat & Zhang, 2014).

[2] In 2008, the Truth and Reconciliation Commission of Canada (TRC) was established as a component of the Indian Residential Schools Settlement Agreement. The *Truth and Reconciliation Commission of Canada: Calls to Action* serve as a guide to reconciliation for the Government of Canada and all Canadians and refers several times to Indigenous lands (Truth and Reconciliation Commission of Canada, 2015).

how current global–local framings position communities and their partners in development, and how different groups frame bioenergy economic and policy opportunities. We conclude by making recommendations for policy and future research.

Background

Resource Development and Indigenous Peoples in Canada

Forest bioenergy development in Canada could impact and/or benefit Indigenous communities in similar ways to other natural resources developments, such as forestry and other types of energy projects (Krupa, 2012). Benefits to Indigenous communities are generally short- and/or long-term economic gains, including employment, increased investment, and other forms of community enhancement such as infrastructure (Caine & Krogman, 2010). Impacts can also be short- or long-term, including degradation to the environment, as well as impacts on the social and economic well-being of communities and on Indigenous rights and civil liberties (e.g., disruption of traditional economies and community social networks; Willow, 2012). These impacts have adverse effects, including contamination of lands and waters, and community members becoming disconnected from their traditional territory and traditional practices, such as hunting, fishing, and trapping (Tobias & Richmond, 2014; Willow, 2012).

Despite impacts associated with the dispossession and degradation of land, Indigenous Peoples in Canada maintain strong connections to their traditional territories and are forging new ways to assert traditional custodial rights and responsibilities (Bone & Anderson 2017). Due to court decisions (e.g., recognition of Aboriginal title for the Tsilhqot'in Nation in British Columbia in 2014) as well as collaborative actions (e.g., collaborative governance and shared tenure through the Miitigoog Partnership Inc. in northwestern Ontario), governments and resource development companies are shifting towards greater Indigenous participation. Arrangements such as co-management have more fully recognized Indigenous Peoples' decision-making authority regarding their traditional territories (Bullock, Broad, Palmer, & Smith, 2017; Wyatt & Nelson, 2016). International advisory bodies such as the International Union for the Conservation of Nature (IUCN) and the United Nations have also been bringing together multi-institutional perspectives (i.e., community representatives, non-governmental organizations [NGOs], national and regional governments) to contribute to building guidelines for new policy affecting Indigenous Peoples. The United Nations' *Declaration on the Rights of Indigenous Peoples* (UNDRIP) is a leading example of such policy. This monumental declaration indicates a major shift in international values, norms, and politics regarding Indigenous Peoples, their roles in governance, and their rights to sovereignty and other forms of decision-making power. Canada joined UNDRIP as one of the last signatory nations in November 2010 (Indigenous and Northern Affairs Canada, 2010). In total, 15 of the 46 declarations relate to the rights of Indigenous Peoples to participate in decision-making processes that affect their livelihoods (United Nations, 2007).

Current Profile of Bioenergy Development and Partnerships in Canada

In Canada, much of the bioenergy development focused around Indigenous communities involves woody biomass, which is derived from forests (Natural Resources Canada, n.d.). The *Canadian Energy Strategy* (Council of the Federation, 2015) and the *Kenora Declaration of Forest Innovation* (Government of Canada, 2015) both emphasize the role of Indigenous businesses and innovation in

growing Canada's bioeconomy (Canadian Council of Forest Ministers, 2015). All provinces and territories have policies and/or programs or policy language referring to bioenergy development, and the bioenergy sector in Canada is expected to continue to grow (Natural Resources Canada, 2016). According to the *Canadian Energy Strategy* (Council of the Federation, 2015), provincial and territorial governments seek official involvement in international energy dialogues, while being committed to engage their Indigenous leadership counterparts. At the same time, growing global demand and international firms place demands on Indigenous communities and lands where benefits could exist, but also where local agendas and views may differ from international strategic agreements. The confluence of endogenous and exogenous influences creates trilateral, multi-level, and, in the case of forest bioenergy, multi-sector (e.g., energy and forestry) arrangements. These arrangements involve parties with different rights, capacities, and objectives, as well as different forums for engaging one another.

In practice, there are currently twelve Indigenous biomass energy projects in Canada, 10 of which are in in British Columbia, and the other two are in Ontario and Québec (Henderson & Sanders, 2017). Established in 1993, the earliest biomass energy project involving an Indigenous community is the Ouje-Bougoumou Cree Nation (OBCN) District Energy System. The OBCN District Energy System currently provides the district with 75% of its thermal energy requirements (36 MW), providing heat to 135 homes and 16 public buildings (FVB Energy Inc., n.d.a). The corporate partner for OBCN District Energy System is the Swedish company FVB Energy Inc. (n.d.b). Other biomass energy projects involving Indigenous communities have been established more recently (2011-2015). In January of 2017, the First Nations Forestry Council (FNFC) signed a memorandum of understanding with three domestic[3] and one multinational[4] pulp and paper companies located in British Columbia. The agreement promotes information sharing between industry and First Nations and commits parties to support policies, projects, and regulations that equally benefit First Nations and companies (Mercer Inc., n.d.).

