

Future Cities Canada:

A SYSTEMS APPROACH TO URBAN INNOVATION

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SUMMARY OF THE REPORT

Historically, cities have always been natural incubators for experimentation, change and progress. Today, our cities are on the brink of a new wave of innovation, driven by emerging practices related to governance and participation, a panoply of powerful new technologies, the availability of massive amounts of urban data, and novel sources and forms of capital investment. But the forces of inertia are also present in the form of established procedures, legacy mind-sets, and vested interests. To make progress, it is important that forward-looking people share a vision and language of change, take inspiration from successful models of change, and have a sense of where change can be achieved with the least resistance.

This brief report takes a modest step towards addressing these needs by sketching out a theory of change that could be used by the Future Cities Canada (FCC) to guide the partners as they design and develop this promising new coalition. It begins with some general considerations concerning the application of the systems approach to innovation in urban places, and then goes on to describe the four themes identified by the FCC partners as strategically significant areas of change (governance, participation, capital, and infrastructure) and how they are interrelated. For each theme, the report explains why it is important, what is driving change within it, the barriers that are hindering progress, and ideas for focusing the FCC's efforts in the area.

A SYSTEMS-PLACE APPROACH

Cities are the locus of complex problems that are notoriously difficult to address: e.g., air pollution, traffic congestion, alienation from nature, income and environmental inequality, inadequate housing, urban sprawl, and crumbling infrastructure. The FCC's challenge is to help cities learn to address problems in ways commensurate with their complexity. We are gradually realizing that the best way to do this is through a systems approach, one that crosses sectoral boundaries and addresses the whole range of attitudes, techniques, policies, regulations, and incentives that can shift the system out of its traditional groove and make the desired outcomes the new normal. Some insights from system theory that can guide the FCC as it develops its approach to urban innovation include:

- > Stakeholders are encouraged to consider the full range of factors that are maintaining the existing system conditions and preventing change. Like ecosystems, urban systems tend to preserve homeostatic conditions until disruption reaches a critical level and the system converts to a new stable arrangement.
- > Attempting to transform an entrenched system requires a coordinated strategy to break up established dynamics and to gather new drivers of change into a competing system powerful enough to replace the conventional approach or create a new one where none existed before.
- > It is advisable for stakeholders to concentrate their resources on solutions that have the potential to resolve multiple problems and to take advantage of multiple opportunities, i.e., solutions that have benefits that propagate throughout the urban system and have the widest range of beneficiaries.
- > Interventions that are mutually reinforcing via positive feedback loops are favoured in the systems approach. Such loops can be devised for almost any complex problem.
- > In a systems world, interventions focused on particular places (a region, city, neighbourhood, block, street, or public plaza) is a more effective means of organizing for social change than the traditional silos approach.

THE FOUR THEMES OF URBAN INNOVATION

Currently, Canada lacks a national organization with the capability to stimulate the type of systems thinking and action required to catalyze the transition of our cities towards inclusive, low-energy, and smart cities. The Future Cities Canada aspires to play this role by accelerating innovation in four theme areas:

1

GOVERNANCE:

- **Definition:** The process and structures that allow groups to make decisions and allocate resources, whether in the public, private, or civil society sectors or a combination thereof.
- **Innovation drivers:** The emerging willingness among municipal leaders to share responsibility for addressing urban issues with outside stakeholders, the spread of collaborative networks addressing city-wide or neighbourhood issues, and hybrid forms of governance in which government agencies share responsibility with private or non-profit groups.
- **Barriers:** Many municipal politicians are risk-averse and focused on core mandates. Bureaucracies are organized for efficient decision making within their silos and not primed to collaborate with external organizations. Getting civil society organizations to the table can be a challenge, and stakeholders may not have the necessary tools, knowledge and skills to engage in collaborative governance.
- **FCC opportunities:** Help document and scale examples of collective intelligence and impact, create capacity for wider engagement in collaborative governance, de-risk the innovation process for municipal officials, and link civic leaders in a learning network across the country. To measure progress at local, regional and national scales, develop a consistent, nested set of future city indicators, and regularly publish a national future cities report card.

2

PARTICIPATION:

- **Definition:** The opportunities open to or created by citizens to engage in community governance or broader social processes of urban change. Inclusive urban innovation relies largely on tapping the creative abilities – often latent – of the population by involving them as co-creators of and participants in the change process.
- **Innovation drivers:** The changing understanding and expectations of citizenship, the advent of digital technologies, a new emphasis on the quality and inclusiveness of public places.
- **Barriers:** Cynicism due to past failures in “public consultation”, the lack of information available to citizens about existing resources and groups and poor understanding of local government processes, along with the tendency for existing initiatives to attract the “usual suspects”.
- **FCC opportunities:** Develop digital platforms and advisory services to link communities with ideas to experts with professional knowledge, set up a network of citizen academies, create toolkits on innovative participatory methods, and raise the profile of community-based social marketing methods. Invest in programs to reach disenfranchised groups.

3

CAPITAL:

- **Definition:** The financial resources and mechanisms that sustain and expand our capacity for achieving the future cities we want. Capital sources include public spending on social programs, public investment in infrastructure and technology, foundation grants and investments, and private capital.
- **Innovation drivers:** Reinvigorated government spending on public infrastructure and clean tech, along with new mechanisms and sources of funding, including cap-and-trade auctions, impact investing, and crowdsourced financing.
- **Barriers:** Infrastructure spending not necessarily directed to future city needs. Some innovating financing mechanisms are undersubscribed due to the perceived risks and lack of experience with this instrument. There are too few sources of capital to finance the types of projects that can shift the existing system into a new configuration.
- **FCC opportunities:** Lobby government infrastructure and technology funding agencies to invest in transit, active transportation facilities, and renewable energy and for programs that de-risk technological innovation. Advocate for revenues from the federal and provincial carbon programs to be earmarked for green infrastructure and renewable

energy. Work with foundations, governments, and private sources of capital to establish new social venture funds for investment in human development and physical infrastructure. Press for the creation of a Civic Assets Development Corporation, and develop a set of tools to help communities strengthen their ability to deploy investment successfully.

4

INFRASTRUCTURE:

- **Definition:** The diverse physical and technical systems upon which our quality of life and economy depend. Includes digital technology, physical infrastructure, buildings, and social infrastructure.
- **Innovation drivers:** The rapid emergence of mobile communications and smart city technology, the advent of civic and clean tech, the spread of innovative approaches to the design of buildings and the wider built environment, the demand for new forms of social infrastructure.
- **Barriers:** The proliferation of locally-tailored apps and technology, the protection of publically useful data by governments and private corporations, the lack of demanding standards governing the built environment and poor performance adopting new approaches.
- **FCC opportunities:** Lead a national effort to promote open data and data analytics at the city level. Provide support for smart city start-ups in the non-profit and social enterprise sectors. Help develop national standards for smart city apps. Advocate for greener building codes and product standards. Broker partnerships that would advance the development, piloting, testing and commercialization of innovative solutions in the various sub-fields of physical infrastructure.

