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The role of philanthropy in financing climate change mitigation and adaptation in Canada: A systematic literature review

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ABSTRACT

This review examines the role of philanthropy, particularly community philanthropy and community foundations, in financing climate change mitigation and adaptation in Canada. Despite the increasing impact of climate change on the nation and the transition to a greener economy, a noticeable gap exists in comprehensive studies addressing philanthropy's role in addressing climate change impacts and action, particularly at the community level. The review systematically analyzes prior research on philanthropy's contribution to funding climate change initiatives in Canada, focusing on community-based efforts. It evaluates existing knowledge, identifies common themes, and addresses limitations in the literature to inform future research. The review reveals that while climate-related investment opportunities are rising due to growing demand and ESG considerations, philanthropic contributions to climate change in Canada remain relatively small. The review emphasizes the importance of community philanthropy and highlights supporting policy engagement, investing in local climate solutions, and addressing environmental justice through community-based efforts.

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Climate change; philanthropy; community philanthropy; community foundations; climate financing; private sector involvement; Canada; environmental justice; place-based initiatives

Introduction

As in other locations around the world, Canada's climate is changing (Bush & Lemmen, 2019). Increased temperatures, altered rainfall patterns, severe weather events, and rising sea levels are just a few of the changes already impacting many aspects of our lives. Over the ensuing decades, climate change will continue and, in many cases, worsen (Chaloux et al., 2015). That will significantly affect the economy, social well-being (health, culture, among others), and the environment of Canadian communities. Colting-Stol (2020) posits that amidst the backdrop of contemporary and impending climate disasters, exacerbating inequalities, and historical surges in greenhouse gas (GHG) emissions, the climate crisis has evolved into an unprecedented "existential threat" to the human species and the integrity of our planet (Moseman & Setiya, 2023).

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Economic development, historically linked to high-carbon growth, faces a crisis due to climate change (Ackerman, 2009). It is essential, therefore, that the global economy quickly switches to a new, low-carbon mode of operation. As Canada and the world seek to shift to mitigate and adapt to the adverse effects of climate change, all sectors of society are anticipated to transition toward a more sustainable and green future (J. D. Ford et al., 2010). This transformation toward sustainability will require a coordinated effort across all sectors of society, including government, businesses, communities, and individuals. Addressing climate change comprehensively involves reevaluating and adapting various aspects of Canadian life to achieve a resilient, low-carbon, and environmentally conscious future and to develop strategies aimed at reducing vulnerability to the impacts of climate change (Kempa & Moslener, 2017). Greenberg et al. (2011) add that to get there, almost every aspect of individual and social lives will need to change, moving away from activities that cause environmental deterioration and toward those that protect and sustain the natural systems that underpin societies.

Climate change poses significant financial challenges for both developed and developing nations, requiring substantial commitments amounting to tens of billions of dollars annually (Williams et al., 2021). Government financing has increased notably as part of climate policy interventions (DiLeva, 2017). However, available climate funding falls short, with less than \$10 billion per year accessible under the Kyoto Protocol and the United Nations Framework Convention on Climate Change (UNFCCC), and additional contributions from the World Bank and bilateral aid initiatives bringing the combined amount to less than \$15 billion (Ackerman, 2009; World Bank Group, 2015). This insufficiency hinders adequate climate investments, leading to ongoing challenges within the UNFCCC regime (Kempa & Moslener, 2017) as parties disagree on defining “climate finance” and achieving a balance between mitigation and adaptation (DiLeva, 2017).

In the Canadian context, the Government of Canada has responded to the climate crisis by enacting the Canadian Net-Zero Emissions Accountability Act. The Act formalizes the government’s commitment to achieving net-zero greenhouse gas emissions by 2050. They have also released the 2030 Emissions Reduction Plan, which outlines the steps the country is taking to reduce emissions to 40–45% below 2005 levels by 2030 and achieve net-zero emissions by 2050 (International Finance Corporation, 2020). Provinces and territories have also played a crucial role in responding to the climate crisis by implementing their own climate action plans and policies. Many of these regions have set their emissions reduction targets, renewable energy goals, and initiatives to transition to a low-carbon economy. Additionally, there has been increased collaboration between the federal government and regional authorities to ensure alignment and coherence in climate policy at the national level (Conteh, 2022). This multi-level governance approach underscores the collective effort to combat climate change and reflects Canada’s commitment to addressing the urgent global challenge through a coordinated and comprehensive policy framework. While these commitments are laudable and ambitious, the question remains of who is willing to fund this commitment to the levels required (J. Ford et al., 2007).

The Canadian government provided \$2.65 billion in international climate finance between 2015 and 2021 (International Institute for Sustainable Development [IISD], 2022). Bednar et al. (2018) added that the UNFCCC institutions and mechanisms have received support from Canada as part of its commitment to climate finance, giving priority

to efforts to adapt to and mitigate climate change, mobilize private sector funding for climate action, and support these institutions and mechanisms. Furthermore, the Climate Action and Awareness Fund (CAAF) has contributed about \$206 million to projects made in Canada that aid in mitigating climate change (Aptowitz, 2022; IISD, 2022). The CAAF is designed to support projects that can create middle-class jobs for Canadians who work in science and technology, academia, and at the grassroots community level. The three main objectives of the Fund are to support youth climate education, awareness, and community-based action, assist with climate research, and advance technology and science related to climate change (Aptowitz, 2022; Government of Canada, 2023). These initiatives, however, are likely to be insufficient due to the many unique difficulties faced by communities in Canada, particularly those in rural and northern areas, in adjusting to the growing threats and transition demands posed by climate change (International Finance Corporation, 2020; Vodden & Cunsolo, 2021).

To enhance resilience, reduce climate change impacts, and support decision-making, climate change mitigation and adaptation actions require financing from various sources – local, national, and transnational, including public, private, and alternative funding (Bush & Lemmen, 2019). The international climate agenda’s emphasis on voluntary, market-based, and bottom-up approaches, including place-based philanthropy, continues to play a significant role in mitigation and adaptation efforts (Aptowitz, 2022). Impact investing, making investments with the intention of generating measurable social or environmental impact along with financial return, has emerged, for example, as a vital source of climate finance (Levett, 2021). Impact investors focus on climate-aligned strategies, measure impact through specific metrics, and foster innovation and partnerships, contributing to sustainable initiatives that combat climate change (Campbell, 2019; Colting-Stol, 2020; Thomsen & Pritzker, 2019). The issue of financing climate change mitigation and adaptation in Canadian communities demands a comprehensive understanding of the various funding sources available. This review delves into the role of philanthropy in financing local-level climate change mitigation and adaptation. By exploring these distinct funding sources, the paper aims to shed light on the role of the charitable or philanthropic sector in financing community climate action, which is essential in pursuing a sustainable and resilient future for Canada.

Research gap

Philanthropy plays a vital role in financing climate action, with charitable organizations and philanthropic foundations addressing climate challenges. Philanthropic contributions tend to prioritize long-term solutions and support projects with substantial climate resilience and mitigation impacts, augmenting the broader pool of climate finance (Squires, 2022a). Foundations and other forms of philanthropy have played a critical role in mitigating climate change and the related challenges that communities face on a global scale, helping to supplement government and industry contributions. They have key resources, including finances, power, and networks, needed to influence the profound changes that are required in social, economic, and political systems to mitigate climate change’s devastating effects (Colting-Stol, 2020). Philanthropy’s efforts to curb climate change are an essential component of the partnership required to tackle climate action (Thomsen & Pritzker, 2019).

Philanthropic foundations, particularly place-based ones, have positioned themselves to strengthen their local communities, although not to replace government (Desanlis et al., 2021). Because they can respond more quickly and flexibly than many other actors, philanthropy has played and will continue to play a crucial role in assisting Canadian communities in moving forward with addressing climate change (Aptowitz, 2022).

Many scholars have been drawn to the topic of climate change mitigation and adaptation action and have explored it from various perspectives. Despite the considerable attention given to climate action and more specifically the role of funding (Aptowitz, 2022; Colting-Stol, 2020; Desanlis et al., 2021), there is still a dearth of existing studies on the role of the philanthropic sector in financing climate change mitigation and adaptation. Further, much of the existing literature on climate action finance (Antimiani et al., 2017; Brechin & Espinoza, 2017; Salazar & Katigbak, 2022) has focused on developing nations and the Green Climate Fund (GCF), leaving a gap related to Canada and other industrialized nations and the nature and impacts of climate action funding in these contexts. In addition, the result of this review suggests a gap in the literature related to philanthropy in rural regions.

This study significantly contributes to the broader knowledge base related to climate change mitigation and adaptation by helping to address these gaps, with a focus on Canada, and on practical applications for climate finance. Based on the findings of this study, stakeholders, such as policymakers, the public, researchers, NGOs, and philanthropic organizations, can better understand the imperative to collaborate for maximum impact. This is particularly crucial given the key role that philanthropy can play in helping to address significant gaps in climate finance. Further, the results of this review underscore the importance of place-based organizations and philanthropic funding in climate mitigation and adaptation.