The largest bioenergy project involving Indigenous people in Canada is the Celgar Green Energy Project (100 MW), which is part of the Celgar mill located in Castlegar in the British Columbia interior (Mercer Inc., n.d.). Two other large biomass energy projects involving Indigenous communities in British Columbia are the Gold River Power Project (90 MW) and Canfor Northwood Pulp Mill–PGP Bioenergy (55.4 MW). A First Nations Clean Energy Business Fund Revenue Sharing Agreement exists between Green Island Energy and the Mowachaht/Muchalaht First Nation for the Gold River Power Project, which exports energy to the British Columbia Hydro grid (British Columbia Government, n.d.). The Canfor Northwood Pulp Mill engages the West Moberly First Nations in the PGP Bioenergy project through new business relations that produce new training and employment opportunities (Canfor, 2016). There is only one biomass energy project in Ontario engaging an Indigenous community. White River Forest Products uses biomass energy (7.5 MW) for the operation of its mill. This opportunity emerged when a major downturn in the forest economy in 2008 and 2009 caused the existing conventional sawmill to close, thus creating a space for a new and innovative partnership

[3] Catalyst Paper Company (based out of Richmond, BC) for the Crofton and Alberni biomass projects, Nanaimo Forest Products (based in Nanaimo BC) for the Harmac Pacific Biomass project, and Paper Excellence Canada (based in Richmond BC) for the LP Golden Biomass project ("FNFC Signs MOU," 2017).
[4] Mercer International Group (multinational corporation with offices in Germany, Canada, and the US) for the Zellstoff Celgar Limited Partnership and Celgar Green Energy Project ("FNFC Signs MOU," 2017).

approach earlier thought to be unviable by industry (McIntyre, 2018). In February of 2016, Biigtigong Nishnaabeg (a.k.a., Pic River First Nation) purchased harvesting equipment and launched Mkwa Timber, a forestry company that negotiated an agreement to supply timber to the White River Forest Products mill ("Pic River First Nation", 2016).

Research Approach

Social Framing: Making Sense of Collaboration and Conflict

Understanding identities, issues, roles, and responsibilities is integral to understanding environmental governance systems that are inclusive of Indigenous Peoples (Corntassel, 2012; Miller & Davidson-Hunt, 2013). We use Kooiman's (2003) definition of governance as "the totality of interactions, in which public as well as private sectors participate, aimed at solving societal problems or creating societal opportunities" (p. 4). Social framing theory provides a systematic approach for building understanding of different viewpoints, shifting perspectives, and the production of shared meanings (Benford & Snow, 2000; Gray, 2003; Schön & Rein, 1994). Framing theory is frequently used in public policy and organizational research to examine public discourse and "make sense" of complex natural resource policy issues (Metze, 2017; van Herzele & Aarts, 2013). Analyzing the frames mobilized by different actors can indicate problem and solution definitions among different individuals and groups, and also help to identify attributions of blame or praise, as well as desired future actions (Schön & Rein, 1994). Applying frame analysis to situations where new issues and risks are emerging, such as periods of economic transition and environmental conflict, is helpful in explaining different perceptions that direct adaptation, investment, and even political support (Bullock et al., 2016; Keskitalo, Klenk, Bullock, Smith, & Bazley, 2011). Frame analysis also provides insight on actions that are the products of new relationships, including how individuals begin to learn together and build trust and other foundations for moving past conflict towards building collaboration (Bullock, 2013).

Social framing analyses commonly employ identity, characterization, prognostic, and diagnostic frames to make sense of the issues, perspectives, roles, and responsibilities relating to governance systems. Identity frames make it possible to understand how different actors view and position themselves (i.e., whether they are for, against, or neutral) with relation to development projects (Bullock, 2013). Characterization frames then relate to how the different groups characterize others in relation to particular issues and existing or future possible outcomes, commonly linked to the perceived roles of other people, groups, or entities. For example, different groups may view certain parties as influencing resource developments that may have adverse or acceptable amounts of effects on the environment, positive or negative socioeconomic outcomes, and/or as enhancing or diminishing equity within a resources governance system. Diagnostic frames define the issues and personal reasoning for issues, and prognostic frames outline potential solutions and the roles and responsibilities involved in implementing solutions (Gray, 2003).

In order to provide context and a framework for understanding the issues relating to Indigenous participation in forest bioenergy development in Canada, we focus on the nuanced discourse in the published literature on energy and allied renewable resources partnerships (i.e., forestry) with Indigenous communities. Therefore, the social framings analysed in our study relate to a focused body of literature, and we must acknowledge that the framing is derived from several layers of interpretation.

