SCHOOL OF CITIES, UNIVERSITY OF TORONTO

SYMPOSIUM ON CLIMATE JUSTICE & CITIES

SUMMARY REPORT

WEDNESDAY, MAY 24TH, 2023

UNIVERSITY OF TORONTO | SCHOOL OF CITIES

Summary

The Urban Challenge Grant (UCG) program at the School of Cities builds multidisciplinary scholarly communities of practice within the University of Toronto around complex urban challenges. The grants fund timely research, knowledge dissemination and community engagement to address emerging research questions, and provide seed funding for pilot studies that could ultimately lead to transformative or high-impact research.

The goal of this program is twofold. First, we seek to build multidisciplinary scholarly communities of practice around complex urban challenges in order to advance knowledge. Second, we are keen to create new and just ways to help communities in Canada and around the world thrive.

Grants are given to U of T faculty and postdoctoral fellows. In 2020, the School of Cities funded 12 proposals on the theme of climate, justice, and cities for its second UCG cycle. The teams represented over 20 departments across the three campuses. Each initiative focused on a different aspect of climate change and its impact on urban spaces and disadvantaged groups, and each team connected closely to policymakers and stakeholders during the research project.

With its remarkable and diverse faculty expertise, the University of Toronto is poised to lead a conversation about how best to adapt to climate change while promoting inclusion and justice. Climate, justice, and cities is a theme that spurs research across many different disciplines, including the natural sciences, engineering and technology, urban policy and planning, business, public health, the arts, and the social sciences.

In May 2023, the researchers from UCG 2.0 came together at an all-day symposium to present their work to one another and to discuss their findings on the themes of:

- Disparate environmental impacts on vulnerable communities
- Unequal access to environmental amenities
- The viability of strategies for sustainability and GHG emissions reduction
- Building community capacity to deal with climate injustice

The presentations and proceedings follow in this report.

Panel 1: Environmental impacts on vulnerable communities

Moderator: Karen Chapple, Director, School of Cities & Professor, Department of Geography and Planning

Panelists:

- Lief Pagalan, Dalla Lana School of Public Health, University of Toronto: Predicting the impact of climate change adaptation and mitigation strategies on premature deaths in Canadian cities

- Assistant Professor Karen Smith, Department of Physical and Environmental Sciences, University of Toronto Scarborough: Climate change, extreme heat, and human mortality in the City of Toronto

- Amanda Norton, Department of Geography, Geomatics & Environment, University of Toronto Mississauga: Air quality and environmental justice: The growing impact of climate change on disproportionate air quality exposure

---

How can data-driven approaches help cities plan for, and mitigate, the impacts of climate change on at-risk communities?

Data-driven approaches can provide evidence of environmental risk exposure and help achieve equity. These opportunities could be increased by:

- Updating data and results regularly as climate change accelerates.
- Using publicly available data to increase the potential to replicate studies.
- Combining datasets to get a more comprehensive understanding of the issues. For example, by combining surface temperature data, geophysical datasets, demographic datasets, census data, and open data from the City of Toronto, Professor Smith's team found that heat vulnerability does not precisely match heat distribution across the city.
- Aligning with other disciplines to validate results with additional data.
- Creating new types of datasets, such as neighbourhood-level data and data that capture segments of the population at higher risk from threats of climate change. Note that collecting data for people at risk is challenging and raises ethical questions.

Cities could develop new capacities for fruitful collaboration with researchers. These include:

- Using climate models to create scenarios, rather than prescriptions or predictions.
- Investing in data and technological structures, such as data warehouses where the data that is continuously being collected can be processed. This will also require facilitating linkages with the data so researchers can easily access it and create robust models.
- Improving data regulation and monitoring. Potential benefits and harms should be considered; regulations should be used to ensure safety, fairness, equity, and accountability; and climate models should be used for the public good.
- Collaborating with researchers early to understand how their research can be used.

