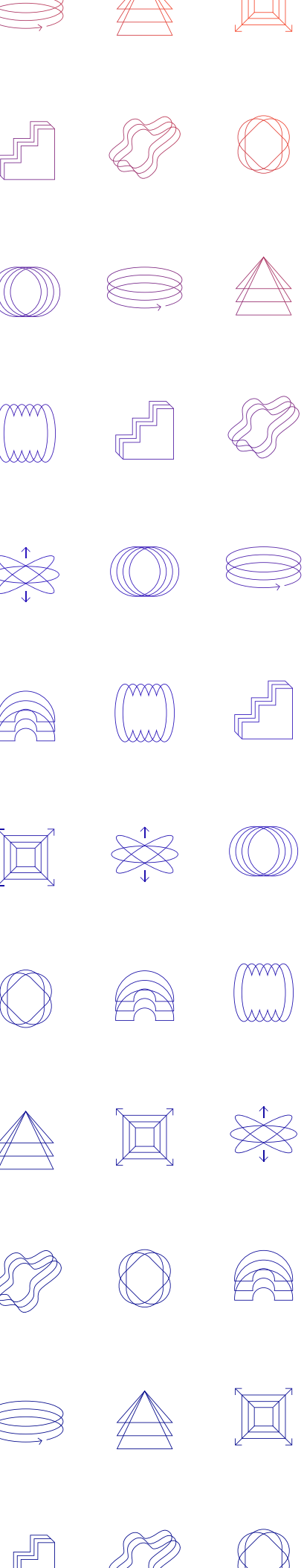

Data Governance – The Missing Piece in the Climate Action Puzzle

November 2023

OPEN NORTH

ACKNOWLEDGMENTS

Recommended Citation

Open North. 2023. "Data Governance – The Missing Piece in the Climate Action Puzzle." Open North.

Disclaimer

If you create an adaptation of this work, please add the following disclaimer along with the attribution: *This is an adaptation of an original work by Open North. The views and opinions expressed in the adaptation are the sole responsibility of the author and the adaptation is not endorsed by Open North.*

Authors

aimee whitcroft, Merlin Chatwin

Contributors

Pamela Robinson, Thomas Linder

CONTENTS

Preface

Open North has been at the forefront of finding ways to use data and technology for the common good for over a decade, with a focus on data governance, digital strategy, and open smart cities. As the climate crisis continues to deepen, we have been looking for ways to leverage our experience and contribute positively. We believe that a coherent effort that cuts across organizational, geographic, and community boundaries is vital for any meaningful climate action to take place – something we at Open North, and others, increasingly refer to as integrated climate action.[1]

Our recent steps into the climate space include our 2022 discussion paper, "Finding common ground: Integrated climate action for open smart communities in Canada," in which we laid out our thoughts on the potential role of data and technology. At the same time, our work with Evergreen in the Community Solutions Network has increasingly adopted a climate resilience focus.[2]

As we put it in the discussion paper, "while we recognize that data and technology are not the answer to climate change, they do have a role to play, and Open North is committed to supporting local governments and environmental justice organizations in their pursuit of a healthy, just, and sustainable future." This stance echoes recent publications from the Dais,[3] Engine Room,[4] and the State of Green.[5]

The open smart cities / communities and climate resilience movements could merge in immensely productive ways to include the wider concept of digitization as a whole – a primary component in smart cities discussions, but increasingly in other movements and initiatives as well.

Technology, including digitization, of course both consumes and produces data, in ever-increasing amounts. There is a lot of talk about technology, and some talk about data.

However, there is a key and often missing component in the conversation about data, technology, the environment, and climate – data governance. And this component is vitally important in helping address climate change as it speaks not only to how to manage the data our efforts will generate and use, but perhaps even more importantly, how we will make decisions about its management, and who will be making those decisions.

This brief serves as Open North's next step into the climate action space, discussing the research we have undertaken since, what we have seen, and further expanding our position on the importance of the role of data governance for climate action.