Methods

A systematic review differs from traditional literature reviews. The PRISMA approach to systematic reviews (Page et al., 2021) posits that the explicit questions being addressed should include consideration of participants, interventions, comparisons, outcomes, and study design (PICOS). Incorporating each of these elements, we selected three primary aspects for inclusion in the study: philanthropic actors, with particular attention to foundations and NGOs providing funding beyond the realms of government funding and business financing (Population), climate change adaptation and mitigation (Interest), and Canada (Context). These criteria informed the development of the study's central research question: "What role has philanthropy played in climate change mitigation and adaptation in Canada."

Specifically, the review sought to achieve the following objectives:

- (i) Investigate how foundations, NGOs, and other forms of charitable giving are helping to finance climate change in Canada, particularly at the community level.
- (ii) Examine what other actors are involved in helping in climate change mitigation and adaptation and the nature of their relationships with climate action funders.

- (iii) Determine to what extent funders are assessing climate impacts and priorities/ conducting an evaluation to maximize the impacts of their investments.
 - (a.) If so, how are they determining climate-related priorities and impacts?

A systematic literature review approach involves selecting relevant research using systematic and explicit methods and criteria. This includes full disclosure of the search terms used and the standards for including and excluding articles, documenting both publications that were included and those that were not. This systematic literature review was based on a series of studies to produce a thorough and disciplined literature review on the role philanthropy has played in climate change mitigation and adaptation in Canada. We sought to obtain all relevant studies since the loss of relevant studies could have led to bias in the review. This review was performed following the PRISMA guidelines and used a flow diagram to standardize and enhance the review reporting, ensuring transparency, completeness, and reproducibility (Page et al., 2021). The ROSES (RepOrting standards for Systematic Evidence Syntheses) review protocol, tailored for the systematic review and mapping of environmental management studies, was also followed (Pusegoda et al., 2017). The primary objective of ROSES is to encourage researchers to provide accurate information at an appropriate level of detail.

The authors' systematic searching strategy, which involved three sub-processes: identification, screening (including criteria for inclusion and exclusion), and eligibility assessment. To ensure the articles selected for review were of high relevance and quality, the authors implemented a specific strategy for appraisal. Finally, the authors detailed their approach to data abstraction, analysis, and validation. The process undertaken in this study is outlined in [Figure 1](#).

Identification/Search strategy

The PRISMA approach recommends that a complete electronic search strategy be applied for at least one significant database (Page et al., 2021). Two relevant databases were identified and then searched to identify the correct documents for this review. The selected databases included Scopus and Web of Science. Scopus and Web of Science were used due to their comprehensive coverage of academic literature, citation indexing capabilities, and high-quality content. These databases offer advanced search functionalities, making it easier for researchers to construct precise search queries and identify relevant studies across various disciplines. Including studies from these databases enhanced the transparency, reproducibility, and overall rigor of the systematic review while also facilitating interdisciplinary research.

The search terms used to identify studies for this systematic review were based on the research questions outlined above and are described in [Table 1](#).

In addition to database searches (resulting in 226 identified articles), relevant papers, case studies, and abstracts were found in library resources and resulted in an additional 103 identified sources. This was done by searching the references of relevant studies identified through the database search and through consultation with experts about which published and unpublished material could be included.

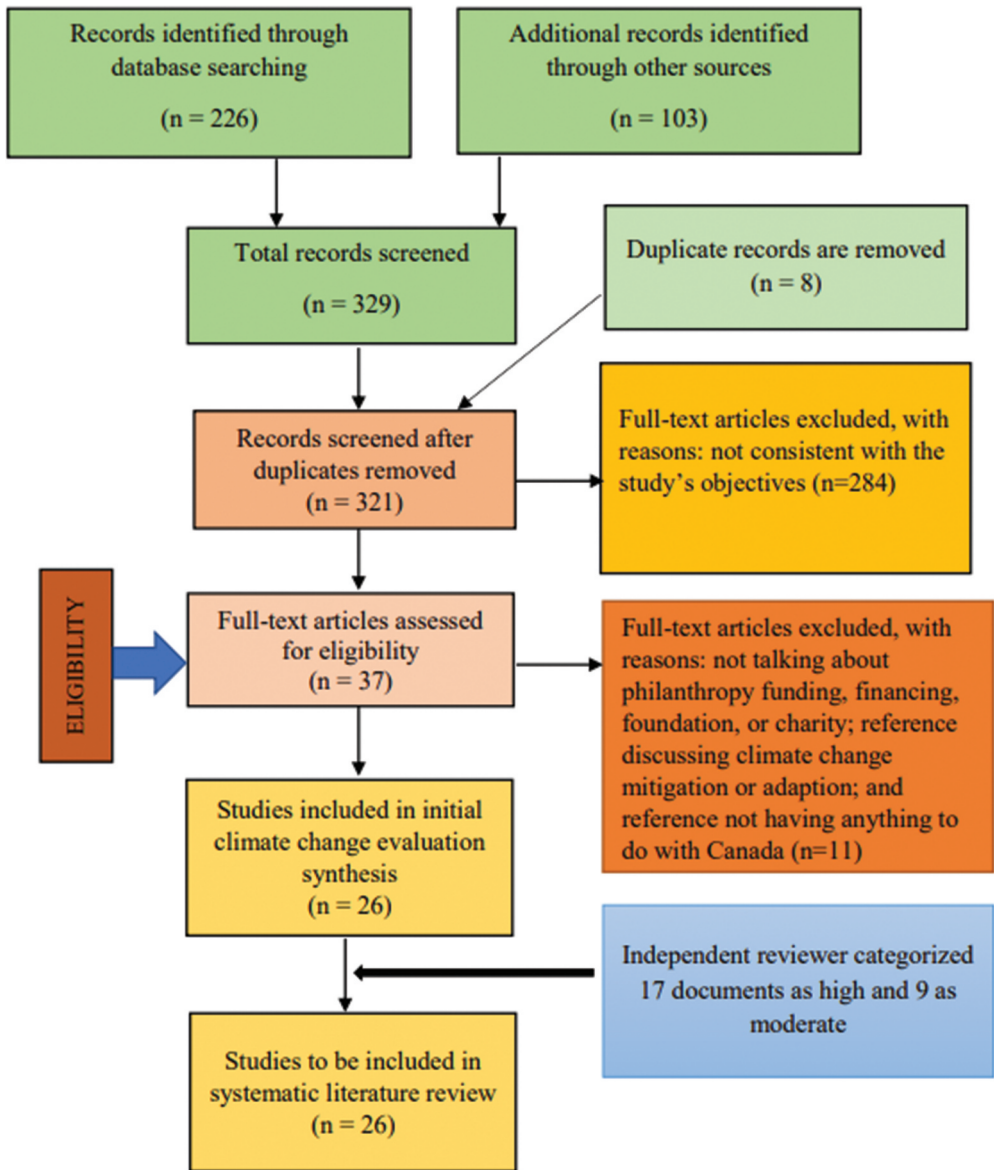


Figure 1. Flowchart for the literature selection strategy.

Screening

The article selection process involved screening the 329 initially identified studies according to a set of exclusion and inclusion criteria (Table 2). The databases' sorting function facilitated automatic screening based on pre-determined criteria established following the research question. Given the impracticality of reviewing all published articles in full, Okoli (2015) suggests that researchers establish a specific time range for their review. Brereton et al. (2007) also recommended that timeline restrictions for publication should only be imposed if relevant studies could have been reported within a specific period.

Table 1. Search terms.

Finance/Funding AND	Climate change AND	Context/geography
Philanthropy/philanthropic NGO	Climate Climate change	Canada
Fund/Funding	Climate justice	
Finance/financing	Mitigation	
Foundation	Adaptation	
Charity/charitable		

Articles selected included at least one term from each of the first two columns (related to finance/funding AND climate change), as well as including the term Canada. The search terms were structured to group each idea and its related terms in one search string instead of running a series of similar search strings in the following manner.

(charit* OR philanthrop* OR fund*) AND (“climate change” OR “global warming” OR “climate adaptation” OR “climate mitigation”) AND Canad*.

Quotation marks from the single-word search terms were removed since they are only needed to indicate when terms need to be searched together. Instead, an asterisk [*] was added to appropriate search terms to pull out all possible endings for these words, expanding the results.

Table 2. Inclusion and exclusion criteria.

Criteria	Inclusion	Exclusion
Timeline	2000-30 April 2023	Before 2000
Document Type	Peer-reviewed (empirical data), case studies	Book chapters, book series, conference proceedings, correspondence, commentary, editorials, hearings, and personal communications
Language	English	Non-English
Regions	Canada	Countries outside of Canada

Following a search of the selected database, it was discovered that the number of studies relating to financing climate change mitigation and adaptation increased significantly from 2000. Therefore, the year range between 2000 and 2023 was selected as an inclusion criterion.

