

Women and Climate Change Impacts and Action in Canada

Feminist, Indigenous, and Intersectional
Perspectives

Written and researched by Lewis Williams with Amber Fletcher,
Cindy Hanson, Jackie Neapole and Marion Pollack

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Reviewers: Rosa Barker, Angela Regnier and Heather Fox Griffith

Layout: Jackie Neapole

Climate change is the defining issue of our age. It is defining our present. Our response will define our future. To ride this storm we will need all hands on the deck.

– UN Secretary General Ban Ki-moon, Opening address of UN Climate Summit, 23rd Sept 2014¹

Summary

Climate change is unequivocally occurring across the globe, impacting the conditions, experiences, and livelihoods of communities in multiple ways.² Between 1948 and 2007 temperatures in Canada increased at a rate approximately twice the global average.³ Accelerated rates of global warming and dramatically increased temperatures are expected to occur in parts of Canada well into the future.⁴ Yet, Canada remains one of the world's biggest per capita carbon polluters⁵ and is falling far short of meeting climate mitigation goals under the Paris Agreement, an international agreement for meeting climate change mitigation and adaptation targets.⁶

Emerging research on the gendered impacts of climate change in Canada demonstrates how climate change is exacerbating inequalities between women and men.⁷ Women's lower incomes relative to men, their gendered roles and social statuses, and the ways in which these interact with changing environments and related policies and programs affect women's experiences of climate change.⁸ Despite these inequities, gender considerations are remarkably absent in climate plans and policies across the country.

Climate change is largely the result of the tightly interwoven forces of colonialism, patriarchy, and neoliberal forms of development.⁹ These conditions are constraining women's knowledge, expertise, and unique agencies in addressing what is probably the most defining issue of our age. Yet women, including Indigenous women, have significant roles to play in the articulation of feminist and Indigenous worldviews, and aligned climate action strategies.

“Women are disproportionately affected by climate change impacts such as droughts, floods, and other extreme weather events. They also have a critical role in combatting climate change, but need to be better represented at all levels of decision making. Empowering women will be a significant factor in meeting the climate challenge.”

- UNFCCC Executive Secretary, Christina Figueres¹⁰

Highlights

- Despite the United Nation's introduction of "Gender Mainstreaming" policies 20 years ago and Canada's constitutional obligations to ensure government policies are not discriminatory, rampant gender inequities in procedural and distributive justice persist, negatively impacting women's well-being and participation in climate mitigation strategies;¹¹
- Climate change science and strategy are largely Eurowestern, masculinized endeavours, stemming from the natural sciences and oriented towards technological solutions closely aligned with neoliberalism.¹² Rather than advocating for deep cultural shifts in corporate behaviour, climate change is often cast as a "threat" to humanity which requires hierarchical rather than democratic decision making;¹³
- Carbon emissions are gendered throughout the world, with some research showing that men produce the larger carbon footprint through greater consumption levels. Within any household, income levels are usually the determining factor for emissions, with higher income households having greater carbon emissions;¹⁴
- Research on the impacts of climate change on historically marginalized women internationally and in Canada remains minimal. Existing studies and commentaries confirm/anticipate the hard-hitting impacts of the intersections between women's identities and roles, and marginalized social statuses;¹⁵
- Canada's renewable energy and aligned "climate prosperity" initiatives¹⁶ are perpetuating employment and income inequities for women in Canada. Women continue to miss out on leadership positions, workforce training, and entry in this high growth and masculinized sector;¹⁷
- Gendered impacts of climate change on women in Canada—the result of interlocking global economic dynamics, regional social-ecological characteristics, and contemporary gender norms and practices—are evident in both paid and unpaid work. Furthermore, there is little evidence of labour-market responsiveness to issues of distributive and procedural justice for women;
- Research on Indigenous wellbeing and climate change in Canada disrupts the Global North–Global South categorization of climate change populations and impacts. Climate change is worsening existing social and economic inequities for these "Fourth World" communities, with particular impacts on women's economic and social wellbeing.¹⁸ Impacts and resulting inequities are rooted in historic and contemporary forms of colonialism, neoliberalism, and attendant ecological degradation;¹⁹
- Feminist critiques of climate change discourses and strategies are mainly rooted in the social sciences and aligned critical theories, advocating for fundamental changes in how we address climate change. Within feminist critiques of status-quo approaches, four key theoretical positions offer a way forward:
 1. Calls for the renewable energy sector—a major area of action on climate change—to incorporate gender equity practices in work-force training, hiring, and management;
 2. Expansions of our concepts of work and the economy to include women's existing green work;

3. Eco-feminist advocacy for addressing climate change through feminist intersectionality, interspecies, and economic justice; and,
 4. Indigenous feminist theories which ground climate action and thinking in anti-colonial approaches and the unique agencies that arise from belonging to the land and associated conceptualizations of citizenship based on relationships and responsibilities;²⁰ and,
- Building solidarities across women's groups is imperative to advancing the paradigm shifts necessary to achieve gender mainstreaming and climate justice in Canada grounded in anti-colonial and intersectionality approaches.

Key Concepts

Adaptation: "Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities".²¹

Adaptive Capacity: "Ability of individuals and groups to access, mobilize and deploy assets and endowments in ways that facilitate adaptation to change without degrading those resources. This includes the ability to both: a) deal with, accommodate, learn from change and reorganize; and, b) seize opportunities arising with change to transform livelihoods and community wellbeing".²²

Climate Change: "A change of climate attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods".²³

Climate Justice / Feminist Nexus: "Climate justice is a vision to dissolve and alleviate the unequal burdens created by climate change. As a form of environmental justice, climate justice is the fair treatment of all people, and freedom from discrimination with the creation of policies, and projects that address climate change, and perpetuate discrimination".²⁴ Climate justice

recognizes that among those hardest hit by climate change are women—particularly rural and Indigenous women—and therefore seeks to rectify the gender inequities which are further perpetuated by climate change effects, policies, and programs.

Epistemology: Theory of knowledge; how we come to know reality.

Fourth World Populations: Sub-populations living in a First World or economically developed country, but with living standards of those of a Third World or developing country.

Gender Mainstreaming: "The process of assessing the implications for women and men of any planned action, including legislation, policies or programmes in all areas and at all levels....The ultimate goal is to achieve gender equality".²⁵

Global North and Global South: A socio-economic and political divide that also roughly, but not solely, corresponds to wealthier northern nations (with the exception of Australia, and Aotearoa/New Zealand), and economically poorer southern countries.

Heteropatriarchy: "[S]ystems and practices that normalize and center male dominance; male-female gender binaries; and heterosexual identities,

6 / Women and Climate Change

family units, and sexual expressions”.²⁶ This system is manifested in economic, material, and social disadvantages for those whose gender or sexual identity does not align with heteropatriarchy.

Intersectionality: An intersectional analysis of climate change examines how the effects of climate change impact diverse individuals and groups differently based on where they are situated within societal power structures²⁷ according to social identities such as gender, ethnicity, race, socio-economic status, sexual identity, age, and place. An important aspect of intersectionality is the idea that social categories are “not independent and uni-dimensional, but rather multiple, interdependent, and mutually constitutive”.²⁸ These dynamics result in different forms of distributive and procedural justice, in this case, related to climate change policy or programs (or lack thereof) and/or the effects of climate change.