---

(1) See, for example, Matthew Claudel, Sophie Nitoslawski, and Merlin Chatwin, *Finding Common Ground: Integrated Climate Action for Open Smart Communities in Canada* (Montréal: Open North, 2022), https://opennorth.ca/resources/finding-common-ground-integrated-climate-action-for-open-smart-communities-in-canada/; Michael Doust, Nathalie Badaoui, and Leo Horn-Phathanothai, "3 Essentials for Integrated Urban Climate Action," World Resources Institute, October 21, 2022, https://www.wri.org/insights/3-essentials-integrated-urban-climate-action; International Climate Initiative, "Unlocking the Power of Integrated Climate Action," February 12, 2012, https://www.international-climate-initiative.com/en/iki-media/news/unlocking-the-power-of-integrated-climate-action/; Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH, Factor, and International Climate Initiative, "A New Narrative of Resilient and Climate Smart Societies: Aligning Adaptation, Mitigation and the SDGs," 2019, https://www.international-climate-initiative.com/fileadmin/iki/Dokumente/Publikationen/Projekte/16_I_298/A-New-Narrativ-for-Resilient-and-Climate-Smart-Societies.pdf; Canadian Climate Institute, "Who We Are," accessed November 6, 2023, https://climateinstitute.ca/who-we-are/.

(2) Open North, "Community Solutions Network Blog #4: Diving Deeper: Workshopping One-on-Ones for Digital Capacity and Data Governance," January 26, 2023, https://opennorth.ca/resources/csn-blog-4-diving-deeper-workshopping-one-on-ones-for-digital-capacity-and-data-governance/.

Canada's Climate Action

Canada is warming twice as fast as the global average, and three times faster in the North.[6] However, Canada is not achieving its federal climate goals on its stated timelines,[7] and its goals were not especially strong to begin with. Meaningful action towards climate resilience in Canada will require both mitigation and adaptation interventions that originate from local governments.

Recent research into Canadian climate change mitigation policies shows over 450[8] across various domains and regions in the country, including at national scale. Most mitigation plans include key indicators related to energy reduction in transportation, buildings, infrastructure actions, and solid waste.[9]

While adaptive measures focused on climate hazards are less prevalent across Canada, local governments are also pursuing them in relation to eight climate hazards: flooding, extreme weather, extreme temperature, sea level rise, geologic, forest fires, drought, and general climate change impacts.[10] The Canadian Climate Institution has estimated that "every $1 spent on adaptation measures could result in $13-$15 in total benefits,"[11] according to Canada's National Adaptation Strategy.

Efforts to address climate action (both mitigation and adaptation) take place on many fronts. Local governments have their own efforts, guided by their climate action plans and additional interventions that fall outside of these plans. Non-governmental groups like ICLEI and the Federation of Canadian Municipalities (FCM), and associations like C40 (global) and the Partenariat Climate Montreal (local) are leading advocacy efforts, coordinating federal funding programs, and working to engage individual residents. Private sector firms are managing fleets, retrofitting buildings, and generally looking for efficiencies. What exists in Canada is a range of actions, from longstanding initiatives to new efforts involving different stakeholders.

---

(3) Nour Abdelaal, Adams Aghimien, and André Côté, *Clean Connection: How Digitization Can Support Canada's Path to Net-Zero* (Toronto, The Dais, June, 2023), https://dais.ca/reports/clean-connection-how-digitization-can-support-canadas-path-to-net-zero/.

(4) Becky Kazansky, Madhuri Karak, Teresa Perosa, Quito Tsui, and Sara Baker, *At the Confluence of Digital Rights and Climate & Environmental Justice: A Landscape Review* (The Engine Room, 2022), https://www.theengineroom.org/new-report-at-the-confluence-of-digital-rights-climate-justice/.

(5) State of Green, *Smart Cities: Creating Liveable, Sustainable and Prosperous Societies* (Copenhagen, State of Green, January 2020), https://stateofgreen.com/en/publications/smart-cities/.

(6) Government of Canada, *Canada's National Adaptation Strategy: Building Resilient Communities and a Strong Economy*, (Quebec, Government of Canada, 2023), https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/national-adaptation-strategy/full-strategy.html.

(7) Climate Action Tracker, Country Summary, Canada, accessed November 6, 2023, https://climateactiontracker.org/countries/canada/.

(8) Canadian Climate Institute, "Policy Tracker," last modified July 7, 2023, https://440megatonnes.ca/policy-tracker/.

(9) ACT - the Action on Climate Team, *MCIP's Role in Mobilizing Municipal Climate Action: 2016-2022* (Burnaby: ACT - the Action on Climate Team, June 2022), https://www.sfu.ca/act/reports/MCIPmobilizingclimateaction.html.

(10) ACT, *MCIP's Role*.