To ensure review quality, only peer-reviewed studies were included (including case studies). Correspondence, book chapters, commentaries, editorials, hearings, and personal communications were omitted because they were difficult to access. Articles published in English were also selected to avoid any confusion in interpretation. Studies that were not related to climate change mitigation and adaptation and financing of those efforts (the combination) were excluded. This resulted in 284 articles being excluded due to not meeting the inclusion criteria. The remaining thirty-seven (37) articles were then examined in a third eligibility process phase.

In the third eligibility process phase, the authors carefully assessed the remaining retrieved articles to ensure that they aligned with the established criteria. This was accomplished by reviewing the titles and abstracts of the articles. As a result, 11 additional articles were excluded due to not focusing on philanthropy or climate change, not mentioning Canada, and/or having an unclear methodology. Consistent with the study’s objective, only articles that discussed philanthropy, climate change, and Canada were included. After this process, only 26 articles met the criteria for inclusion in the study.

Critical appraisal

The study then adopted a critical appraisal worksheet based on the Oxford Center for Evidence-Based Medicine (CEBM) approach, which was adapted from Greenhalgh and

Taylor (1997). The critical appraisal worksheet included 19 questions divided into four subgroups: methodological quality, description of results, types of studies included, and reviews' assessment of included studies. Each question received a high, medium, or low response, with high indicating evidence that the study was of sufficient quality for inclusion. To ensure the quality of the articles' content, a quality assessment was conducted by two reviewers, again following the framework proposed by Greenhalgh and Taylor (1997). The reviewers appraised the remaining articles based on their methodology and assigned them to three quality categories: high, moderate, and low. Inclusion in the review was contingent on both reviewers agreeing on at least a moderate level of quality. Any discrepancy between the two reviewers was discussed, and the inclusion or exclusion of the articles was determined through mutual consensus. This careful and deliberate process yielded a total of 17 selected articles ranked as high and eight articles ranked as moderate, all of which were deemed eligible for inclusion. Each of these studies was uploaded to Mendeley to easily organize the studies for review, annotation, and citation as the study was being conducted. Mendeley is a reference management tool that is used by researchers to organize and cite academic papers, facilitating efficient literature management, collaboration, and citation generation.

Data extraction and analysis

In this research, an integrative review approach was employed, including both quantitative and qualitative analysis of trends and themes in the existing literature. Only the data that could answer the research questions were extracted and recorded in a table. We then performed thematic analysis, identifying patterns and themes by noting similarities, relationships, and clustering within the abstracted data (Alhojailan, 2012). The following information was first extracted from the included studies: the names of authors, year of publication, the title of the paper, country (or province/territory) of focus, study methods, findings and major outcomes, recommendations, and objectives of the study.

In conducting the thematic analysis, our initial step was to identify emerging patterns among the abstracted data from the reviewed articles. The authors then proceeded to pool any similar or related abstracted data, resulting in the creation of eight groups or themes. The ensuing stage involved a rigorous review of the accuracy and key findings related to each of the main themes described in the section that follows.

Results

The outcomes of the thematic analysis are presented in Table 3, with each theme discussed further in the section that follows. The literature reviewed emphasized the significant roles of philanthropic organizations and NGOs in supporting climate action, including infrastructure retrofitting, community resilience enhancement, and ecosystem restoration. These efforts are crucial for addressing climate change at provincial and local levels in Canada.

MI = Mitigation; AD = Adaptation; FD = Foundation; RP= Receiving province/territory; OA = Others actors; FR = Funder-actor relationship; AE = Assessment and evaluation of impact; DP -Determination of priorities

Table 3. Themes.

Article Title and Details	MI	AD	FD	RP	KA	FR	AE	P
Batrancea et al. (2020)								*
Colting-Stol (2020)	*	*	*					
Carroll et al. (2021)			*		*	*	*	
Baird et al. (2016)		*		*	*	*	*	
Ardoin and Bowers (2012)			*				*	
Ayers (2009)	*						*	
Smith et al. (2011)	*	*			*	*	*	*
Schenker and Stephan (2014)							*	
Dessai (2003)	*		*				*	*
Antimiani et al. (2017)		*					*	*
Salazar and Katigbak (2022)			*		*		*	*
Gulluscio et al. (2020)							*	
Thomsen and Pritzker (2019)		*	*		*		*	
Jensen and Dowlatabadi (2018)					*		*	
Reeder et al. (2020)		*		*	*	*	*	
Clark et al. (2018)			*					
Sarkar & Leal (2010)			*					
Nisbet (2018)			*					
J. D. Ford, Berrang-Ford, et al. (2011)		*			*	*		*
J. D. Ford et al. (2010)			*		*			*
Squires (2022a)	*	*			*			
Levett (2021)			*		*	*		
Brechin and Espinoza (2017)			*		*	*		
Michaelowa et al. (2020)					*	*		
Campbell (2019)			*		*	*		
Hossain (2022)	*	*	*	*	*	*	*	

Source: Research data (2023).

As Table 3 indicates, one article was published in each of the years 2003, 2009, 2010, 2012, 2014, and 2016, with three published in 2011, two in 2017, three in 2018, two in 2019, five in 2020, two in 2021, and two in 2022. Further, one of the studies focused on the general philanthropic landscape of Canada with particular emphasis on climate finance, seven of the articles focused on British Columbia, two focused on Ontario, eight focused on North America but generally discussed Canada, and seven focused on the global climate action, including a discussion on Canada. The review found limited literature on philanthropic financing for climate change action in Atlantic Canada. Only one study (Reeder et al., 2020) focused on rural community leaders' perspectives on climate change adaptation in New Brunswick without extensive discussion of philanthropic financing. However, Reeder et al. (2020) highlight growing public support for climate action, aligned with federal government initiatives in the province. This shows that while the literature on philanthropic funding for climate change mitigation and adaptation has been growing since 2003 the number of studies remains limited. Further, very little scholarly literature exists that focuses on philanthropic funding for climate change mitigation and adaptation in Atlantic Canada or in provinces and territories beyond Ontario and British Columbia. This analysis excludes, however, French language literature and therefore there is likely to be additional literature not included in this review related to Quebec.

Theme 1: Mitigation or adaptation?

Mitigation and adaptation are main themes arising in the literature reviewed. The literature did not indicate a clear trend on whether more funds go into adaptation

than mitigation. While four studies, including Baird et al. (2016), Antimiani et al. (2017), Reeder et al. (2020), and Thomsen and Pritzker (2019), discuss funding directed toward adaptation (AD), others, such as Ayers (2009) and Dessai (2003) discuss funding of mitigation (MI) efforts. Some articles mention both adaptation and mitigation funding, like Colting-Stol (2020), Ford et al (2011), Squires (2022a) and Hossain (2022). Ayers (2009) found that more investments (over \$86 billion annually) go into adaptation globally compared to mitigation (which receives about \$75 billion annually). Although it is challenging to conclude whether adaptation or mitigation receives more funding based on the literature, Antimiani et al. (2017) asserted that numerous nations, including Canada, allocate substantial financial resources to implement measures aimed at adapting to and mitigating the impacts of climate change. Notably, wealthier countries tend to prioritize proactive measures aimed at mitigating climatic damage, while lower-income nations are mainly engaged in reactive interventions and adaptation strategies.

J. D. Ford, Berrang-Ford, et al. (2011) mentioned that the funds allocated by federal departments and community-based organizations tend to be directed toward community-led initiatives focused on identifying local vulnerability, building community capacity, and identifying adaptation options. This again suggests that more funds are being invested in adaptation than mitigation. While mitigation is often a broad national aim, more funds are invested in adaptation at the grassroots level. Examples of adaptation-focused studies include Baird et al. (2016) and J. D. Ford, Berrang-Ford, et al. (2011), which discuss funding for climate change adaptation in Canada and the risks posed by climate change to health, respectively. They focus on funding for adaptation, emphasizing the importance of supporting actions and measures to adapt to climate change impacts. J. D. Ford, Smith, et al. (2011) further describes that from 2008 to 2011, the federal government allocated an estimated \$16 million toward research focused on the intersection of climate change and health (J. D. Ford, Smith, et al., 2011).

There is evidence, however, of significant investments being made in mitigation in urban communities in Canada. The MacArthur Foundation, for example, joined forces with 28 major global foundations in 2018 to commit \$4 billion in grants to accelerate the transition to clean energy and mitigation of global emissions (Thomsen & Pritzker, 2019). The McConnell Foundation, based in Montreal, also plays a pivotal role in mobilizing investments and endowment funds to promote climate action, particularly supporting the transition to clean energy sources. They lead by example through emission reduction and divesting from industries like standard oil and gas (Colting-Stol, 2020). The Trottier Foundation also focuses on its environmental program with a strong emphasis on collaboration and investments. Their instrumental efforts in spearheading the Low Carbon Cities Canada initiative have led to substantial federal investments, exemplified by a \$183 M allocation in 2019 (Colting-Stol, 2020). Colting-Stol (2020) further notes that the Trottier Foundation has joined forces with C40 Cities and the David Suzuki Foundation, alongside five other foundations, to support the City of Montreal in developing a comprehensive carbon-neutral 2050 Climate Action Plan.