Intergovernmental Panel on Climate Change (IPCC): “is the international body for assessing the science related to climate change. The IPCC was set up in 1988 by the World Meteorological Organization (WMO) and United Nations Environment Programme (UNEP) to provide policymakers with regular assessments of the scientific basis of climate change, its impacts and future risks, and options for adaptation and mitigation”.²⁹

Justice (Distributive): Fairness and equity in work, money, and resource access.

Justice (Procedural): Fairness and equity in decision making, leadership, and political agency.

Mitigation: “An anthropogenic intervention to reduce the sources or enhance the sinks of greenhouse gases”.³⁰

Neoliberalism: “A theory of political economic practices that proposes that human well-being can best be advanced by liberating individual entrepreneurial freedoms and skills within an institutional framework characterized by strong private property rights, free markets, and free trade”.³¹ Neoliberal policy tends to emphasize deregulation, corporatization, and the pursuit of profit combined with an individual-responsibility approach to social services.

United Nations Framework Convention on Climate Change: “sets an overall framework for intergovernmental efforts to tackle the challenge posed by climate change”.³²

Work: Roles and responsibilities of both intrinsic and extrinsic value that give people the “ability to live life in ways they have reason to value”.³³ This conceptualization includes both Indigenous and Western feminist perspectives of work, taking into account the diverse realities, worldview, and unique agencies that women possess.

Methods

An Advisory Committee of CRIAW representatives who are also experts in the fields of gender studies, women's paid and unpaid work, and climate change—or combinations thereof—was struck for the purpose of advising and guiding the research. Five key questions framing the research and a literature search strategy were determined by the first author, an Indigenous scholar, in collaboration with this group and University of Saskatchewan reference librarians. Given the paucity of literature on the gendered impacts of climate change on women's roles and work as well as women's activism in this area, a broad literature search strategy was adopted and implemented between October and December 2016. The search included international material with relevance to the Canadian context in the form of peer reviewed journal articles, reports, newspaper reports, and website material, as well as communication with experts in the field whose research has relevance to Canadian women, climate change, and work.

Data bases utilized include Academic Search Complete, broad Subject Areas within the University of Saskatchewan library data base (Women and Gender Studies, Political Studies, Environmental Studies), and data bases within these (Canadian Business and Current Affairs, Political Science Complete, PIAS Index, Web of Science Core Collection, CIAO (Columbia International Affairs Online), Geo-Base, and the Indigenous Studies Portal. Searches were also carried out using Google Scholar and the Worldwide Web. Websites for key international and national bodies were also consulted—for example, the United Nations, IISD (Institute for Sustainable Development), and relevant NGOs. Preference was given to international and Canadian material published between 2006 and 2016, with searches sorted by relevance from most recent to oldest.

Data bases varied considerably in their yield, according to data base and combination of search terms used. For example: CIAO yielded: Climate change + women (15); Climate change + Canadian women (0); Political Science Complete (EBSCO Host) yielded: Climate change + women (73); Climate Change + gender (69); Climate change + Canada + women (2); and Canadian business and current affairs data base yielded: Climate change + women's work (3516); Climate change + gender + work (4002); and, Global warming + gender + work (489). Around 140 articles were deemed relevant to the questions framing our review of the literature, with some additional articles incorporated as these were referred by the review team.

Climate Change and Gender

Gender is a distributive system through which women and men are differentially positioned. In the context of climate change, this means they are differently positioned before, during, and after (climate) disasters. To date “Climate Justice” has been “conceptualized as an issue of north-south relations and intergenerational fairness”.³⁴ Much of the research and policy to date has focused around the theme of the Global North being the primary driver of climate change with the Global South disproportionately bearing the impacts through lack of adaptive capacity, and in particular the vulnerability of women in these countries.³⁵

Global climate change impacts reflect the result of complex and interlocking dynamics between economic, ecological, political, social, and cultural systems.³⁶ In Canada and internationally, these perpetuate existing social stratification patterns; women, and particularly women with other marginalized social identities, are more likely to be negatively impacted by climate change and less likely to be “heard” in climate change strategy-making than members of culturally dominant groups.³⁷ These gendered inequities are increasingly critical in light of accelerated global warming and associated climatic changes.

Indications of Climate Change: Key Points

- The latest Intergovernmental Panel on Climate Change Fifth Assessment Report (AR5)³⁸ confirms human-caused climate change and “predicts global surface temperature to continue to rise, along with increased sea level rise, melting of glaciers and ice sheets, acidification of oceans, increase in the intensity of tropical storms and changes in precipitation patterns”;³⁹
- Temperatures throughout the world are predicted to rise between 1.5 to 4 degrees Celsius by 2100; occurring unevenly, with possible temperature increases over certain land regions of 4.8 degrees Celsius,⁴⁰ including parts of Canada;⁴¹
- Climate change will increase existing environmental related risks and bring the threat of new ones for both natural and human systems. Consequences are not distributed equally and are greater for marginalized populations;⁴² and,
- The Arctic region is warming four times faster than the rest of the planet with sea ice melting rapidly. Climate warming processes in the Arctic are expected to accelerate due to run-on effects of methane gas release from warming permafrost and snow-bare land absorbing more heat.⁴³

Climate Governance: Women and Indigenous Women

Women and Indigenous women have expert knowledge of climate change impacts and priorities at local levels because of the way climate change affects their work, roles, and responsibilities.⁴⁴ Women are under-represented at all levels of climate change decision making. Gender remains a largely “decorative” consideration in the Paris Agreement—“except for two brief mentions of gender regarding capacity—building and adaptation, gender equality, human rights and Indigenous rights are limited to the preamble of the agreement, with unclear binding or operational value”.⁴⁵

“The Government of Canada will continue to respect, promote, and consider the rights of Indigenous Peoples when taking action to address climate change. Indigenous Peoples are not just on the forefront of climate change impacts, but also climate change solutions....I challenge UNFCCC Parties to work together with Indigenous Peoples and with Canada to formulate a platform for Indigenous Peoples, as we agreed to in the Paris decision.”