The first layer of interpretation is by the study participants documented directly in research papers, the second is the author(s) of the articles that were reviewed for this synthesis, and the third layer is our own influence on meanings produced by the research team who applied the frame analysis to the articles. The perspectives of parties involved in governance were more directly conveyed through articles that reported findings from empirical research engaging participants in discussions on forest and energy development(s) and governance. In such cases, articles offered perspectives "by" parties. Other articles, which were policy or topic focused, provided syntheses and insights about a policy or an issue linked to Indigenous participation in forest and/or energy development. Such findings are important because they illustrate how "experts" cast partnerships and describe the implications of the different framings. Through accounting for the variety of different perspectives, we develop understanding of how Indigenous partnerships are framed and how those framings are connected and mobilized through the current literature.

Literature

A comprehensive search of recent research articles and grey literature was conducted using ISI Web of Science (WOS), which is considered one of the most comprehensive and extensively used academic databases for literature reviews (Cañas-Guerrero, Mazarrón, Pou-Merina, Calleja-Perucho, & Días-Rubio, 2013). We chose to work with WOS because it is international in scope and captures a large diversity of literature (e.g., books, proceedings, and reports) from multiple databases (Yu, Akin-Fajiye, Thapa Magar, Ren, & Gurevitch, 2016). However, we also took into consideration some of the challenges that occur when using databases such as WOS, such as limitations in searches related to multi-disciplinary literature (Mongeon & Paul-Hus, 2016), and conducted searches within Google Scholar to crosscheck and ensure that key literature was not being excluded. An initial search was conducted with search terms that would narrow in on the literature on all forms of Indigenous participation in bioenergy projects published in the last 10 years (2008-2017), which corresponds with the main phase of forest bioenergy development in Canada. This initial search produced only one result, indicating that the peer-reviewed literature in this particular area is exceedingly limited, which reflects the relative newness of forest bioenergy development in Canada (Table 1).

The scope of the literature search was then broadened to be inclusive of all topics relating to forest and energy development and the different forms of Indigenous participation. This search produced 29 results, inclusive of the one that was part of the initial search. This literature became the data for the frame analysis for Indigenous participation in forest and energy sectors.

Abstracts of the articles that were results of the broader ISI Web of Science were reviewed for relevance and criteria for inclusion and exclusion were developed (Berrang-Ford, Pearce, & Ford, 2015). To be included, a paper had to directly discuss Indigenous participation, consultation, engagement, and/or collaboration in forest and energy sectors in the Canadian context. Papers discussing resource sectors or topics outside the Canadian context (e.g., palm oil production by Canadian companies abroad) were excluded. Papers not relating to Indigenous participation, and industries not involving forests or energy, were also excluded. A total of 6 articles were excluded from the review because they fell within the exclusion criteria or were records of articles that were no longer accessible (e.g., part of the grey literature that are no longer supported through affiliated institutions). Therefore, 23 peer-reviewed sources (journal articles, conference papers, etc.) were used for the frame analysis.

Table 1. Search Terms for the Bioenergy and Affiliated Resource Sectors Literature Review

Search	Search terms
Search 1	Canad* AND (Indigenous OR Aboriginal* OR "First Nation"* OR Métis) AND (biofuel* OR biomass OR bioenerg*) AND (participation OR engage* OR consultation* OR collaboration*) AND (compan* OR corporat* OR business* OR developer* OR proponent* OR industr*)
Search 2	Canad* AND (Indigenous OR Aboriginal* OR "First Nation"* OR Métis) AND (biofuel* OR biomass OR bioenerg* OR energy OR forestry OR "forest* management" OR "forest planning" OR "forest governance") AND (participation OR engage* OR consultation* OR collaboration*) AND (compan* OR corporat* OR business* OR developer* OR proponent* OR industr*)

Standard bibliometrics, including the year of publication, article keywords, region of study, and authorship, were analysed to provide a portrait of the literature used for the frame analyses (Bullock & Lawler, 2015; Song & Zhao, 2013). Of the 23 articles that were included, 14 were from the past 3 years (6 from 2015, 5 from 2016, and 3 from 2017). The other 9 were spread across 2008 to 2013 (2 in 2008, 2010, and 2011; none in 2009 and 2012; and 3 in 2013). A total of 88 different keywords were associated with the articles. The most common keywords were: "Canada" and "First Nation(s)" (occurring 4 times each), "governance," "forest(s)," and "Aboriginal people(s)" (occurring 3 times each), and "Aboriginal participation," "collaboration," "forest governance," "forest policy," "Québec," "sustainable development," and "sustainable forest management" (occurring 2 times each). Among the articles, 9 broadly related to Canadian issues and policy, and were not focused on a particular province, territory, or region in Canada. Regional policies, programs and/or cases were discussed in such papers only as examples that would demonstrate the points being made about the broader issues around Indigenous participation in forestry and energy development in Canada. Most cases were situated in British Columbia (4 articles), Québec and Alberta (3articles each), followed by Ontario, New Brunswick, Saskatchewan and the Northwest Territories (2 articles each).