(11) Government of Canada, *Canada's National Adaptation Strategy*, last modified August 1, 2023, https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/national-adaptation-strategy/full-strategy.html.

Despite this, and the growing urgency around taking immediate and powerful climate action, there are no policies, no frameworks, and very little available funding in Canada that creates spaces to explore how digital and data technologies could contribute to helping Canada meet its climate (including emissions) goals.[12]

Inside local governments we see further gaps. Our own research has shown that even where municipalities have both a climate action plan *and* a digital (for example, smart city) plan – as is the case with the City of Mississauga and others – there is little to no coordination between the plans, other than perhaps a nod to the other's existence.

One of the main reasons for this is a lack of intergovernmental and intersectoral coordination, collaboration, and effective prioritization and alignment. There is great work happening across the country, with strong leadership and innovation, but without coordination and governance, these efforts cannot have the necessary results.

Data Governance is the Missing Piece

More and more people are starting to talk about the intersections between environmental justice, climate justice, just transitions and data rights, and how data, digitization, and technology can help address our climate challenges at the pace and scale necessary.

However, something we noticed across all the plans, papers, and reports we read was an almost complete lack of explicit mention of data governance. Addressing this lack of focus on data has been referred to as the second wave of climate action plans, moving from a focus on physical objects and operations like gas capture and fleet changes to how to manage and communicate the data that emerges from and informs climate-related technology.[13]

In some cases, that was because there was not much talk of data per se, even though some documents – climate action plans being a great example – are fundamentally based around the generation, collection, and analysis of data as a means to understand progress against goals (e.g. the UN Sustainable Development Goals, climate targets). In other cases there is discussion about the need for intersectoral data sharing, but no exploration into the digital infrastructure or data governance frameworks required to make that happen.

Another example here is conversation around digitization and digital technologies such as 5G, mobility-as-a-service, and precision agriculture. These technologies can positively contribute,[14] but more because of what they enable than the data they generate and upon which they are built. However, the public sector is still struggling to develop adequate data governance measures for such tools[15] – and this shortcoming will impact their ability to properly manage inter- and intra- organizational data sharing and undermine local governments' ability to use crucial AI tools, like weather prediction systems.

(12) Kazansky, Karak, Perosa, Tsui, and Baker, *Digital Rights and Climate & Environmental Justice*.

(13) Pamela Robinson and Christopher Gore, "Municipal Climate Reporting: Gaps in Monitoring and Implications for Governance and Action," *Environment and Planning C: Government and Policy*, 33, no. 5 (October 2015): 1058-75, https://doi.org/10.1177/0263774X15605940.

(14) Abdelaal, Aghimien, and Côté, *Clean Connection*.

(15) Sichen Wan and Renee Sieber, "Artificial Intelligence (AI) Adoption in Canadian Municipalities: In-house Development versus Outsourcing," Open Science Framework (2023). Retrieved October 21, 2023, from https://osf.io/fbxgm. Marijn Janssen, Paul Brous, Elsa Estevez, Luis S. Barbosa and Tomasz Janowski, "Data governance: Organizing data for trustworthy Artificial Intelligence," Government Information Quarterly, Volume 37, Issue 3 (2020): 101493. https://doi.org/10.1016/j.giq.2020.101493.

We view effective data governance[16] as being grounded in a clear set of values and explicit goals for data use. It mitigates risk and promotes responsible outcomes by defining decision-making processes, assigning key roles, and establishing accountability throughout the data lifecycle. As we have written before, data governance is not just about legal compliance or operational effectiveness; rather, it is a pathway to reimagine and rebalance power between data collectors and the individuals or communities the data represents.[17]

Even in conversations around just transitions, there is mention of the important role of data, and the importance of data governance is clear, as in this example from LA (Los Angeles) County: "Significant data collection will be needed by LA County to fully understand the demographics of those who face job losses due to the climate transition, and those who are in the best position, and who most deserve, to benefit from new opportunities in emerging or growing green economy sectors."[18]

In the case of the data generated and used by some of the technologies we mentioned above, much of that data will contain personal elements. Who will own that data, and how will it be shared and used, and who decides that? Who is assessing and evaluating who the most vulnerable populations are and their disproportionate exposure to climate risks?