- Catherine McKenna, Minister of Environment and Climate Change, Canada, Marrakech, November 2016.⁴⁶

Women’s participation in the United Nation’s Framework Convention on Climate Change (UNFCCC) has not been researched beyond “numbers on seats”, i.e., women’s under-representation.⁴⁷ Gains in women’s representation have been incremental and fluctuating, with large discrepancies between countries.⁴⁸

Procedural Justice Facts

- Between 1995 and 2011 at Conference of Parties (COP) sessions in Berlin and Durban, women delegates increased from 18 to 31 percent respectively, with representation ranging from 0–40 percent.⁴⁹
- In 2016, however, the gender composition of the constituted bodies continued to fluctuate with women constituting 29 percent of representatives.⁵⁰

Climate Change Mitigation, Adaptation, and Women in Canada

Government inactivity on climate change over the past 10 years has resulted in Canada being well behind meeting its 2020 targets for national mitigation action under the Paris Agreement. In 2014, carbon emissions were 20 percent above 1990 levels.⁵¹ Canada's disinvestment in women's equality over the last decade has significantly impaired the policy capacity of women's organizations and gender experts to engage in the climate change debate.⁵² Recent examples of exclusion of women and gender considerations from climate change strategizing and action include:

- Despite several years of concerted climate research and related initiatives, gender-based analysis is starkly absent in the Federation of Canadian Municipalities' climate change reports and strategies;⁵³
- The Native Women's Association of Canada was excluded from a major national meeting of First Ministers on Climate Change in Vancouver as recently as March 2016;⁵⁴
- Canada's Minister for the Environment, Catherine McKenna, was recently "Twitter heckled" as a result of her advocacy for greater recognition of the gender dimension to climate in Tokyo at a G7 environment ministers' meeting in May 2016.⁵⁵

An Anti-colonialist Approach to Climate Change and Gender

Colonialism is continually being enacted through status-quo approaches to sustainable development policy that are subservient to extractive modes of development. For example, research aiming to assist climate change adaptation of Indigenous communities through community-based approaches to strengthening traditional knowledge often work to contain resulting practices within localized climate change policy and programming.⁵⁶ This prevents Indigenous knowledge and associated climate change perspectives from effecting fundamental changes in climate change mitigation and adaptation related-policies at more influential levels of global decision making. At these international levels, it is "business as usual" in that Western science and techno-rational solutions continue to dominate.

Anti-colonialism challenges the dominant "business as usual" way of doing things. Specifically, an anticolonialist approach:

- Works with reclaiming Indigenous and local knowledge⁵⁷ in ways that transform the economic, cultural, and political systems which are the root causes of climate change;

- Recognizes that colonial-capitalist accumulation relies on axes of exploitation that include racial, gendered, hetero-normative, other socially constructed norms and identities, and nation state lines. It applies an intersectional analysis⁵⁸ to problematize colonial and socially constructed categories, shedding light on how these are reinforced or challenged through climate change impacts and action⁵⁹; and
- Recognizes the unique contributions of Indigenous⁶⁰ and aligned Western feminisms⁶¹ in challenging colonial-capitalist accumulation and heteropatriarchy.

The Power Behind Climate Change Discourse: Reclaiming Women's Agency

Climate change discourses and the worldviews (ontologies and epistemologies) that underpin them have profound impacts on the subjectivities of women and men and the capacities of women to mitigate and adapt to climate change. Even when gains are made in terms of procedural justice, evidence suggests that women, like their male counterparts, are similarly caught in and to varying extents reproducing the Eurocentric and patriarchal discourses and beliefs that perpetuate climate change gender inequities.⁶²

The ECOMOM Alliance: An Example of Women and Hegemonic Capture.

Established in 2006, the ECOMOM alliance, an American not-for-profit organization, has the expressed aim of “inspiring and empowering women to help reduce the climate crisis and create a sustainable future”. It has over 6000 members and a trademarked motto of: *Sustain Your Home, Sustain Your Planet, Sustain Yourself™*. Feminist scholar Sherilyn Macgregor⁶³ suggests that the eco-alliance pushes all the right buttons of “hegemonic *femininity*” to convince women it is their duty as mothers to help save the planet. Their website (<http://www.ecomomalliance.org>) invites women to take up “the economic challenge”, which entails taking 10 well-known steps towards tackling climate change by changing household practices and making the “right” consumer choices. According to Macgregor: “all of these steps are promoted by government and environmental campaigns, the difference is that whereas masculinist Greens do not address ‘who’ will take up the steps, here there is an explicit acknowledgement that this *women’s work*, indeed work that most ‘good moms’ already do!”⁶⁴

Reclaiming Women's Agency through Discourse

One way of thinking about how women can exercise more agency in action on climate change is to examine the discourses (language and underlying beliefs) commonly used. Another means is to explore alternative framings that might offer women more agency.

Feminist critiques of climate change discourse identify **five key orientations** to women's mitigation and adaptive capacities. The first two below critique dominant discourses, while the latter three are resistant discourses in that they seek to construct alternative climate change solutions beyond the Eurocentric framings:

1. Virtuous or vulnerable: Women are often portrayed as either "vulnerable" or "virtuous" in climate change literature.⁶⁵ Women in the Global South are positioned as "vulnerable" (they will be adversely affected by climate change relative to men) while women in the Global North are portrayed as "virtuous" (they have smaller carbon footprint than men⁶⁶ and are believed to be more ecologically conscious).⁶⁷ The vulnerable/virtuous dichotomy masks the complexity of gendered experiences, deflects attention from power relations, and can reinforce gender dualisms (man-woman) in ways that exacerbate the exclusion or neglect of LGBT communities in climate crises.⁶⁸

2. The masculinization of climate change science and strategy: Climate change science and strategy tend to be masculinized endeavours and most decision-makers are men. These patterns of thinking and interaction are shaped by the alignment of scientific materialism⁶⁹ and technological solutions with neoliberal interests. Accordingly nature is often portrayed "as a threat to be endured",⁷⁰ resulting in the replacement of democratic public debate with expert public administration and individual behaviour change.⁷¹ For example, a 2007 US military report entitled "National Security and the Threat of Climate Change" describes climate change as a "threat multiplier" and recommends numerous strategies to defend against climate change as a "security threat". The report does not mention reducing greenhouse gas (GHG) emissions or associated cultural shifts to reduce carbon emissions.⁷²

3. Ecofeminism: An ecofeminist approach challenges human and animal hierarchies through its focus on fundamental issues of gender, sexuality, interspecies, and economic justice. Ecofeminism⁷³ highlights the concept of trans-corporeality, "the physical fact of our co-constituted embodiment with other flows of life, matter, and energy".⁷⁴ It also draws on feminist animal studies that connect the exploitation of animals and women. Significantly, ecofeminism also includes a body of theory focusing on the co-arising and shared affect between humans and other species as humans recognize the feeling states of other animals, recognizing the inter-subjective aspect of intersectional analysis.⁷⁵

4. Expanding the concept of the "Green Economy": Prominent bodies such as the UN and various scholars are expanding the concept of the "Green Economy" by making much of women's caring work more visible and valuing it not only as an economic contribution, but a part of the economy that may already be "green".⁷⁶ Currently, most "ideas about green jobs and a green economy focus fairly narrowly on reducing GHG emissions from the dirtiest industries."⁷⁷ While the production of

clean energy and reduction in emissions from “dirty” industries are necessary, “a shift to including areas of the economy that are inherently green and provide for essential human needs would have very positive gender implications.”⁷⁸

5. Indigenous feminist theory and climate change: Indigenous feminist theories⁷⁹ view climate justice as connected to anti-colonialism.⁸⁰ These discourses re-locate Indigenous women’s voices and power within the context of land-based Indigenous resurgence.⁸¹ Citizenship is seen as a series of relational responsibilities to human and other-than-human relations, grounded in world views of deep interconnectedness that relate to a specific place.⁸² Through emphasizing the unique experiences and agency capabilities of Indigenous women alongside interspecies connection and agency,⁸³ Indigenous feminisms open up an interactive space for addressing climate change in ways that not only reconfigure ideas of work, but re-frame dominant Western traditional framings of life, relationships, and approaches to climate change.