Climate justice dream

"Empowered communities that are knowledgeable of climate impact and have their voices heard, and belong"

Climate justice dream

"Climate justice should look like sustainable and realistic changes"

Climate justice dream

"To create shared and inclusive spaces where one group isn't more vulnerable than others"

Data-driven approaches raise some ethical considerations that must be addressed:

- For privacy reasons, not all types of data can be collected.
- Datasets are often biased when they are spatially aggregated.
- Indigenous populations are under-represented in the census.
- Private companies collect and own much of the relevant data.

The following practices can be helpful in overcoming challenges:

- Working with communities to understand individual concerns about climate change and people's priorities. Participatory approaches can be implemented through open discussions involving communities, researchers, and policymakers.
- Considering the implications of research and communicating the results appropriately.
- Pushing for the redefinition of public data. Who owns, or should own, data?

International discussant:

Professor Priyanka DeSouza, Department of Urban and Regional Planning, University of Colorado Denver

Climate change adaptation actions are often focused on protecting material assets from potential disasters. Climate change is also a public health crisis that generates context-specific human vulnerabilities.

Professor DeSouza studies the health impact of climate change in Denver, Colorado, using health impact assessments (HIAs). In the United States, most HIA analyses are done at the country level, but when using But when using block-level mortality rates, the research team found hotspots that previous studies had missed because of aggregated data. The block-level data showed that communities with a high percentage of non-white residents had the highest mortality rates. Similar findings from other studies are often framed in a way that leads to the stigmatization of some population groups. Using a structural racism lens is key to avoiding this outcome.

The work was spurred by community concerns in a census tract close to an oil refinery called Suncor. The communities are using the study results to oppose the renewal of Suncor's permit. More work is needed to understand how the data collected and the tools developed are leveraged and whether they are used effectively in policymaking.

The research team found that factoring in workplace locations shows greater air pollution disparities than are observed when residential areas only are considered. This finding highlights the need to take a more holistic look at how structural racism has created disparities. Public health and urban planning scholars must find a way to translate these findings more broadly to policymakers and argue for radical change.

In addition to real-time data, better infrastructure would make existing data and analysis more visible and accessible to policymakers. Conducting reviews and updating existing sources is as important as collecting new data.

Panel 2: Access to environmental infrastructures

Moderator: Professor Robert Soden, Department of Computer Science and School of the Environment, University of Toronto

Panelists:

- Assistant Professor Nidhi Subramanyam, Department of Geography & Planning, University of Toronto: Modelling just stormwater infrastructures for a flood resilient Toronto
- Dr. Alessandro Filazzola, ApexRMS: Urban parks for people: Anonymized movement data to determine access and equity
- Associate Professor Amy Bilton, Centre for Global Engineering, University of Toronto: Community adoption of ecotechnology and grassroots approach to climate change adaptation: A participatory study of rainwater harvesting initiatives in Mexico City

---

How can we better understand, and overcome, the urban challenges of unequal access to environmental infrastructures?

Infrastructures can be defined broadly as collective services or materials contributing to the health and wealth of those living within a community.

When looking at green spaces, Dr. Filazzola's team started by defining what counts as a park and identifying three essential features: usable by all, no private entrance, and not used for an alternative purpose (such as a cemetery or a golf course). This definition is fundamental to assessing the unequal distribution of parks. Infrastructures also have diverse functions and can provide co-benefits. For instance, residential front and back yards can improve stormwater management and be used as recreation places. The fact that many actors are involved in creating and maintaining environmental infrastructures can be a challenge for coordination.

Professor Subramanyam's team found a strong positive correlation between social vulnerability and a lack of access to green infrastructure across Toronto. Researchers and planners should recognize this unequal proximity and access to critical infrastructure and distribute future infrastructural capacity across vulnerable and underserved communities. Climate change alters behaviours and exacerbates inequalities and vulnerabilities. Those who do not have access to critical infrastructure or who have been harmed by infrastructural projects should be at the centre of infrastructure planning and design, moving away from a cost/efficiency approach.

