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IMAGINING
CANADA'S
FUTURE



ADVANCING KNOWLEDGE ON COLLABORATIVE AND SUSTAINABLE ENERGY AND NATURAL RESOURCE DEVELOPMENT IN CANADA

Insights and opportunities for knowledge mobilization
and future research

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Executive summary

Canadians have always been well aware of the rich resources of their country, and have debated how best to manage those resources in the interest of societal well-being. New processes and technologies are transforming how resources are accessed and developed. Complex regulatory and governance frameworks across Canada's regions are challenged by evolving societal values and persisting global and environmental pressures. Evolving research issues and approaches are enhancing our collective ability to address widespread societal impacts and transitions; from critical climate change and economic concerns, to deep social and cultural challenges and impasses. Exploration of these issues is encompassed in one of the six future challenge areas identified in the Social Sciences and Humanities Research Council's (SSHRC) [Imagining Canada's Future](#) initiative.

Drawing on the findings of SSHRC Knowledge Synthesis Grants award holders, as well as insights from graduate students and cross-sectoral leaders, this report addresses the future challenge area: "[What effects will the quest for energy and natural resources have on our society and our position on the world stage?](#)" The findings are highlighted under the following six shared themes:

- **Innovation and transitions to clean energy**
- **Resource development and extraction in international contexts**
- **Adaptation and community resilience**
- **Governance, social licence and engagement**
- **Aboriginal rights and benefits**
- **Socio-economic effects: labour markets, equity and education**

The report identifies key knowledge gaps and strengths related to the socio-economic and environmental impacts of both conventional and alternative energy and resource development. The findings provide a breadth of guidance for policy and practice, and to inform future scholarly inquiry.

Insights included in this report are those of the researchers, graduate students and multisector stakeholders who participated in SSHRC's dialogue related to this future challenge area in 2015 and 2016. They do not represent the positions of SSHRC or the Government of Canada.

Following are some of the key messages resonating across the thematic findings:

- Governments must play an increasingly important role to ensure responsible and sustainable resource development in Canada.

- Energy and natural resource use, management and transition need greater and more meaningful integration of Indigenous peoples and Indigenous knowledge.
- As public perception plays a significant role in the quest for energy and natural resources, increased access to informed science on resource sector impacts is needed.
- The renewed focus on the environment and climate change should integrate social and cultural impacts, as well as the resilience of Indigenous and non-Indigenous communities.
- Immediate translation of knowledge, both across Canada and from abroad, is needed, to inform policies and best practices in the Canadian context.

Overall, the findings call for increased interdisciplinary, as well as longitudinal, studies to enhance our understanding of causal relationships and diverse, cumulative outcomes. Meaningful and inclusive dialogue among and across communities, researchers, industry and all levels of government is critical to building on and applying knowledge.

SSHRC invites researchers and stakeholders from all sectors to examine these and other social science and humanities insights, and to continue exploring critical issues, in order to pave the way for more robust energy and natural resource development policies, practices and tools for a sustainable and equitable future.

Introduction: The quest for insights on Canada's energy and natural resource development

Canadians recognize the ability to collectively and sustainably access and benefit from natural resources and energy in the face of socio-economic, cultural and governance fluctuations, and the development of new technologies, as central to their future. Against the backdrop of international greenhouse gas reduction commitments, the renewed federal priority on transitioning from carbon-intensive industries to alternative energies and renewable goods and services is demanding urgent and transformative changes in Canadian policies, practices and value systems.

Diverse social sciences and humanities fields are addressing the onset of sustainable development principles and technologies for both conventional and renewable energies. In fact, some scholars have stated that research on resource-based communities has undergone an evolution over the past two decades. Practical and theoretical frameworks have brought to light the global energy and resource sectors' multifaceted impacts on community livelihoods, traditions and well-being across Canada's distinct regions, and particularly on Canada's Aboriginal Peoples and rural and remote communities.

Drawing on the findings of knowledge synthesis projects, as well as insights from graduate students and cross-sectoral leaders, this report addresses the future challenge area under SSHRC's [Imagining Canada's Future](#) initiative: "[What effects will the](#)

quest for energy and natural resources have on our society and our position on the world stage?”

SSHRC investments over the past decade in research projects related to energy and natural resources

SSHRC invested **\$260 million** between 2005 - 15 (8% of overall research funding) resulting in funding for **2,600** grants and scholarships.

SSHRC 2016-20 STRATEGIC OBJECTIVES



SSHRC’s Imagining Canada’s Future initiative illuminates the contributions of the social sciences and humanities research community in addressing the complex challenges facing Canadians over the next 20 years. It does so by encouraging research preparedness, informing decision-making, and expanding cross-sector collaboration and partnerships for research and training.

Following an extensive two-year foresight exercise through SSHRC’s Imagining Canada’s Future initiative, six future challenge areas impacting Canadians in the coming two decades were identified and launched in 2013. Each challenge area includes a range of possible—yet, not exclusive—issues that explore the complexity of each respective issue. The research questions are framed to facilitate cross-disciplinary and multisectoral collaboration.

Currently, the six future challenge areas are:

1. What new ways of learning, particularly in higher education, will Canadians need in order to thrive in an evolving society and labour market?

2. What effects will the quest for energy and natural resources have on our society and our position on the world stage?

3. How are the experiences and aspirations of Aboriginal Peoples in Canada essential to building a successful shared future?

4. What might the implications of global peak population be for Canada?

5. How can emerging technologies be leveraged to benefit Canadians?

6. What knowledge will Canada need to thrive in an interconnected, evolving global landscape?

The breadth of resources, perspectives and areas of inquiry covered by this theme called for a broad synthesis of the current state of knowledge. Objectives included assessing and evaluating the overall quality, accuracy and rigor of existing research, and identifying knowledge gaps.

To achieve these objectives, SSHRC launched a **Knowledge Synthesis Grants** funding opportunity in June 2015. A central goal was to mobilize research knowledge related to promising policies and practices within the public, private and not-for-profit sectors. **Twenty-one projects**, awarded funding through a rigorous merit review, covered a range of critical issues facing Canada's energy and natural resources sectors. The projects drew on cross-sectoral and interdisciplinary knowledge, and provided in-depth understanding of cases or theoretical frameworks.

We need facts. On these issues, SSHRC's Knowledge Synthesis Grants demonstrate that organized research brings key information and societal enlightenment, and prepares the ground for good public policies. ¹

Knowledge Synthesis Grants: Selected Areas of Knowledge Strengths and Gaps

Knowledge strengths and emerging research:

- There is a growing literature clarifying resource-related conflicts, and includes identifying structural factors, triggering events, and socio-political processes, as well as the role of extractive companies in governing security issues.
- There has been a steady increase over the past decade on research regarding capacity-building of Aboriginal Peoples in natural resource development projects.
- A large body of work by Indigenous creators contains critical traditional teachings about the relationship of humans to the environment, in the form of oral stories, literature, non-fiction and film, among other genres.
- “Resilience” is an emerging research field, with particular growth in the governance of natural resources and ecology, and in urban contexts.
- Significant research is devoted to geographic- or industry-specific environmental and health impacts of fossil fuels.

Further research is needed:

- on the social, political and cultural impacts of solar, small-scale hydro, and small modular reactors or nuclear;
- on the long-term effects of impact benefit agreements on Indigenous communities);
- to develop a more complete picture of the impacts of booms and busts on the local economies of resource-based communities;
- to determine biological and psychosocial effects of energy resource activities and climate change, on which knowledge is extensive but fragmented; particularly on children and families;
- on the design and mix of federal and provincial policies to boost clean innovation and remove impediments;
- for a more detailed analysis of Indigenous philosophies of energy, in order to guide energy transition on a large scale;
- on the socio-economic effect of hydraulic fracturing; and
- for gender-based data on both carbon and renewable industries.