Finally, some authors addressed adaptation and mitigation funding in conjunction (Thomsen & Pritzker, 2019). Antimiani et al. (2017) and Smith et al. (2011) also discussed the allocation of funds to both adaptation and mitigation activities.

Theme 2: Foundations and other forms of charitable giving

Under this theme, the literature demonstrates that foundations employ diverse approaches to achieve their social and ecological objectives, including empowering marginalized communities and endorsing low-carbon enterprises and innovations. There are more than 10,000 foundations registered in Canada, approximately half of which are private and half public foundations, most with small budgets and volunteer boards of directors (Glass, 2018). Levett (2021) pointed out that foundations in Canada hold substantial financial capital, with about \$34.8 billion in assets and \$4.2 billion in grants made in 2017. Despite the crucial role and the potential for an even more significant impact of philanthropic foundations, the environment receives only around 3% of the total funding from the leading Canadian grant-making foundations. Moreover, climate change initiatives receive an even smaller proportion of foundation funds (Colting-Stol, 2020). In contrast, Ardoin and Bowers (2012) showed that in the United States, 16.4% of the foundations listed the environment as one of the fields of interest. Additionally, the authors found that the percentage of foundation funds being directed to climate change programs ranged from only 3% to 5% of all foundation funding for the environment 2003 to 2007.

A considerable portion of funding directed toward environmental causes is allocated to conservation efforts, frequently framed as nature-based solutions within the context of climate action (Antimiani et al., 2017). The dollar value of grants for the environment in Canada increased from \$54 million in 2003 to \$92 million in 2007, with a growth in the number of grants awarded from 1,010 in 2003 to 2,119 in 2007. Most grantmakers (86.4%) provided five grants or fewer during the five years. However, there was reluctance to fund climate change programs and research. Instead, there was a preference for supporting strategies perceived to have a direct and measurable impact on conservation targets (Ardoin & Bowers, 2012; Ayers, 2009).

Despite the above noted limitations, philanthropy, and foundations in particular, are recognized for their significant contribution toward mitigating climate change and addressing global community challenges. Colting-Stol (2020) noted that to achieve their objectives effectively, philanthropic foundations and charities have efficiently allocated grant resources for their supporting donors, thereby minimizing wastage and duplication of efforts. For grant recipients and place-based foundations, having a centralized funding source not only saved time and resources but also allowed for streamlined approaches to project implementation.

Hossain (2022) showed that environmental philanthropy focuses on advancing charity outcomes through strategic interventions in two key domains: engaging the community and fostering sustainable practices. This involves long-term research to inform effective strategies and maximize impact. The allocation of philanthropic funding related to climate action serves three core objectives with distinct focuses. First, it aims to foster innovation and facilitate technology transfer in support of sustainable energy initiatives. Second, it seeks to demonstrate mitigation and adaptation options that yield systemic impacts in addressing climate change. Finally, it integrates mitigation and adaptation considerations into broader strategies for sustainable development, thereby advancing the overarching goal of environmental sustainability (Salazar & Katigbak, 2022). Each of these objectives reflects a common desire to challenge the status quo and take concrete actions toward

tackling climate change (Baird et al., 2015). However, many foundations encounter difficulties when it comes to communicating their impact in terms of innovation, scalability, measurement, capacity, and geographic scope (Colting-Stol, 2020).

Foundations, NGOs, and other forms of charitable giving have been helping to finance climate change initiatives in Canada through various programs and grants. Some of these organizations have a dedicated focus on climate change or other environmental priorities and have explicitly named climate change in their mission (Carroll et al., 2021). These organizations support climate change initiatives with primary objectives, such as significant reductions in greenhouse gas emissions to meet national and global targets. They also support community-led efforts to identify those most affected by climate change and aim to diminish barriers related to the intricacies of climate change issues (Levett, 2021).

Moreover, foundations engage in collaborative and risk-taking initiatives, focusing on scientific inquiry, education, health, and environmental efforts. These endeavors are conducted in collaboration with community and international organizations, aiming to protect the environment and alleviate the effects of climate change (Campbell, 2019). Philanthropy contributes to climate action plans at various levels, supporting planning and implementation through risk-taking, momentum-building, fostering buy-in, and fostering a sense of community. Some foundations have adopted a hybrid grantmaking approach that combines both distant grantmaking and a more participatory model (Jensen & Dowlatabadi, 2018). These foundations actively seek out initiatives and activities where they identify gaps and the potential for significant impact. This identification process often involves directly accepting grant applications through grants management systems and adhering to regular grantmaking procedures (Colting-Stol, 2020). Although they endorse environmental organizations and projects, these entities may not actively participate in direct environmental action themselves (Carroll et al., 2021).

The literature emphasizes the varied approaches and objectives of different foundations in their climate change initiatives. Many foundations explicitly aim to influence climate change mitigation or climate action by financing programs that support significant reductions in greenhouse gas (GHG) emissions to meet national and global targets (Colting-Stol, 2020). In addition to their financial role, Nisbet (2018) contends that philanthropic foundations have wielded policy influence in the enactment of renewable energy mandates in numerous states and provinces across North America. This support has fostered a thriving alternative energy sector, including wind and solar energy, and has facilitated the adoption of renewable energy sources and energy efficiency practices among major utilities and corporations (Nisbet, 2018). Foundations have played a crucial role in reshaping the discourse surrounding climate change, leveraging scientific evidence and emphasizing the economic benefits associated with climate action to influence elected officials and industry leaders, and promoting the adoption of renewable energy and energy efficiency. Carroll et al. (2021) provide an example of foundations funding business-friendly “clean-growth” organizations in Canada. Foundations vary in the extent to which they adopt free-market thinking and market-based analyses in their climate action funding. Some foundations, while advocating for climate change action, also support free-market thinking in their allocation of resources toward a transition to a low-carbon future (Baird et al., 2015).

Philanthropic foundations are actively influencing their investment strategies, including actions such as divesting from fossil fuels (Jensen & Dowlatabadi, 2017). Some engage

in impact investing, aiming for measurable impacts beyond financial returns, aligning with their mission, and avoiding investments that support environmentally and socially irresponsible practices (Colting-Stol, 2020). For example, the McConnell Foundation channels its investments into portfolios with strong Environmental, Social, and Governance (ESG) criteria, aligning with its mission through social impact investments. They leverage financial assets to support social innovation, providing grants to organizations and individuals dedicated to sustainable solutions (Carroll et al., 2021; Colting-Stol, 2020).

Nisbet (2018) highlights a strategic shift in recent times, with foundations increasingly backing climate action at the state and local levels. Additionally, Campbell (2019) points out that philanthropic foundations, charities, and non-governmental organizations (NGOs) are allocating more financial resources to community and grassroots initiatives in climate action. The goal is to alleviate barriers and provide support to those most affected by climate change, including Indigenous peoples, women, the working class, and individuals living in poverty (J. D. Ford et al., 2010). Squires (2022a) highlights the significant role of foundations in directing funding to Indigenous-led organizations and programs related to lands and environment, for example. Philanthropic organizations are emphasizing the need to shift away from extractive economies and work toward a future that prioritizes clean air, clean water, a stable climate, and democratic participation (Jensen & Dowlatabadi, 2018). They promote these social changes through funding programs and projects focused on sustainable solutions, including clean energy, healthy oceans, protected lands and forests, and resilient communities (Carroll et al., 2021).

To address such concerns, there is a growing emphasis on participatory, grantee-led, community-focused, and grassroots approaches to grant-making among foundations and other contributors to climate action financing. This shift challenges traditional power dynamics and encourages collaboration (Colting-Stol, 2020). Recognizing the importance of pooling resources and coordinating collective efforts within philanthropy, there is a growing acknowledgment that this is a crucial step in advancing climate change action and safeguarding the environment. By collaborating toward a new economic paradigm, philanthropic entities significantly contribute to mitigating the adverse effects of climate change (Squires, 2022b). Additionally, many foundations actively engage in advocacy, policy development, and public engagement efforts to reshape public perceptions and values in support of robust climate action.

Theme 3: Geographic distribution/receiving provinces, territories, and regions

Regarding allocating funds to specific provinces (RP), the literature mentions a few locations where funds are allocated. For example, Baird et al. (2016) discuss collaborative governance for climate change adaptation in Canada, indicating that funds are often allocated to specific provinces or regions such as British Columbia (BC), Alberta, and Manitoba. The allocation of environmental and climate funding in Canada is unevenly distributed, as reported by Squires (2022b) citing Lutter (2010). Specifically, British Columbia (BC) receives approximately 50% of all environmental grant dollars, despite having only 13% of the Canadian population. BC foundations were observed as more likely to fund more transformative, socio-ecological initiatives while Alberta-based foundations tend to be more conservative, supporting clean growth and sustainable business

(Carroll et al., 2021). In recent years, 43% of all community foundations and 22% of all charities were based in rural areas, despite being home to less than 20% of the population (Gibson & Barrett, 2018; Gibson et al., 2014).