Authors of the articles were mostly from academic institutions, with the exception of one article that is authored by a member of a corporation. Articles were affiliated with the University of British Columbia (5 articles), the University of Moncton (6 articles), the University of Saskatchewan (4 articles), Laval University (4 articles), Lakehead University (3 articles), the University of Québec (2 articles), the University of Winnipeg (2 articles), and York University (2 articles). These universities have forest- and resource-based programming, which accounts for the frequency of articles that are produced. Several of the articles also had international co-authors (in some cases first author) from universities such as

Cambridge University (UK), Utretcht University (Netherlands), University of Bergen (Norway), and University of Arizona (USA). A total of 14 authors were female and 40 were male. Of the lead authors, 7 of the 23 were female and 16 were male.

Data Analysis: Applying Social Framing

A coding framework was developed based on analytical constructs from the literature (i.e., frame categories) to assist classification, and open coding was used to help account for emergent findings. All statements relevant to energy and forestry issues and perceptions were coded. Content analysis involved theme coding, pattern matching, and ranking to construct profiles of the different perspectives and positions that currently underlie Indigenous partnerships in the bioenergy sector (Yin, 2014). Characterization, identity, diagnostic and prognostic frames were coded. In adhering to Kooiman's (2003) definition of governance, identity frames and related codes therefore included groups involved in governance: *community*, *government*, *NGO*, and *proponent*. Subset codes for each of the identity codes were used to indicate whether the party was *supportive*, *neutral,* or *against* the development being discussed in the literature. Characterization frames and codes related to whether the development in question was characterized as being *positive*, *negative,* or *neutral* relating to the *environment*, *socioeconomics,* and *equitable decision-making* outcomes for Indigenous communities. Diagnostic frames and codes described whether *community(s)*, *company(s)*, *government(s),* and/or *NGO(s)* were the parties responsible for the characterizations of development. This relates directly to characterization frames and codes, for example, where the *government* could be deemed responsible for a situation that is *inequitable* for Indigenous communities. Prognostic frames and codes indicated what parties were thought to have the solution(s) to the resource development issues at hand. Prognostic codes therefore included: *communities, companies, the government,* and/or *NGOs* as *having the solution*. A fifth code was also produced to account for instances when the author or participants believed that *the solution lies in partnership*. This code included the subset codes: *led by communities*, *led by companies*, *led by the government*, *led by NGOs*, and *led by all parties*.

Two types of emergent codes were derived. The first type of emergent code was types of Indigenous participation that were featured in the literature (e.g., *criteria and indicator development*, *impact benefit agreements*, *collaboration, and power-sharing*). The second type were captured themes highlighted through the literature (e.g., *barriers to participation*, *decolonization*, *feasibility*). In addition to coding for frames mobilized in current policy and research discourse, statements in non-academic and academic literature were coded for magnitude to further probe attitudes, motivations, and priorities (after Plummer, Baird, Bullock, Dupont, & Renzetti, 2018). Magnitudes were *empty* (descriptive), *implicit* (advisory), or *explicit* (directive). This method helped us to make sense of the nuanced discourse that bridges domestic and international actors, and that provide new insights on existing knowledge produced over the past 10 years to advise energy policy and Indigenous engagement.

Results and Discussion

Perspective and Issue Frames

Identifying the underlying perspectives surrounding energy and forest sector development is important for contextualizing the issues relating to Indigenous participation within such sectors. Framing of identities revealed some differences in support for development projects by different parties

(proponents, government, communities, and NGOs) involved in governance. Energy and forestry proponents were always supportive of new development projects that would enhance their corporate revenue. Governments were mostly supportive of new resource developments as a way of strengthening regional and national economies. However, there were some cases where the government demonstrated uncertainty or a lack of support for energy and forestry development. For example, articles by Griffith, Diduck, and Tardif (2015) and Krupa (2012) reported that the scale of the development has in the past had an effect on whether a development project would receive the government's support. Griffith et al. (2015) reported that Manitoba's provincial forestry branch had an aversion to small scale forestry, and a study by Krupa (2012), in the context of bioenergy development, reported that Ontario government officials were hesitant to embrace large biofuels developments because their region was still recovering from major losses in forestry and that the industry was still "fraught with major pitfalls" (p. 119). Hesitation on the part of the government may reflect a certain culture of risk aversion with regard to development opportunities that can generate conflict. Such frames and associated decision behaviours can hamper innovation necessary to bolster new development and partnerships. Governments wanting to support innovation should perhaps be aware of the implications of mobilizing such frames; proponents advancing new projects could pay attention to considerations of scale to ensure they make a solid case for submission. Innovation-directed policies should be designed to accommodate scale considerations (Alexander, Andrachuk, & Armitage, 2016).