Strengthening knowledge mobilization through partnership with Natural Resources Canada

In support of the Imagining Canada’s Future objective to create a national dialogue on critical issues facing Canadians, Natural Resources Canada (NRCan) and SSHRC brought together a cross-section of leaders from academic institutions, think tanks, federal government departments, industry, and not-for-profit sectors to discuss recent and future research related to economic, social, and environmental issues. An event, held on December 7, 2015, convened discussions on climate change, environmental protection, innovation and competitiveness, and on how research can help inform decision-making across these issues and sectors.

NRCan is fostering cross-sectoral knowledge-sharing and collective understanding of Canada's natural resources through its **Natural Resources Economic Analysis Network**, which includes close to 400 members active in the natural resources and economic analysis. Those interested can join by contacting nrcan.nrean-raern.nrcan@canada.ca to get a report on the SSHRC-NRCan knowledge symposium, and the latest publications and data published by departments, industry and institutions across the country.

The Knowledge Synthesis Grants opportunity was complemented by a range of activities across the country. A December 2015 cross-sectoral knowledge symposium, held in Ottawa in partnership with NRCan, convened rich discussion on the project proposals and on critical research needs across the country. A discussion on knowledge mobilization highlighted the importance of data; timely and collaborative input on pressing policy issues; and the structures in place to enable transferring knowledge across sectors.

Insights from the 21 synthesis projects were shared at the Imagining Canada's Future forum in June 2016 in Calgary, held in conjunction with the **Federation for the Humanities and Social Sciences** Congress 2016. Andrew Bear Robe, elder of the Siksika Nation, provided the opening ceremony. Discussions on project findings included leading researchers, and provincial and federal government and private energy sector representatives. Knowledge synthesis project leaders have since published their findings in a number of op-eds in national newspapers, including *The Hill Times*, as well as through interactive videos, shared in this report.

In 2015, SSHRC invited the Canadian Association for Graduate Studies (CAGS) to organize a national dialogue on the future challenges areas; over 300 graduate students at 28 universities participated. This future challenge area evoked rich discussion among graduate students in three of Canada's resource-rich provinces—British

As a country, we need to create institutions and people that work at the interface of research and policy and encourage cross-pollination between government, academia, not-for-profit, private sector and independent research organizations.²

"Energy literacy:" Canadians need to know about their energy past if they want to face their energy future. We need to know why we are where we are at the moment. We need to know who has already experienced major energy transitions that impacted them in a massive way.³

Columbia, Newfoundland and Quebec—on authentic engagement with people in rural and remote communities, equity, education, energy diversification, and opportunities for Canada to become a global leader. Participant views are documented in [reports prepared by CAGS and the host universities](#).

Panelists called for more support to incorporate a global perspective into this research. Not only would this help adapt best practices and policies from other nations—it could inform provincial and federal policies to help improve reputational damage and move Canada into a leadership position.⁴

The dialogue on this future challenge area took place over the course of a change in federal leadership, which has seen increased focus on climate change and clean energy in the backdrop of minister mandates prioritizing evidence-based decision-making, open science, transparency and collaboration.

During this time, SSHRC also launched its new [2016-20 strategic plan](#). Key priorities include enabling excellence in a changing research landscape, creating opportunities for research and training through collaboration, and connecting social sciences and humanities with Canadians.

The present summary report illustrates how humanities and social sciences research is being mobilized to advance our understanding of a number of complex resource and energy issues impacting Canadian society and Canada's position on the world stage.

Insights included in this report are those of the researchers, graduate students and multisector stakeholders who participated in SSHRC's dialogue related to this future challenge area in 2015 and 2016. They do not represent the positions of SSHRC or the Government of Canada.

The report begins with key conclusions drawn from the 21 knowledge synthesis reports. Wide-ranging



Roundtable discussions were held at Université Laval on April 20, 2015, on SSHRC's energy and natural resources future challenge area.⁵

accounts of the findings—as well as the knowledge strengths and gaps identified to help guide future work and decision-making—are further detailed in the synthesis reports themselves.

The current summary report also offers insights and cross-cutting themes that emerged from the knowledge syntheses and the thematic stakeholder conversations convened by SSHRC on the forces shaping Canada’s energy and natural resources landscape.

SSHRC invites you to connect and participate on this and other future challenge areas. To find out more about the ways in which humanities and social sciences researchers are contributing their knowledge, talent and expertise to advance Canada’s prosperity and quality of life, please visit www.sshrc-crsh.gc.ca/imagining.



[View video on YouTube](#)

**SSHRC Storytellers
2016 Finalist
Imagining energy in
transition: Past,
present, future**
Ian Wereley, Carleton
University

Knowledge synthesis: project overviews

The knowledge synthesis projects highlighted in this report appear in the following list, alphabetized by principal investigator. Listings include researcher contact information and, where available, a link to the full report:

Optimizing employment for women in Canada’s clean energy sector [Bipasha Baruah](#), Western University

In 2014, renewable energy sectors employed almost eight million people—an 18-per cent increase from the previous year. Gender equity policies and programs must be proactively planned and implemented to allow women in industrialized countries—already severely underrepresented in the clean energy and energy conservations sector—to prosper. [Full report](#)

Enhancing Aboriginal capacity to control and benefit from natural resource development [Ryan Bullock](#), The University of Winnipeg

The historical exclusion of Indigenous peoples in natural resource development has not only led to serious capacity gaps in decision-making, it has impeded the ability of Indigenous peoples to reap vast benefits. A review of research on Canada’s energy,

forestry and mining sectors illuminates interconnected issues, to support more meaningful Aboriginal participation and benefits. [Full report](#)

Arctic oil: Canada's chance to get it right

[Michael Byers](#), The University of British Columbia

Climate change and receding sea ice are making Arctic oil reserves—approximately 13 per cent of the world's recoverable but as-yet-undiscovered reserves—more accessible. The downturn in global prices is giving pause to oil and gas development in the Arctic. This presents an opportunity for the Canadian government to make significant legal, regulatory and policy resolutions in the interest of both Indigenous peoples and the environment. [Full report](#)

Renegotiating justice: From social acceptability to maximizing benefits of mining and renewable energy development

[Bonnie Campbell](#), Université du Québec à Montréal, and [Marie-Claude Prémont](#), École nationale d'administration publique

The current emphasis on social acceptability and on maximizing benefits by local communities near mining and renewable energy development projects is creating tensions. These tensions can be seen as symptoms of far deeper, ongoing transformations—most notably, persistent deficient regulatory capacity; shifts in multilevel governance; and devolution of responsibility to industry. These transformations merit much closer attention than they have received to date. [Full report](#)

The young and the resilient: Key agents in the transition to low-carbon goods and services

[Robin Cox](#) and [Leila Scannell](#), Royal Roads University, and [Michael Ungar](#), Dalhousie University

Children and youth experience a wide range of biopsychosocial and economic effects related to energy resource activities, especially to carbon-intensive energy emissions and extractions. As Canadians look to sustainably transition to low- or no-carbon energy systems, emergent literature is helping position the next generation as key agents of change and “multipliers of resilience.” [Full report](#)

Mining the gap: Aboriginal women and the mining industry

[Raywat Deonandan](#), University of Ottawa

Canada's mining industry is a major contributor to growth and prosperity, and is Canada's largest private sector employer of Aboriginal Peoples. However, the industry's invasive nature and potent economic presence in remote communities affect Aboriginal families—particularly women—in marked ways. The affects involve those to health, the environment, and livelihood practices, with notably strong implications for cultural

traditions. Aboriginal women's voices can help guide industry to improve its conduct and practices within their communities. [Full report](#)