Data are critical to understanding the role of infrastructure and the scope of the problem of unequal access to environmental infrastructures. There are two caveats:

- The data collected need to be consistent to explain the root of the problem. To confirm or reject researchers' initial hypotheses, on-the-ground knowledge is fundamental to getting residents' perspectives and understanding their experiences. However, surveys and interviews can be limited when participants try to answer as they expect the surveyor wants them. Distributed sensing could more accurately show use patterns of green infrastructure.
- Data is not adjusted for future scenarios. Computing worst-case scenarios could inform infrastructure planning. Professor Subramanyam's team did this for stormwater management and contends that cities should be ready to anticipate storms of varying intensity and duration.

Opportunities to bring more diverse perspectives and ways of understanding inequitable access to infrastructure include:

- Connecting with other Canadian cities to be aware of different patterns and concerns, getting a broader perspective on existing issues, and identifying solutions to address these.
- Making data publicly available to increase residents' knowledge of their living environments and awareness of potential risks.
- Adopting a multi- and cross-disciplinary approach to address and analyze different and complementary aspects of infrastructure distribution and accessibility. Dialogues among researchers from various fields bring different perspectives on one issue and allow for the definition of varied answers.
- Engaging in a dialogue with policymakers, planners, and community actors. For example, the definition of worst-case scenarios should include community input to understand which infrastructural solutions might help residents feel safe and secure.
- Seizing opportunities for community development and for the empowerment of social organizations, and providing more support to increase their impact.

Climate justice dream

"Moving beyond extractivism (mentality/economy that "takes" but does not give back)"

International discussant:

Professor Maya E. Carrasquillo, Department of Civil and Environmental Engineering, University of California Berkeley

In the United States, federal efforts to address unequal access to infrastructure include the bipartisan infrastructure law and the Justice 40 initiative, which states that 40 percent of overall benefits of certain investments must go to communities that are marginalized, underserved, and overburdened by pollution. These are often infrastructural deserts.

Professor Carrasquillo studied stormwater management in East Tampa, Florida, a historically Black community that has experienced environmental injustices over the years. East Tampa is bordered by two of Tampa's major highways and has the largest density of stormwater ponds per square mile of any community in Tampa. These ponds are often poorly maintained, fenced in, and primarily located in residential areas.

Revitalization efforts for these ponds, led mainly by residents, have included boardwalks and educational signage, and, most prominently, have also included changing the names of several ponds. While this was an opportunity to shift outsider perspectives, it also revealed differences in understanding and perceptions across important stakeholder groups. To residents, these lakes were an opportunity to build amenities and give access points to residents in the community, but city agencies viewed them simply as water retention facilities. This divergence highlights the need to bring these varied perspectives together, and it emphasizes the importance of including diverse perspectives when making key infrastructural decisions.

Professor Carrasquillo is also working on a project in Richmond and East Oakland, California, funded by the Environment Protection Agency, which explores the design and implementation of community-driven green stormwater infrastructure. She stressed the importance of asking:

- Who still needs to be included in efforts to address unequal access to infrastructure?
- How do we characterize vulnerability, and who decides who is vulnerable?
- What does it look like to develop decentralized systems?

Panel 3: The viability of strategies for sustainability and greenhouse gas emissions reduction

Moderator: Professor Marc Johnson, Department of Biology, University of Toronto Mississauga

Panelists:

- Associate Professor Shoshanna Saxe, Department of Civil and Mineral Engineering, University of Toronto: Urban form pathways, affordable housing, and the reduction of greenhouse gas emissions
- Dr. Françoise Cardou, Department of Biological Science, University of Toronto Scarborough: Evolving cities: Access to nature in Toronto over three generations
- Dr. Md Abdul Halim, John H. Daniels Faculty of Architecture, Landscape and Design, University of Toronto: Developing remote sensing tools for monitoring the success of Toronto's green roofs

---

Can we achieve sustainable land use and reduce greenhouse gas emissions in cities?

Achieving sustainability is commonly defined as successfully meeting today's needs without compromising those of future generations. Sustainable land use requires a balanced distribution of resources and the harmonization of competing interests. Achieving sustainability includes creating green infrastructure, encouraging active transportation, transitioning to renewable energies, and encouraging sustainable practices in industries and businesses.

