Inequities in climate change: the impacts of policy on people

A literature review

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July 2019

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INTRODUCTION

> **Although this is a global issue, climate change does not impact all individuals or communities equally. The environmental, economic and social burdens linked to climate change disproportionately impact the well-being of people who belong to equity-seeking groups.** (Berko, J., Gould, S., & Rudolph, L., 2015)

Climate change is one of the most pressing global issues, if not the most, of our time. For years, human activities have played a major role in the increasing concentration of carbon emissions in the atmosphere (Environment and Climate Change Canada, 2018). As a result, we are experiencing detrimental impacts to our environment, some of which cannot be reversed.

Throughout this paper, equity-seeking groups will refer to those who are marginalized and working towards equitable inclusion in society (City of Ottawa and City for All Women Initiative, 2015). Equity-seeking groups may include but are not limited to: people from low-income groups, persons living in poverty, racialized peoples, Black peoples, Indigenous peoples, women, and rural residents. While this literature review will focus more on the former groups, other equity-seeking groups are also impacted by climate change and its related policies.

This paper relies on the four overlapping dimensions of equity for program and policy design, adopted from *The Urban Suitability Directors Network*'s Equity Scan Steering Committee (See Figure 1). This comprehensive understanding of equity highlights how inequities are rooted in historical, institutional, and structural contexts, and that its impacts are prolonged.

Relying on existing research, this paper will focus on the distributional and procedural inequities as a result of climate change and its related policies, as well as best practices to advance equitable outcomes in climate change work.

Figure 1: Four Dimensions of Equity

Procedural Equity	Inclusive, accessible, authentic engagement and representation in the process to develop or implement programs or policies.
Distributional Equity	Programs and policies result in fair distributions of benefits and burdens across all segments of a community, prioritizing those with highest need.
Structural Equity	Decision-makers institutionalize accountability; decisions are made with a recognition of the historical, cultural, and institutional dynamics and structures that have routinely advantaged privileged groups in society and resulted in chronic, cumulative disadvantage for subordinated groups.
Transgenerational Equity	Decisions consider generational impacts and do not result in unfair burdens on future generations.

Adopted from Park, A. (2014). Equity in Sustainability: An Equity Scan of Local Government Sustainability Programs. Urban Suitability Directors Network

DISTRIBUTIONAL INEQUITIES

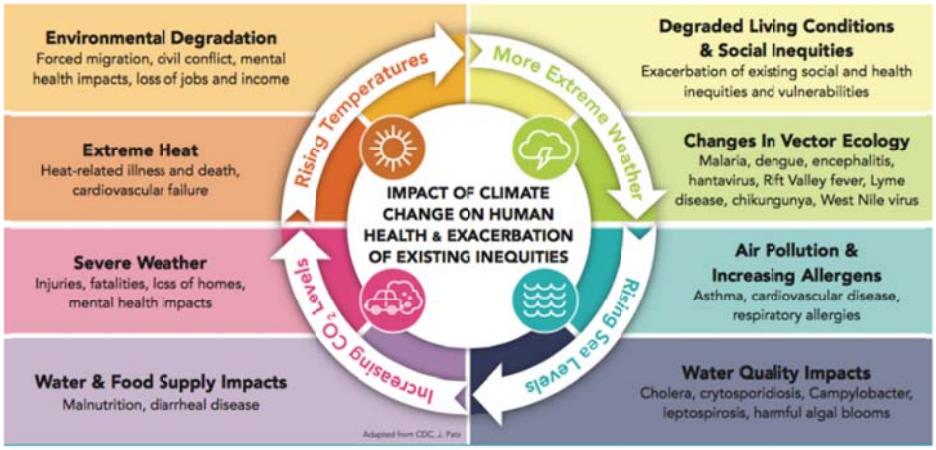
> **People who belong to equity-seeking groups are not the main contributors to human activities that have led to increased global emissions; however, they bear the brunt of its impacts and subsequent policies aimed to address climate change.** (Sustainable Prosperity, 2011b)

Various socio-economic factors such as income, location and race, can influence the ways in which people are impacted by the effects of climate change, and these impacts can be intergenerational (Sustainability Solutions Group, 2017). At a household level of comparison, lower-income households have a substantially lower carbon footprint; however, they are more vulnerable to the impacts of climate change (Sustainable Prosperity, 2011b). Low-income groups experience greater financial impacts as a result of environmental and climate change policies, compared to high-income groups (Johnstone. N., & Serret, Y., 2006), as they have less disposable income to mitigate and prepare for its impacts (i.e. maintenance and repairs) (Krechowicz, D., 2011), and they are less likely to have insurance (Sustainability Solutions Group, 2017). These impacts make low-income groups increasingly vulnerable to climate-related risks.