Boosting clean innovation in natural resources through smart public policies

[Stewart Elgie](#) and [Brendan Haley](#), University of Ottawa

Canada's future environmental health and economic competitiveness hinge on the country's ability to accelerate clean innovation for the development, movement and use of energy and natural resources. Government has an important role to play to both correct market and system failures and strategically leverage the efforts of private actors in this emerging area. [Full report](#)

Sharing a wealth of information: Fracking disclosure regimes in Canada

[Dror Etzion](#), McGill University

Fracking technologies have increased substantially over the past decades, along with public concern about potential health and ecological repercussions. Canadian regulators are challenged to improve accessible and public disclosure practices to benefit and address public safety risks in communities. [Full report](#)

Scoring sustainability within the legislation of Canada's forestry sector

[Paule Halley](#), Université Laval

Canadians are intrinsically linked to their forests. Forests cover 40 per cent of the country's surface area, and 10 per cent of the planet's. Legal frameworks and governance of these resources have strong consequences, both social and environmental, with significant impacts on industry practices. Recent changes in forestry law across the country have contributed to renewing governance practices to promote more equitable and sustainable local development. [Full report](#) (in French only)

Reducing the impacts of unconventional natural gas development in rural and remote communities

[Greg Halseth](#) and [Chris Buse](#), University of Northern British Columbia

The inevitable boom-and-bust cycles of northern British Columbia's rapidly expanding unconventional natural gas development bear profound and different implications for rural and remote communities throughout the value chain of production, transportation and processing. A renewed focus on equity, demographics and local governmental capacity is central to reducing negative community impacts. [Full report](#)

Impacts of alternative energy development: What do we know?

[Kevin Hanna](#), The University of British Columbia

Creating alternative energy systems will be essential for Canada to meet its commitments on climate change. Yet, these new systems will not necessarily just “plug into” the country’s existing infrastructure. Each will have its own environmental, social and economic impacts. Policy-makers will need new knowledge to make important decisions about Canada’s energy future. [Full report](#)

Volatile commodities: Conflicts and security issues in the extractive sector

[Philippe Le Billon](#) and Jon Gamu, The University of British Columbia, and Marta Condé, Universitat Autònoma de Barcelona

The recent global boom in the extractive industry, in which Canada is a major player, has been met with growing conflicts and security concerns in resource-dependent nations. Insight into the interplay between negative social and environmental impacts, participatory decision-making processes, and uneven revenue distribution, alongside neo-liberal reforms in partially democratized regimes, can help positively transform governance of the industry. [Full report](#)

Measuring labour market impacts in resource-based communities

[Joseph Marchand](#), University of Alberta, and Jeremy Weber, University of Pittsburgh

Untangling the local labour market impacts of the oil and gas industry is a critical challenge. Growth in resource extraction is found to increase employment, income, earnings and local populations, and create jobs in non-resource sectors. However, to more meaningfully assess the long-term prosperity of resource-based economies, future research should carefully consider and clarify resource measurement, study whether resource busts are generally worse than booms are good, and think more about the effects on human capital. [Full report](#)

Environmental performance and the future of Canada’s forest industry: What we know, don’t know and ought to know

[Rajat Panwar](#), The University of British Columbia

Canada’s forest industry is widely seen as one of the most progressive examples of environmental stewardship and excellence. But, does this translate into greater financial profitability of the industry? Can environmental performance leverage and secure Canadian competitiveness in today’s complex global markets? [Full report](#)

Bridging Indigenous rights and social engagement for responsible resource development

[Siomonn Pulla](#), Royal Roads University

In the coming decade, hundreds of major resource development projects, valued at over \$650 billion, are planned, or are already underway, in Canada. Indigenous engagement in the review of these projects is now a regulatory requirement; however, requirements to consult are still an ongoing learning process for all stakeholders. Much work remains to be done on the emancipatory potential of social licences to operate. [Full report](#)

Sustainable collaboration with the right to say “No:” A global perspective of Aboriginal veto power in the extractive industries

[Roberta Rice](#), University of Calgary

Co-operative relations between the extractive industry, governments and Aboriginal Peoples begin with free, prior and informed consent. But, voluntary measures are not enough. As a global energy leader, Canada is challenged to ensure emerging best practices become standard practices in our extractive sector operations in Indigenous communities, both domestically and internationally. [Full report](#)

Urban resilience: Research priorities and best practices for climate resilience in Canadian cities

[Richard Shaker](#) and Mark Gorgolewski, Ryerson University

As global climate change worsens over the next century, many known and unknown shocks and stresses—such as ice storms and droughts—will test the resilience of communities. The fast-emerging field of urban resilience offers frameworks and strategies to address the impact of global climate change on issues of access, equity and the availability of energy. [Full report](#)

Attending to social, gender and cultural impacts of extraction in Canada’s North

[Deborah Stienstra](#), University of Manitoba and Mount Saint Vincent University; Leah Levac, University of Guelph; and Gail Baikie, Dalhousie University

The environmental and economic effects of resource development and extraction are at the forefront of media, research and policy. While vitally important, they are emphasized at the expense of attention to and action on the deep and lasting social, gender and cultural effects on marginalized peoples in resource-based communities. Greater integration of gender and diversity in Canada’s regulatory processes and collaborative research can help address this. [Full report](#)

Transforming our “petroculture” to ease our transition to sustainable energies

[Imre Szeman](#), University of Alberta

The shift to new energy systems will require not only technological innovation and development, but also significant transformations in the way we manage our resources and live our lives. The developing and interdisciplinary field of “energy humanities” can help us understand the cultural dimensions—habits and practices of being, believing and belonging—that stand in the way of energy transition. [Full report](#)

A multidimensional approach to support resilience in resource-based communities

[Sara Teitelbaum](#), Université de Montréal

Canada’s resource-based communities face significant socio-economic and environmental inequities and challenges, many of which are global in scope. A socio-ecological systems framework provides a multidisciplinary and multidimensional look at community resilience in the context of global change, and can help policy-makers address critical community challenges. [Full report](#)

“What the frack?:” Hydraulic fracturing and public policy in Canada

[Jennifer Winter](#), University of Calgary

Regulatory approaches to hydraulic fracturing vary greatly across Canada—from moratoriums in New Brunswick and Quebec, to business as usual in the West. These different approaches appear to be largely driven by the degree of public trust and risk tolerance. With persisting and significant knowledge gaps, a comprehensive cost-benefit analysis of the longer-term economic, social, health and environmental impacts of hydraulic fracturing is needed to inform the public and improve critical policy-making. [Full report](#)

Thematic insights on the quest for energy and natural resources

Building on the outcomes of the knowledge synthesis reports, the following six themes were identified as key areas of interest for stakeholder discussions on the state of the quest for energy and natural resources. Collectively, with cross-cutting issues, these themes illustrate the benefits of connecting social sciences and humanities researchers with potential users of their research, to exchange ideas and explore opportunities for future collaboration.



Innovation and transitions to clean energy



Resource development and extraction in international contexts



Adaptation and community resilience



Governance, social licence and engagement



Aboriginal rights and benefits



Socio-economic effects: labour markets, equity and education

Here we outline some of the connecting ideas, preliminary policy and practice recommendations, knowledge strengths and future gaps drawn from the knowledge synthesis reports and dialogue with researchers, practitioners and policy-makers throughout 2015 and 2016.

To obtain more information on the findings included in the reports, and details on both current and proposed knowledge mobilization activities, please contact the lead investigators. You may also contact [SSHRC](#) directly, or consult [our awards search engine](#), to identify and connect with other SSHRC-funded researchers for insights on these critical issues.