CONCLUSION

Some questions the report leaves for the FCC leadership to consider and debate as their plans for the Network unfold are:

- > How can the mechanistic values normally associated with technological innovation be meshed with FCC's mission to build more humane, inclusive, and participatory cities?
- > How should the FCC position itself with respect to other national organizations with an overlapping mandate?
- > What research needs to be done to support the work of the FCC and how can the FCC shape the activities of major research institutions in Canada to bring more attention to questions surrounding future cities?
- > How does the FCC ensure it stays relevant as cities in Canada adapt and change?
- > How can the FCC gather the forces of change while remaining sensitive to the deep social rifts in our country, among language groups and income classes, and between Indigenous and non-Indigenous people.

INTRODUCTION

Historically, cities have always been natural incubators for experimentation, change and progress. Today, our cities are on the brink of a new wave of innovation, driven by emerging practices related to governance and participation, a panoply of powerful new technologies, the availability of massive amounts of urban data, and novel sources and forms of capital investment. But the forces of inertia are also present in the form of established procedures, legacy mind-sets, and vested interests. To make progress, it is important that forward-looking people share a vision and language of change, take inspiration from successful models of change, and have a sense of where change can be achieved with the least resistance.

This brief report takes a modest step towards addressing these needs by sketching out a theory of change that could be used by the Future Cities Canada (FCC) to guide the partners as they design and develop this promising new coalition. It begins with some general considerations concerning the application of the systems approach to innovation in urban places, and then goes on to describe the four themes identified by the FCC partners as strategically significant areas of change (governance, participation, capital, and infrastructure) and how they are interrelated. For each theme, the report explains why it is important, what is driving change within it, the barriers that are hindering progress, and ideas for focusing the FCC's efforts in the area. The report ends by posing some questions for the FCC leadership to consider over the coming months.

A SYSTEMS + PLACE APPROACH TO URBAN INNOVATION

One of the key goals of the FCC is to create a culture of urban innovation. This means that innovation becomes routine rather than an exception. While “routine innovation” may sound like an oxymoron, it is not: It means that the social, physical and financial conditions are in place to mainstream the development and spread of innovative solutions that foster greater equality and inclusiveness, strengthen the city as a commons, advance clean technologies that lower our carbon footprint, and create good jobs and economic development opportunities for all who want them.

The desire to build a culture of urban innovation emerges in part from the increasingly obvious mismatch between our potential for improving our communities and our actual achievements on the ground, a mismatch that is ever more visible as breakthroughs are achieved in other sectors. Fields as diverse as medicine, space exploration, retail operations, and industrial production are being revolutionized through advances in engineering and data science. How, we want to know, can we bring that potential for fundamental change and major progress to the way our cities work?

While the pace and scope of innovation in the engineering-related fields are inspiring, the approach to accelerating innovation likely to be successful in the urban realm will differ in important respects. Unlike engineering systems, cities are living entities, characterized by dynamic interaction and mutualistic relationships among its components, namely individuals, groups, organizations and institutions. The “value added” by cities derives from this complex web of opportunities for exchange, cooperation, and mutual improvement. Arrangements that build upon the dynamic features of city life will help accelerate the circulation of ideas, experimentation, and learning about what works under what conditions. A simple demonstration of this maxim is seen in the rapid proliferation of work hubs, fab labs, and impact hubs that bring together unrelated people with diverse interests to catalyze interactions and unpredictable benefits.

Compared to engineering systems, cities are the locus of complex problems that are notoriously difficult to address: e.g., air pollution, traffic congestion, alienation from nature, income and environmental inequality, inadequate housing, urban sprawl, and crumbling infrastructure. Such problems often cannot be solved in the way that an engineering problem can be solved because the nexus of cause and effect is extremely complicated, with problems often inter-related and mutually reinforcing. As a result, efforts to solve urban problems using the “silo” approach, which works well with engineered systems, often leads to poor results and perverse outcomes when applied to urban problems. The historical failure of urban renewal programs to deal with neighbourhood decline is a sad testimony to the inadequacy of this way of thinking.

The challenge for the FCC is to help cities learn to address problems in ways commensurate with their complexity. We are gradually realizing that the best way to do this is through a systems approach, one that crosses sectoral boundaries and addresses the whole range of attitudes, techniques, policies, regulations, and incentives that can shift the system out of its traditional groove and make the desired outcomes the new normal.

Like ecosystems, urban systems tend to preserve homeostatic conditions until disruption reaches a critical level and the system converts to a new stable arrangement. The systems approach encourages stakeholders to consider the full range of factors that are maintaining the existing system conditions and preventing change. "Path dependencies" refers to the tendency of existing approaches, once established, to perpetuate themselves into the future by reinforcing the existing system - often in below-the-radar ways - and consistently discouraging alternative paths.

Path dependency can be seen in a wide variety of urban processes. In the planning field, it is well known that municipal officials who are responsible for enforcing the complex system of codes and standards (parking, zoning, infrastructure, parks, etc.) that govern real estate development tend to defend them against new development concepts, even when council has adopted policies encouraging exactly that type of innovation. This lengthens approval times, increases costs, and scares off investors, which discourages developers from proposing or proceeding with pioneering approaches.

Attempting to transform an entrenched system requires a coordinated strategy to break up established dynamics and to gather new drivers of change into a competing system powerful enough to replace the conventional approach or create a new one where none existed before. A system approach therefore not only operates on the level of strategic visioning, but also drills down to the "nuts and bolts" of the system, i.e., the everyday machinery that keeps rebalancing and reproducing the current system. Thus, it includes not only the big questions of governance and leadership, but also the "little questions" of standards, fiscal incentives, investment vehicles, procurement policies, and organizational design. Change happens when the signals at all levels are pointing in the direction of the desired innovation. To return to the example of suburban development, the proponents of New Urbanism have found that the only way to build healthier neighbourhoods was to orchestrate a cross-sectoral and multi-level effort. This has typically included rewriting municipal zoning bylaws, reforming infrastructure standards, transforming planning procedures, and bringing together the public, private and civic stakeholders to resolve differences, solve technical problems, and celebrate success.

The system approach encourages stakeholders to concentrate their resources on solutions that have the potential to resolve multiple problems and to take advantage of multiple opportunities, i.e., solutions that have benefits that propagate throughout the urban system and have the widest range of beneficiaries. For example, the movement to equip buildings with green roofs has taken off in the last 15 years due in part to evidence that vegetated roofs not only have private benefits such as lower energy costs for heating and cooling buildings, but multiple and far-reaching social benefits, including positive impacts on air quality, water run-off, property values, social cohesion, mental health, food security, solar roof panel efficiency, local crime rates, and even healing times at hospitals. Innovative solutions that touch on so many aspects of urban life are likely to enjoy the widest support across the social spectrum.