Improving public transit can contribute to sustainable land use and greenhouse gas emissions reduction in cities by increasing connection and accessibility to green spaces. Expanding public transit services can also reduce the road space currently dedicated to cars, leaving more room for greenery in the public realm. Significant tensions between housing justice and climate justice also need to be addressed by changing land use patterns, housing form and design, and material selection.

Panelists suggested policies and programs to help achieve sustainable land use and reduce GHG emissions in cities:

- Use land that has already been built on. For instance, instead of focusing on new buildings when considering green roofs, retrofit green roofs in suitable older buildings. Although this approach is physically possible, it may be politically challenging.
- Prioritize areas in greater need rather than restoring areas already well supplied with green spaces, even though it is harder to put green spaces in areas that have already been paved with concrete.
- Adopt a long-term ecosystem service delivery approach. Urban trees are commonly perceived as carbon capturing, but many trees die young and are hard to maintain. Diversifying greening initiatives and not focusing solely on the number of trees planted would help reduce GHG emissions.
- Abandon traditional land use practices and the sprawling suburban model. Forms of gentle and distributed density offer opportunities. The City of Toronto has recently adopted a multiplex bylaw and legalized garden suites; however, such housing types are still hard to build.
- Increase monitoring. For example, even though the City of Toronto passed a bylaw in 2009 that made green roofs mandatory for new development or additions greater than 2,000 square metres in gross floor area, and many green roof permits have been issued since then, the state of maintenance of green roofs is not monitored.

International discussant:

Professor Mikhail Chester, School of Sustainable Engineering and the Built Environment, Arizona State University

Governance must be structurally designed to deal with interdisciplinary challenges such as GHG reduction, social justice, and climate adaptation. In the United States, when it comes to urban infrastructure, we tend to see a siloed bureaucracy, with distinct subdivisions dealing with specific issues semi-autonomously. How can we restructure government to deal with these issues?

The framework of social-ecological and technological systems is in line with the increasing recognition of the need for crossing domains. Professor Chester co-led a centre for the National Science Foundation that promoted social-ecological-technological system (SETS) thinking across 12 cities in different countries. They found significant contextual differences that caused problems and tensions between different domains and diverse types of stakeholders with different priorities.

In one case, the research team spoke to members of a local community about flooding. Community members, however, had other priorities — the fact that they live in a food desert and lack green spaces. Bioswales were suggested as a solution to flooding that also introduces green space into the community. Once a solution is identified, the implementation must be thought through in a collaborative process that includes communities.

Panel 4: Building community capacity to deal with climate injustice

Moderator: Assistant Professor Praneeta Mudaliar, Department of Geography, Geomatics and Environment, University of Toronto Mississauga

Panelists:

- Dr. Joanna Kocsis, Social Services and Humanities Research Council Postdoctoral Fellow, Department of Geography, Politics, and Sociology, Newcastle University: Urban climate justice: Policymaking for transformative resilience

- Rebecca McMillan, PhD Candidate, Department of Geography and Planning, University of Toronto: Urban climate justice: Policymaking for transformative resilience

- Assistant Professor Imara Rolston, Dalla Lana School of Public Health, University of Toronto: Reconciling racial justice and climate resilience

- Assistant Professor Fikile Nxumalo, Department of Curriculum, Teaching and Learning at the Ontario Institute for Studies in Education, University of Toronto: Designing for climate justice education in a Canadian city: Learning with Black ecologies

What are best practices for building local capacity to empower communities to pursue climate justice?

Professor Nxumalo shared three main insights from her project on climate justice education, in which she spoke to Black parents who have young children enrolled in schools in the GTA.

First, to avoid deficit framings of Black Canadians' ecological relationships and knowledge, it is crucial to begin with affirmative stories and relations rather than structuring conversations around damage, loss, and needs. Black ecological stories are filled with possibilities for expanding what counts as climate justice education that centres and affirms Black relations with lands and waters.