Theme Innovation and transitions to clean energy

Since the advent of the fossil fuel era, societies have shaped and developed their practices, beliefs, expectations and desires around the capacities and capabilities engendered by cheap, energy-rich fossil fuels. Transitioning away from fossil fuels will necessitate a more thorough understanding of the social forces they have unleashed, and an understanding, too, of shifts in social practices that will be important for real and sustainable energy transition.⁶

Clean innovation offers significant opportunity for Canada's energy and natural resource sectors. It is central to meeting the growing demand for environmental performance, meeting commitments to reduce climate change impacts, and increasing Canada's global competitiveness.

Transitions to alternative energy sources are being supported in a new political climate with renewed commitments, including doubling federal investment in clean-energy research, development and demonstration by 2020; and amongst other initiatives, establishing a 2016 federal working group on clean technology, innovation and jobs and a pan-Canadian framework on clean growth and climate change with provinces and territories.⁷

Some of Canada's alternative energy and diversified resource efforts, such as in biomass in the forest sector, have shown progress. Nonetheless, all sectors face the challenge of competing globally, while maintaining both environmental and financial sustainability. Significant knowledge gaps remain on the socio-economic and environmental impacts of both existing and alternative energy and resource development. Insights on this theme underline the role of policies, financing and partnerships in fostering and accelerating green technology, as well as the knowledge and perspectives needed to overcome the barriers to energy transition.

Insights:

- **Environmental performance does not always translate into industry-level competitiveness.** While some evidence supports positive links between the environmental performance of individual firms and financial profitability, dependence on external contingencies—such as competitor behaviour and consumer preferences—inhibits industry-wide global competitiveness.
- **Indigenizing energy: Indigenous philosophies of energy are crucial models to guide energy transition.** Many Indigenous peoples have advocated transitioning away from modern energy practices to values of connectedness, reciprocity, and

respect for the natural world. Understanding and relating traditional energy ideas, practices and relationships to the land can mitigate resource development activities, and support global energy transition processes.

How will humans effect the necessary changes to their ways of life in order to avoid serious negative consequences on a global scale? The technical and scientific challenges are great, but the cultural ones are at least as large.⁸

- **Clean innovation policies could benefit from an ongoing “diagnostic monitoring” process.** The increasing innovations in green technology within Canada’s geographically diverse context, which includes multiple players, would benefit from ongoing and systemic monitoring of public policies. Innovation policy should also be based on decentralized activities, to leverage sectoral and regional strengths.
- **The study of the sociocultural aspects of “impasse” is critical in transitioning to renewable energies.** Guided by the emerging, interdisciplinary “energy humanities” approach, this involves looking at the habits and practices of being, believing and belonging that impede energy transition. These insights are critical as the world moves past the fossil fuel era, and faces the realities of finite resources.

State of knowledge:

- **Transitioning to green economies will require greater focus on employment and social equity issues.** In industrialized countries like Canada, the attention on the technology and financing of renewable energies exceeds the focus on widespread social and labour inequities. Progressive employment equity policies and changes in societal attitudes hold promise for reducing inequities women and marginalized peoples face in existing carbon and renewable-energy industries.



Knowledge synthesis findings:
Women in renewable energy⁹

- **Global literature addressing wind power is expansive, but research on the majority of renewable sectors is scarce.** More work is needed on biophysical research and, particularly, on the social, political and cultural impacts of solar, small-scale hydro, and small modular reactors or small-scale nuclear.
- **About five per cent of the literature focused on wind energy directly addresses the Canadian context.** Within this amount, seventy-five per cent of Canada-specific publications address only onshore development. More international literature needs to be translated into the Canadian context, to enrich knowledge and present relevant experiences and, ultimately, enhance the viability of these emerging sectors.

The transition to a system based overwhelmingly on alternative energy sources will entail environmental, social and economic impacts that can be very different than the recognized impacts of existing energy systems, and will require new information and knowledge. There is a well-established literature on the social and cultural impacts of fossil fuel development; but research on the impacts of alternatives can seem lacking, or thematically and geographically dispersed.¹⁰

- **Studies on the function and outcomes of social media use in debates about energy transition are virtually non-existent.** Social media is widely used by industry and activist groups to influence public perceptions about energy transition. Measuring social media's ability to shift political action and behaviour is difficult but critical, given its potential uses in either supporting or inhibiting transformative

shifts from oil and fossil fuel economies.

- **There is a significant knowledge gap in arts-based research on “energy impasse” and transition.** Outside of film, there are less than 100 individual, curatorial and collective works related to the energy arts. Arts-based research, also known as **research-creation**, may serve to guide innovative knowledge and perspectives on energy as a force that underpins social, human and interspecies relations, and shapes institutions, beliefs, desires and expectations.



Beneath a petroliferous moon: An example of **research-creation** cited in a SSHRC knowledge synthesis project (Szeman et al.) highlights international artistic responses to the petroleum industry.

Theme **Resource development and extraction in international contexts**

As a global leader in resource extraction, the competitiveness of Canadian extractive industries, and especially overseas mining operations, has become increasingly tied to socially responsible performance.¹¹

Rapid economic growth and the liberalization of extractive industries in emerging economies in the 1990s contributed to a dramatic increase in demand for raw mineral extractions. Canada is a major resource player and producer, hosting 60 per cent of publicly listed extractive companies in the world. In 2014, Canadian mining and exploration companies were present in 105 countries, and Canadian mining assets abroad totaled \$170 billion.¹²

Governance of extractive industries has changed to adopt sustainable-development principles and more inclusive norms. At the same time, transfer of authority to non-state actors, weak government structures in some regions and countries, and the rise of unrest among resident communities have increased focus on governance and security. Canadian mining activities often face resource-related conflicts, including, notably, with Indigenous communities. Canada has developed corporate social responsibility strategies, including the 2014 federal *Doing Business the Canadian Way*, for Canada's extractive sectors abroad. These have, however, had mixed success in aligning practice to international social responsibility standards.

Projects under this theme reviewed security in and governance of the mining industry, dominated by studies on Latin America. International reviews of unconventional natural gas approaches; regimes of free, prior and informed consent; and Canada's interest in Arctic reserves provide global insights on the extractives sectors.

Insights:

- **Research has pinpointed the structural, contextual and triggering factors that lead to community-level conflicts and security issues around extractive projects.** Over 800 large-scale protest movements took place between 2006 and 2013, in 87 countries, which, together, cover 90 per cent of the world's population.¹³ A large-scale literature review revealed the leading factor leading to conflict is labour issues, followed by environmental factors, resource nationalism, and local community and Indigenous rights.

The McGill University Research Group on Canadian Mining in Latin America recorded 85 cases of socio-environmental conflicts against Canadian mining companies in 2013 alone.... Clearly, it is time for a new approach.¹⁴

- **The downturn in oil and gas prices is providing an opportune moment for resolving international legal disputes related to the Canadian Arctic.** Such opportunities lie in resolving boundary disputes, adopting new domestic laws and regulations on marine protection, and improving international environmental protection instruments. These measures would significantly benefit responsible oil and gas production and shipping, and enhance human and environmental safety and security.
- **Free, prior and informed consent is the first step to obtaining a social licence to operate.** A major area of research in the field concerns the implementation of the principle of free, prior and informed consent under *the United Nations Declaration on the Rights of Indigenous Peoples*. Its implementation, with the power to veto projects and plans that may impact their territories, is essential. Negotiating equitable impact and benefit agreements is another critical ingredient in building sustainable partnerships between communities and extractive industries.