The literature reviewed also suggests discrepancies in philanthropic support for rural versus urban climate action. Similar to global patterns, with greater investment in mitigation directed at higher-income countries, rural and lower-income communities have been found to invest more in adapting to the impact of climate change than mitigation (Antimiani et al., 2017). Examples such as those noted above in the City of Montreal and the Low Carbon Cities Canada initiative demonstrate that investments are being made in mitigation within Canada's major cities. These partnerships and initiatives highlight the dedication of foundations to driving meaningful climate action at local, regional and national levels. Ayers (2009) and Antimiani et al. (2017) also discuss international funding to support urban adaptation and mitigation activities.

Squires (2022b) showed that rural Canadians exhibit a higher tendency to donate to charitable organizations compared to their urban counterparts. This observation suggests that rural communities have specific needs and rely on philanthropic organizations to deliver essential services and support that might otherwise be lacking. The distinct demand for such organizations in rural areas highlights the vital role they play in addressing the unique challenges and requirements of rural communities. This indicates a greater reliance on philanthropic efforts by rural communities to meet the needs of individuals and enhance the overall well-being of rural Canadians. Yet Squires (2002) also points out that there is limited philanthropy research focused on rural regions. Approximately 43% of community foundations (83 of 191) and 22% of charitable organizations have established their bases in rural areas, which is noteworthy, given that these regions house less than 20% of the overall population (Squires, 2022b citing Gibson et al., 2014; Gibson & Barrett, 2018; Colting-Stol, 2020). These foundations actively support local initiatives, including those related to the environment, education, culture, and housing, helping to offset the reduction of government support and services with their strong connection and commitment to their local areas (Levett, 2021).

Theme 4: Other actors involved in financing climate action

In examining the actors involved in climate change mitigation and adaptation, and particularly those who finance these efforts, several key entities and initiatives were identified in the literature. The actors include private sector donors and investors, international climate finance organizations, community-based and civil society organizations, as well as government entities. Private sector involvement in climate finance has been considered vital for achieving meaningful change. Corporate foundations, such as Weston Foundation, RBC Foundation, Suncor Energy Foundation, and TD Friends of the Environment, have playing a role, for example, in funding environmental non-governmental organizations (ENGOS) and climate-related initiatives (Carroll et al., 2021). Impact investing also plays an increasingly important role in Canada, where place-based investing organizations, such as co-operatives, may provide support for climate action. Levett (2021) provides the example of Rhiza Capital, a financial intermediary in BC that works with partners, such as local credit unions to develop and implement innovative, place-based,

financial instruments that support various Sustainable Development Goals, including Goal 13: Climate Action. However, globally in 2014, only a tiny portion of climate finance, USD 141 million out of USD 361 billion, was provided by the private sector (Clark et al., 2018).

Efforts to address financing gaps for climate change mitigation and adaptation have included a focus on unlocking private finance. Various funding sources have emerged, including bilateral and multilateral aid, multilateral trust funds, and private finance through international market mechanisms. Multilateral development banks (MDBs), such as the World Bank, allocate substantial resources for climate-related projects, utilizing tools like green bonds (Gulluscio et al., 2020). Climate-related trust funds, like the Global Environment Facility (GEF) and Clean Technology Fund (CTF), draw contributions from diverse sources, including local, federal, and international entities, private sector investors, and individuals. MDBs implement these funds, supporting activities related to clean technology and climate risk (Michaelowa et al., 2020). Development Finance Institutions (DFIs), operating on market principles, also contribute to climate financing. Canada ranks among the top economies attracting significant funds for climate change mitigation and adaptation, with sustainable investments rising globally, reaching \$2.1 trillion in Canada by 2018 (Batrancea et al., 2020).

Civil society organizations, including community-based environmental organizations (CBEOs), have also significantly contributed to environmental conservation and climate action in Canada. Locally, community-based environmental organizations (CBOs) and community foundations, also referred to as place-based or grassroots philanthropy, have become pivotal contributors to climate change resilience-building initiatives (Squires, 2022a). They address community needs and utilize their knowledge of local contexts and community trust. The nonprofit and philanthropic sector, boasting over 170,000 registered charities and nonprofits, constitutes 8.1% of Canada's GDP, equating to \$151 billion in endowments (Squires, 2022b). Grassroots efforts, spearheaded by not-for-profit and charitable organizations, have gained prominence in mitigating environmental challenges by leveraging local knowledge, resources, and expertise. These entities possess substantial connections, resources, power, and financial capabilities, enabling them to exert influence on the structural and systemic social, economic, and political changes needed to mitigate the detrimental effects of climate change (Campbell, 2019; Colting-Stol, 2020).

CBOs are uniquely positioned to contribute to resilience-building efforts due to their understanding of local contexts and their trust within the community (Smith et al., 2011). In Atlantic Canada, CBEOs have been instrumental in environmental conservation (Reeder et al., 2020). Examples of CBEOs elsewhere in Canada include the SkeenaWild Conservation Trust, Watershed Watch Salmon Society, and Ecotrust Canada, among others. Many of these organizations have received funding from foundations with environmental mandates, emphasizing their commitment to addressing local environmental challenges (Carroll et al., 2021). These ENGOs receive significant funding from foundations aligned of various kinds and with varying priorities and networks (Carroll et al., 2021). These organizations often collaborate with other stakeholders, including government entities to co-create solutions in a way that is cognizant of and responsive to unique

community contexts (Squires, 2022a). Among their collaborators are Indigenous governments and organizations as well as municipal and regional governments, although rural local governments are also noted as under resourced and facing funding challenges (Levett, 2021).

Regarding financing adaptation, the literature suggests that supporting NGOs and civil society alongside government initiatives can enhance the effectiveness of both approaches. NGOs can strengthen advocacy efforts, hold governments accountable for service delivery, and encourage the uptake of services by marginalized groups. At the same time, support for adaptation through both NGOs and government systems can facilitate the scaling up of community-based approaches (Ayers, 2009). The actors involved in climate change mitigation and adaptation finance in Canada comprise various stakeholders, including international financial institutions, private sector donors, investors, and foundations, civil society organizations (with a particular focus on CBEOs), and government entities. These actors also have varied relationships, with the literature pointing to the value of collaboration across various funding channels and partnerships to address the multifaceted challenges of climate change in communities and regions across Canada.

Theme 5: The nature of funder-actor relationships

The relationships between climate action actors are shaped by various funding sources, ranging from government funding and philanthropic assets to private sector investments and international financing mechanisms. The involvement of place-based organizations and their understanding of local contexts strengthens a region's capacity for effective climate action. Efforts to combine resources and avoid duplicating initiatives have yielded significant efficiencies and benefits (Clark et al., 2018), leading to a sense of "strength in numbers" when advocating for policy changes at higher levels of government, for example (Squires, 2022a).

One key relationship is that of granting agencies and their grantees. Program-related investments (PRIs) are used by foundations to support their missions through loans, loan guarantees, and equity investments. For these organizations, the level of partnership and collaboration involved may determine whether PRIs are treated as grants or used to supplement other financing arrangements and partners (Campbell, 2019). Project grants support public engagement and mobilization, while multi-year program initiatives can help build coalitions for policy advocacy and action on climate change such as the Low Carbon Funders Group and collective support for the Pan-Canadian Framework (Clark et al., 2018).

There is evidence in this review of an increasing emphasis on relationships with CBOs and community-based environmental organizations (CBEOs) particularly. This underscores the trust established by CBEOs within their respective communities, stemming from their relationships with community members and their deep understanding of local contexts. These organizations emphasize the importance of cooperation and partnerships driven by necessity and opportunity (Squires, 2022b).

Squires (2022b) highlights the potential, for example, of environmental non-governmental organizations (ENGOS), foundations, and other philanthropic actors in fostering relationships and collaboration between settlers and Indigenous peoples. The

introduction of numerous industrial projects in recent decades has been a key factor in creating momentum and strengthening the capabilities of the local environmental philanthropy sector, leading to the development of a culture focused on building coalitions and fostering collaborations with First Nations (J. D. Ford, Berrang-Ford, et al., 2011). Additionally, these initiatives often aim to strengthen the capacity of First Nations. Organizations such as The Catherine Donnelly Foundation, for example, actively collaborates with Indigenous communities through meetings, dialogue, and partnerships to support clean energy projects as solutions for climate justice and socio-economic development (Colting-Stol, 2020). Squires (2022a) also acknowledges the challenges associated with such efforts, including the potential to perpetuate colonial relationships by influencing resource control and decision-making concerning Indigenous lands and peoples outside Indigenous organizations. Ongoing relationships and approval of environmental groups by Indigenous communities depends on sustained solidarity, trust and allyship, relationships which can in turn affect roles of and relationships with philanthropic funders (Squires, 2022b).