Agency and Intersectionality: How does climate change impact historically marginalized women?

More research is needed on the impacts of climate change on historically marginalized women in Canada. Existing literature indicates the interlocking and mutually constitutive nature of these social identities and statuses.

Women and Socio-economic Status

The most common form of intersectional analysis to date has been around issues of gender and socio-economic status. Research suggests that lower income levels and traditional gender roles result in procedural (access to decision making and influence) and distributive (access to resources) inequities for women.⁸⁴ For example, both gender and income are implicated in the mitigation strategies of Climate Prosperity and Renewable Energy Sector programs, which are centred on male-dominated industries, limit women’s participation and perpetuate income inequalities between women and men.⁸⁵ Furthermore, a gender-based analysis of impact on income levels in British Columbia has demonstrated negative impacts of this policy.⁸⁶

Green Change, Climate Change, Urban Renewal, and Jobs in Toronto: An Example of Intersectionality (Perkins, 2017)

A Toronto-based gender justice and climate justice researcher provides the following account of how the intersection between gender and income inequities for women limit women's climate mitigation and adaptive capacities in the city of Toronto. The following is an excerpt from a summary of this research.

“In Toronto, Canada, the effects of climate change are being noted particularly through high amounts of summer rainfall and sudden storms with intense winds and heavy rain, which seem to be becoming more frequent. Higher amounts of rainfall stress the aging urban water/sewer infrastructure, resulting in sewage overflows into Lake Ontario. The City has launched basement flooding programs to prevent water backups during rainstorms. The increasing numbers of extremely hot days in the summer have led the City to develop a ‘cooling centres’ program where those without air conditioning can come to public libraries, community centres and other communal spaces which offer extended hours on very hot days....In recent years the wage gap between men and women in Ontario has worsened with women working full-time earn 24 percent less than men, and women are twice as likely to be low-income earners.”⁸⁷ Perkins notes that from an equity perspective both climate change and resulting policies are disproportionately impacting low-income Toronto residents, particularly women, since women are overrepresented in lower income brackets compared to men. Women are therefore more likely to occupy basement apartments and to be renters, not homeowners who can benefit from government infrastructure subsidies.

Indigenous Women and Intersectionality

Research with Inuit communities in Canada's Northern and Arctic regions demonstrate spiritual, social, and material impacts of climate change for women. These impacts are caused by intersections between Indigenous worldviews and cultural identities (where self-identity and livelihood is connected to the land), women's gendered social and economic roles as tradition carriers with specific tasks within communities, and their marginal socio-economic statuses regarding food security.⁸⁸

Researchers⁸⁹ identify a number of factors (poverty, technological capacity, socio-political values and inequalities, information deficit, and lack of institutional capacity) that are differently distributed across Canadian Indigenous communities, impacting their ability to respond to climate change in varying ways. The intersection of these factors with social statuses (e.g., gender, income, age, ability, sexual identity, education, and impacts of specific colonial histories) indicates that the relationship between climate change and Indigenous women's roles, responsibilities, and agency is complex and varied.

Other Intersections

Studies have documented how women with multiple minority statuses have been marginalized within rescue efforts and climate change action. For example, the combinations of gender, income, and race;⁹⁰ gender and disability;⁹¹ and gender and sexual identity⁹² affect people's experiences of climate change. Other research draws on existing data to predict impacts of climate change on minority status groups as the following example demonstrates.⁹³

LGBT: Struggling to Thrive, Way Behind—An Example of Climate Change and Intersectionality

The study "LGBT Economic Empowerment in an Era of Climate Crisis" cites a credible poll demonstrating income disparities experienced by LGBT communities relative to population averages. The Gallup poll demonstrates that LGBT communities are 10 percentage points "less likely to be thriving financially than their non-LGBT counterparts."⁹⁴ A gendered analysis of the findings show that not only are members of the LGBT communities 10 percentage points on average to be less likely to be thriving financially but this financial disparity is even greater for LGBT women.⁹⁵

Building on this, the authors cite a further study published by the Transgender Equality and National Gay and Lesbian Task Force (2011): an intersectional analysis of employment rates for transgender people by racial and ethnic group. This shows unemployment rates for Native American and Native American transgender people to be 14 percent and 24 percent respectively.⁹⁶

A feminist intersectional analysis of these findings reveal the ways in which dominant cultural-power relations shape distributive and procedural justice in terms of climate change—i.e., in this case Indigenous transgender people, because of their lower incomes and social statuses, will have fewer resources to adapt to climate change, are more likely to be shunned and stigmatized in climate disasters and marginalized within climate change decision making. This has significant implications for gender-equity considerations in climate change adaptation and mitigation strategies as this very broad identity grouping (transgender) defies gender categories and therefore will likely fall under the radar in terms of gender-responsive climate change policies.

What are the Impacts of Climate Change for Women's Work in Paid and Unpaid Spheres?

Existing feminist research on climate change impacts on women's labour and agency has focused primarily on four key categories: The renewable energy sector; forestry, farming, fishing, and subsistence economies; employment sectors with high proportion of women such as healthcare or the lower echelons of the hospitality industry; and women's unpaid labour in the domestic sphere.

1. Gender, Climate Change Mitigation, and the Renewable Energy Sector

Generally speaking, both the fossil fuel-based and renewable energy global workforce represents a vertically and horizontally gender-stratified labour market, with women concentrated in the lowest-paid portions, closest to the most menial and tedious aspects, and furthest from the creative design of technology and authority of management or policymaking.⁹⁷

Among the most significant responses to climate change amidst efforts to lower carbon emissions is the expansion of the renewable energy sector worldwide.⁹⁸ The rapid expansion of this sector is partly because it is seen as a way of reducing carbon emissions while avoiding increasing unemployment rates⁹⁹ and creating new job opportunities. However, women in Canada and internationally appear to be missing out:

- Women are highly under-represented in this sector (e.g. solar, hydro, bio-energy, geo-thermal, and wind power), with women in countries such as Canada, United States, Spain, Germany, and Italy holding only 20-25 percent of jobs in the sector. The vast majority of these jobs are lower paid, non-technical, administrative, and public relations positions¹⁰⁰; and,
- There is a growing concern that women who are already drastically under-represented in the sector will become even more marginalized if gender equity programs and policies are not proactively planned and implemented.¹⁰¹

Reasons for women's marginalization within the renewable energy sector include:

- Women are severely under-represented in STEM (Science, Technology, Engineering, and Maths) related jobs and training.¹⁰² This is perpetuated both by negative treatment of women in these fields and women's perception of their abilities to perform the job-related tasks;
- Women are vastly under-represented in trades-workforce training as well as employment. A 2010 Statistics Canada study found that in 2007 women accounted for 1-2 percent of completions in apprenticeship training, while 2012 data provided by post-secondary education and training programs showed that excluding the program for cooks, women made up just 2.4 percent of registered apprentices;¹⁰³ and,

- Challenges associated with workforce entry due to inappropriate and poor working conditions, including discriminatory recruitment practices and the persistence of a macho culture.¹⁰⁴

Renewable Energy and Women in the Maritimes: An Example

A recent gendered analysis¹⁰⁵ of women's representation and entry into renewable energy jobs in New Brunswick (NB) and Nova Scotia (NS) found that:

- Within the NB wind power economy, women's labour was concentrated in lower paid positions with minimal levels of authority, being 50 percent of assemblers and 37.8 percent of sheet metal workers, but only 1 percent of construction equipment operators, and 0 percent of millwrights, machinists, and first-line production supervisors;
- Within the NB solar power economy as a whole, women were only 10.6 percent of installation helpers and labourers, 7.1 percent of electrical engineers, 1.3 percent of electricians, and 0 percent of welders, industrial machinery mechanics, and metal fabricators; and,
- Within the Smart Energy grid in the NB economy as a whole, although 50 percent of electrical equipment assemblers were women, they were only 23 percent of operating engineers, 16.2 percent of software engineers, 8.6 percent of industrial engineering technicians, 7.1 percent of all electrical engineers, 4.4 percent of construction labour, and 0 percent of machinists and electrical power line installers and repairers.