Second, parents expressed a desire for interdisciplinary approaches in environmental education and emphasized the need to address the erasure of the histories of Black communities in Canada in the Ontario curriculum. Examples of experiences of and resistance to environmental racism by Black communities could be used. The research points to the persistence of systemic barriers to the formal environmental education of Black communities. Parents think that children should learn about the effects of extractive capitalism on nature and be taught about environmental advocacy or activism. Food justice should also be defined as a critical area of concern related to climate.

Third, educators should recognize and support the place-based learning that Black families engage in with their children. Some families discussed the importance of time spent outdoors but also explained that racialized communities face significant inequities in access to green spaces or maintenance of the green spaces they can access. Participants also shared experiences that left them feeling unwelcome or unsafe in outdoor and recreational areas.

The panellists agreed that climate resilience implies resilience in a broader sense. Climate change is a symptom — a wider base of disenfranchisement creates extreme climate vulnerability and a racial-spatial climate divide. For this reason, resilience must be considered holistically, given the interconnection of issues beyond the city scale. The complexity of climate change highlights the importance of bringing policymakers from different disciplines together.

Different framings of the climate change problem have been put forward by social movements such as Black Lives Matter (BLM) and have altered how we think about climate change and justice. For example, BLM has initiated a shift in conversations from food security towards food sovereignty, from food deserts to food apartheid. Different stakeholders have different understandings of climate change. Framing the problem in terms of technical or engineering approaches to adaptation may overlook climate justice concerns.

Reconciling these different understandings of climate change calls for collaborative work. Academic knowledge about climate resilience can be useful only if policymakers understand and know how to apply it. For this reason, Dr Kocsis and Rebecca McMillan, in their project on the interface of knowledge and action, tried to build receptive capacity with policymakers in Thailand, Vietnam, and Cambodia. Researchers can create opportunities for collaboration between policymakers and community members to find solutions to climate change. In this case, they used interactive games-based workshops and applied learning simulations. Role-playing games invite one type of actor to take on another actor's role, challenging individuals' expertise and enhancing knowledge-sharing and compassion.

Similarly, Professor Rolston's team, to address the racial and spatial climate divide in Toronto, brought policymakers, academics, and grassroots organizers from seven cities in North America to co-construct a racial justice climate resilience framework.

Including communities in decision-making processes fosters a sense of belonging. A good practice is a shift from the use of advisory tables (that have major limitations in terms of inclusion and engagement of communities) to the more challenging ideal of accountability of policymakers. The creation of accountability structures increases communities' participation and control in decision-making processes. Finally, bridging the gap between academic knowledge, communities, and policymakers requires making knowledge and data more accessible and understandable.

Changing political will is not easy, and more than evidence-based studies are needed. It requires grasping opportunities, moments when policymakers are more receptive to ideas. Cross-disciplinary coalitions and cross-collaborations strengthen the possibility of policy changes.

Climate justice dream

"Cities that are connected where policymakers connect with communities, academics, civil society and other stakeholders to create solutions that work for all citizens and address our most complex climate and social issues"

International Discussant:

Assistant Professor Linda Shi, Department of City and Regional Planning, Cornell University

Depending on the studied context, different discourses can be used to talk about climate justice. This raises the question: Is there one single and uniform language that can be used to talk about it? International mobilization and movement building across different geographies allow one to reach a common language.

Climate change is not a new dilemma; it informs other existing movements (such as housing, food, and health). There is, therefore, an opportunity to merge different activities and groups of actors. Looking at documents that were developed by organizations and social movement organizations in the United States, Professor Shi identified three main ways that have been suggested to address climate change:

- Procedural change (the most addressed theme): finding ways to give more power to communities so they can get their voices heard.
- Changes in the distribution of resources that should be allocated in priority to disadvantaged communities.
- Structural changes (the least addressed theme): identifying and overcoming the underlying barriers and causes of the systemic issues we see on the ground.

More effort needs to be put into community-building and capacity-building. The assumption that our communities exist as cohesive entities is only valid in some contexts; more resources should be dedicated to engaging communities instead of prioritizing infrastructure.