The literature highlights the philanthropic sector's ongoing engagement with the government to scale its impact. Addressing the intricate and far-reaching consequences of climate change requires the involvement of a diverse array of stakeholders across government levels and sectors (Carroll et al., 2021). By leveraging their trusted position within communities and adopting an initiative-taking approach that emphasizes innovation and sustainable resource management, these organizations effectively engage with the government and contribute to the broader goals of climate action (Hossain, 2022). As discussed above, foundations can also influence policy by leading by example through internal sustainability practices and divesting their endowments from environmentally harmful industries (Colting-Stol, 2020). Carrol (2021) notes Gutstein (2018)'s extensively research on the influence of coalitions of neoliberal think tanks and foundations on Canadian climate change policy. He also highlights the emergence of clean growth Environmental Non-Governmental Organizations (ENGOS), which align with the federal government's 2016 Pan-Canadian Framework on Clean Growth and Climate Change, are frequently funded by foundations, and serve as "gatekeepers" against more radical solutions, particularly those attributing global warming to capitalism itself.

Climate actions and related objectives have often been accomplished through ongoing public-private partnerships (PPP) between the various actors involved, including climate funders. These ongoing partnerships offer advantages such as overcoming shortages in public capital, providing accessing to the efficiency of the private sector, and shifting risks to the private sector, which, in turn, allows the public sector to focus on core services (Jensen & Dowlatabadi, 2017). Collaboration among governments, NGOs, investors, and financial institutions has been vital in understanding and making conservation opportunities investable. Enhanced collaboration improves understanding of the financial benefits of conservation, including often difficult-to-measure dimensions, such as watershed protection, health and cultural benefits, and carbon sequestration (Clark et al., 2018).

The relationships between climate action funders and other actors involved in financing climate action are often and increasingly characterized by collaboration, partnerships, and shared visions and goals (Glass, 2018). Hub and network organizations (such as Community Foundations of Canada, Philanthropic Foundations of Canada, and

Environment Funders Canada, formerly Canadian Environmental Grantmakers Network) bring together foundations and various entities to combine resources and establish common priorities, visions, and goals, and in other cases to support knowledge exchange and capacity building (Glass, 2018; Colting-Stol, 2020). ClimateWorks Foundation exemplifies collective philanthropy, emphasizing the shared utilization of resources (Colting-Stol, 2020). The Sustainable Cities Funders Group 2014 National ~15 CEGN Low Carbon Future Funders Group involves approximately 15 and 30 funding organizations, respectively. Both groups are supported by the CEGN. The US-led Funders' Network for Smart Growth and Liveable Communities and the International Arctic Funders Collaborative also include Canadian foundations (Glass, 2018).

Collaboration is identified as a crucial approach to confront the multifaceted challenges of climate change, which extend beyond borders and impact social, economic, and political systems. Community foundations and other funders actively engage in continuous learning and collaborative initiatives focused on impact investments, prioritizing community, grassroots, local, or Indigenous movements, and sustainability (Levett, 2021). The McConnell Foundation adopts innovative approaches to address social, cultural, economic, and environmental challenges, emphasizing issue advocacy, inviting diverse viewpoints and interests to co-create solutions, and collaborating with diverse individuals and organizations to bring about necessary change and system redesign (Colting-Stol, 2020). Philanthropy actors are actively participating in climate action plans and implementation at various levels, taking risks, building momentum, seeking to foster a sense of community and increase impact through collaboration.

Theme 6: Climate impacts assessment to maximize investment impacts

Several articles shed light on the various ways funders assess and evaluate the outcomes and impact of their funding efforts. The literature identified that funders in the climate action sector are actively assessing climate impacts and priorities to maximize the effectiveness of their investments. This emphasis on evaluation and monitoring is driven by the desire to optimize outcomes and ensure the accountability of climate finance initiatives (Squires, 2022a). By employing network analysis, adaptive co-management, historical analysis, and evaluation of specific funds, various assessment strategies contribute to ongoing efforts to optimize climate financing strategies and enhance their effectiveness.

Gulluscio et al. (2020) mention that assessing the impact of climate funding can be aided through climate accounting and reporting practices, involving the analysis of the methodologies, data quality, and reporting standards employed in GHG emissions and carbon accounting and information about the costs and benefits of adaptation and mitigation strategies. The authors found that more research is needed in this area, however, including research related to auditing, governance, and performance measurement.

Adaptive co-management is one approach gaining attention as a means to assess and enhance the impact of climate finance. Adaptive co-management is described as a particular approach to collaborative governance involving iterative learning and allowing funders to evaluate the effectiveness of their interventions. This approach focuses on understanding and adapting to the complex and dynamic nature of climate change and its interactions with governance systems (Baird et al., 2015). Carroll et al.

(2021), Baird et al. (2015) and others employ social network analysis to examine the relationships and interactions between different actors involved in climate financing, as well as how their funds are benefiting communities and advancing their missions, and how various relationships dynamics and structures inhibit or facilitate positive outcomes.

Ardoin and Bowers (2012) points out that funders and grantmakers in the US evaluate the outcomes and effectiveness of their funds and have favored strategies such as policy and legislation change over environmental education because the impacts are shorter term and easier to measure. Additionally, Ayers (2009) found that philanthropic organizations conduct comprehensive reviews of funding for urban adaptation to climate change. This assessment involves analyzing the diversity of funding sources and evaluating their contributions to urban adaptation efforts. Ford et al. (2011) mentioned the coordination and integration of development and adaptation funding, including evaluating the effectiveness of these funding approaches in addressing climate change challenges. Schenker and Stephan (2014) also noted that donors assess the impact of their funds on climate change adaptation, examining the economic implications and benefits of funding adaptation projects to help them know where to invest their funds to yield the maximum result. Salazar and Katigbak (2022) showed that some foundations aim to enhance the operations of their investment into climate change through a climate justice lens, evaluating the policies and practices of community foundations and NGOs, and how the policies and practices align with climate justice principles.

Theme 7: How funders determine their priorities

Many foundations, charities, NGOs, as well as other entities in Canada who are championing climate action have developed strategic priorities for funding climate initiatives, either through traditional grants, or impact investing loans and equity (Levett, 2021). Funders establish climate-related priorities and assess impact through diverse strategies and considerations. A clear and comprehensive sustainability vision, along with policies that ensure sustainability is incorporated into corporate governance are seen as key measures (Gulluscio et al., 2020).

Corporate accountability and reporting practices have evolved to encompass not just financial, social, and environmental performance but also sustainability-related factors. This transition entails the assessment of accuracy, comprehensiveness, consistency, credibility, relevance, timeliness, and transparency (Gulluscio et al., 2020). Funders also employ the valuation of adaptation costs and benefits as an approach to determine climate-related priorities and impacts. By understanding the costs and benefits associated with adaptation measures, funders can make informed decisions and allocate resources effectively (Schenker & Stephan, 2014).

The development and dissemination of carbon accounting tools are instrumental in increasing the impact of funders' actions. These tools facilitate the measurement and assessment of climate change performance, informing decision-making processes and promoting accountability (Gulluscio et al., 2020). It is widely acknowledged that environmental information, both financial and non-financial, is crucial for measuring corporate greenhouse gas emissions and economic performance. Approaches such as carbon cost accounting, full cost accounting, life cycle assessment, eco-balance, and reporting

initiatives like the Carbon Disclosure Project aid in gauging and assessing climate-related effects stemming from projects and organizations (Gulluscio et al., 2020).

Some foundations such as McConnell Foundation and SHARE focus on market-based principles, while others prioritize building sustainable low-carbon or regenerative economies. They may lead by example, reducing their emissions and divesting from environmentally harmful industries (Ivey Foundation). Additionally, collaboration, impact investing, and knowledge sharing through platforms and networks play a crucial role in determining priorities and maximizing impact (Colting-Stol, 2020). Community leadership and engagement are also important considerations for funders. This involves recognizing interconnectedness, addressing root causes, and supporting holistic approaches that rebuild connections to land, language, and culture (Reeder et al., 2020). Moreover, funders emphasize the importance of information gathering, rigorous analysis, and policy research to advance practical outcomes at scale (Thomsen & Pritzker, 2019).

This shows that funders in the climate action sector assess climate impacts and establish priorities by considering scale and speed, establishing metrics, and seeking to address capacity gaps and foster innovation. They employ various strategies such as valuation of adaptation costs and benefits, carbon accounting tools, environmental information measurement, impact investing, collaboration, and community engagement to determine climate-related priorities and maximize the impacts of their investments.

Discussion

This discussion focuses on the above findings related to the allocation of funds for climate change mitigation and adaptation in Canada. We summarize and discuss the various actors involved and their relationships as well as how their efforts are evaluated and prioritized.

How foundations and other forms of charitable giving are helping to finance climate change in Canada

The literature reviewed indicates that there is no clear trend in the allocation of funds, with some studies mentioning funding toward adaptation, while others discuss funding toward mitigation. Regarding the allocation of funds between adaptation and mitigation, the literature presents a mixed picture. Some studies suggest that more funds are invested in adaptation measures. For example, Antimiani et al. (2017) argue that several countries are spending considerable financial resources on adaptation measures to reduce or recover from climatic damage. Ayers (2009) also mentions that more investments globally go into adaptation compared to mitigation. However, the specific allocation of funds between adaptation and mitigation is challenging to determine definitively based on the literature.