2. Gendered Impacts of Regional Climate Change on Forestry, Farming, Fishing and Subsistence Economies:

Emerging literature examines regional adaptation to climate change in Western, rural, forest, and agricultural communities¹⁰⁶ as well as remote Northern and Arctic communities.¹⁰⁷

While changing climatic conditions are unique to each region, studies demonstrate the impacts of interlocking economic, political, ecological, and cultural systems in shaping gendered experiences of, and responses to, climate change. Fletcher and Knuttila's research¹⁰⁸ with 30 farm women in prairie agricultural communities throughout Saskatchewan found that environmental crises entrench farm women's historical gender roles. Building on past research contextualizing farmwork as constructed by patriarchal ideologies that position males as the primary "farmers" while marginalizing and/or rendering women's contributions invisible,¹⁰⁹ Fletcher and Knuttila found that material and ideological positioning of women as caregivers, helpers, and supporters produced a unique set of psychological stressors while giving them "less agency over concrete adaptation strategies."¹¹⁰

18 / Women and Climate Change

While still in its early days, research with Canada's West Coast forestry communities demonstrates women's economic vulnerability to changing climatic and economic conditions and marginality with respect to their unique situated knowledges and climate change strategies.¹¹¹

3. Employment Sectors with High Proportions of Women

Transforming living/working/playing contexts into more environmentally friendly versions has emerged as a discrete response to climate change.¹¹² This is equally true in the public and private sector.

A Healthcare Example

Healthcare is the largest carbon emitter of all the public sectors, responsible for 27 percent of all GHG emissions with 78 percent of all healthcare workers being women.¹¹³ A recent study of women healthcare workers in B.C.¹¹⁴ and the impacts of climate change policy on their working lives found that:

- While women experience the brunt of policy changes, their expertise and leadership abilities in shaping organizational policy are routinely over looked;
- Women experienced increased time-pressures through having to meet the demands of new systems; for example, recycling activities were frequently reported as being time intensive; and,
- Despite demonstrating national leadership to reduce GHG emissions, the B.C. government has done little to provide guidance to workplaces to consolidate and expand on these efforts, including gender mainstreaming to ensure women's critical expertise is part of decision making in strategies to reduce carbon emissions.

Greenwashing in the hospitality sector: Intersections of gender and race

Researchers¹¹⁵ refer to efforts by corporations to greenwash their business by deceptively promoting the perception that an organization's products, aims or policies are environmentally friendly. Implementation of new environmental practices in the accommodation and/or food service industries can either "discipline" or "empower" workers according to employers' interests. Due to their over-representation in these sectors, women, and particularly racialized and migrant women, are vulnerable to this practice.

Table 1 Demographic Characteristics of Accommodation and Food Services Workers in Canada below illustrates this overrepresentation in the accommodation and food and beverage services' sectors.

	Total Labour Force	Accommodation	Food & beverage Services
Female % (2006)	47.4	61.4	59.6
15-24% (2006)	15.0	22.8	48.1
Full-time, Full-year % (2006)	53.7	39.4	31.0
Born outside Canada percentage (2006)	22.1	26.1	25.2
Visible minority % (2006)	15.1	19.1	27.2
Union Coverage % (2006)	26.7	16.9	3.5

Table 1. Demographic Characteristics of Accommodation and Food Services Workers in Canada.¹¹⁶

The Green Choice Program: An Example of the Impacts of Greenwashing on Gender and Race.

Tufts and Milne¹¹⁷ cite the following example of the “disciplinary” effects of greenwashing. In 2010 unionized room attendees and a delegation of community supporters protested the “Make a Green Choice” program, which gives guests a discount for not having their room serviced. The hotel company claimed the reduction in energy and chemicals used to clean the rooms and launder linens had significant environmental benefits. However the workers, represented by UNITEHERE Local 75, argued there was no real reduction in environmental harm, only significant cost savings to the employer, as room cleaning is their highest labour cost. The Union further argued that non-serviced rooms consume almost the same amount of energy to clean as rooms maintained daily and that work is intensified for room attendees who clean rooms on a quota system.¹¹⁸ The Green Choice Program therefore not only decreases the number of rooms to be cleaned each day, but additionally intensifies the labour process as rooms which have not been serviced take room attendees more time to clean. As the table demonstrates, women are particularly vulnerable to increased labour pressures and bear the brunt of corporate cost-cutting, particularly migrant and racialized women, through their higher rates of employment at the lower end of the hospitality sector.

4. Women’s Unpaid Work in the Domestic Sphere

Emerging research suggests that climate change is resulting in significant impacts on women’s unpaid work across Canada. This is occurring through multiple and interconnected pathways linking global neoliberal trade policy and resulting climate change to localized, gendered behaviour patterns and social norms surrounding women’s traditional roles. A number of studies¹¹⁹ demonstrate that women’s unpaid labour is frequently utilized as a source of low-cost climate change mitigation and adaptation:

- Cohen¹²⁰ points out, for example, that many household and caring responsibilities are incurred through public policy on climate change without understanding the unpaid work burdens and other related costs this imposes on the vast majority of women who are responsible for such tasks. One example is reducing electricity costs for consumers for off-peak periods, which has the effect of pushing household duties (often done by women) late into the night.
- Macgregor¹²¹ provides the example of the disproportionate burden on women's unpaid labour of recycling and other green activities; and
- Women's unpaid work also makes a major contribution to climate adaptation strategy through their prominent roles as carers, supporters, and community builders. These impacts often render women even more invisible within public spheres and thus even more marginal to climate change decision making.¹²²

What is the Impact of Climate Change on Indigenous Women?

Overall, news and social media, as well as existing scholarly research, point to the devastating effects of forest fires, droughts, and permafrost, lake and sea-ice melt on the lives of Indigenous Peoples and communities across Canada.¹²³ These experiences support United Nations findings regarding the disproportionate impacts of climate change on Indigenous Peoples, including resulting losses of biodiversity predicted to severely disrupt “the traditional hunting, fishing and herding practices of Indigenous Peoples...worldwide.”¹²⁴

“Within many traditional belief systems among Indigenous communities, water and the subsequent aspects related to climate change are of paramount importance to the women. Women are seen as the protectors of water, and have the closest relationship to the earth—related to the physical ability to bring forth life, and that that life spends the first 9 months immersed in water within the woman's body. The first food a baby has is milk from the mother. Other teachings about water are related to the monthly cleansing of menses, and the relationship with the moon and ocean tides. Women, Indigenous and non-Indigenous, have always shared this symbiotic relationship with the moon, the oceans and the waters of the earth.”