Community support for projects typically depended on the type and level of participation, as well as the potential for benefits to be received through participation and from the development. Benefits and incentives for participation in governance included influence on how projects took shape (including the assertion of rights), as well as socioeconomic outcomes for communities, such as jobs and community infrastructure (Beaudoin, Bouthillier, & Chiasson, 2015; Fortier, Wyatt, Natcher, Smith, & Herbert, 2013; Laurin & Jamieson, 2015; Montsion, 2015; Wanvik, 2016; Zurba, Diduck, & Sinclair, 2016). With regards to energy development, the articles reviewed were in the context of non-renewable resources (the literature on renewable resources and Indigenous participation was too scant), namely oil and gas production and transportation via pipeline infrastructure. It is highly likely that this would have influenced the perspectives and support for existing and/or future developments. For example, several of the articles refer to the potentially severe impacts of oil and gas development on the environment and how such impacts could affect Indigenous livelihood strategies that are connected to the environment, such as hunting, fishing and trapping (Bagelman, 2016; Laurin & Jamieson, 2015; Mathewson, 2013; Montsion, 2015). Demonstrating benefits that will accrue to communities beyond jobs, such as cultural enrichment and relevance, as well as environmental protection, are paramount to successful proposal and implementation of bioenergy development. New partnerships that meaningfully account for livelihood, cultural, and environmental concerns have a better chance of building community support requisite for success. The challenge here for international partners is whether and how they can become locally acquainted so as to build meaningful relationships.

Laurin and Jamieson (2015) and Montsion (2015) commented on the potential impacts to Indigenous rights and sovereignty from different forms of development projects. The characterization regarding environmental impacts and acceptability of forestry projects by communities generally related to the area of harvest (Beaudoin et al., 2015, 2016; Wyatt, Fortier, Natcher, Smith, & Hébert, 2013), harvesting techniques (Wyatt, Kessels, & van Laehoven, 2015), and whether or not communities had a history of forestry and/or negative experiences in dealing with forestry companies in the past (Zurba et

al., 2016). In the context of oil energy development, Laurin and Jamieson (2015) highlighted that developers are aware of impacts and are increasingly modifying their consultation and development practices to meet the needs and requests of Indigenous communities. However, they also explained how this modification of practice is perceived by industry as enhancing the "above the ground risks" of projects (i.e., legal, regulatory, financial, and reputation). Corporate risk is often perceived to increase with increased interactions with the public; in other words, adapting processes to meaningfully engage Indigenous groups carries more corporate risk. The prior experiences of Indigenous groups with industry and their perspectives on resource development could work either way to mitigate or build conflict with resource companies (Zurba et al., 2016). Prior experience with flawed engagement processes can enhance conflict. These views may signal immaturity of engagement processes and point to the need for innovation in process design. The willingness of energy companies to modify engagement processes based on Indigenous direction can be seen as a positive feature of such partnerships, especially where positive measurable participation outcomes are demonstrated.

The type of participation in the governance resources related directly to how the project was characterized in terms of being equitable for Indigenous communities. Non-renewable energy development in Canada has produced a variety of different types of participation, ranging from direct conflict between communities and companies (i.e., within meetings and through protests) to participation in energy development consultation through impact benefit agreements (IBAs) and environmental assessments (EAs) (Bagelman, 2016; Laurin & Jamieson, 2015). Companies may obtain social licence to operate (SLO) when communities participate through such processes, but this does not predetermine legal consent to the development (Laurin & Jamieson, 2015; Wyatt, 2016). SLO processes can be highly variable for what they deliver in terms of effectiveness and equity to Indigenous communities that are potential future partners with industry (Wyatt, 2016). SLO processes are especially vulnerable to limited capacity and transparency, as well as the legal frameworks that dictate development (e.g., forest harvesting; Wyatt, 2016). Similar in some ways to the SLO process, free, prior and informed consent (often referred to as FPIC) has entered the landscape of different standards for working with Indigenous communities mostly through political processes and legal decisions, particularly Canada's legal obligation to consult and accommodate (Forest Stewardship Council, 2012; Laurin & Jamieson, 2015; Wyatt, 2016). However, FPIC is largely a consultation approval process (Wyatt, 2016) and consent is an ongoing issue for Indigenous participation in energy development, which is confounded by the fact that there is no single process for obtaining full legal consent from communities (Laurin & Jamieson, 2015; Wyatt, 2016). The same is true for forestry in Canada. However, forest governance systems have evolved structurally over the past few decades as a result of social and economic factors, such as the economic downturn impacting forestry in the early 2000s (Zurba et al., 2016). Our systematic review accounted for several different types of Indigenous participation in energy and forest development with varying degrees of equity for the parties involved (e.g., criteria and indicators processes, advisory committees, consensus building, international negotiations). In the context of forest management, Fortier et al. (2013) and Wyatt et al. (2013) use a typology with 5 top-level categories: (1) Treaties, agreements and memoranda of understanding (MOU); (2) Aboriginal involvement in forestland planning, management and land use studies; (3) Influence on forest management decision-making, subtypes; (4) Aboriginal-held forest tenure; and (5) Economic roles and partnerships.