Interventions that are mutually reinforcing via positive feedback loops are favoured in the systems approach. For example if the larger goal is to democratize a city's transport system, then a systems approach might counsel an intervention that begins with the introduction of an electronic road pricing scheme. Revenues from the tolls could be invested in improved transit services and the development of a smart card system that eliminates administrative barriers between transit operators and makes the transit system more seamless and efficient. The savings from deploying the smart card system could be used to reduce transit fares for low-income people. As popular and business support for the scheme escalates (because of reduced congestion and air pollution, more walkable streets, and better labour mobility), the size of the road pricing area could be increased. This would allow the system to maintain revenues as car use drops while spreading benefits to a wider area. Other "virtuous circles" can be designed to apply to the urban heat island effect, affordable housing, high-school drop-out rates, and almost any other complex urban problem.

Finally, it is important to highlight the role of physical places in a theory of urban innovation. In a systems world, interventions focused on particular places (a region, city, neighbourhood, block, street, or public plaza) is a more effective means of organizing for social change than the traditional silos approach. Real, physical places are important as a locus where efforts from across sectors and organizations can be integrated, while leveraging positive synergies and managing negative spillovers. A place-based focus also allows us to draw attention to the fact that each place is distinctive and call upon local leaders and citizens to identify key issues and leverage their unique strengths to envision and create the future cities they want. Physical places are also increasing thought to exert an important influence on economic development. Clusters – geographic concentrations of interconnected companies and institutions in a particular field – increase companies' productivity and drive innovation. Looking at a region's clean tech or smart city sectors as clustered systems of interrelated products and services that build on local strengths can unlock economic growth potential and contribute to regional prosperity and competitiveness. Finally, physical places are where people live, what they care most about defending and improving, and where many people first become involved in community issues.

THE FOUR THEMES OF URBAN INNOVATION

Currently, Canada lacks a national organization with the capability to stimulate the type of systems thinking and action required to catalyze the transition of our cities towards inclusive, low-energy, and smart cities. The Future Cities Network aspires to play this role and put the needed collaborative infrastructure in place. After some deliberation, the FCC partners identified four theme areas in which to focus their thinking and efforts:

1

GOVERNANCE

The process and structures that allow groups to make decisions and allocate resources. Governance structures can include government bodies, private companies, public institutions, civil society organizations, and citizens. Innovation drivers in governance includes the emerging willingness among municipal leaders to share responsibility for addressing urban issues with outside stakeholders, the spread of collaborative networks addressing city-wide or neighbourhood issues, and the emergence of hybrid forms of governance.

2

PARTICIPATION

The opportunities open to or created by citizens to engage in community governance or broader social processes of urban change. New forms of public engagement are emerging with the advent of digital technologies and the changing definition of citizenship.

3

CAPITAL

The financial resources and mechanisms that sustain and expand our capacity for achieving the future cities we want. Capital sources include public spending on social programs, public investment in infrastructure and technology, foundation grants and investments, and private capital. Major opportunities for triggering innovation are arising due to reinvigorated government spending on public infrastructure and clean tech, and new mechanisms and sources of funding including cap-and-trade auctions, impact investing, and crowdsourced financing.

4

INFRASTRUCTURE

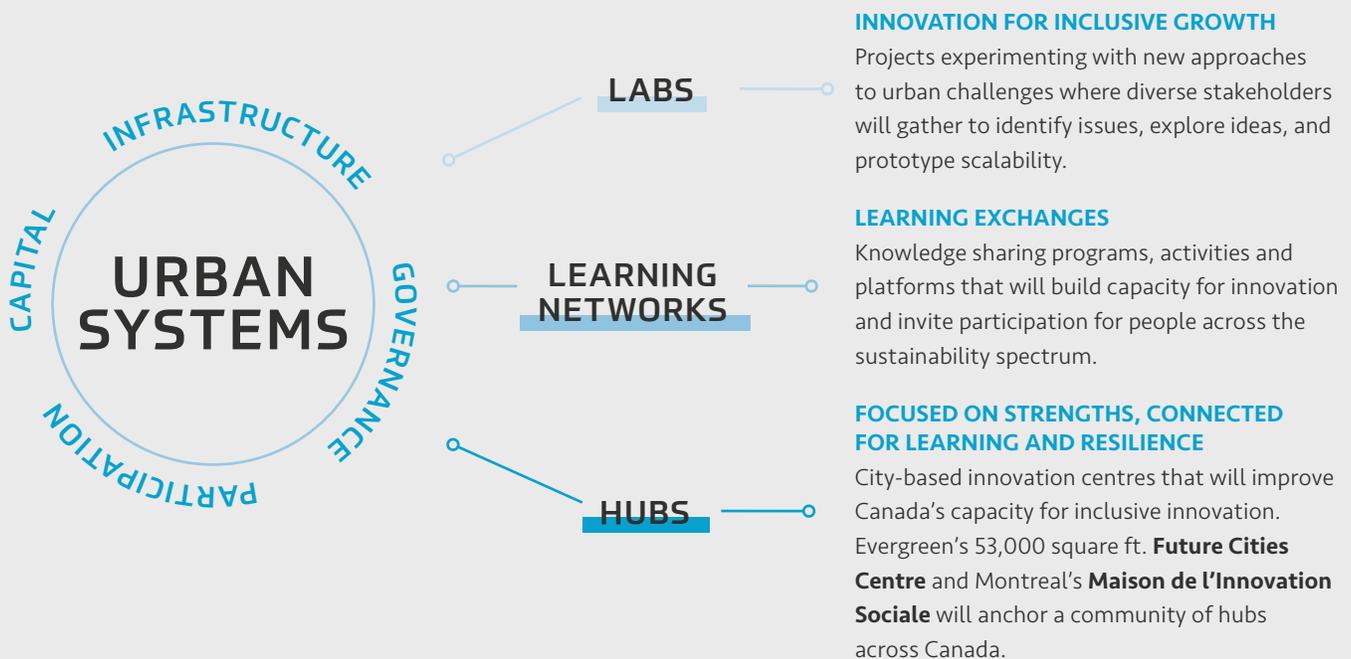
The diverse physical and technical systems upon which our quality of life and economy depends. Includes digital technology, physical infrastructure, buildings, and social infrastructure. Innovation potential is flowing from the rapid emergence of smart city technology, the advent of civic and clean tech, the spread of innovative approaches to the design of buildings and the wider built environment, and new trends like the civic commons and green infrastructure movements.

One can think of these four theme areas as sub-systems of the overall urban system, each of which is already in flux due to larger social and economic forces and whose direction of change is susceptible to intervention through collective action. Future city initiatives often depend on innovations in more than one of these sub-systems. Placemaking, for example, relates to governance (bringing together key stakeholders to envision and authorize changes to the place), participation (engaging citizens in the placemaking process), capital (funding for the changes envisioned), and infrastructure (implementing the changes to the built environment). Indeed, it could be argued that the more sub-systems it meshes constructively together, the more likely an initiative is to be a positive disruption to the status quo. We see this in the work of major networks abroad; Living Cities, Bloomberg Philanthropies, URBACT, Participatory Cities, and Reimagining the Civic Commons, among others, achieve innovative results by

bringing together diverse stakeholders across scales and sectors, combining significant new forms of capital, deploying digital and other infrastructure, and testing new approaches to participation and community capacity building.