– Dr. Rose Roberts, Woodland Cree, Traditional Knowledge Holder, December 2016.¹²⁵

Climate Change and Indigenous Women: Contexts and Dynamics

Indigenous women live in diverse regions and contexts ranging from cities, which sometimes include urban reserves, to hamlets that may be near to traditional lands, to reserves that may be on or in the vicinity of traditional lands. These comprise a huge range of living situations and geographies with Indigenous women experiencing different degrees of connection to traditional territories and traditional knowledge systems. The lack of research on climate change and Indigenous women reflects dominant Eurowestern, patriarchal power-knowledge relations. To date most research is focused on the Arctic regions.

Indigenous Women in the Arctic

“The Arctic has been called ‘the world’s climate change barometer’ and [I]ndigenous peoples ‘the mercury in that barometer’—especially vulnerable to the impacts of climate change.”¹²⁶

By 2050 the Arctic Ocean is expected to be ice-free for 125 days per year (contrasted to 50 days in 2015), seriously affecting the feeding and reproduction of polar bears, migratory birds, caribou, and fish, key food sources for Arctic Inuit peoples.¹²⁷

Impacts on Food Security, Social Dimensions, and Intergenerational Knowledge Transmission

Climate change has led to the declining availability of traditional country food for Inuit communities, exacerbating already high rates of food insecurity in the North.¹²⁸ Inuit women experience significantly greater food insecurity relative to men, especially in single parent households headed by women who have the least access to traditional foods or healthy alternatives. The same women also have greater difficulty than men accessing paid employment, which is increasingly relied upon to supplement traditional economies.¹²⁹

Inuit Women and Food Insecurity: An Example

An exploratory gendered analysis of food insecurity with 50 Inuit in Igloolik, Nunavut,¹³⁰ found that:

- 64 percent of participants surveyed had experienced some degree of food insecurity the previous year, a rate that greatly exceeds the Canadian average;
- Female respondents were more likely to be food insecure (80 percent) than were men (53 percent);
- Women were also significantly more likely than men to reduce the size of their meals or skip meals, go hungry due to lack of food, or not eat for an entire day; and,
- Of those women who reported not eating for a day, 43 percent indicated that this was generally a monthly occurrence, compared with 29 percent of men.

Impacts on Inuit Women's Economic and Social Roles—Lessons from the Clyde River and Qikiqtarjuaq Communities

Research with Inuit women from Clyde River and Qikiqtarjuaq communities, Nunavut, on primary and secondary climate change impacts found negative effects on women's food preparation work and handicraft production (both vital to the social-economy). These impacts also had secondary effects on their social roles within communities. For example, the lower availability and quality of seal skins due to altered ice freeze-up and thaw effects means that sewing has ceased to be women's primary economic role, with resulting negative economic impacts on them and their communities. Given the primacy of sewing circles or traditional food preparation to intergenerational knowledge transmission, this has negative run-on effects for youth and elder-youth relationships.¹³¹

“The land defines who we are [as Inuit]. It's part of us. It's just something that we've always went there, we always did things. I don't know...we have this connection to the land that makes you feel good. It makes you, you.”

- Inuit mother of three.¹³²

Sense of Place and Identity

Research with Inuit communities demonstrates that climate-caused environmental changes affect feelings of place-attachment through disrupting hunting, fishing, foraging, trapping and travelling, and changing local landscapes. This, in turn, impacts mental and emotional wellbeing and people's ability carry out their roles and responsibilities. A survey conducted by Willox et al. (2012) found that, for all 72 respondents, the land surrounding the community was profoundly important, with sense of place being “deeply and intimately cultural, spiritual and corporeal, and

founded on long ancestral connections to the region.”¹³³ Other research¹³⁴ suggests these same pathways of experiences are also shaped by gender roles and associated statuses, which in turn influence sense of identity and well-being and associated agency capacities.

Indigenous Women’s Knowledge, Expertise, and Experience

“Aboriginal women have diverse connections to ATK [Aboriginal Traditional Knowledge], and their influence on protecting the environment and natural resources cannot be neglected. Acknowledging the views of Aboriginal women encourages the consideration of relevant traditional knowledge, contributes to greater environmental sustainability and care, as well as enhances gender equality.”¹³⁵

- Native Women’s Association of Canada, 2015, “Access and Benefits Sharing Report”

Women’s Traditional Knowledge

Many Indigenous women in Canada hold considerable ecological knowledge and insight into climate change impacts and associated possibilities for adaptation and mitigation.¹³⁶ This includes knowledge of environmental changes and effects on economic activities. For example, through observing climatic conditions and associated physical effects on the qualities of seal skins or berries at harvesting time, women not only develop detailed knowledge of environmental patterns and processes, but also of secondary effects, such as the impacts of climate change on use of country products and related social, cultural, and psychological spheres.¹³⁷

In 2007 the Native Women’s Association of Canada (NWAC) published the paper “Aboriginal Women and Climate Change” emphasizing the importance of supporting the involvement of Aboriginal women in climate change mitigation and adaptation. NWAC notes that in times of crisis “Aboriginal women have always played an important role in both traditional and modern societies and are integral to the wellbeing of their families and communities.”¹³⁸

However, Indigenous women’s expertise remains marginal to climate change policy and strategy throughout Canada.¹³⁹ A gendered analysis of Inuit women’s roles in addressing issues such as the economy, environment, and politics reveals that although women have a prominent role in Inuit society, these roles are not apparent in institutional structures.¹⁴⁰ Rather, Indigenous women across Canada appear to be part of an unelected leadership that is not visible in formal, institutional levels of governance.¹⁴¹

Women as Agents of Change:

How are Women Acting as Agents of Change to Reverse, Mitigate, and Adapt to Climate Change?

*“Women do not lack agency in the environmental space; they hold critical knowledge that can enhance climate adaptations and assist the development of new technologies to address climate variability in areas related to energy, water, food security, agriculture and fisheries, bio-diversity services, health, and disaster risk management.... Yet accessing this knowledge and expertise is hampered by lack of attention to gender equality and an often unquestioned acceptance of existing power and gender relations”.*¹⁴²

Women’s roles in climate change action are varied and far-ranging, from global governance organizations to localized, voluntary efforts. These actions vary widely with respect to level and sphere of focus, social and geographical positioning, and epistemological lens of different cultural groups.

These include:

- Indigenous women’s activism at global and local levels, which in many cases fundamentally challenges the framing of much climate change action;
- Emerging climate change discourse and policy analysis by mainly Western feminists illuminating gender-biases and suggesting alternative policy pathways;
- International and grassroots networks by younger Indigenous and non-Indigenous women carving out new feminist and intergenerational routes to action on climate change; and,
- Women’s organizations aimed at mobilizing women to reduce household-related carbon emissions through wise consumer choices and methods of recycling.