Within the types of participation and tools used to facilitate participation, Indigenous communities have varying degrees of ability to assert rights, values, and aspirations, as well as varying abilities to reap socioeconomic benefits (Krupa, 2012; Laurin & Jamieson, 2015; Mathewson, 2013; Wyatt, 2008; Zurba et al., 2016). The shifts in forest policy and management in Canada have also been influenced by national and international policy documents, such as the Royal Commission on Aboriginal Peoples (RCAP) and the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP; McGregor, 2011; Wyatt, 2016). However, Adam and Kneeshaw (2011), Beaudoin et al. (2015) and Wyatt et al. (2015) found that the sustainability and equity of a management system or development project can be negatively impacted if consultation tools (i.e., facilitating different types of participation) are designed only to suit government and industry proponents. Overall, despite shifts in tenure arrangements and changes to types and level of participation, participation in forest management remains inequitable for Indigenous communities (Adam & Kneeshaw, 2011), especially those that might want to assert rights and visions that are perceived to be incompatible with development. It thus appears that the many avenues available to establish new partnership developments in bioenergy may be imperfect in so far as equity and efficiency. The ability to move swiftly from a business perspective may need to be tempered by the need to move more slowly in order to get partnerships "right" and properly account for equity issues.

Problem and Solution Frames

The perspective and issue frames detailed above provide a context for understanding problem frames (i.e., diagnostic frames) and solution frames (i.e., prognostic frames) regarding Indigenous participation in energy and forest development (Gray, 2003). Assertions of responsibility for enabling Indigenous communities to participate in resource governance included governments, companies, and communities themselves as the primary actors. Within energy and forest development contexts, there is resounding agreement that governments are responsible for consulting with Indigenous communities because they have a fiduciary responsibility laid out by the Crown and are also responsible for setting the policy agenda for the community participation that ultimately take place (Laurin & Jamieson, 2015; Wanvik, 2016). Governments may also change policy and what is possible for Indigenous participation in development for political reasons (e.g., changes in government) that are not connected to the successes of current governance structures (Zurba et al., 2016).

Despite the ability to change tenure policy and community consultation protocols, provincial and federal governments in Canada do not have ultimate authority. Case law at the level of the Supreme Court and provincial courts supersedes government decision making and can affect federal and provincial policy relating to natural resources developments (Laurin & Jamieson, 2015; Menzies, 2015; Montsion, 2015). Nonetheless, collaborative policy development for bioenergy expansion, if that is the will of governments, industry, and communities, seems the path most likely to achieve governance arrangements customized for success. Such "preventative" policy making would better address Indigenous participation issues, although certain rights-based issues may still need to be resolved by the high court, even if parties have amicable working relationships. It is also apparent that the onus to improve Indigenous involvement is not the sole responsibility of any one entity, whether government, court, community, or industry. Given the multi-scale nature of international energy partnerships, solutions could also be found across different regions and sectors.

Governments have been credited with facilitating the development of new policy tools and frameworks that promote Indigenous participation, facilitate partnerships, and enhance equity within agreements (McArthur, 2017; Zurba et al., 2016). Solution frames directed at the government relate to national and regional domestic policy development, as well as the need for the government to acknowledge international guiding frameworks such as UNDRIP (Laurin & Jamieson, 2015). The tone with regards to government solutions frames was often explicit (i.e., directive). Connected to the call for policy supports and reform is the call for political will in association with acknowledgement of the rights and titles held by Indigenous Peoples (Bagelman, 2016; Laurin & Jamieson, 2015; Mathewson, 2013; McArthur, 2017; Menzies, 2015; Montsion, 2015).

The foundation of responsibility for Indigenous communities is their custodial role in the stewardship of the land (Bagelman, 2016; Beaudoin et al., 2015; Laurin & Jamieson, 2015; McGregor, 2011). The importance of stewardship to Indigenous identities intensifies the connection between identity and diagnostic or prognostic framings of environmental issues. Community leadership, as well as individual members and groups, thus engage by necessity in environmental governance through different forms of action, which in turn relate to the solution frames that communities continue to put forward (e.g., stewardship, restricting access to development). Indigenous communities engage in forging solutions to participation through their on-going involvement in processes related to environmental governance. Such processes not only include forms of participation that reduce conflict, but also types of participation that enhance conflict, such as protest and the development of alternative structures for consultation (Bagelman, 2016; Menzies, 2015). A noteworthy example of governance outside of state politics is the development and actions of the First Nations Energy and Mining Council (FNEMC) (Montsion, 2015). The FNEMC was formed by British Columbia First Nations as an alternative organization (alternative to the Government of Canada) that would conduct "direct, independent and collaborative relations between indigenous peoples and [foreign] investors" with regards to energy development in Canada (Montsion, 2015, p. 1).

The FNEMC represents an assertion of First Nations sovereignty and, in 2011, they initiated a strategy entitled First Nations & China: Transforming Relationships. The strategy was designed to promote reciprocal investments and acknowledgement of development interests on Indigenous lands (Montsion, 2015). Non-state actions taken by the FNEMC are an example of disruption and self-affirmation, and they could act as a touchstone for Indigenous communities wishing to assert their sovereign interests with foreign interests. Indigenous concerns and actions go beyond state designed processes and policies. Indigenous identities, problem framings, and solution framings may therefore offer innovative ways to develop bioenergy partnerships and solve problems that are produced by, and even hampered by, Canadian trade policies. Indigenous motivations and needs cannot be fully accounted for with current arrangements, so new ones are being developed to suit Indigenous and international partners that better reflect the roles they see themselves fulfilling.