The literature also touches upon the allocation of funds to specific countries or provinces. Squires (2022a) notes that environmental and climate funding in Canada is unevenly distributed, with certain provinces receiving a larger share of the funding. There is a scarcity of literature on the engagement of philanthropy, charitable organizations and others in financing climate change mitigation and adaptation, particularly in Atlantic Canada and provinces and territories outside British

Columbia and Ontario. Additionally, rural communities in Canada rely on philanthropic organizations to address their specific needs and enhance their overall well-being, including financing climate change initiatives. The literature highlights that foundations have varying approaches to social and ecological goals, including empowering marginalized communities, and promoting low-carbon innovations. Philanthropic funding aims to foster innovation, demonstrate systemic impacts, and integrate mitigation and adaptation considerations into broader strategies for sustainable development.

The literature highlights the crucial role of philanthropic entities in challenging the prevailing norms and actively addressing climate change. Foundations participate in collaborative initiatives and embrace risk-taking endeavors centered around scientific inquiry, education, health, and environmental concerns. Their objectives include safeguarding the environment, mitigating climate change, and endorsing sustainable solutions. Certain foundations have also adopted impact investing strategies, aiming to generate measurable social and environmental impact in conjunction with financial returns. Nevertheless, the literature also indicates that the overall funding for climate change initiatives from foundations is relatively insignificant compared to other areas of focus. Environmental funding constitutes a small proportion of the total funding from foundations, and climate change initiatives receive an even smaller share of these funds. There is a need to increase funding for climate change programs and research, as well as to address the barriers to supporting such initiatives.

Other actors involved in supporting climate change mitigation and adaptation

Philanthropic organizations and non-government organizations (NGOs) are known to play significant roles in climate action and support various initiatives related to mitigation and adaptation in Canada. Community-based organizations (CBOs) and NGOs, particularly community-based environmental organizations (CBEOs), have been instrumental in environmental conservation. contribute to climate action through the construction or retrofitting of infrastructure to withstand climate change impacts and community-led initiatives that enhance the resilience of vulnerable communities (Reeder et al., 2020). These initiatives include training programs, community engagement activities, and knowledge-sharing. Additionally, CBOs collaborate with community leaders to promote ecosystem restoration and conservation, funding projects focused on restoring and conserving ecosystems such as wetlands, forests, and coastal areas. CBOs or grassroots philanthropy operate at the local level, uniquely positioned to contribute to resilience-building efforts due to their understanding of local contexts and established trust within communities. Place-based investing organizations also play a role.

Local-level actors, including community-based organizations (CBOs) and community foundations, also collaborate with government entities and others to address climate change challenges. Reeder et al. (2020) investigates the viewpoints and experiences of rural community leaders regarding climate change adaptation in a forest-dependent region in New Brunswick, for example, acknowledging the federal government's recommendations and support for climate action and growing public support for climate action in Atlantic Canada. This study, however, highlights the need for additional support, regulatory pressure, or a legal mandate from higher levels of government to effectively

address the climate crisis. The literature suggests that supporting NGOs alongside government efforts can improve the efficiency of both strategies, encouraging government backing for civil society actions and easing the expansion of community-based approaches.

Local organizations often receive funding from foundations with environmental mandates, highlighting their commitment to addressing local environmental challenges. Philanthropic foundations have had significant accomplishments in influencing renewable energy mandates, promoting the wind and solar industries, and facilitating the adoption of renewable energy sources and energy efficiency practices. These foundations efficiently allocate grant resources, minimizing wastage and duplication of efforts. Foundations in Canada hold substantial financial capital, and rural communities are home to numerous community foundations actively supporting local initiatives, including those related to the environment.

Private sector involvement in climate finance is also considered vital for achieving meaningful change. Corporate foundations provide funding environmental non-governmental organizations (ENGOs) focused on clean growth, for example. However, the private sector's contribution to climate finance is found to be relatively insignificant compared to other sources. Efforts have been undertaken to mobilize private finance for climate change mitigation and adaptation, evident in the establishment of various funds like the World Bank BioCarbon Fund, Clean Development Mechanism, Global Environment Facility, and Green Climate Fund that draw on capital from diverse sources, including local, federal, and international entities, regional governments, financial institutions, development finance institutions, private sector investment, and wealthy individual donors. Additionally, Development Finance Institutions (DFIs) and multilateral development banks (MDBs), operating on market principles, play a role in contributing to climate financing through initiatives, such as green bonds and trust funds that invest in climate-related projects. The international climate finance architecture comprises funding channels such as bi- and multilateral aid, multilateral trust funds, and private finance through international market mechanisms, supporting activities related to clean technology, climate risk, and early warning systems. Global initiatives and partnerships underscore the potential for forming new collaborations to direct finance toward climate action.

The nature of their relationships with climate action funders

The nature of funder-actor relationships in climate change mitigation and adaptation in Canada encompasses a diverse range of entities and initiatives. Public and private organizations, development finance institutions, community foundations, environmental organizations, and multilateral development banks are among the stakeholders involved (Clark et al., 2018). Community-based environmental organizations (CBEOs) play a significant role, establishing trust within their communities through relationships with community members and their deep understanding of local contexts (Squires, 2022a). The involvement of place-based organizations and their understanding of local contexts strengthens the capacity for effective climate action. Collaboration, cooperation, and partnerships are emphasized by these organizations as they seek to combine resources, avoiding duplicating initiatives and achieve efficiencies and benefits, when advocating for policy changes at higher levels of government, for example (Squires, 2022a). Partnerships

between environmental non-governmental organizations (ENGOs) and Indigenous groups, supported by foundations are also discussed (Squires, 2022a).

The philanthropic sector actively engages with the government to scale its impact, leveraging its trusted position within communities and adopting a proactive approach that emphasizes sustainable resource management (Hossain, 2022). Collaboration, partnerships, and shared visions and goals characterize the relationships between climate action funders and other actors involved in financing and undertaking climate action. Foundations play a crucial role in leading by example through internal sustainability practices and divesting their endowments from environmentally harmful industries (Colting-Stol, 2020). Public–private partnerships (PPPs) are ongoing between the various actors involved in climate action and climate funders and offer advantages, such as access to capital and private sector efficiencies (Jensen & Dowlatabadi, 2017).

Collaboration among governments, NGOs, investors, and financial institutions has been vital in understanding and making conservation opportunities investable, improving the understanding of the financial benefits of conservation (Clark et al., 2018). Hub organizations play a crucial role in uniting foundations and organizations to combine resources and establish common priorities, visions, and goals. Involving a diverse range of stakeholders at various levels of government and across sectors is recognized as a critical approach to tackling the multifaceted challenges of climate change (Carroll et al., 2021). Collective philanthropy emphasizes the collective and shared use of resources, fostering a sense of community and promoting collaboration (Colting-Stol, 2020). Community foundations and other funders engage in continuous learning and sharing initiatives related to investments and their impacts, often with a focus on community, grassroots, local, or Indigenous efforts in movement-building and sustainability.

How funders conduct evaluation to maximize the impacts of their investments

The urgency of addressing the global climate crisis has prompted increased investments from philanthropic organizations and funders in the climate action sector. As these investments grow, there is a growing recognition among funders about the need to assess climate impacts and priorities to optimize the effectiveness of their funding efforts. The findings underscore the increasing emphasis on evaluation and monitoring to ensure accountability and optimize outcomes while identifying challenges and opportunities for enhancing the effectiveness of climate finance initiatives.

The literature reveals several key factors driving the focus on climate impact assessment among funders. Funders are eager to implement solutions on a global scale; however, questions linger about the costs and equitable distribution of emission reduction burdens (Squires, 2022a). Metrics and measurability present challenges in determining which initiatives to fund, as funders grapple with defining relevant metrics and timeframes (Clark et al., 2018). Capacity considerations arise due to the concentration of funding among large environmental organizations, limiting support for smaller non-profits. The emphasis on evaluation and monitoring is driven by the desire to optimize the impacts of climate finance initiatives and ensure accountability. Funders recognize the need for transparent and evidence-based evaluation to justify their investments and enhance decision-making processes (Gulluscio et al., 2020). Adaptive governance emerges as an important approach in assessing climate finance impact, as it considers

the complex and dynamic nature of climate change and its interactions with governance systems (Baird et al., 2016). Additionally, the biennial assessment of climate financial flows provides a comprehensive overview of climate finance, enabling a better understanding of the impacts of climate finance initiatives (Ford et al. 2011).

To optimize climate financing strategies, funders have employed various assessment approaches. Network analysis is one valuable tool used by funders to evaluate the impact of climate financing. Network analysis is used to examine relationships and interactions between actors involved in climate financing, identifying how funds benefit communities within the framework of the funders' mission. By examining relationships and interactions among different actors involved in climate financing, funders gain insights into how their funding is benefiting communities and achieving their mission objectives (Carroll et al., 2021).