One way to look at the relationship among the four themes is to see them as two sets of linked pairs. Governance and participation on the one hand, and capital and infrastructure on the other hand. Governance is concerned with leadership and collaborative structures, while participation is primarily about citizen engagement with those processes. Likewise, capital innovation is about raising the funding needed to build the city's physical and social systems using novel sources and financing mechanisms, while infrastructural innovation is largely about realigning those systems to materialize or embody the future city vision. Another way to see the relationship among these four innovation themes is to picture them as linked to different stages in the innovation process, with governance and participation linked to the earlier stages when issues are identified, stakeholders are aligned, citizens are engaged, and proposals are generated, while capital and infrastructure are linked to the latter stages, when proposals are implemented and scaled and the system is successfully transformed.

We turn now to a more detailed exploration of each of the four innovation themes. For each, we define and describe the theme area, identify drivers of innovation, give some examples of initiatives illustrating different dimensions of the theme, identify barriers to innovation, and discuss some potential roles for the FCC in moving the innovation agenda forward.





1. Governance

Governance is the processes of interaction and decision-making among actors involved in addressing a collective problem or opportunity that leads to the articulation of goals and expectations, alignment of efforts, and decisions on the allocation of collective resources. The term can be applied to public, private, or civil society settings or to combinations of those sectors.

In contrast to the centralized authority that characterizes most corporations, cities have many centres of power, including city hall, corporations, foundations, institutions, NGOs, community groups and individual citizens. This decentralized power structure makes the city ideally suited to a collaborative form of governance.

Collaborative governance (or “collective intelligence”) is the theory that by convening a wide variety of stakeholders and by drawing on the talents and interests of the citizenry, we can come up with innovative approaches to solving public problems and seizing new opportunities to create more humane, resilient, and smart cities. It is based on the premise that the complex interdependencies at the heart of urban challenges are not addressable by agents acting in isolation. These challenges require us to build open, diverse, multi-sector coalitions committed to a shared mission and change at a systems level.

In response, a new field of programs, platforms, networks and organizations is emerging to develop and harness the knowledge, competencies, assets, resources and abilities across sectors and organizational boundaries.

Municipal governments have a key role to play in this new approach to governance, but one that differs from their traditional function. Elected leaders increasingly realize that they cannot count on senior governments to resolve complex local issues and that their own resources are already stretched to the limit. Thus they are increasingly less inclined to make unilateral decisions and more likely to reach out to other stakeholders, with whom they are willing to share risk, accountability, and resources, to experiment with this urban governance. This new breed of municipal leaders is not content with good management of municipal services, but sees city hall as a hub for local movements and initiatives that will grow the intelligence and agency of the system as a whole.

In other cases, leadership is coming from outside city hall. Montreal’s Collective Impact Project is led by Centraide and brings together community leaders to develop plans to reduce poverty and revitalize 17 neighbourhoods using a social innovation fund to which eight foundations have contributed. The Halifax Regional Municipality Alliance - a coalition of almost 60 recreational, environmental, and business groups

led by the Ecology Action Centre – is moving the region towards the creation of a network of green spaces. The Calgary Homeless Foundation is leading a collective impact project that assembles resources across the not-for-profit, business, academia, government and philanthropy sectors to end homelessness in the city. The Winnipeg Boldness Project is collaborating with a wide range of stakeholders including community leaders, businesses, and community residents, to co-create solutions on early childhood development and family wellbeing in a disadvantaged neighbourhood. In most of these initiatives, local governments are involved as a stakeholder, regulatory gatekeeper, source of expertise, or funding partner, but they are not leading or orchestrating the innovation.

Some communities are experimenting with hybrid forms of governance that formally share decision-making among public, private and/or civil society agencies. Private-sector partnerships with municipalities have become very common in Canada and elsewhere as a vehicle for delivering public infrastructure. Less common, but potentially of greater interest to the FCC, are formal partnerships between civil society groups and local governments to create or manage public assets. Conservancy has been created with funding from a and operate parkon publically-owned land In the US, co-management of urban assets is more common. For example, the Central Park Conservancy, which was formed by a group of concerned New Yorkers in the 1970s, manages the park in conjunction with the City and other service providers. Other countries have blazed paths that may inspire more experimentation here at home; in Stockholm, for example, citizen groups share responsibility with local governments for the management of urban ecosystems, while in Torino, the local government has hybridized with an NGO to manage and repurpose abandoned buildings.

Although collaborative governance seems to have the wind in its sails, adopting a collective intelligence approach is not always easy. The leadership potential of municipalities is compromised by the fact that many municipalities are risk-averse in their corporate culture. Being involved in initiatives outside the municipality's "core mandate" is often frowned upon by councils, making it difficult for municipal officials to champion collaborative ventures. Bureaucracies are organized for efficient decision making within their silos and not tooled to act across sectors or in the spaces between sectors. Nor are they primed to routinely request, absorb, and act upon ideas and information offered by citizens and external organizations. Moreover, getting outside organizations to the table can be a challenge, especially non-profit and grass-roots groups, whose resources are already stretched to the limits. Finally, stakeholders may not have the necessary tools, knowledge and skills to engage in collaborative governance.

Under these conditions, there is a real need for a coalition like the FCC that will help document and scale examples of collective intelligence and impact, create capacity for wider engagement in collaborative governance, and link civic leaders in a learning network across the country. Through research and training, the FCC could foster more nimble collaboration between the public sector and civil society and further the understanding and development of hybrid structures for collaborative governance. Social entrepreneurs, startups,

A major investment is needed in educating municipal officials – elected and non-elected – in new governance models through training and peer-to-peer learning programs. Officials need to be inspired by living examples of new collaborative

approaches, instructed in the art of social convening, and have their legitimate concerns answered regarding liability, political accountability, and dealing with uncertain outcomes. The FCC could help de-risk the innovation process for municipalities by drawing on examples provided by initiatives such as Bloomberg's What Works Cities, which is funding efforts in 100 US cities to open their data to the public, and Rockefeller's 100 Resilient Cities, which is funding a full-time municipal position in each city to coordinate local efforts to improve physical, social, and economic resilience.

There are many examples in Canadian cities of how local innovations can address complex urban issues. Unfortunately, many promising local initiatives remain just that – local – even when they have the potential to resonate in other cities across the country or even internationally. One reason for this is that Canada has until now lacked a national organization capable of bringing local innovations to a wider audience and helping them scale to a larger stage. Models for this function come from abroad; in the UK, Nesta and Future Cities Catapult play this role, Europe has URBACT, and in the US, Living Cities and What Works Cities are catalysts for scaling local innovations.

To develop the collaborative infrastructure vital to scaling both social and technological innovation in Canada, the FCC could develop a network of advisors available to assist those responsible for local success stories to build the vision, contacts, business skills, media savvy, and funding sources necessary to scaling their initiatives. The FCC could also help scale innovation by offering expert assistance and grants to create action planning networks that bring stakeholders together across cities on specific initiatives to plan the way forward. The FCC could also help spread local successes by organizing city-to-city knowledge exchanges, sponsoring high-profile expositions of innovative initiatives, and developing a future cities knowledge sharing platform to promote national discussion within communities of interest. The FCC should monitor the relevant contribution of new entrants like the Canadian Urban Sustainability Professionals Network and FCM's Innovation Network and fill any gaps in this respect that remain.