Companies operate within the legal and policy frameworks set forth by government; yet, they maintain responsibility for how they engage Indigenous communities within what is possible according to policy (Mathewson, 2013; McArthur, 2017; Montsion, 2015; Wyatt, 2015). This responsibility also applies to consultants that are hired by companies to consult with communities or engage them in development planning related processes, such as anthropological research (Menzies, 2015). Companies have the ability to create meaningful pathways and support capacity building for developing participation, and

they can divest responsibilities to communities that enable them to play a role in decision making and receive direct returns from their involvement (Zurba et al., 2016). Solution frames connected to companies were often explicit (i.e., directive) and/or implicit (i.e., advisory) in tone. Most solution frames were directed towards companies in general, with no distinction between domestic and international firms. The authors stressed the importance of improving relationships with communities through genuine forms of engagement (Bagelman, 2016; Zurba et al., 2016). They also promoted participatory spaces, where communities are empowered to communicate on their own terms, as having the greatest potential for working through conflict and facilitating the development of trust, among other relational qualities (Beaudoin et al., 2015; Reed, 2010; Wyatt, 2016; Zurba et al., 2016). Furthermore, the call for shared value initiatives where business success is connected to community prosperity is a stated solution for community well-being and participation in development projects (Laurin & Jamieson, 2015).

More recent articles suggested solutions that were based on different types of collaboration, including corporate partnerships involving companies and Indigenous communities (Laurin & Jamieson, 2015; Wanvik, 2016; Zurba et al., 2016). Divestment is an important part of such partnerships where communities take on leadership and decision-making roles (McArthur, 2017; Zurba et al., 2016). Provincial governments often have a strong role to play in creating spaces for collaboration through shifting policy, and local government managers working with companies and Indigenous communities have a role to play in facilitating new collaborative agreements (Zurba et al., 2016). Zurba et al. (2016) reported an example of a recent shared-tenure agreement (Sustainable Forestry Licence administered by the Ontario Ministry of Natural Resources) for the Kenora Forest (1,225,536 ha), the Miitigoog Partnership Inc. in northwestern Ontario (est. 2010), which involves First Nations, domestic and international forestry companies, and small regional licence holders. Within the agreement, First Nations have redeemable and retractable shares and 50% of the seats within the board. As part of the agreement, First Nations were also supported by the parties to develop the First Nations fully owned Miisun Integrated Management Co., which oversees day-to-day operations on the licensed public land base.

The Miitigoog partnership illustrates power sharing and collaboration that emerged out of regional conflict around forestry and relationship building during a time of relatively slow economic growth (following the economic downturn of the early 2000s). Regional cooperation and coordination are increasingly popular approaches to implementing political and economic strategies, especially in underserved rural and remote areas. Regional economic development corporations, de facto regional governance forums including groups of band and municipal leaders, and economic working groups extend governance infrastructure available to support bioenergy development as such arrangements are likely to intersect geographically (Bullock & Reed, 2016). Syndicates of communities could therefore lobby government and apply concerted effort to attract international investment for bioenergy development, and likewise defend territorial values by mobilizing common identity and solution frames to steer policy discourses.

While collaboration can create structural changes that can enhance equity for all parties, it is not guaranteed. Furthermore, such structures are often based heavily on relationship building and the collaborative development (not simply implementation) of governance frameworks (Beaudoin et al., 2015; Laurin & Jamieson, 2015). Our review of solution frames relating to collaboration revealed that

there is explicit language stating that relational (i.e., building understanding through interpersonal relationships and informal interactions) and affective interactions (i.e., understanding the emotions of parties, deep listening, and learning) are important for building meaningful and long-term collaboration (Bagelman, 2016; Zurba et al., 2016). Connected to the need for long-term development of relationships is the call for a two-row approach to collaboration, which is built upon the common interpretation of the treaties as two distinct groups traveling a path of sharing where one does not aim to disempower the other for the other's sake (Bagelman, 2016; McGregor, 2011; Wyatt, 2008). The two-row approach provides guidance for understanding Indigenous identity, and problem and solution frames with respect to how Indigenous communities and organizations may wish to engage settlers and perhaps international partners.

Conclusions

Our analysis revealed that identities and perspectives concerning energy and forestry can be complex and can shift depending on how business is done around such projects. Strengths in the current state of knowledge include the breadth of research regarding participatory natural resource management in Canada, particularly with regard to northern and Indigenous communities and territorial lands. Our review indicates that even the emerging bioenergy literature that exists now, when paired with that of allied sectors, can help analysts understand and make sense of energy and energy-related issues. In particular, existing research confirms what we know of typical resource development models in Canada— that is, proponents support projects to generate corporate revenue, communities demand benefits from such projects, and governments support new resource development to strengthen economies. However, the rising importance of concepts and practices like social license to operate, community-led companies, and local or municipal intermediate facilitation in "higher order" structures and processes (i.e., corporate-community collaboration) all highlight that conventional roles and agendas are shifting. This bodes well for Canadian communities and would-be national and international partners seeking to do business in Canada's sustainable and renewable natural resource industries.