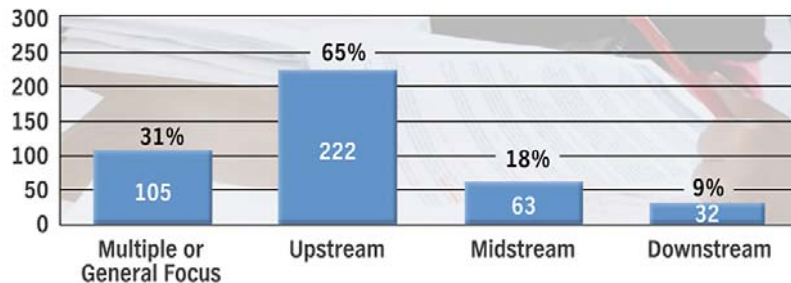
In general, communities only tend to exercise the power to veto in highly contentious and poorly managed projects. The refusal to issue a social license to operate is typically the result of a failure to consult and a lack of meaningful engagement between local communities and extractive industry firms.... A genuine [free, prior and informed consent] process helps to avoid such outcomes.¹⁵

State of knowledge:

- **A life-cycle approach will increase understanding of the full community-level impacts of unconventional natural gas development.** Sixty-five per cent of existing articles on community impacts focus on “upstream” communities immediately adjacent to unconventional natural gas drilling and extraction. Few focus on “midstream” pipeline transportation corridors (18 per cent); and fewer still on “downstream” processing, liquefaction and shipping (nine per cent). A more inclusive analysis of supply chain impacts, as well as of the local government capacities to address the impacts, is critical for resource-based communities across

the globe.

Figure: Distribution of scholarly literature on unconventional natural gas development, according to supply chain focus ¹⁶



- **Greater understanding is needed of corporate perspectives and practices related to social responsibility and conflict.** There is currently a gap in case studies about this perspective. Providing diverse perspectives through multistakeholder approaches and analyses of cases would enrich the literature, and make findings relevant to a broader audience.
- **There is little scholarly focus on unconventional natural gas in the Canadian context.** Journal articles on unconventional natural gas development are, geographically, predominantly on the United States, a focus that comprises 69 per cent of all such articles. Only seven per cent of such articles focus on Canada, and only two per cent focus explicitly on British Columbia, home to a significant number of proposed projects.
- **The impacts of industrial resource development on marginalized populations needs further analysis.** Groups that experience marginalization are only covered specifically in a small number of the studies on community impacts of unconventional natural gas development (four per cent for Indigenous groups, two per cent for women, two per cent for children, and one per cent for the elderly). In addition to health research, more research is needed on socio-economic impacts, including whether the benefits of local economic booms are distributed across local populations.
- **Greater analysis of the extractives industries' presence in both Aboriginal and non-Aboriginal communities is needed.** Comparative and cross-regional analyses could help identify best practices in Aboriginal-extractive industry relations around the world; more in-depth research on the gender and generational impacts of industry operations on or near Indigenous lands is particularly needed. The possibility of extending the principle of free, prior and informed consent under

the *United Nations Declaration on the Rights of Indigenous Peoples* to non-Aboriginal populations should also be further explored.

There is now a growing literature and body of expertise seeking to explain and address resource-related conflicts, including the identification of structural factors, triggering events, framing perspectives, and sociopolitical processes influencing their occurrence, pathways, outcomes and modes of prevention/resolution, including the role played by extractive companies in governing security issues.¹⁷

Theme **Adaptation and community resilience**

Empirical work in this area and within the scholarship on community resilience provides important lessons with regards to conditions supporting communities This type of research is nascent in Canada, and can be an important tool towards addressing important policy challenges, such as climate change and economic restructuring in resource communities.¹⁸

The significance of social, cultural, economic and health impacts of climate change and energy transition on communities continues to grow, as Canada and the world begins to move towards low- or no-carbon energy alternatives and goods and services. Inspired by broader work in ecology, community resilience—or adaptation—has emerged as an idea for addressing resource-based communities' ability to absorb related changes and disturbances. This is an emerging research field, with particular growth in the area of urban resilience.

A 2008 report by NRCan¹⁹ identified a need for further research to help reduce uncertainties and address specific knowledge gaps and adaptation-planning needs. Importantly, that same report also noted that despite these uncertainties and knowledge gaps, existing knowledge is sufficient to start undertaking adaptation activities in most situations. A further 2014 scientific assessment by NRCan, of 63 adaptation activities in Canada, confirmed that adaptation implementation in Canada is still in its infancy stage.²⁰

Knowledge syntheses point to a number of insights to inform multilevel policies and practices, and areas where further knowledge is needed to promote the stability and resilience of Canada's resource-based communities. Particular methodology frameworks and indicators can be called upon in critical planning and assessment of resource impacts experienced in both rural and urban contexts across the country.

Insights:

- **Understanding the determinants of resilience can help support communities and resource governance initiatives.** A review of existing literature underlines the critical prerequisites for resilience. These include the role of social interaction and social networks, leadership, integrated and polycentric institutions, participatory mechanisms, opportunities for social learning, respect for diverse knowledge systems, external support, and social equity.
- **The determinants—not only the outcomes—of resilience are often social in nature.** Resilience indicators are largely informed by social justice agendas, and focused on infrastructure; however, the determinants are often social. In order to

improve resilience against natural threats, researchers and policy-makers must go beyond the design of buildings and place greater focus on understanding the behaviour of occupants as determinants, rather than only outcomes, of resilience activities.

- **Decision-making processes related to natural resources would benefit from a child- and youth-centred theory of change.** As governments and industry consider and move forward in addressing climate change impacts, youth involvement and agency should be recognized and integrated into consultation and policy development related to natural resource activities.

Young people are potentially powerful actors in developing and implementing the energy transition in Canada and internationally. It is important, therefore, not only to understand the social, economic and health dimensions of energy systems for children and youth, but also their potential roles as energy resource innovators and contributors to the economic sustainability and whole-of-community resilience of their communities and to society.²¹



[View Video on Vimeo](#)

Knowledge synthesis findings: Youth voices in focus²²

State of knowledge:

- **The social-ecological systems framework is an effective methodological framework for assessing community resilience.** An interdisciplinary review of the framework uncovered the design's promise, as well as useful variables that can

be applied to improve environmental governance and community resilience.

- **Community resilience studies would benefit from increased focus on the experiences of resource-based communities.** A number of scholars note these communities are important test sites for resilience theory, given their cycles of instability and their need for solutions to diversify their economies. Such work would also provide important lessons for resource governance in Canadian communities.
- **Quantitative accounts of vulnerability can inform resilience strategies.** Toronto is estimated to have six days of transportation fuel, 20 days of food, and 49 days' worth of biomass for home heating.²³ This type of work is beneficial for municipalities to inform the public about the degree to which they are vulnerable to environmental threats, and what adaptation measures can be taken to reduce risks.

Theme Governance, social licence and engagement

In short, the perspectives of industry, academics and public authorities all consider that a project's social acceptability or social licence to operate should be negotiated on a case-by-case basis, without any real influence on important public policies, thus confirming a negotiated justice approach which is most likely to be conditioned by the objectives of industry and by existing power relations among the parties concerned.²⁴

Initiated by industry in the early 2000s, social acceptability mechanisms, including impact and benefit agreements, have been applied to redress legal and administration procedures that are no longer sufficient to, on their own, obtain proper support for natural resource development projects. Negotiation of relationships and contractual agreements between industry and Indigenous communities, in particular, is now a widespread and standard practice in Canada's mining sector. In 2008, there were approximately 120 negotiated agreements in Canada,²⁵ according to NRCan's [The Atlas of Canada website](#), as of March 2016, there were 384 active Indigenous mining agreements.

However, these agreements maintain no formal legal basis in Canada, and are subject to significantly asymmetrical power relations. The historical role of government, policies, regulatory processes and public disclosure is discussed in a number of the knowledge synthesis projects. These explore systemic barriers that impede equitable and meaningful engagement with deeply impacted, resource-based communities; as well as the ability to secure social, economic, cultural and environmental well-being.