To measure progress at local, regional and national scales, the FCC could develop a consistent set of future city indicators. Working with agencies such as the World Council on City Data, the Vital Signs program, and the International Institute for Sustainable Development, the FCC could endeavour to develop a consistent, nested set of indicators and standards for data collection to allow cross-comparability in tracking the impacts of urban innovation programs. The FCC could offer training on how to use the measures, along with advice on creating user-friendly report cards, dashboards, apps, data visualization and toolkits. The FCC could take on the role of publishing a national urban innovation report on a regular basis.



2. Participation

Participation refers to the opportunities open to or created by citizens to engage in community governance or broader social processes of urban change. Public participation is based on the principle that those potentially affected by or interested in a decision have a right to influence both processes and outcomes. It involves two-way communication and collaborative problem solving with the goal of achieving better and more acceptable decisions on the most socially-relevant issues, and developing a more informed and engaged citizenry. Participation can also refer to individuals taking direct responsibility and acting to solve a problem or explore an opportunity, with or without institutional support. In many ways, participation is the flip side of governance, meaning that much of what was said in the last section applies to this realm as well.

Unlike private-sector innovation, inclusive urban innovation relies largely on tapping the creative abilities – often latent – of the population by involving them as co-creators of and participants in the change process. Just as new governance models are reflecting changes in community leadership roles, changing expectation among citizens is driving new forms of participation, beyond the often sterile and perfunctory “public consultation” programs of the past. Many people are no longer content to be passive consumers of government services and to let traditional elites make the strategic decisions that affect community quality of life. From the point of view of potential participants, what is important is the authenticity of the opportunity to participate. When citizens feel authentically engaged, new ideas, connections, and confidence in their own agency emerge. Participation, in other words, begets innovative solutions to public problems and the motivation to help implement them.

There are many inspiring models of authentic engagement in urban innovation processes, both in Canada and abroad. In Montreal, Percolab has explored new ways to engage the public in the co-design of urban services and places, from a municipal library to a public square. Their process typically involves a wide array of cultural communities, social groups, and stakeholders, including the traditionally marginalized, such as the homeless. Techniques include co-planning of options, prototyping, ethnographic observation of how people use spaces and services, capacity building workshops, creating engagement games, and debriefing or sense-making with participants. At a national level, MASS LBP has helped make Canada a leader in “deliberative democracy”. Its citizen assemblies - made up of randomly selected people representative of the affected populations - have advised governments on neighbourhood planning in Vancouver, infrastructure decisions in Calgary, and a review of the planning system in Toronto. Internationally, initiatives like Co-City in Bologna, Participatory City in London, and the Ujima Project in Boston are demonstrating how authentic engagement can revitalize and transform entire neighbourhoods.

But citizen engagement is not always about problem solving in an organizational setting. Examples of initiatives that empower citizens to explore opportunities for urban innovation with a minimum of institutional overlay are also multiplying. The 100 in 1 Day movement, which began as a student project in Bogotá in 2012, has now spread to 30 cities worldwide, including Edmonton, Hamilton, Montreal, Toronto, Halifax, and Vancouver. Its success is attributable in part to the fact that it draws upon the creativity of existing groups and social networks, rather than imposing a formal structure on participants. Jane's Walks, which are free, self-organized tours and discussions led by committed citizens, have followed a similar trajectory. They were started in 2006 by a group of Jane Jacobs' friends and colleagues and by 2017, they were taking place in 223 cities around the world, including many Canadian cities, including Corner Brook, Châteauguay, Guelph, and Lethbridge.

New digital tools are making it easier for citizens to become directly involved in policymaking, designing built environments, and making other decisions traditionally confined to government offices. Better Reykjavik, developed by a non-profit foundation in Reykjavik, enables groups to collaboratively develop ideas for improving the city and its services. Individuals propose ideas on the site, which are then debated and voted on. The most popular ideas are evaluated by the city council and the ones that are deemed feasible are then put to a vote on the platform, with the winning ideas executed by the city council. Platforms for participatory budgeting in cities around the world (including Montreal, Guelph, Calgary, and Vancouver) have helped open up municipal budgets for priority setting and direct decision-making by citizens. The rise of open data also allows broader involvement of citizens in the development of new city services and in the oversight of government activity, helping to increase accountability and transparency. In Canada, Open North is pioneering the way forward in this respect. Idea jams, hackathons, and smart city challenges are also helping to trigger greater citizen participation in innovative approaches to urban questions.

Digital platforms can also link communities with ideas to experts with professional knowledge. The Resilience Dialogues were a set of facilitated discussions in the US designed to help communities create climate action plans. Ideas from communities were matched with expert knowhow through a series of online discussions. Local knowledge, combined with prompts from experts about the resources needed for various ideas and the likely outcome of particular proposals led to much more robust proposals than either of these groups could have produced in isolation.

Digital and virtual processes can open virtual spaces that diminish the type of logistical and social barriers that often limit physical participation. As such, these processes invite a broader array of participants, and lend themselves more readily to scaling and replication than other modes of engagement. However, as with any type of digitally-mediated participation, it is crucial that digital platforms should complement rather than replace physical exchanges and opportunities to connect. Workshops, brainstorming sessions, prototyping exercises, meetings where community members can ask questions directly to responsible officials; such face-to-face encounters engender empathy and trust, which are crucial to building connection to the community, place, and project. In London Ontario, the municipal government worked with a local non-profit to energize the budget-setting process using a combination of on-line apps and gamification with workshops and hackathons. Another good example of the combination of "high-tech and high-touch" is the Montreal Listening

Platform, which uses ethnographic techniques such as listening, textual analysis, and photography to document encounters with groups of Montrealers as they discuss their hopes for a better city and ideas for action.

The city presents myriad opportunities for physical interaction, including in the spaces between buildings. These public places bring diverse people together to share their experience of and aspirations for the city, and build a sense of community, tolerance, and inclusion. The (re)design of such places is an ideal opportunity to shift the role of citizens from being passive consumers of services, to actors, co-creators, and agents of change. In the US, groups like Art Place and Project for Public Spaces have pioneered the movement to create meaningful spaces through innovative methods of public engagement. In Canada, Evergreen, Pépinière (Montreal), the Indigenous Placemaking Council, Artscape (Toronto), Public Spaces Network (Vancouver), and CoLab (Halifax) are integral to the Canadian placemaking movement. However, Presently, however, we have no nation-wide place-making organization.

Participation also refers to the willingness of ordinary people to change their behavioural patterns and get behind new approaches to solving urban problems. This applies to everything from choice of transport mode and home energy use source to eating and shopping habits. It is well-known that environmental and social behaviour change information campaigns based on awareness raising and guilt-messaging are not effective in influencing comportment on a social-scale. More effective methods rely on direct contact between the target population and behaviour change agents, such as local non-profits, faith groups, or employers. Community-based social marketing campaigns, such as those being used by cycling advocates in Toronto and Vancouver to encourage new Canadians to adopt cycling, have been shown to be an effective way to influence attitudes about cycling and choice of transport mode.