Indigenous Women as Agents of Change

Indigenous women are acting globally and locally on climate change.

“As the impact of climate change is becoming more noticeable in Canada and in the north, it is Indigenous women who have taken up the resistance stance and have been working at bringing awareness to the wider public. Indigenous knowledge holders have begun to share teachings about the sacredness of water. Indigenous women have walked around the Great Lakes, carrying a pail of water as a symbol of the waters they are protecting. Indigenous women are often the leaders in the health fields in Indigenous communities and have advocated and fought for healthy water.”

- Dr Rose Roberts, Woodland Cree, Traditional Knowledge Holder, December 2016.¹⁴³

Mandaluyong Declaration:

Mandaluyong Declaration:¹⁴⁴ In 2010 eighty Indigenous women representing 60 different Indigenous Peoples from 29 countries met at Mandaluyong City in the Philippines at the Global Conference on Indigenous Women, Climate Change and the REDD Plus to see what could be done to address climate change risks and enhance contributions to climate change action. The declaration sets seven priorities (one of which includes recognizing Indigenous women’s knowledge) for climate change adaptation and mitigation that must be adopted globally.

Indigenous Women’s Activism around Canada’s Great Lakes:

Canada’s Great Lakes region lie in the industrial heart of Canada and among some of the nation’s regions most subjected to immediate effects of climate change.¹⁴⁵ Climate change is affecting Indigenous women and their communities in that region, below are two examples.

a) The Ontario Indigenous Women's Water Commission¹⁴⁶ (OIWWC): The OIWWC has the goal of supporting Indigenous women’s full participation in the development and implementation of legislation that deals with water. The OIWWC’s objective is to develop grassroots capacity in areas such as water protection, conservancy, and management that respects and promotes Indigenous women's knowledge. In particular, the Commission highlights that water in Ontario is threatened by hydro-fracking, deforestation around watershed areas, the emission of pollutants into the air, and the shipment of toxins across the great lakes. Underpinning their work is the philosophy of honouring obligations to the seven generations to come, honouring teachings of women and Elders, and ensuring that all the information provided is respectful of Indigenous Knowledge.¹⁴⁷

b) Mother Earth Water Walk¹⁴⁸ Two Anishinawbe Grandmothers, and a group of Anishinawbe women and men have taken action regarding the water issue by walking the perimeter of the Great Lakes and gathering other groups and/or organizations to participate with them in a walk around the Great Lakes. The goal is to strengthen the presence of Aboriginal peoples in the Great Lake Regions and to increase awareness of Indigenous and non-Indigenous Peoples of the importance of the water and of keeping Great Lake waters clean. The 1st Annual Women's Water Walk took place April 2003.¹⁴⁹

Women in Labrador

Over the past four decades, Indigenous and non-Indigenous women in Labrador have led a variety of resistance efforts against militarization and environmental degradation.¹⁵⁰ One recent example involves the development of the Muskrat Falls hydro-electric dam. Diverse women in Labrador have been organizing to ensure that the concerns for their well-being and the well-being of their families and communities are taken into consideration at every stage of the development.

Women at **The Mokami Status of Women Council**¹⁵¹ had witnessed the boom and bust of the resource extraction industry in the area of Happy Valley-Goose Bay over many decades. In partnership with FemNorthNet¹⁵² women in this region are organizing and making interventions in a variety of ways in spaces and places where they had been typically excluded. From leadership development, to submissions to environmental assessment panels,¹⁵³ and direct action including protests,¹⁵⁴ and leading walks onto the land,¹⁵⁵ the women in Labrador are finding ways to have their voices and concerns heard. These women's efforts continue to draw attention to the importance of a gendered intersectional analysis when looking at the impacts of resource development.

Other Examples of Global Women's Organizations as Agents of Change

WEDO

WEDO¹⁵⁶ is a global women's organization that aims to ensure that women's rights; social, economic, and environmental justice; and sustainable development principles—as well as the linkages between them—are at the heart of global and national policies, programs, and practices. WEDO allies with women's organizations, environmental, development and human rights organizations, governments, and intergovernmental organizations including the United Nations to achieve its mission. One of its focus areas is climate change.

Global Gender and Climate Alliance (GGCA)

GGCA,¹⁵⁷ launched in Bali in 2007, provides space for its members to effectively collaborate on gender and climate change issues. To achieve these ends at the multiple levels, the Alliance comprises a unique partnership of UN agencies, intergovernmental organizations, non-governmental organizations and other

institutions. The Alliance has four key objectives that involve integrating a gender perspective into policy and decision making, ensuring that financing mechanisms on mitigation and adaptation address the needs of poor women and men equitably and designing and implementing gender-responsive climate change policies, strategies and programmes.

Conclusion

Women—through their paid and unpaid work, roles, and responsibilities—are local knowledge experts on the impacts of climate change and ways of mitigating and adapting to its effects. The gendered impacts of climate change and associated policies are evident throughout Canada. Impacts of climate change are differently distributed amongst women according to geography, identities, and social statuses such as income, race and ethnicity, age, and ability. Climate change inactivity at policy and programming levels throughout Canada, lack of gender based analysis combined with the erosion of funding for women’s organizations and programs presents substantial challenges to gender and climate justice.

At local levels, women, and especially Indigenous women, have been taking action on climate change for some time. Emerging research by feminists on the impacts of climate change on women’s work and agency in Canada is now beginning to record what is being done as well as shedding light on the gendered impacts on women in areas such as renewable energy, food and subsistence and economies, the public sector including healthcare, and women’s unpaid work.

Particularly significant are Western feminist critiques of climate change discourse and Indigenous critiques of Western feminist theory, for their potential to shift the framing and terms of engagement of climate change action. Common to both Indigenous and Western feminist work is the critique of late capitalism and associated pro-growth logic together with alternative visions of social-economy through feminist intersectional analysis across human and non-human relations. Indigenous feminist analyses¹⁵⁸ are powerful for the unique capacities related to ensuring the collective continuance of not only human life but the continuance of our non-human relations in terms of climate change responsibility. For Indigenous women, climate change adaptation and mitigation are interwoven with relational responsibilities “that facilitate the future flourishing of Indigenous lives that are closely connected to the earth and its many living and nonliving beings and natural inter-dependent collectives”.¹⁵⁹ Careful critique of epistemological perspectives in ways that dig underneath identity politics but also take account of dominant power relations and their multiple intersections with social identities and forms of structural power from context to context, might provide Western and Indigenous feminist activists and scholars’ ways forward to forge new and creative solidarities for action on climate change.