Insights:

- **Restrengthening the role of government in negotiations may achieve more of the intended, transformative changes of social acceptability.** Industry is increasingly employing social licences to operate to legitimize operations and minimize dissent in mining and wind energy sectors. The withdrawal or selective absence of federal public authorities from negotiating industry-community agreements is a key trend in energy and natural resource development. This absence, a historical legacy that is potentially further supported by concepts of social acceptance, is one of the barriers undermining fair outcomes for local communities and environmental sustainability.
- **Over the past decade, authors have found that social acceptability concepts have led to few tangible results in protecting and augmenting benefits for local communities.** Scholars and government are divided on the impacts of social

acceptance processes and impact and benefit agreements. Some scholars call for institutionalizing processes and agreements, to compensate for the legal system's shortcomings; others feel these should be replaced by concepts emphasizing resilient local development.

- **The settlement of comprehensive land claims has important implications.** In terms of territorial rights, self-governing First Nations in the Yukon enjoy unprecedented surface and subsurface rights to much of their settlement lands. This provides greater incentives for industry to formalize commitments with local communities. Actual or perceived notions of modern-day treaties can support these incentives.

Modern comprehensive treaty-holders mostly act as if they had veto power; Historic treaty-holders are mostly forced to act as if they didn't have veto power. These differences shape the development and outcomes of social licenses.²⁶

- **Impact and benefit agreements have the potential to distribute the benefits of resource development more equitably.** However, there is little evidence on how or whether the agreements use gendered and intersectional analyses, which are essential for ensuring women and other marginalized populations do not bear burdens while others reap rewards. There are also uncertainties as to how the agreements interact with public regulatory mechanisms, including environmental assessments.

The current federal review of the Environmental Assessment Act provides an important opportunity to make gender based analysis plus (GBA+) a mandatory component of the environmental assessment... process where impacts of resource developments on women, families and communities can be more carefully considered, in turn providing a greater degree of fairness and accountability.²⁷

- **More accessible and legally mandated public reporting, and an understanding of risk tolerance, is needed to regulate fracking activity.** Accessible information is critical to informing and shaping perceptions; however, it is not only more and better knowledge that is driving the diverse decision-making across the country. Provincial and territorial differences in hydraulic fracturing regulations can more likely be explained by variations in risk tolerance, which stem from differences in the historical

and economic roles of oil and gas extraction.

- **Most provinces and territories have made progress integrating sustainable development principles into forest legislation, but not uniformly.** Canada's forest legislation and management have largely evolved due to changing environmental protection laws and priorities, rather than changes to forest law. This has positively impacted the industry's diversification efforts.

State of knowledge:

- **Interdisciplinary research can enrich transformations in regulatory frameworks.** For example, there is little cross-disciplinary research between law and political or social science fields with regards to mining and renewable energies. Research of this nature would allow better understanding of the relationships between social science observations and legal issues and their shortcomings, and vice versa.
- **Established social licence and environmental assessment processes would benefit from recognizing and monitoring the cumulative social and cultural impacts.** To support processes and agreements that are driven by the private sector to obtain and maintain consent from Indigenous communities, cumulative and long-term sociocultural impacts of resource development projects should be researched, accounted for and monitored.
- **Canadians would benefit from greater comparative analyses of laws governing natural resource development.** In the case of forest law, this can be a challenge, as few Canadian lawyers publish within this sector. Synthesizing information on both diverse and similar integrations of sustainable development principles into forest law across Canada underlines the great opportunity available to draw on a multitude of lessons and best practices. For example, widespread access to reports on Quebec's innovative regulatory approaches should be facilitated.
- **Critical knowledge gaps are impeding decision-making related to hydraulic fracturing.** These gaps include a lack of baseline data; insufficient information on long-term, cumulative effects; and a lack of regional specifics. Socio-economic research on the sector has not progressed. Assessing costs and benefits associated with fracking goes outside the niche research areas of most individual academics. The knowledge gaps could be best addressed by a government-led, comprehensive cost-benefit analysis.

Theme Aboriginal rights and benefits

Nonetheless, the desire for employment opportunities that would not cause fundamental change to culture and environment emerged as a common theme in mining and forestry, suggesting that certain other values place attenuation on economic values. As Wyatt and others remind us, it remains a question whether the types and degree of benefits that are produced are always the ones wanted and needed by Aboriginal people.²⁸

Natural resource development projects are credited with increasing job training and employment, and socio-economic growth and prosperity for Aboriginal communities in remote and northern regions of the country. Canada's mining industry is the largest private sector employer of Aboriginal Peoples in Canada, on a proportional basis; at least one analysis indicates the industry will need 145,000 new workers over the next decade.²⁹

However, various studies confirm these industries can also contribute to significant tensions, upheavals and social ills, in addition to the negative environmental and health impacts in Indigenous communities. Fueled by global demand for minerals, the continuing expansion of extractive industries onto Indigenous lands could dramatically increase these problems.

The implications and impacts of both conventional and renewable resource industry transitions on Aboriginal communities must be considered. Several knowledge synthesis grant projects underlined the need for more rigorous, consistent and transparent cost-benefit assessments of resource development, beyond job creation. Analyses of governance systems, the evolving legal landscape, and land treaty settlement opportunities provide opportunities to better recognize Aboriginal rights and benefits and integrate important and diverse traditions, spirituality, and connection to land.

Insights:

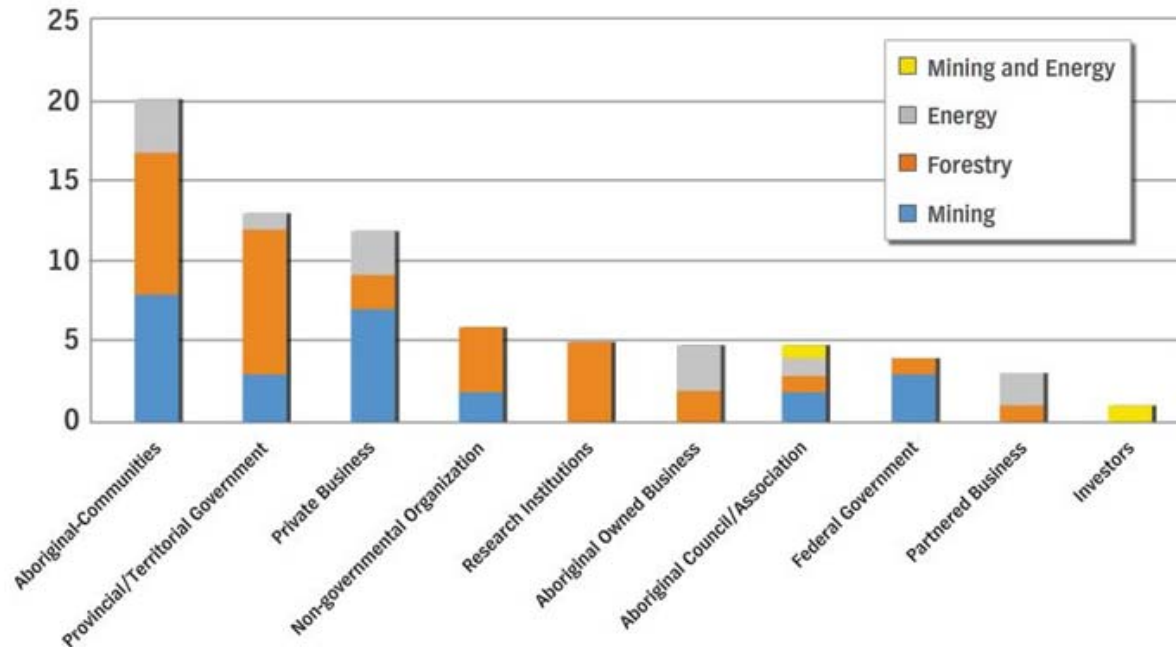
- **There is little evidence to date demonstrating that major resource development projects in Indigenous communities contribute to the reduction of poverty.** There are mixed conclusions on the outcomes and benefits of resource projects for Indigenous peoples; some researchers argue these projects are contributing to a "new poor." High environmental and social costs are deemed to outweigh the potential benefits of the projects.
- **The legal regimes for land use are an important dimension of resource development.** New bylaws and land restrictions constrain customary behaviour and

sustenance activities and negatively impact livelihoods in Aboriginal communities. It is important that reclamation of land be considered with a focus on the livelihoods and well-being of future generations.