In Canada, one of the main barriers to effective participation in urban change processes is the general lack of information available to citizens about existing resources and groups. An organization like FCC has tremendous potential to catapult participation and innovation by acting as the go-to place for individuals, grass-roots groups and non-profits seeking information on local issues and opportunities for involvement, and of course, the media. Another barrier is the tendency for existing initiatives to attract the “usual suspects” of already well connected and resourced participants. To counter this tendency, the FCC could invest in programs designed to reach disenfranchised groups (such as those with lived experience of poverty, racism, or mental stigmas) and sensitize local communities to reach out to such groups in their participation programs.

Many Canadians lack an adequate understanding of local government processes, including planning, policy making, and budgeting, as well as the opportunities for citizens to influence such processes. This lacuna is being addressed in scattered locations – such as in Ottawa by the Citizen’s Academy – but there is a need for a national organization in this space. The development of tool kits on innovative participatory methods would also be helpful, as would a pool of experts who could link digitally with local grass-roots efforts to better inform them on a technical basis, and advisors who could be dispatched to assist in local participatory process. Although community-based social marketing is a proven approach to behaviour change, it is little understood in Canada and needs a national organization to boost its profile and user base.

Finally, the FCC could play a role in advancing the placemaking movement in Canada. The FCC could help build a Canadian placemaking network, create an on-line platform to share knowledge, stories, and resources, and undertake research on the value of placemaking as a way of validating the movement in the eyes of potential funders.

3. Capital

Capital in this context refers to the financial resources and mechanisms that sustain and expand our capacity for achieving the future cities we want. Capital sources include public investment in social programs and physical infrastructure and technology, foundation grants and investments, and private capital. Creating a culture of innovation will require finding new mechanisms and sources of funding, which often results from combining these different sources of capital in novel ways. Capital is not essential to every urban innovation, but many otherwise promising initiatives flounder on the lack of adequate financing. Capital is needed to support the development of new technologies, investment in infrastructure and buildings, social infrastructure, equipment and operating costs for civil society organizations, and 'human capital' programs of all types that meet the needs of citizens and put them at the heart of the innovation process. Capital is essential to all phases of the innovation cycle, including small-scale piloting, local reproduction, and wider scaling of successful initiatives.

Public infrastructure funding in Canada is in a critical situation, entailing both serious challenges and major opportunities for progress. On the one hand, the country is facing a major infrastructure debt, on everything from roads and bridges to public transit vehicles and recreation centres. On the other hand, introducing new taxes or increasing existing ones is seen as political suicide. The result is that local authorities have little room to maneuver when it comes to launching new, untested programs. Our philanthropic sector is relatively small and has traditionally shied away from supporting nuts-and-bolts projects like civic infrastructure. The private sector's capacity to bring clean technology to market is hampered by our banking sector, which is cautious when it comes to getting behind new ideas with uncertain risks it has little experience in assessing.

Ottawa is responding to this situation through a redoubling of the federal government's commitment to funding public infrastructure across Canada. The Investing in Canada plan will provide over \$180 billion over 12 years, and a new financing tool called the Canada Infrastructure Bank will create a pool of \$35 billion and leverage it 20 times with private sector capital to build more infrastructure in Canadian communities. This commitment to infrastructure investment is also visible at other levels of government. Over the next decade, the three levels of government in

Canada are expected to invest more than \$750 billion in our cities. These expenditures will be multiplied by the private sector, whose investments over the same time period will reach into the trillions. These waves of government and private spending on infrastructure expected in the coming decades represents a major opportunity for promoting urban innovation in the country, if spent wisely.

There are also new opportunities arising to influence the direction of innovation in the clean tech industry. The federal government has traditionally promoted clean tech through financing mechanisms like Sustainable Development Technology Canada (SDTC) or Business Development Canada (BDC), but Canadian governments at all levels have recently begun to make real progress in building a more robust policy architecture to boost investment in clean tech. For example, the Pan-Canadian Framework on Clean Growth and Climate Change, signed by First Ministers last year, includes a national floor price on carbon (building on existing provincial regimes) and commitments to ambitious standards for low-carbon energy, vehicles and transportation, buildings, industrial production and government operations. The latest federal budget committed billions of dollars in new investments aimed at boosting research, development, and commercialization of low-carbon technology.

With more than \$400 billion invested in Canada, the large Canadian pension funds represent major capital pools available for infrastructure and technology investment. These institutional investors are particularly suited to backing infrastructure assets due to their long-term investment strategy. In fact these funds have been steadily increasing their involvement in the infrastructure investment space in recent years. One of the largest pension funds in the country, the Caisse de dépôt et placement du Québec, helped finance the Canada LRT line in Metro Vancouver, while in Montreal it has taken direct responsibility for building and operating a major new electric rapid transit network. Large, aggressive and patient, pension funds are pushing into a financing vacuum that neither cash-strapped governments nor private equity can fill.

A smaller pool of money, but one specifically directed at investment in sustainable infrastructure is being created through cap-and-trade systems. Governments in participating jurisdictions pool their total emission allowances and sell them using an auction format. This emission pricing mechanism not only provides emitters with an incentive to lower their emissions, it generates revenues for governments to finance clean energy programs that lower net emissions. The Western Climate unites California, Quebec, and Ontario in a cross-border cap-and-trade system. The most recent auction in Ontario alone generated over \$500 million, which by law will be invested in programs that will reduce greenhouse gas emissions, including clean tech lending. Carbon taxes are another source of funding for innovative infrastructure initiatives. Part of the proceeds from Alberta's carbon tax, for example, are funneled into green infrastructure and renewable energy.

New forms and sources of capital are also needed to scale up innovations in the delivery of social services. Social impact bonds (SIBs) have great potential to unlock investment in addressing the toughest social issues. Private or philanthropic investment is used to finance interventions upfront, which are delivered by social service providers with proven track records. If agreed-upon social outcomes and cost savings are achieved, then financial returns are paid to investors out of the savings realized by government. Thus, the private investors assume the risk for improvements to social outcomes. A number of countries (UK, US, and Australia) have moved ahead with development and

implementation of a variety of SIBs. Despite its promise, however, this instrument has not been widely employed in Canada due to the perceived risks and lack of experience with this instrument. Ontario is currently piloting two SIBs, one with a non-profit organization that provides housing to survivors of mental illness and addiction, and the other with a local group dedicated to increasing high school graduation rates.