Climate change impacts are inextricably linked to existing inequities as a result of rising temperatures, extreme weather, rising sea levels, and exposure to increasing carbon emissions (California Department of Public Health, Office of Health Equity, 2019). These links have significant impacts on our health and well-being (See Figure 2). As the literature on the linkages between climate change and mental health grows, there is strong evidence to suggest that exposure to warmer temperatures, increased precipitation, and tropical cyclones are associated with worsened mental health (Migliorini, R., et al., 2018).

In the following section, we look at the distributional impacts in three areas of climate change policy: carbon tax, transit-oriented development, and energy conservation and efficiency retrofits in homes.

Figure 2: Climate Change and Health Inequities



California Department of Public Health, Office of Health Equity. (2019). Climate Change & Health Equity

Carbon tax

The carbon tax is a leading tool used to reduce carbon emissions by making carbon-intensive goods and services more expensive in efforts to shift the demand towards low-carbon alternatives (Sustainable Prosperity, 2011a). An introduction or change in a carbon price is often shifted onto the public. Whether this shift is direct or indirect is dependent on the elasticity of demand for the product or service.

The elasticity of demand for a good determines how much of an increase in cost can be passed on to consumers. When demand is inelastic, a carbon price will increase the price of goods, and some or all the additional costs of carbon will be passed on directly to consumers. On the other hand, when the demand is elastic, the producer or service provider has to absorb the additional carbon costs. Unfortunately, the latter can occur in the form of lower wages, thus still shifting the cost burden onto consumers, although indirectly (Krechowicz, D., 2011). Depending on an organization's capacity to absorb the additional cost of carbon, this could even lead to job loss. This poses a particular risk for low-income groups, and especially rural populations who are heavily employed and skilled in natural resource-dependent sectors (i.e. agriculture, forestry, and mining) and thus are likely to have invested their skills development in these sectors, which are becoming increasingly vulnerable to climate change (Krechowicz, D., 2011).

In the Canadian context, lower- and middle-income groups depend more heavily on carbon-intensive goods, with more of their income being allocated towards fossil fuels than high-income groups (Rivers, N., 2010; Krechowicz, D., 2011). There could be many reasons for this; for instance, perhaps lower-income groups are more likely to live in less energy efficient homes and consequently spend more on heating. Nonetheless, a price on carbon will change the price of many carbon-intensive products and services, and consequently, change consumer behaviour. This includes goods and services that are integrated into many aspects of our everyday lives, (i.e. basic necessities such as housing, transportation and heating), which will inadvertently impact purchasing decisions by lower-income groups, Aboriginal peoples, women, and rural communities (Sustainable Prosperity, 2011a), as they have less disposable income and thus are less flexible to substitute carbon-intensive goods with low-carbon alternatives (Krechowicz, D, 2011).

Ultimately, although a carbon tax may seem equal because it will impose the same added cost for people across income levels, research points to concerns that people who fall into low- and middle-income groups are at a disadvantage as they are more dependent on carbon intensive goods and they will have a larger portion of their income consumed by the carbon tax compared to high-income groups.

> **Research on the impacts of a carbon tax suggests that this policy tool is regressive when absent mitigation efforts to prevent adverse effects on equity-seeking groups.** (Sustainable Prosperity, 2011b)

The introduction of a carbon tax regime should be complemented by policies that focus on supporting equity-seeking groups that are disproportionately impacted by this policy (Sustainable Prosperity, 2011a). Reducing the impacts of poverty, particularly in the ways that climate change adversely impacts equity-seeking groups, should be a fundamental design principle of policies and programs. As such, policy makers must consider how putting a price on carbon will impact individuals and households based on a broad range of socio-economic, cultural and regional factors (Bubna-Litic, K., & Chalifour, N. J., 2012).

The distributional impacts of a carbon tax are partially determined by how fairly the government chooses to allocate the revenue generated by carbon taxes (Sustainable Prosperity, 2011a). Tax benefits in the form of credits or cuts are considered the economically efficient approach; however, tax benefits can still be regressive as they may not reach those groups which do not pay taxes but are still impacted by the unintended consequences of a carbon tax (Blonz, J. et al., 2010). There is research to suggest that lump sum rebates and subsidies are effective tools for government to make a carbon tax less regressive (Sustainable Prosperity, 2011a). Preventative measures can be combined simultaneously to further reduce the potential for adverse impacts of these policies.

Transportation-oriented Development

Transportation-oriented development (TOD), aims for liveable and walkable neighbourhoods by increasing density of homes, workplaces, and businesses near public transit. TOD has the potential to reduce carbon emissions while improving health outcomes as people are more likely to walk or take transit, rather than travel long distances in a vehicle.