Recent research on wastewater data states that there are insufficient legal and ethical frameworks in place to properly govern the evolving technologies and data uses.[19] The authors contend that concerns within wastewater research are in line with trends across technological development and its resultant data. Without appropriate data governance, seemingly mundane data collection can move from being a public good to a rights-affecting situation.[20]

In the case of climate action plans and work – much of the necessarily granular data may be and often is owned by the private sector. Our ongoing conversations at the local government level have highlighted the dependency of the public sector on purchasing data to measure the effectiveness of their climate actions. Recent research suggests that integrating both corporate and community data into emissions inventories provides a more comprehensive picture of emissions sources and opportunities for local government intervention.[21] What incentives are required for the private sector to be able and willing to share data with municipalities, contributing to the commons and more coordinated, collaborative action? How do we break through the profit-generating and competitive motives? If they *are* willing to share it, will local government have the necessary capabilities, digital infrastructure, and data governance framework to facilitate it? Our work on creating a climate data hub in partnership with the Data Studio

(16) In previous writing, Open North has described data governance as the development and formalization of roles, responsibilities, accountability, policies, and principles that govern data usage and management in the digital age.

(17) Thomas Linder, "Data Governance for Equity: Principles-Driven and Structurally Iterative," February 16, 2023, https://opennorth.ca/resources/data-governance-for-equity-principles-driven-and-structurally-iterative/

(18) Vanessa Sun, *Just Transition: Best Practices for a Just Transition in Vancouver* (Vancouver: Vancouver Economic Commission, October 2021, https://vancouvereconomic.com/wp-content/uploads/2021/10/Best_Practices_for_a_Just_Transition_in_Vancouver_Report_Web.pdf

(19) Teresa Scassa, Pamela Robinson, and Ryan Mosoff, "The Datafication of Wastewater: Legal, Ethical and Civic Considerations," *Technology and Regulation* 2022, 23-35, https://doi.org/10.26116/techreg.2022.003.

(20) Lance Gable, Natalie Ram, and Jeffrey L. Ram, "Legal and Ethical Implications of Wastewater Monitoring of SARS-CoV-2 for COVID-19 Surveillance," *Journal of Law and the Biosciences* 7, no. 1 (January-June 2020), https://doi.org/10.1093/jlb/lsaa039.

(21) ACT, *MCIP's Role*.

at Concordia University and the Partenariat Climat Montreal is exploring these very questions.[22]

In all these cases, is the data interoperable and sufficiently granular, so that we can build the sorts of system-wide insights we need across different areas and sectors?

And are we using our data, as well as qualitative factors like justice and community needs, to develop sufficiently detailed, coordinated, and effective action which truly moves the needle?

Data Governance is a Key to Meaningful Action

Data governance is often placed in the "too-hard" basket – too few talk about it, and of those who do, it is often difficult to know where to start, or how to improve practice.

However, the state of the art *is* improving, with a growing number of people across the world recognizing it as fundamentally important as an underlying and critical success factor for any work related to data. With this comes a growing number of data governance principles and frameworks optimized for different use cases and groups of people, including the concept of non–extractive data governance.[23]

As people start developing integrated data / digitization / climate policies, there is a rare opportunity to get it right from the start. Building strong data governance at the foundations of this work will save a great deal of effort – we know that retrofitting anything is always more difficult and less effective than building properly at the time – and indeed lead to enhanced outcomes.

On top of this, these sorts of coordinated, collaborative efforts could introduce and then leverage shared standards, open source technologies, etc., leading to even further gains. Climate change knows no jurisdictional or sectoral boundaries and sharing lessons learned across the country is a key strategy to making up for lost time.

And there is huge scope for a whole range of other opportunities to explore, including what ethical artificial intelligence (not just data) use could look like at local, regional, and national levels.

Cities will be at the heart of much of this change because they are uniquely placed to make behavioural change and to work with people in ways that sectors and industries cannot due to being either too narrow, or too siloed. They are also the ones to gain the co-benefits of positive climate action, as well as being able to explore opportunities like cross-financing across local jurisdictions and sectors.

However, while we need to act at local levels, we need to think beyond jurisdictional and administrative boundaries. For example, municipalities and other organizations with more resources (funding, digital capacity, etc.) could pool them, work together, and then share those resources with smaller, or less well-resourced, communities.

In some cases, geographically-focused levels may not be optimal – in such cases, similar-sized municipalities with similar challenges may want to collaborate. For example, the District of North Vancouver has a Sea Level Rise Assessment & Adaptive

(22) Alexander Hackett, "Concordia's Data Studio Allies with the Montreal Climate Partnership to Better Track the City's Greenhouse Emissions: The Initiative Is Developing a Roadmap to Create a Collective Dashboard," May 16, 2023, https://www.concordia.ca/news/stories/2023/05/16/concordia-s-data-studio-allies-with-the-montreal-climate-partnership-to-better-track-the-citys-greenhouse-emissions.html.