As with water, land too holds a great deal of spiritual and cultural significance, in addition to material value, for Aboriginal communities. Thus, for example, when as a result of resource development, land is rendered inaccessible or is damaged or altered, this has immense implications for the spiritual, cultural and material existence of [A]boriginal [P]eoples. Spiritually, the land is intimately connected to [I]ndigenous peoples in a way that involves reciprocal relationships of care.³⁰

- **Indigenous women are often excluded from impact and benefit agreement negotiations.** As traditional keepers of the water, women have important concerns about the effects of extractive industry activities on the environment—and, as an extension, on traditional practices that rely on maintaining the integrity of water and the environment. Impacts on the environment, as well on human and animal health, should be acknowledged in impact and benefit agreements.
- **Aboriginal communities are expected to engage with a significant number and variety of players in order to advance their land management objectives.** A graph from one of the knowledge synthesis projects indicates the extent and range of engagement. These can vary, depending on the nature of the related project. Significant human and social capital is needed to manage these relationships, and to ensure positive outcomes and benefits for Aboriginal Peoples.

Figure: Primary partners in Aboriginal natural resource development initiatives
31



State of knowledge:

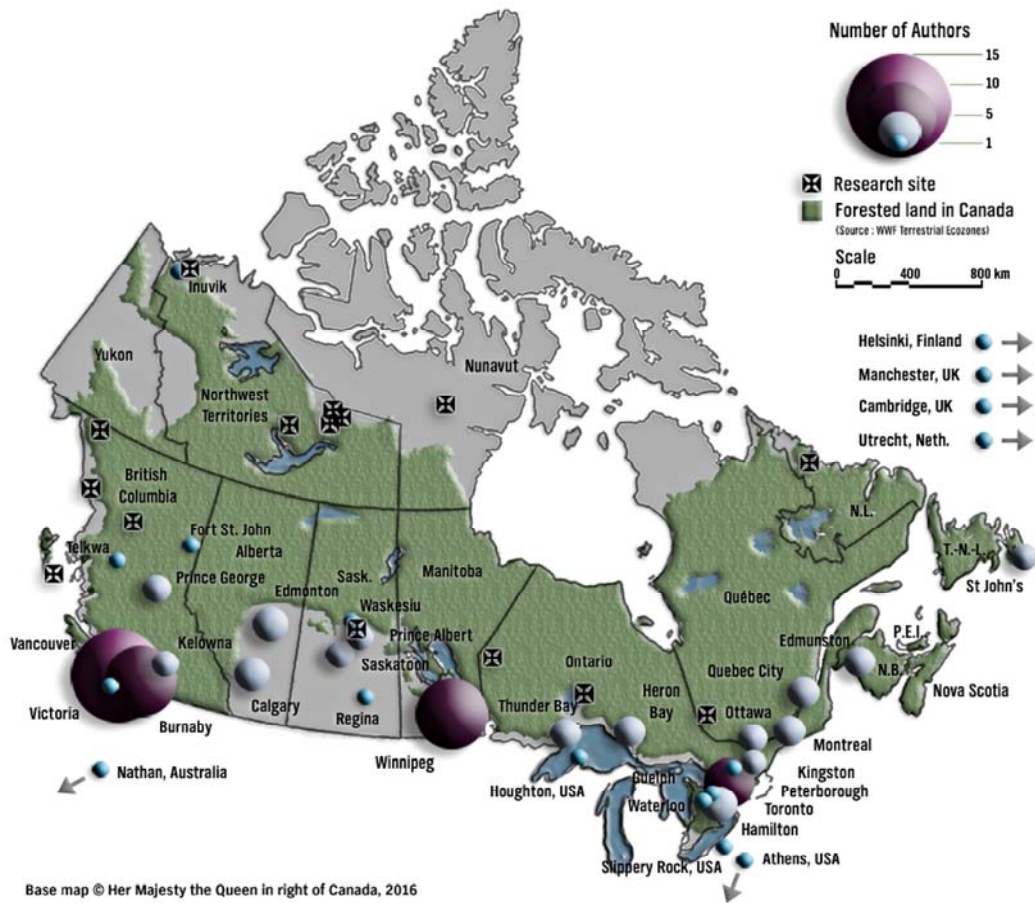
Development that respects Aboriginal rights and is culturally appropriate, environmentally responsible, and socio-economically beneficial is a major priority being expressed and demanded by Aboriginal leaders, organizations and communities. However, recognition of rights is not enough for Aboriginal communities to reap the benefits of resource development. The types of governance systems that support sustainable development, from an Aboriginal perspective, are not well understood and are a recent area of scholarship in the Canadian context.³²

- **The impacts of renewable energy on Indigenous communities need to be further explored.** There are emerging bodies of research addressing the effects of industrial development on Indigenous peoples, and their role in environmental assessments. However, knowledge of both the positive and negative environmental, economic, political and social impacts of alternative energy sources on Indigenous communities is largely lacking.
- **The number of research publications related to Aboriginal capacity-building and natural resource development has increased over the last decade.** A comprehensive bibliographic review found that these studies focused

predominantly on land-use strategies and planning processes, followed by impact and benefit agreements. Most papers focused on forestry and mining, followed by energy, which had half as many publications as the first two sectors.

- **Studies on the benefits natural resource development has on Aboriginal capacity-building are difficult to substantiate.** A review of publications on this topic shows that the majority of the studies (22 of the 24 articles) provided examples of actual associated benefits. These included employment (12 articles), improved decision-making (11 articles), and financial support (eight articles). However, definitions and data varied significantly, making it very difficult to quantify and compare benefits across cases and sectors.
- **New employment models and social support for Aboriginal women need to be explored more greatly.** Aboriginal women's roles are intrinsic to overall and long-term community development. A study on Aboriginal women and mining uncovered the need for more opportunities for women to enhance their marketable skills. Social support to address downstream-community social ills associated with working in extractive industries is also needed, to enable these models.
- **There is clear geographical disparity in research capacity and between research sites in Canada.** A knowledge synthesis on Aboriginal capacity development found that research is predominantly being housed in or conducted by southern Canadian institutions. Greater examination of research capacity and disparities between north and south, rural and urban, and other domains, would help in assessing implications for research by and with Aboriginal Peoples, as well as Aboriginal capacity development in general.

Figure: Research sites and locations of author-affiliated institutions related to research on Aboriginal natural resource development [33](#)



Base map © Her Majesty the Queen in right of Canada, 2016

Theme **Socio-economic effects: labour markets, equity and education**

Reports from around the world warn of a looming skills gap as industrialized and emerging economies retool their existing industries and seek out new opportunities. In virtually all areas of energy development, there are skills shortages and calls for additional training... Although the skill shortages present challenges for labor supply, they also represent an opportunity to train and recruit women, visible minorities, Aboriginal peoples, new immigrants and other groups that have historically been marginalized in the energy sector in Canada.³⁴

Critical and diverse conversations are underway about the sociocultural and economic costs and benefits of energy and natural resource development. Topics include considering the impacts of boom and busts, and transitioning industries to renewable energy sources in resource-dependent economies.