However, there are many examples of Indigenous communities in Canada that have had negative experiences with international companies (including those in forestry). Reframing characterizations of international interests will therefore be important to building trusting relationships. Moreover, as framings are fluid and contingent upon actors and context, much thought could be given to how current and future bioenergy relationships are framed in international policy forums. Since local intentions and meanings can be interpreted differently by "outside" or international actors, greater consideration given to local perspectives will help maintain the influence and intent of community decision and policy makers in international initiatives. Furthermore, we know, for example, that there are differences in how Indigenous and non-Indigenous groups frame their involvement in governance and their responsibilities. It would be helpful to know more about the interplay of these framings and fully grasp the differences in order to craft policy for the expanding bioenergy sector, as well as any evolving role identities of various parties, from domestic or international firms, governments, or communities. Governance research to support decision making and social-economic development is needed to balance the focus on and government investment in renewable bioenergy technology and engineering research and development. There remains a need to fully document bioenergy policies, including conducting comparative policy analyses across the provincial and territorial resource sectors. This could

include examining the implications of the language in existing policies relative to current framings emerging from literature on energy and forest sector developments.

There is also a need for local frames to be incorporated in international policies and dialogues. Such changes could help inform Canada's international leadership and development of engagement guidelines, as well as outward-looking national strategies intended to direct how Canada engages with international firms, governments, and NGOs. Incorporating Indigenous community and business perspectives in such protocols would enhance Indigenous engagement and perhaps even lead to greater control through management decision making when they are engaged by international companies. Increasing international dialogue and embracing existing frameworks would help close the gap between how local and global groups frame bioenergy development by increasing understanding of the discourse that bridges local domestic and international actors. Further to this point, our findings show that governments, industry, and communities are all seen to share responsibility for improving Indigenous involvement; this responsibility must be extended to international entities involved in matters related to Canadian business and governance. Bioenergy development is a useful opportunity through which the appropriate roles for international partners can be identified. Given its international appeal, cross-sectoral relevance (energy, forestry, food), and socio-economic and environmental links to Indigenous cultural, stewardship, and livelihood concerns, there is great potential for the bioenergy sector to demonstrate how relevant international conventions such as UNDRIP and existing practice aimed at guiding foreign investment (e.g., First Nations Energy and Mining Council) could be meaningfully embraced and more broadly implemented. How Canada's Indigenous bioenergy partnerships unfold will signal its policy and leadership preferences to the world, and ultimately, how international relations are mobilized to shape timely initiatives directly connected to bioenergy, such as renewable energy, climate policy, and reconciliation efforts.

While possible synergies hold promise, they are not automatic, and statements of commitment need to be backed by specific actions and resources. A complicating factor is that we do not fully acknowledge or understand the interplay of Western and Indigenous knowledge and governance systems as this relates to processes and conditions that support innovation in energy and allied sectors. For example, it has been difficult to realize the full contribution and benefits of Indigenous involvement in environmental resource management because their knowledge, if it is used at all, is often used inappropriately through selective and de-contextualized applications (Stevenson, 2013). Thankfully, research has demonstrated that knowledge and governance systems are pluralistic and evolve (Bullock & Reed, 2016). Still, much more effort is spent devising technologies and products than is spent building relationships, common lexicon and protocols, and decision-making procedures and processes. There is much work to be done in the human dimensions of energy and forestry, which likewise might be considered the social innovation side of bioenergy partnerships involving Indigenous representatives and their partners (Mulgan, 2011). Like technological innovation, social innovations require experimentation, failure, and perseverance (Olsson & Galaz, 2012). Examples of current community-led partnerships emphasize that such activities are ongoing and are essential to upholding local control, building respect, and support (Pengelly & Davidson-Hunt, 2012).

More empirical research with and by communities actually involved in biofuels development is needed. The bioenergy sector is expanding, and thus so too must this area of research, which can be described as emerging at best. There are a small number of biomass energy projects in Canada involving Indigenous

communities, most of which are in British Columbia. Further analysis of such projects could be a useful next step in the research towards developing transferrable lessons and, in particular, analysis of evolving policy discourse and its alignment with community and broader natural resource strategies. There is also a need for definition regarding how international and national firms can properly engage Indigenous partners in bioenergy development. This could mean creating and making explicit the proper protocols, expectations, and roles of partners in sector activities and new projects. In addition, the question of what bioenergy-specific policies can be developed to build on lessons learned and also avoid the pitfalls of previous governance work remains to be answered. One step would be to consult national and international policy documents, such as the RCAP and UNDRIP while developing bioenergy strategies and policies to direct Canada's future energy sector.

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