Endnotes

- ¹ Oliva & Owren, 2015, p. 17.
- ² Health Canada, 2008; Warren & Lemmen, 2014, pp. 1–18.
- ³ IPCC, 2014, p. 151.
- ⁴ Ford, Berrang-Ford, King, & Furgal, 2010; Oliva & Owren, 2015.
- ⁵ World Bank, 2016.
- ⁶ Averchenkova & Matikainen, 2016.
- ⁷ Assembly of First Nations, 2009; Perkins, 2015a, pp.17–20.
- ⁸ Cohen, 2014, pp. 55–80; Perkins.
- ⁹ Cameron, 2012, pp.103–114.
- ¹⁰ Oliva & Owren, 2015, p. 17.
- ¹¹ Acha, 2016; Alston, 2014, pp. 287–294.
- ¹² Gaard, 2015, pp. 20–33; Nagel, 2015, pp. 202–208.
- ¹³ Macgregor, 2013, pp. 617–633.
- ¹⁴ Cohen.
- ¹⁵ Connell & Whittaker, 2015; Kaijser & Kronsell, 2014; Perkins, 2017, pp. 45–63
- ¹⁶ Canadian Council on Renewable Electricity, 2015; Thompson & Joseph, 2011; National Round Table on the Environment and the Economy, 2011.
- ¹⁷ Baruah, 2016; McFarland, 2015.
- ¹⁸ Beaumier, & Ford, 2010, pp.196–201; Beaumier, Ford, & Tagalik, 2014, pp. 550–559; Morgan.
- ¹⁹ Cameron.
- ²⁰ Baruah; Cohen; Whyte, 2014, pp. 599–616.
- ²¹ IPCC, 2001.
- ²² Reed *et al.*, p. 996.
- ²³ United Nations,1992, p. 3.
- ²⁴ See Climate Institute, in Perkins, 2015b, p. 4.
- ²⁵ United Nations Economic and Social Council, Introduction, no. 2.
- ²⁶ Woodson & Pabon, 2016, pp. 57–71.
- ²⁷ Kaijser & Kronsell.
- ²⁸ Bowleg, 2012, p. 1268.
- ²⁹ IPCC, 2013
- ³⁰ IPCC, 2001.
- ³¹ Harvey, 2005, p. 2.
- ³² United Nations,1992, p. 3.
- ³³ Sen, 1999.
- ³⁴ Bendlin, 2014, 680–698.
- ³⁵ Arora-Jonsson, 2011, 744–751; UN Women Watch, 2009; Dankelman, 2010; IPCC, 2007.
- ³⁶ Fletcher, 2015, pp. 364–374.
- ³⁷ Alston; Macgregor, 2010, pp. 124–140; Resurreccion, 2011.
- ³⁸ IPCC, 2014.
- ³⁹ WEDO, 2016; IPCC, 2014.
- ⁴⁰ Oliva & Owren.
- ⁴¹ Ford *et al.*
- ⁴² IPCC, 2014.
- ⁴³ IPCC.
- ⁴⁴ Morgan, 2008; Perkins, 2015a.
- ⁴⁵ Acha.
- ⁴⁶ McKenna, 2016.
- ⁴⁷ Alston.
- ⁴⁸ Kruse, 2014, pp. 349–370; UN Secretariat, 2016.
- ⁴⁹ Kruse.
- ⁵⁰ UN Secretariat, 2016.
- ⁵¹ Environment and Climate Canada, 2016.
- ⁵² Perkins, 2015a.
- ⁵³ Thompson & Joseph.
- ⁵⁴ Lavell-Harvard, 2016.

- 55 Vanderklippe, 2016.
- 56 Cameron, 2012.
- 57 Dei, 2006, pp. 1–23.
- 58 Coulthard, 2014.
- 59 Kaijser & Kronsell.
- 60 McGregor, 2012; Whyte, 2014.
- 61 Gaard; Macgregor, 2014.
- 62 Macgregor, 2010.
- 63 Macgregor, 2009.
- 64 Macgregor, p. 135.
- 65 Arora-Jonsson.
- 66 Cohen.
- 67 Dietz, Kalof, & Stern, 2002; Hunter, Hatch, & Johnson, 2004, pp. 677–694.
- 68 Alaimo, 2009, 22–35; Connell, & Whittaker.
- 69 Scientific materialism refers to the bias within modern Western Science towards physical reality and claims that this can be objectively measured and quantified. As such this is the dominant knowledge system which shapes public policy and programming.
- 70 Macgregor, 2013, p. 617.
- 71 Alaimo; Macgregor.
- 72 Nagel.
- 73 Alaimo, 2008, pp. 237–264.
- 74 Gaard, p. 25.
- 75 Gaard.
- 76 Cohen.
- 77 Cohen, p. 74.
- 78 Cohen, p. 76.
- 79 Arvin, Tuck, & Morill, 2013, pp. 8-34; Huhndorf & Suzack, 2010, pp. 1–17.
- 80 Kinch, Giibwanasi, & Sleeping Grizzly, 2014, pp. 259–266; Whyte.
- 81 Corntassel, 2012, pp. 86–101.
- 82 McGregor, 2012, p. 11; Whyte; Williams, & Hall, 2014, pp. 211–221.
- 83 Arvin *et al.*; Whyte.
- 84 Arora-Jonsson; Cohen.
- 85 Baruah; McFarland.
- 86 Chalifour, 2010, pp. 169–197.
- 87 Perkins, 2017, p. 55.
- 88 Beaumier, & Ford, 2010; Dowsley *et al.*, 2010, pp.155–165; Morgan.
- 89 Ford *et al.*, p. 3.
- 90 Enarson, 2006.
- 91 GPDD, 2009; Wolbring, 2009.
- 92 Chetty, 2010.
- 93 Connell, & Whittaker.
- 94 Gallup-Healthways Well-Being Index in Connel & Whittaker, (2015)
- 95 Gallup-Healthways Well-Being Index in Connel & Whittaker, (2015)
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- 97 Baruah, p. 19.
- 98 Baruah.
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- 101 McFarland.
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- 104 Baruah; Clarke & Wall, 2014, pp. 26–27.
- 105 McFarland.
- 106 Fletcher, 2015; Fletcher & Knuttila, 2016, pp. 168–187; Milne, 2005, pp. 49–54; Muzoz, & Boyd-Bell, 2008/09, pp. 23–25; Reed *et al.*
- 107 Beaumier, & Ford, 2010; Beaumier, & Ford *et al.*, 2010; Dowsley *et al.*, 2010, pp.155–165; Nallainathan, 2009, pp. 4–6.

- 108 Fletcher; Fletcher, & Knuttila.
109 For example, Fletcher, 2015, p. 369.
110 Fletcher, & Knuttila, 2016, p. 171.
111 Munoz, & Boyd Bell; Reed, *et al.*
112 Tufts, & Milne, 2015, pp. 41–43.
113 Black, 2015, p. 38.
114 Black.
115 Tufts, & Milne.
116 Tufts, & Milne, p. 41.
117 Tufts, & Milne.
118 Tufts, & Milne.
119 Fletcher; Cohen; Munoz, & Boyd-Bell; Reed *et al.*
120 Cohen.
121 Macgregor, 2006.
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124 United Nations, 2009, p. 45.
125 Roberts, 2016.
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127 Perkins, 2015b.
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132 Willox *et al.*, 2012, p. 542.
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136 Dowsley *et al.*; McGregor; Morgan; Whyte.
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144 Mandaluyong Declaration, 2010.
145 Perkins, 2015a.
146 Ontario Indigenous Women’s Water Commission, n.d.
147 See: <http://www.onwa.ca/article/about-us-1235.asp>.
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149 See: <http://www.motherearthwaterwalk.com/>.
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152 See also FemNorthNet at <http://fnn.criaw-icref.ca/en>.
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