Impact investing has spread around the world in the last few years at a remarkable rate. Impact investing is the deployment of capital - including public, private or philanthropic - with the intent of not only generating financial return, but also producing measurable social and environmental impacts. In Canada, the case for impact investing as an innovative vehicle for collaboration across sectors to improve social outcomes has caught the attention of foundations, governments, and private investors. For example, New Market Funds is a social impact investment firm targeting investments in purpose-built, multi-family, affordable rental housing in BC. The Community Forward Fund in Toronto provides repayable loans to non-profits and charities, something few traditional lenders feel comfortable doing. Such loans are important to help civil society organizations mount projects prior to receiving operational funding from the traditional sources, or for growth and diversification. Social Venture Connexion (SVX) is a Canadian impact platform that connects impact ventures and crowdsource investors with organizations making positive contributions to the community, both non- and for-profit. Social purpose real estate investing is a growing trend in high-priced markets where social entrepreneurs, NGOs, and startups are unable to afford adequate space for their operations. In Vancouver, the Social Purpose Real Estate Collaborative brings together impact investors from the philanthropic and private sectors to help mission-driven organizations find and afford the space they need.

Another innovative approach to financing physical and human capital projects is civic crowdfunding. Crowdfunding establishes a connection between entrepreneurs who need to raise capital and small-time investors via internet-based intermediaries. Crowdfunding is effective in funding modest projects or as seed funding to create momentum to secure larger funding. Whereas more established platforms such as Kickstarter and Indiegogo cater to a broad range of projects, some new platforms, such as ioby and Citizinvestor in the US, and Spacehive in the UK, are focused on crowdfunding initiatives in the civic domain, including such projects as parks, gardens, and bike paths. Another US platform called Neighborly started as a site to raise money for small-scale community projects, but has evolved into a vehicle for crowdsourced investment in municipal infrastructure bonds; now it helps fund larger projects like transportation infrastructure and waste management facilities. In Canada, the civic crowdsourcing scene is less developed, but a new initiative called Wayblaze recently emerged that is dedicated to civic crowdfunding in BC.

There are several roles the FCC could play in promoting innovation in the capital realm. Because it represents the largest block of capital funding for communities, the federal government's infrastructure investment plans should be a primary target of the FCC's strategy. In particular, influencing the investment strategies of the Canada Infrastructure Bank so that public and private money flow into transit projects, active transportation facilities, renewable energy, and civic assets is crucial to the future cities program. The FCC should also push to turn government commitments on clean technology into investment decisions that can de-risk technological innovation and contribute to more inclusive, sustainable, and smart cities. Likewise pension

funds, which are typically mandated by and report to provincial governments, should be encouraged to invest further in community infrastructure that will have positive social and environmental returns. The FCC could also advocate that revenues from the federal government's promised carbon tax (to be imposed on provinces that don't join a cap and trade system or introduce their own tax) be 100% earmarked for green infrastructure and renewable energy and that provinces do the same with their emissions-control revenues.

Despite the increasing availability of innovative financing mechanisms vehicles in Canada, there are still far too few and overall, the amount of money involved is still small compared to the need for financing projects and programs that can shift the existing system into a new configuration. To help address these limitations, the FCC could work with foundations, governments, and private sources of capital to establish new social venture funds dedicated to boosting the availability of flexible and patient capital for investment in human development as well as physical infrastructure. It could also promote special purpose funds to fill some of the more important financing gaps. One such gap is in regards to the retention and reuse of civic assets. The idea of creating a Civic Assets Development Corporation that would bring government, financial institutions, pension funds, philanthropic and other sources of capital to maintain and repurpose the country's civic assets has already been floated – and should be further pursued - by FCC partners. Finally, the FCC could explore the potential of creating a more robust crowdsourcing sector in Canada, e.g., by helping existing platforms to scale up to the national level, or by introducing new crowdsourced financing mechanisms, such as investment in municipal bonds.

Another issue is the concerns that potential investors raise about the risks involved in investing in organizations and communities whose capacity to deliver on promised results may be questionable. To help address this concern, the FCC could conduct research on what Living Cities in the US calls “capital absorption capacity”. This refers to the readiness of communities to make the most effective use of incoming capital, i.e., that have the planning and policy measures as well as the technical capacity and governance structures in place to maximize investment impacts. The results could be used to develop a set of tools to help communities strengthen their ability to deploy investment for the public good.

Finally, there are concerns that the market for civic investment is not well formed; investors are not fully aware of opportunities and cities are unsure how to find the capital they need to effect system-level changes. With its network of partners involved in both sides of this equation, the FCC is well positioned to develop recommendations on how to make this market more streamlined and transparent.

4. Infrastructure

Infrastructure here refers to the diverse physical and technical systems upon which the functioning of the urban system depends. It provides services essential to sustain or enhance our quality of life, protect the environment, and grow the economy. It includes digital and clean technology, physical infrastructure, buildings, and social infrastructure. Infrastructure is a major opportunity for triggering innovation because of the large chunk it represents of our economy, and its critical impact on the productivity, efficiency, livability and inclusiveness of our cities. Moreover, it is one of the most important levers of collective agency in city building and urban innovation; much of it is under direct public control through government spending, while the rest is subject to indirect public control through government investment in R&D and regulation.

As noted above, the demonstrated power of new technologies is helping to drive interest in urban innovation. Canada is in some ways quite advanced in the smart city sector. Several cities – like Edmonton, Ottawa, Guelph and Montreal – are notable for their open and geospatial data efforts, while others have made significant advances on the Internet of Things, such as Toronto and Montreal. Montreal and Mississauga have committed themselves to extensive coverage by public Wi-Fi. Many cities have made advances with respect to smart transit technology, like real time bus information available to the public by mobile app in Laval, and Montreal’s Opus card that works on regional bus services as well as a car sharing and public bike system. Calgary even has an app to help citizens locate lost pets or find a new one at one of the city’s animal shelters.

Mobile phones – with their GPS capabilities and the myriad apps available for them – enable citizens to act as sensors that can provide data to governments and other organizations leading initiatives to deal with common problems. This could apply to anything from the planning of new transit and bike routes (as has been done in Halifax), to tracking cyclist exposure to air pollution (in Montreal). More proactively, 311-type apps that allow citizens to report local problems like potholes are multiplying in cities across the country (e.g., Toronto, Kamloops, BC and Taber, Alberta). Citizens can also use inexpensive monitoring kits linked to an on-line platform to help cities develop new approaches to water quality management (as in Boston).

Smart city technologies like these have the potential to improve our cities by bettering our understanding of urban processes, allowing us to test new solutions cheaply and with little risk, redirecting scarce resources to improve outcomes, and creating new services or improving existing ones. But most smart city observers seem to agree that we are only at the beginning of this movement and that the potential of the smart city is yet to be realized. One challenge is the proliferation of locally-tailored apps and technology – each city is reinventing the wheel on apps that monitor parking availability, for example. Another issue is that the municipal sector – with its lumbering procurement process – has difficulty responding to needs and opportunities in a fast changing digital world. The protection of publically useful data by governments and private corporations is also hamstringing progress. Finally, digital solutions are situationally specific (apply to a building, a transit system, a bike share program) and fail to interact with each other in order to realize opportunities for synergistic benefits.

Addressing these and other challenges over time will unleash the true potential of the smart city movement. However, we should not be misled into thinking that technology can single-handedly create the change we want to see. Technical innovation needs to be positioned in a social context and connect with real social needs that are felt by a diverse cross-section of the population, not as a solution in search of a problem as has so often been the case in the past. Innovations in technology are not ends in themselves, but means to strengthen the role of citizens as informed, networked, and empowered co-creators of the future city. Seen in this way, technological advancements are a way not only to improve system capabilities, but to enhance collective intelligence, and help create the conditions for greater equity and inclusion.