Keynote address from Julian Agyeman, Professor of Urban and Environmental Policy and Planning, Tufts University

Just sustainabilities

Professor Agyeman defines "just sustainabilities" as the need to ensure a better quality of life for all, now and into the future, in an equitable manner while living within the limits of supporting ecosystems. Sustainability is not only an environmental concept, but also includes critical equity and social justice questions: environmental quality and human equality must be considered together. Achieving just sustainabilities therefore implies:

- Managing co-existence in shared space: that is, moving away from urban planning as the spatial toolkit of white supremacy and shifting from racial and segregationist planning to reparative planning (Williams, 2020). The concept of cosmopolitan canopies (Anderson, 2004) contains this idea of co-existence. Spaces of difference and otherness create increased opportunities for tolerance and respect.
- Fostering belonging: in Superkilen Park in Copenhagen, planners worked with the community to put artifacts from diverse cultures into the park to give users a sense of familiarity. One way to create belonging is to let people see themselves in the city's space.
- Fostering engagement using deep ethnographies: planners use demographic data extensively to think about neighbourhoods. Deep ethnographies could also be co-produced by planners and communities and used, updated, and made accessible to city workers, non-profits, and others.
- Practising human- and humane-scaled urban planning and design, bringing in critical dimensions of dignity and empathy.
- Making social justice intentional: social justice should not be the goal, but the starting point.

Spatial justice: How do we allocate rights in urban spaces and places?

Spatial justice refers to the way rights are allocated in urban spaces and places; achieving spatial justice requires ending the predominant geographical distribution of life chances and opportunities. A recent article published in the Boston Globe highlights an example of spatial injustice: people living in Back Bay live significantly longer than those living in Roxbury, which is located 1.5 miles away. Several urban planning practices are not in line with the ideal of spatial justice:

- The use of landscape and infrastructural features - such as river, trails, and freeways - to segragate population groups.
- Streets not used as public and democratic spaces. Streets with heavy vehicular traffic offer less opportunity for social interactions and are more dangerous for pedestrians. This constitutes a social and spatial justice issue, since roads tend to be unequally distributed, and some population groups are more affected than others. Promising practices include Mayor Bloomberg's implementation of avenues for people in New York City (Times Square, for example) and the city of Copenhagen, which has a significantly high pedestrianized city space per capita.
- Hostile and defensive architecture and urban design. In some cases, claims of sustainability are used to justify eliminating undesirable uses and displacing people. In Seattle, for example, bike racks replaced a settlement of homeless people.

Achieving spatial justice and social injustice is challenging, as some policies can have unintended effects:

- "Complete streets" are intended to de-centre the automobile and re-centre humans and active transportation. But who gets to define a complete street? For instance, Los Angeles has a complete streets policy but has also banned street vending (which is an integral part of sidewalk culture). The ban was finally lifted following many protests, but this example emphasizes the need to make sure that communities are consulted when making important planning decisions.
- While redlining was explicitly racist, greenlining — which refers to a spatial management strategy that promotes sustainability and environmental justice principles in urban planning — may inadvertently contribute to the reproduction of spatial and racial inequalities by enhancing livability for the most privileged residents who can afford to live in greenlined areas.
- Walkability is a crucial sustainability metric. However, realtors widely use it to increase home values. The Walkscore app is owned by Redfin, demonstrating that sustainability has been commodified.

The Minneapolis paradox

The Minneapolis example demonstrates that green policies do not necessarily result in social justice. Minneapolis is one of the greenest and most liberal cities in the United States. It is also the epicentre of structural racism, where urban planning has been used as a toolkit for articulating, implementing, and maintaining white supremacy. With the Minneapolis 2040 plan, the city is trying to deal with these deep inequalities. The plans include measures to end single-family zoning, the introduction of inclusionary zoning policies, and the broad goal to eliminate disparities by 2040.

Food justice: What is "local" food in intercultural societies?

The idea of local food is being challenged by population movements, as immigrants introduce their own "local" foods. For instance, many farms in Maryland are now selling African produce to respond to the demand from local communities who want to eat locally grown African food. Similarly, 20 percent of farmers in the Greater Vancouver region are Chinese Canadians; they have set up a network of farmers' markets, creating parallel local food networks.