Adaptive co-management offers a collaborative governance approach, facilitating iterative learning and evaluation of intervention effectiveness (Reeder et al., 2020). Adaptive governance, as one method used by funders to assess climate impact to maximize their investment, emphasizes a flexible and responsive approach to understand and adapt to the complexities of climate change and its governance interactions. This allows funders to assess the impact of their climate finance initiatives in the ever-changing landscape of climate action. Coordination and integration of development and adaptation funding are also evaluated for their effectiveness in addressing climate change challenges. Adaptive co-management, involving collaborative governance and iterative learning, enables funders to evaluate the effectiveness of their climate finance interventions (Baird et al., 2015). Through this iterative approach, funders can make adjustments based on feedback and emerging trends, thus enhancing the overall impact of their investments.

Historical analysis is another valuable method that allows funders to identify trends and assess the impact of their contributions to environmental initiatives over time (Ardoin & Bowers, 2012). This retrospective examination helps inform future funding decisions and contributes to the continuous improvement of climate financing strategies. Furthermore, funders assess the impact of climate funds through proper accounting and reporting systems, which involve analyzing methodologies, data quality, and reporting standards used in climate change initiatives (Gulluscio et al., 2020).

The assessment of climate impact and priorities in climate investments has become a crucial aspect of climate finance initiatives. Funders recognize the significance of evaluation in maximizing the effectiveness of their efforts and ensuring accountability. The use of diverse assessment strategies, such as adaptive governance, network analysis, adaptive co-management, historical analysis, and climate accounting practices, contributes to the ongoing evolution of climate financing approaches. As the field of climate finance continues to evolve, adopting robust evaluation methods will continue to be vital in driving positive and meaningful impacts on the global fight against climate change.

How are they determining climate-related priorities and impacts?

The literature review indicates that funders within the climate action sector employ diverse strategies and considerations to establish their climate-related priorities and assess impact. These include a clear and comprehensive sustainability vision, policies to

ensure sustainability and climate change strategies are embedded in corporate governance (Gulluscio et al., 2020). This includes performance metrics that are financial, social, and environmental with influence on decision-making. Funders utilize valuation of adaptation costs and benefits to help determine climate-related priorities and impacts (Schenker & Stephan, 2014). Carbon accounting tools can also play an important role in enhancing funding impact, informing decision-making, and supporting accountability (Gulluscio et al., 2020).

Some funders adopt specific principles and approaches that align with their identified priorities. Some foundations focus on market-based principles while others support sustainable low-carbon or regenerative economies. Some seek to lead by example, reducing their own emissions, and investing their endowments in ways they demonstrate a strong commitment to climate action and sustainability. Collaboration, impact investing, and knowledge sharing through various networks can also play an important role in determining priorities and maximizing impact (Colting-Stol, 2020). Funders recognize that working together and sharing expertise can lead to more effective action to address climate challenges.

Moreover, community leadership and engagement are acknowledged as important considerations, bolstered by support for initiatives that tackle root causes and enhance connections between culture and ecosystems (Reeder et al., 2020). This community-centered approach ensures that climate initiatives are culturally relevant and have a lasting positive impact on affected communities. Information gathering and analysis, including policy research, also allows funders to make well-informed decisions and achieve real and practical outcomes. In summary, funders in the climate action sector determine priorities and assess impacts through a combination of innovative approaches and considerations, seeking to maximize the impacts of their climate investments and ensure the effective allocation of resources to combat climate change and promote a sustainable future.

Conclusions and recommendations

Climate change poses significant challenges that necessitate effective and sustainable financing for climate action. The available literature on climate finance in Canada, while limited, highlights the involvement of diverse stakeholders, including philanthropic foundations, NGOs, private sector entities, and government bodies. Collaborative partnerships, innovative funding mechanisms, and community-based initiatives play crucial roles in addressing the challenges faced in combating climate change, including massive financial demands and inadequate available resources to meet these demands. Philanthropic foundations play a vital role in supporting climate change mitigation and adaptation initiatives in the country. Although specific examples in the literature are limited, foundations are shown to invest in initiatives that promote low-carbon economies and societies and empower communities in adapting to climate change.

The literature underscores the importance of increasing funding for climate change programs and addressing the barriers that limit financial support for such initiatives. NGOs, particularly community-based environmental organizations (CBEOs), actively contribute to climate action. They receive funding from foundations and play a pivotal role in enhancing community resilience and conservation efforts. The

literature emphasizes the need for collaborative partnerships between NGOs, government entities, and civil society organizations to maximize the effectiveness of climate action initiatives. Private sector involvement is an important element for financing climate change mitigation and adaptation. It is evident from the literature that the private sector has been instrumental in driving clean growth and renewable energy transition, also supporting environmental non-governmental organizations (ENGOs). This review demonstrates the benefits of funds and initiatives that leverage diverse sources of capital, including local and international entities, and the potential for unlocking private finance for climate action. Government entities at various levels also make important contributions, with the literature acknowledging the Government of Canada's support for climate action.

The involvement of multilateral development banks (MDBs) and bilateral donors is also mentioned, emphasizing the importance of global partnerships in climate financing. Community-based organizations (CBOs) and community foundations play a crucial role in climate action financing. These organizations operate at the local level and possess valuable knowledge of the region's specific challenges and opportunities. Collaborative partnerships between CBOs, government entities, and civil society organizations enhance the effectiveness of climate action, fostering state support for civil society initiatives and allowing for the scaling up of community-based approaches.

While the existing literature provides valuable insights into the financing landscape of climate action in Canada, it is limited in scope. Further research and empirical studies are needed to deepen our understanding of these relationships and identify best practices for effective collaboration, impact measurement, and financing of climate change mitigation and adaptation efforts. Future research is needed on specific examples of philanthropic organizations and NGOs' actions in climate change financing in specific regions, such as Atlantic Canada. Grey literature can provide valuable additional insights and perspectives not included in this review. Comprehensive studies that explore the contributions of private sector entities, government initiatives, and community-based approaches along with the role of foundations would also enhance our understanding of financing dynamics and relationships. Investigations into innovative funding mechanisms, the role of impact investing, and the potential of global climate finance partnerships would further enrich the literature.

In conclusion, the analysis presented in this scholarly review provides insights into the nature of funder-actor relationships in the context of climate change mitigation and adaptation in Canada. The findings highlight a diverse range of actors involved, including community-based environmental organizations (CBEOs), public and private organizations, development finance institutions, community foundations, environmental organizations, and multilateral development banks.

A key findings are the significant role played by CBEOs in climate action. Their established trust within communities and deep understanding of local contexts make them effective agents of change. These organizations prioritize collaboration, cooperation, and partnerships, driven by both necessity and opportunity. Through their efforts, CBEOs have successfully advocated for policy changes at higher levels of government, contributing to the advancement of climate change mitigation and adaptation strategies. The analysis also reveals the evolving partnerships, including, for example, between environmental non-governmental organizations (ENGOs), Indigenous groups, and

funding partners. Collaboration with NGOs or others that have in-depth knowledge of local circumstances better enables charitable organizations to support community-based philanthropy as well as innovative, appropriate and effective strategies for climate change mitigation and adaptation.

Foundations, as key actors in the funder-actor relationships, play a vital role in leading by example and driving change. By adopting sustainable practices and divesting from environmentally harmful industries, foundations actively contribute to broader climate action goals. Their engagement with the government and communities enables them to leverage resources effectively. Philanthropic organizations collaborate with various stakeholders and adopt investing strategies that align their investments with their climate goals and other priorities. Hub and network organizations facilitate collaboration among foundations and organizations, helping to create shared priorities, visions, and goals and maximize resources and investment impact. This analysis also emphasizes the importance of assessing climate impacts and conducting evaluations to optimize funding efforts. Ongoing effort is needed to further develop tools and approaches to inform decision-making processes and promote accountability and effectiveness. The findings of this review demonstrate that funders are committed to optimize their funding strategies in addressing the urgent imperatives associated with climate change. Collaboration, impact investing, and knowledge sharing are all crucial elements in achieving climate action goals.

It is important to note that this analysis is based on a synthesis of existing literature, and the citations provided indicate the sources from which the information is derived. This discussion provides a comprehensive overview of the nature of funder-actor relationships, climate impact assessment, and priority determination in the context of philanthropic climate action funding in Canada. To fill the existing gaps in the literature, this study aimed to systematically review previous research on the role of philanthropy in financing climate change mitigation and adaptation in Canada. This review synthesized and evaluated the current state of knowledge in this field, identifying common themes, gaps, and limitations. By doing so, this study provides a foundation for future research and policy development to attract more, and more effective, philanthropic funding toward climate change mitigation and adaptation. However, further studies are needed to deepen the current understanding of the relationships between actors, best practices for effective collaboration, and ways to maximize the impact of philanthropic funding toward climate action.

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