We must also avoid the temptation to think of infrastructure as comprised only of digital technology and data when discussing the potential for innovation in cities. Clean technology and large-scale physical infrastructure are also crucial to the emerging potential for urban innovation, including the energy, transportation,

water/waste water, and green infrastructure sectors. Energy infrastructure covers not only smart grids and low/no-carbon fuel sources for electricity and transportation, but the use of decentralized renewables like wind and solar to power urban processes, along with district heating and cooling. Transportation infrastructure includes roadway demand management systems (like road pricing), bike sharing, and emerging technologies related to vehicle automation and electrification of the transport system. New approaches are being explored on how to adapt our water and waste water systems to climate change, while the green infrastructure movement – including groups like Green Roofs for Healthy Cities in Toronto - is literally greening the city through urban forestry, rooftop vegetation, and ecological restoration of rivers, lakes and streams.

Private buildings, like offices, housing, and commercial spaces are also part of our shared infrastructure, as are our civic assets, including libraries, recreational centres, post offices, hospitals, schools, courthouses, places of worship, and universities. Innovations in the design of these buildings can have a major long-term influence on the livability and sustainability of our cities, as well as their inclusivity. Approaches such as net zero (or even net positive) development strategies, passive house design standards, the tower renewal movement, green urbanism, new urbanism and smart growth, are pushing local authorities to rethink their planning regulations, urban design aspirations, building codes, procurement policies, and investment decisions. In many ways Vancouver is showing the way forward on these issues with its green building code, sensitive urban design, and long-standing efforts to manage regional growth and shape its urban fabric to support walking, biking, and transit.

Beyond digital technology, physical infrastructure, and buildings is a fourth type of infrastructure that is getting increasing attention in discussions about our urban future; social infrastructure. Social infrastructure builds on the other types of infrastructure but prioritizes social innovation, bringing a social lens to our thinking about the physical design of city buildings and places, and ensuring that urban innovation is inclusive of all social sectors. Social infrastructure includes spaces (both interior and exterior) that are dedicated to finding new ways of meeting social and environmental challenges, such as social innovation centres, incubators, accelerators, spaces for prototyping new ideas, and labs. The civic commons movement is pressuring public agencies to repurpose the many civic assets that are currently underused or abandoned and to re-appropriate those that have been turned over to strictly private use. A superb example of innovation on this front is St. Joseph's Church, one of the oldest religious buildings in Montreal, now chronically underutilized. A coalition of groups led by a progressive real estate company is turning the building into a multi-purpose community hub that will support Montreal's burgeoning ecosystem of social innovators, entrepreneurs and economic developers.

Developing new approaches to the design and operation of urban infrastructure of all types requires a culture of experimentation. Cities are limited in the degree to which they can conduct experiments on innovative approaches to urban questions. The large scale, number of factors involved, poor risk tolerance by elected officials, limited budgets for discretionary expenditures, and the inertia of established procedures all militate against conventional approaches to experimentation. City governments are learning to address this brake on innovation through modelling and data analytics (such as New York City's Office of Data Analytics), but also by experimenting

on a smaller scale, as evidenced by the many urban pop-ups and tactical urbanist initiatives around the country.

To test new approaches, municipal governments are increasingly partnering with civil society organizations like universities and NGOs, which tend to be more flexible, have independent sources of funding, and a higher tolerance for risk and failure. Edmonton has created CITYlab, which works with citizens and community groups to facilitate small, temporary projects to test new planning ideas. CityStudio is an innovation hub in Vancouver where City staff, university students, and community groups co-create experimental projects to make the city more sustainable, livable and joyful. Research institutions like MIT's Media and Senseable City Labs and living labs in Europe and Canada are also directly engaged (along with businesses, citizens, and governments) in the creation, prototyping, and testing of new technologies, service and products in real-life contexts.

These considerations point to several important roles for the FCC in the infrastructure realm. The network could work with Canada's regional technology incubators – such as Communitech in Kitchener-Waterloo – to encourage more smart city products and ensure that those products are well-rooted in communities they are meant to serve. A national effort to promote open data and data analytics at the city level is also needed in Canada, similar to the process being driven by Bloomberg's What Works Cities initiative in the US. Support for smart city start-ups in the non-profit and social enterprise sectors and an assistance program for municipalities – akin to Code for America – could also be considered by the FCC. The network could also work with cities to develop open standards for service-oriented apps – as has been done for 311-type apps – and for ways to encourage apps to work synergistically across services. Working with international tech companies like Google, IBM, and Siemens to encourage investment in smart city product and service development in Canada would help develop this sector at home and further digitally-enable Canadian cities. Finally, the network could help expose municipal procurement officials to more nimble and efficient ways of obtaining services, such as the problem-based challenges that have been pioneered internationally by Citymart.

In terms of non-digital infrastructure, the FCC could build relationships with developers, builders, and suppliers to help them develop the confidence they need to adopt new standards and strive for a more innovative industry. The FCC could also work with federal and provincial government agencies responsible for building codes and product standards to encourage more robust practices on the ground. At the local level, the Network could work with city governments to push more demanding standards in municipal facilities, to adopt green building standards for private sector buildings, and life-cycle analysis for municipal procurement decisions. The FCC could encourage municipal and regional governments to adopt policies that promote more innovative neighbourhood design and smarter growth on a regional level.

More generally, the FCC could help broker partnerships that would advance the development, piloting, testing and commercialization of innovative solutions in the various sub-fields of physical infrastructure.

CONCLUSION

This report has offered some insights on the drivers of urban innovation in Canada and where the FCC could play an important role in steering us towards the cities of the future that we want to see. As with many “think exercises”, however, the report raises as many questions as it answers. Some questions that the FCC leadership may want to consider and debate as their plans for the Network unfold are:

- > How can the mechanistic values normally associated with technological innovation be meshed with FCC’s mission to build more humane, inclusive, and participatory cities?
- > Should the FCC focus exclusively on the strategic levers of urban innovation and systems change – like research, knowledge sharing, policy advocacy, tool development, capacity building, networking, training, etc. – or should it also get directly involved in helping to accelerate local initiatives?
- > How should the FCC position itself with respect to other national organizations with an overlapping mandate, like FCM’s Innovation Network, the Tamarack Institute, or the Canadian Urban Sustainability Professionals Network?
- > What research needs to be done to support the work of the FCC and how can the FCC shape the activities of major research institutions in Canada to bring more attention to questions surrounding future cities?
- > As FCC gathers resources and people, builds momentum and starts triggering the changes to the urban system it aspires to, how does it avoid becoming ossified and losing sight of the main goal, which is to disrupt existing routines? In other words, how does the FCC ensure it stays relevant as cities in Canada adapt and change?
- > How can the FCC gather the forces of change while remaining sensitive to the deep social rifts in our country, among language groups and income classes, and between Indigenous and non-Indigenous people?