In the context of Toronto, TOD is largely concentrated along the subway line and in the downtown core. In recent decades, there has been a dramatic shift in the distribution of Toronto's population along socio-economic lines, as many lower-income groups, recent immigrants, populations of Black, Chinese, South Asian, and other visible minority populations, are increasingly concentrated along the edges of Toronto, towards the suburbs (Hulchanski, D. J., 2007). This inequitable spatial distribution is linked to the increasing polarization of income and wealth within Toronto (Hulchanski, D. J., 2007). Access to well-serviced public transportation infrastructure is relatively poor beyond the central city and neighbourhoods close to the subway line, and more particularly in low-income neighbourhoods (Hulchanski, D. J., 2007). This reduces transportation alternatives, particularly environmentally friendly options, for those groups living along the edges of the city, often making driving a vehicle the most accessible, reliable, and time-efficient transportation option.

Inequities in infrastructure planning are having lasting impacts on the health of marginalized groups. Racialized peoples, people of low socio-economic status, the elderly, and children are more likely to be disproportionately affected by aspects of transportation, building, and land use within the built environment (Dannenberg, A. L., 2008). Changes to infrastructure can negatively impact urban accessibility, creating barriers to sociability and incentivizing residents to own a vehicle

(Sustainability Solutions Group, 2017). Over the long-term, this type of infrastructure and land-use planning can lead to a decline in social relationships, having lasting impacts on physical health, mental well-being, and productivity (Sustainability Solutions Group, 2017). For those who live near highways in major cities, there is greater exposure to air pollution and an increased risk of developing dementia (Burnett et al. (2017).

To address these growing concerns, equitable TOD has been proposed as an approach to TOD that places an emphasis on social equity throughout its implementation (Pollack, M., & Prater, B., 2013). Within this model, the process should aim to engage a diverse group of partners (See Figure 3), with support from regional, provincial or territorial governing bodies to play a key role to inform best practices and provide project capital. The development and implementation must account for the needs of each specific community; thus, equitable TOD is best planned at the regional level and implemented locally (Pollack, M., & Prater, B, 2013).

This collaboration allows for an opportunity to streamline activities across these different areas, ultimately increasing efficiency and better coordinating implementation efforts (Pollack, M., & Prater, B., 2013). Achieving this, however, requires financial tools that are risk tolerant to mitigate potential risks of development (Pollack, M., & Prater, B, 2013).

Figure 3: Partners in the Equitable TOD Process

Pollack, M., & Prater, B. (2013). Filling the Financing Gap for Equitable Transit-Oriented Development. Living Cities, 6.

Energy Conservation and Efficiency Retrofits in Homes

Energy conservation is the process of reducing energy through less, more efficient energy use. Energy efficiency retrofits can take many different forms (i.e. switching to LED lights, replacing windows, upgrading HVAC systems), with the aim to improve the existing energy infrastructure in residential and commercial buildings.

Racialized peoples and people of low socio-economic status are predominantly affected by substandard housing and subsequently, poor building conditions (Dannenberg, A. L., 2008). For instance, Aboriginal peoples are three times more likely than non-Aboriginal people to live in housing that needs major repairs (Statistics Canada, 2008). Further, lower income groups are more likely to live in older, poorly insulated, and overall less efficient housing (Energy Efficiency Working Group, 2008). Beyond the carbon impacts, poor building conditions can impact residents' energy bills, living comfort, respiratory and cardiovascular health, thermal conditions, air quality, productivity, and mental health (Dannenberg, A. L., 2008). These impacts are amplified when residents are situated in areas with reduced urban accessibility, as discussed earlier.

For low-income and other vulnerable groups, a large portion of their income is allocated towards their energy bill, making them less resilient to increases in energy prices. As a result, households with lower income levels are more likely to experience fuel poverty (National Energy Board, 2017), and are the largest beneficiary of energy efficiency improvements (Anica, A., et al, 2018).

Increasing energy efficiency can be used as a policy tool to alleviate fuel poverty (Bhardwaj, A., et al, 2016). Consider Knoxville, Tennessee as an example, where the City has developed a strategy that simultaneously reduces social inequity and carbon emissions (Jensen, A. V., & Robinson, J., 2017). Focusing on the needs of vulnerable populations, the Knoxville Extreme Energy Makeover program uses utility data to identify the least efficient properties and offer them free energy efficiency upgrades (Jensen, A. V., & Robinson, J., 2017). The program also offers free participation in energy efficiency workshops to educate and empower people to increase their energy-savings (Jensen, A. V., & Robinson, J., 2017).