This translocalism pushes alternative food movements to be more reflexive in their understanding of local food and its meaning. It also exemplifies the development of place-making practices through food.

Keynote address from Julie Dabrusin, Member of Parliament for Toronto–Danforth (Ontario) and Parliamentary Secretary to the Minister of Natural Resources and the Minister of Environment and Climate Change

Objectives to address climate change at the national and international level

Since 2015, the government of Canada has been working to address the crises of climate change, pollution, and biodiversity, by defining a set of goals, notably the reduction of emissions by 40 to 45 percent below 2005 levels by 2030 and achieving net zero by 2050. In 2016, the pan-Canadian framework on clean growth and climate change was adopted. In 2019, carbon pricing was implemented, driving down carbon emissions and increasing innovation and energy efficiency. The year 2023 marked the first structural bending down of the curve on emissions, and this success was attributed to the adoption of a cleaner electricity grid.

Canada is also trying to contribute to climate justice at the international level. Canada recently participated in a global treaty negotiation in Paris on eliminating plastic waste. At the international level, the government is not only trying to take a leadership role, but also helping other countries that have been on the receiving end of plastic waste produced in Canada.

The economic strategy: A focus on clean energy and nature

In the most recent budget, one central investment area is the electricity grid and clean energy technologies. Canada is now considered second in the world for investments in clean technology. The challenge is to work across all sectors to reduce emissions while promoting innovation and creating jobs. A clean electricity investment tax credit and a clean technology manufacturing investment tax credit have been adopted, supported by industries, environmental organizations, and business groups.

Canada has also committed to the conservation of 25 percent of Canada's lands and oceans by 2025 and 30 percent by 2030. In 2022, through the Montreal Global Biodiversity Framework, Canada agreed to safeguard the world's nature, halt and reverse biodiversity loss by 2030, and put nature on a path to recovery by 2050.

Addressing the disproportionate impacts of climate change

Vulnerable communities and countries need resources to respond to loss and damage from the adverse impacts of climate change. Through international climate finance, Canada is helping countries combat climate change with the establishment of a fund for responding to loss and damage: $7 million to the Global Shield Financing Facility, for a coordinated approach to climate risk prevention and response, and $1.25 million in early support for technical assistance to vulnerable countries in averting, minimizing, and addressing loss and damage. Over the next five years, the plan will focus on international climate finance in four areas: climate governance; nature-based solutions; clean energy transition and coal phase-out; and climate-smart agriculture and food systems.

At the community level, working alongside and in partnership with Indigenous peoples is fundamental to protecting lands and waters. Bill C226 aims to address the disproportionate impacts faced by vulnerable communities. It is an act respecting the development of a national strategy to assess, prevent, and address environmental racism and advance environmental justice.

Conclusions and recommendations

- Sustainability is a broad concept encompassing environmental, social, and economic dimensions. Achieving sustainability therefore requires collaboration among different disciplines as well as across public, private, and non-profit organizations.
- Combining different types of data (collecting information about people's experiences can be particularly useful) can produce a more comprehensive understanding of climate change and justice issues.
- The public accessibility of data is fundamental. Data must be accessible for multiple stakeholders and communities to take advantage of findings from data-driven approaches.
- Researchers and policymakers must include and communicate with communities during the data collection phase and in the decision-making process. As climate change accelerates and the impacts become more acute, cities need updated data.
- Structural and governance constraints must be dismantled to implement efficient and successful policies.
- More financial resources are required to identify and implement solutions to climate change.
- Prevention now is less expensive than adaptation in the future.

Follow us to learn more about the School of Cities — a multidisciplinary hub for urban research, education, and engagement creating new and just ways for cities and their residents to thrive.

@UofTCities

@uoftcities

linkedin.com/company/uoftcities

@uoftcities

schoolofcities.utoronto.ca

SYMPOSIUM ON CLIMATE JUSTICE & CITIES