(23) Kazansky, Karak, Perosa, Tsui, and Baker, *Digital Rights and Climate & Environmental Justice*.

(24) District of North Vancouver, "Sea Level Rise Strategy," accessed November 6, 2023, https://www.dnv.org/community-environment/sea-level-rise-strategy.

Management Strategy with an adaptation measures toolkit.[24] Learning from its development and implementation could be beneficial for coastal cities in the east, west, and north of the country despite their geographic separation.

These are just examples – there is wide scope for connected action.

Conclusion and Next Steps

Climate change is accelerating, and with it, focus in Canada and beyond on the necessity for meaningful action at pace and scale. Canadian municipal climate action has benefitted from the support and leadership of climate network actors including ICLEI Canada, FCM and C40. But there is more work to be done.

In our own work, through the Community Solutions Network, we've offered similar municipal support for local governments seeking to use new technologies and/or advance data governance efforts. When we consider this work collectively it is clear that Canadian municipal action on climate, data, and digital transformation fronts benefits from external networking and support. Open North proposes that we can do the same for climate data governance.

There is increasing talk of how data, digitization, and other technologies could help improve climate efforts, but there is a gap: the inclusion of data governance as being fundamentally important to the ethical, effective, efficient uses of these technologies.

The conversation is a rapidly-evolving one, and we certainly don't have all the answers. However, we recommend the following as starting points.

- Begin thinking now about the fundamentals of your data governance.
  - This can start broadly with a data management maturity assessment, or more tactically by assessing specific challenges like problem-driven data needs, technology-driven data needs, or data quality requirements.
- Conduct data inventory and data flow assessments to identify and break down data silos, internally and externally, and to assess the potential of data sharing agreements.
- Develop discrete, pragmatic use cases through which to implement and road test key data governance components before scaling up.
- While action at a local scale is vital, so is thinking about climate resilience from an interjurisdictional and multilevel governance perspective.
- Explore partnerships across similar-scale local governments with similar challenges. Form partnerships across jurisdictions with interlocking priorities rather than competing against or replicating the work of other local governments.
- Leverage federal funding opportunities that focus on innovation in climate resilience.
  - The National Adaptation Strategy[25] is also a powerful funding and coordination opportunity, with over $2 billion having been spent since late 2022 to implement the strategy and support related activities.[26]
- Support contextual learning and convening opportunities, where people can support and learn from each other. (We have networks across Canada and internationally we would be happy to leverage for interested communities.)
- Find or create civic infomediary partnerships whose efforts can bridge the climate action–data governance divide.[27]

(25) Government of Canada, *Canada's National Adaptation Strategy*.

(26) Government of Canada, "Plan, Prepare, Act: Government of Canada Launches First National Adaptation Strategy," June 27, 2023, https://www.canada.ca/en/environment-climate-change/news/2023/06/plan-prepare-act-government-of-canada-launches-first-national-adaptation-strategy.html.

There is a great deal of work to be done, but there is also a lot of willingness and passion to do so, and huge opportunity to do things well, from the beginning.

We can and would love to support your action on these recommendations and/or connect you to local governments across Canada thinking about and experimenting in this space.

If you'd like to hear more about our work in data governance, smart cities, digital strategy and the use of data and technology for the common good, we would love to speak with you.

About Open North

Open North is a Canadian nonprofit dedicated to advancing the common good. As an organization with expertise in data governance and digital strategy, we work alongside governments, nonprofits, and mission-aligned businesses to create transformative digital strategies and data governance frameworks.

Open North's team is made up of professionals with a wide range of expertise, including in government, strategic and operational planning, urban planning, community building, information technology, applied research, international development, and policy development. With our diverse backgrounds and skills, Open North's team members bring valuable perspectives and experience to all projects.

opennorth.ca

(27) Pamela Robinson and Lisa Ward Mather, "Open data community maturity: Libraries as civic infomediaries," URISA Journal, 28 (2017): 31-38. https://www.researchgate.net/publication/322300855_Open_data_community_maturity_Libraries_as_civic_infomediaries.

Data Governance – The Missing Piece in the Climate Action Puzzle