Regional and global trends and lessons learned shed light on the transformative societal changes tied to Canada's energy and natural resources. Applying these lessons across Canada's vast regional contexts and local traditional cultures of both Indigenous and non-Indigenous peoples presents a challenge. Further, socio-economic benefits associated with natural resource industries are often underemphasized while considerable, and still important, focus is placed on environmental and biological effects.

Insights into labour equity, education and work-life balance help provide direction for proactive policies, programs and institutions critical to both existing carbon and low- or no-carbon resource development. These insights also provide a more far-reaching picture of the future social and environmental sustainability of natural resource development.

Insights:

Our land-based learning Water Bush Camp situates science into Indigenous culture. It provides a real-lived context and integrates big data and eco-informatics in community water monitoring: a profound evolution in the social science toolbox.³⁵



[View Video on Vimeo](#)

Water Bush Camp: Video of 2016 SSHRC Partnership Grant project on sustainable water governance and Indigenous law. The project was presented by Karen Bakker and Caleb Behn as a keynote address at SSHRC Forum, June 1, 2016.

- **Without more transformative change, employment inequities in conventional energy sectors will persist, and be replicated in renewable industries.** Available research results show that women and other marginalized groups in Canada and other Organisation for Economic Co-operation and Development countries are experiencing significant employment biases in emerging renewable energy sectors. Looking to examples in a number of developing countries, this can be mitigated through increased focus on science technology, engineering and math training; and proactive equity and work-life balance policies.
- **Despite job creation and spillover effects, there have been mixed results as to the economic benefits of natural resource development.** Several studies have documented spillover effects. One found that each oil and gas sector job creates around one to two jobs in other sectors in local economies. Another estimates that green economy sectors provide over two-thirds higher levels of employment spillover than oil and gas sectors. Nevertheless, despite declines in actual poverty rates, conclusions about the distribution of resource development benefits across communities are uneven.
- **Shifts in education patterns could support the development of Aboriginal leaders.** The majority of postsecondary Aboriginal students are concentrated in education, social and behavioural sciences, and business. However, training in areas such as finance, engineering, natural sciences and computing, for example, would help Aboriginal learners enhance their possibilities to hold upper-level positions in resource management and governance in their regions.

- **Waged labour is viewed as a potential source of social disruption.** Studies have linked waged labour with substance abuse and domestic stress. It also reduces the community members' time and motivation to engage in cultural practices and shared family experiences. Impact and benefit agreements must recognize and provide support to overcome these potential negative social impacts, and must place greater emphasis on the long-term well-being of youth.

State of knowledge:

- **The limitations of socio-economic research on fracking make it challenging for decision-makers to apply findings more broadly.** Due to the localized nature of hydraulic fracturing, studies on socio-economic effects are typically province- or region-specific. The majority of studies, which are mainly conducted by think tanks as opposed to being peer reviewed research, predominantly cover economic benefits. Those that quantify environmental impacts are largely focused on the United States.
- **A diversity of methodological approaches makes it hard to draw conclusions about the viability of local resource-based economies.** An analysis of local labour markets cautions against comparing studies employing diverse methodological approaches. Researchers must select resource measurement typologies that fit the purposes of their particular study, and need to offer clear explanations for their use.
- **Debates on the employment effects of renewable energy are gaining prominence in Canada, but knowledge gaps remain.** There is significant potential for renewable energy sectors to generate strong employment growth. However, specific analytical work and empirical evidence on this important subject remain extremely limited.

Having access to sex-disaggregated employment data on specific renewable sources such as wind, run-of-river hydro, solar, biomass and geothermal would enable us to better understand trends as well as to propose policies and interventions for promoting employment equity. Without data, there is no visibility. And without visibility, there is no policy priority.³⁶

- **Much uncertainty surrounds extraction’s long-term economic effects on communities.** Questions remain about whether busts are generally worse for the local economy than booms are good, and what happens when economically attractive resources have been largely exhausted. Given numerous studies that have documented the industries’ economic gains, more convincing research—particularly on human capital effects—is needed.
- **Renewed commitment to the environment may further overshadow socio-economic issues surrounding natural resource development.** Research on the environment can come at the expense of greater appreciation of natural resource development’s deep and long-lasting social and cultural effects on communities. These effects are often invisible in research, policy development, program implementation, and monitoring and evaluation.

Policy incoherence in relation to resource development and extraction can be linked, in part, to significant research gaps, including: a lack of overlap between environmental and social science research in this area; little research on gender and resource development, with the important exception of a growing body of research related to Indigenous women; knowledge gaps about the impact of resource development on people with disabilities, recent immigrants, those identifying as LGBTQ or two-spirited, and people who are homeless; and limited attention to the gendered experiences of men and boys. [37](#)

Conclusion: Re-imagining Canada’s resources

Social sciences and humanities research is fostering a deeper understanding of the human dimensions of the quest for energy and natural resources, and their production, extraction and use. Building trust and transparency at the start of and throughout resource development projects is critical for meaningful dialogue and mutually beneficial relationships. Building stronger linkages across and within research disciplines and sectors, and with citizens, is central for realizing a strong future for the sustainable development of natural resources in Canada and abroad.

More longitudinal and comparative analyses, both nationally and internationally, and mixed-methods research are needed to get a more complete picture of the long-term impacts of and potential opportunities for resource-based communities in Canada.

This report summarizes the key findings emerging from SSHRC's Knowledge Synthesis Grants projects related to energy and natural resources. It also identifies several areas of improvement for achieving more harmonized approaches and equitable outcomes for natural resource development across Canada's diverse communities and landscape. Where Canada has demonstrated strength in research capacity and expertise, greater efforts to mobilize knowledge may be taken to inform policies, regulatory frameworks, practices and citizens.

In areas where there are knowledge gaps or weakness, opportunities to support new research questions may be pursued. As raised at the SSHRC-NRCan knowledge symposium, there are additional, critical questions for researchers and policy-makers to pursue on the future of Canadians in the quest for natural resources. These areas include transportation, foreign financing and ownership, and federal initiatives addressing water issues.

The exploration of this future challenge area has generated significant interest among the research community, as well as by research users in the public, private and not-for-profit sectors. SSHRC will continue to monitor SSHRC-funded research in this area, while we also look for ways to better connect research knowledge and expertise with Canadians.

... reports that made specific policy recommendations and discussed the role of the government were relevant and informative. Reports that identified knowledge gaps were of practical use for our departmental Research Agenda. ³⁸

SSHRC encourages the research community to review the current project findings closely. It also encourages the community to consider leveraging new funding opportunities for knowledge mobilization and future research, including seeking out partnership opportunities, as appropriate.

SSHRC invites all stakeholders and researchers to participate in our national dialogue on all six of the future challenge areas identified through the Imagining Canada's Future initiative. Through partnerships and innovative collaborative efforts, we can leverage new and promising opportunities for research, training and knowledge mobilization. Together, we can build a better tomorrow for all Canadians.

We need to harvest the wealth of knowledge in Canada, and get it into the hands of decision makers: distilling both existing knowledge and new thinking as it relates to emerging issues. There are ways to push this knowledge to government for impact, such as concise policy briefings, interactive workshops and webinars, special commissions, exchanges or scholars in residence. ³⁹

Research for a better tomorrow.

SSHRC'S Imagining Canada's Future initiative positions the social sciences and humanities as essential to addressing complex societal challenges facing Canadians over the coming decades.

About SSHRC

The Social Sciences and Humanities Research Council (SSHRC) is a funding agency of the Government of Canada. Through research grants, fellowships and scholarships, we support research that provides key insights on the social, cultural, environmental and economic challenges and opportunities of our ever-changing world.

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