Working towards more equitable solutions would require reducing barriers to energy conservation and energy efficiency retrofits, especially for the most vulnerable groups, in addition to opportunities that allow local knowledge to inform the implementation process to reduce any negative economic impacts of residential building retrofits (Anica, A., et al, 2018).

PROCEDURAL INEQUITIES

Equity-seeking groups are underrepresented throughout key stages of the policy process.

An American study that looked at public perceptions about which socio-economic and racial groups are concerned about the environment shed light on the lack of representation and influence that equity-seeking groups often have in these spaces. While the study had a U.S. focus, these findings offer valuable insights that may not be specific to an American context. The study compared public and reported environmental concerns among different social groups, and found that people overestimated the environmental concern among White people, people underestimated the environmental concern among racialized groups (i.e. African American, Hispanic, Latino or Asian), and the perception by White people of their own environmental concern was higher than what they self-reported (Ballew, M. T., et al, 2018). Interestingly, all three racialized groups expressed a greater concern about the impacts of climate change on their communities compared to White people (Ballew, M. T., et al, 2018).

These misperceptions perpetuate stereotypes and create biases which suggest that socio-economic factors impact which groups hold environmental concerns, when in fact, African Americans are concerned about the environment just as much as White people (Mohai, P., 2003). These findings point to the issue that marginalized groups do not see themselves represented in positions that involve some level of environmental advocacy or climate change policy, and as a result, they underestimate the environmental attitudes of their own social groups (Ballew, M. T., et al, 2018).

Diverse representation and shared decision-making power are fundamental to improving outcomes for equity-seeking groups. There are equity benefits related to climate action; however, these benefits are largely dependent on the ways in which policies are implemented (Sustainability Solutions Group, 2017). Policy makers and decision-makers must ensure that distributional impacts (i.e. benefits and harms), are considered in the various stages of the policy process.

Equity Considerations in the Policy Process

To address inequities in climate action, policy design requires holistic considerations.

Policies related to climate action have the potential to maximize co-benefits and achieve social equity (Bhardwaj, A., et al, 2016). Policy makers can develop more equitable policies by leveraging the knowledge and lived experiences of people that belong to equity-seeking groups. People with decision-making power must commit to increasing their understanding of the experiences of equity-seeking groups and allow space for these groups to support the development of climate solutions that account for their specific needs.

Stakeholder engagement is a key activity that can build an understanding of different perspectives. To deepen the impact of stakeholder engagement, "those who will be adversely affected by proposed policies, should have a meaningful opportunity to contribute to decision-making" (Sustainable Prosperity, 2011b, 4). This process should also include an opportunity to negotiate the distribution of power among stakeholders involved in the policy process to ensure that stakeholders involved in the decision-making process are representative of the community and that those diverse perspectives are accounted for in the selection, design and implementation of climate change policies (Sustainable Prosperity, 2011b).

To support the use of such a framework, education and training must play a key role in the policy process to both inform policy makers of the key indicators highlighted in Figure 4, and to engage members of equity-seeking groups in actions related to climate change. Through capacity building, these efforts can build existing social capital, encouraging local participation and civic engagement in climate action.

> **Much like co-benefits, policies and programs can also produce co-harms which can have negative feedback cycles and produce socio-economic inequities.**
> (Sustainability Solutions Group, 2017)

Policies and programs aimed at climate action must consider incidental and unexpected outcomes before their implementation. To accurately measure these outcomes, this process requires making some assumptions about potential co-benefits and co-harms and developing a baseline, or a status quo, to compare against actual impacts for evaluation purposes (Sustainability Solutions Group, 2017). As the policy process is continuous and on-going, these considerations should also be integrated into the evaluation phase where there are opportunities to improve future iterations of a policy.

Beyond the city level, a broader approach to promote equitable outcomes could include mainstreaming climate change across broader (provincial and territorial) government agendas, for instance through incorporating these measures into a national or provincial poverty reduction strategy (Richards, M., 2003).

CONCLUSION

Climate change policies can have adverse economic and social impacts on people who belong to equity-seeking groups that are already more vulnerable to climate-related risks. This is partly a result of the structural and procedural inequities which create barriers that limit the engagement, power and influence by these groups in policy development and decision-making. As the research on the intersections of equity and climate change policy grows, it is becoming increasingly apparent that policy makers should take a holistic approach to climate action to reduce the co-harms of climate change policy and improve outcomes for equity-seeking groups.

There are many ways to work towards a more sustainable *and equitable* future. Policy can, and should, be developed to address climate-related goals, without adversely impact equity-seeking groups, and prioritizing those groups who have greater needs.

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