



PRELIMINARY

# RESILIENCE

ASSESSMENT

FEBRUARY 2017

Montréal 





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A stylized map of Montreal, Quebec, Canada, showing the city's layout and surrounding areas. The map is rendered in shades of blue and grey. A red dot is placed on the West Island, with a white line connecting it to the 'West Island' text block. Other text blocks are connected to their respective neighborhoods by white lines. The map highlights several key neighborhoods: Little Italy, Park Extension, Côte-des-Neiges, and Quartier international. The background features a dark blue gradient with white outlines of the city's streets and water bodies.

### Little Italy

Settled by the city's first Italian immigrants in the 19th century, Montréal's Little Italy has preserved its charm over the years. Backyards brimming with tomato plants are a common sight in this neighbourhood, where soccer is a way of life and the smell of cappuccino fills the air.

### Park Extension

Park Extension is home to 155 cultural communities. The neighbourhood's commercial streets form the heart of its true urban villages.

### Côte-des-Neiges

Located near the Université de Montréal campus, where scores of students share the streets with residents of diverse origins, Côte-des-Neiges offers an amazing mosaic of cultures.

### West Island

This traditionally anglophone sector of the island takes in the boroughs and reconstituted cities of the West Island. The region offers vast green spaces bordering rivers and lakes, tranquil living environments, and lower urban density compared to the rest of Montréal.

### Quartier international

The Quartier international urban space highlights and promotes the development of Montréal's international vocation, drawing on a prestigious contemporary cityscape featuring art and urban design.



### **Mile-End**

Mile-End is known for its eclecticism, creative energy and bohemian vibe. The neighbourhood's urban landscape reflects its multicultural population, which includes Hassidic Jews, Greeks, Italians and anglophones.

### **Petit Maghreb**

A recent mobilization by merchants in this sector resulted in the creation of Montréal's first official Maghrebian neighbourhood. It aspires to become a commercial and tourist destination and to serve as a bridge between Maghrebian Montrealers and citizens of other origins.

### **Hochelaga-Maisonneuve**

This once working-class francophone Montréal neighbourhood is undergoing a complete transformation. With its vast green spaces and attractions bordering the Olympic Park, Hochelaga-Maisonneuve offers all the advantages required to meet challenges posed by social diversity.

### **The Main**

Boulevard Saint-Laurent marks the dividing line between the eastern and western portions of the city. To this day, the *Main*, as it is known to Montrealers, remains a cultural microcosm of Montréal.

### **Centre-Sud / Gay Village**

One of Montréal's original working-class enclaves, the Centre-Sud is undergoing a renewal today, marked by the return of residential construction. The neighbourhood is known for its colourful and lively Gay Village.

### **Quartier des spectacles**

Montréal's former Red Light district today has become the Quartier des spectacles, home to an impressive array of cultural institutions, including some 30 performance venues with a total seating capacity of 28,000.

### **Chinatown**

The point of arrival for Montréal's Chinese community in the 19th century, Chinatown remains a special place where people can immerse themselves in Chinese culture.

### **Quartier de l'innovation**

This neighbourhood aspires to be an innovation ecosystem in the heart of the city. Its territory incorporates the Cité du Multimédia, Cité du commerce électronique and the largest hub for information and multimedia technologies in Canada.

### **Old Montréal / Old Port**

Its name reflects Montréal's rich patrimonial heritage. Its ancestral buildings and cobblestone streets are lined with art galleries, restaurants and boutiques. The nearby Old Port is an historic site and leading tourist attraction that draws more than six million visitors annually.



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URBAN RESILIENCE IS THE  
COMMUNITIES, INSTITUTIONS  
WITHIN A CITY TO  
GROW NO MATTER  
STRESSES AND ACUTE



CAPACITY OF INDIVIDUALS,  
BUSINESSES, AND SYSTEMS  
SURVIVE, ADAPT, AND  
WHAT KINDS OF CHRONIC  
SHOCKS THEY EXPERIENCE.

# LIST OF ACRONYMS

<b>NPO</b>	Non-profit organization
<b>SME</b>	Small- and medium-sized enterprises
<b>PRA</b>	Preliminary Resilience Assessment
<b>RC</b>	Resilient cities
<b>100RC</b>	100 Resilient Cities program

# OUR APPROACH

## Identification of stakeholders



Provincial government



Federal government



Municipal government



academic



Private sector



NPO

## Engagement of stakeholders



Presentation



Group meeting



individual meeting

## Preliminary Resilience Assessment



Research



Survey



Workshops



Steering Committee

## Identification of focus areas



An engaged Montréal community



A flexible city that values collaboration



An economy that anticipates change



A city that looks to the future

# INTRODUCTION

## 1.1 100 RESILIENT CITIES PROGRAM

The 100 Resilient Cities program (100RC), an initiative of the Rockefeller Foundation, is dedicated to helping cities worldwide better face the social, economic and physical challenges that are a growing part of the 21st century. 100RC supports the adoption and integration of a common definition of urban resilience that includes not only shocks – i.e., earthquakes, fires, floods, etc. – but also stresses that erode the fabric of a city on a daily basis or in a cyclical manner. By responding, at one and the same time, to shocks and stresses, a city develops its potential for collective and individual resilience and thus becomes better equipped to ensure the safety and well-being of its entire population.

The cities in the 100RC network have access to all the resources required to develop their resilience strategy:

### 100RC provides cities 4 types of support to address these problems

1. Funding to hire a CHIEF RESILIENCE OFFICER (CRO)

2. Support to develop a CITY RESILIENCE STRATEGY

3. A PLATFORM OF SERVICES to support strategy implementation

4. Membership in the 100RC NETWORK



TO HELP COMPLEX URBAN SYSTEMS ORGANIZE AND INTEGRATE AROUND RESILIENCE

TO SCALE SOLUTIONS EFFICIENTLY

Source : 100 resilient cities

Thanks to these actions, 100RC aims to help individual cities become more resilient and facilitate the adoption of global resilience practices by governments, NGOs, the private sector and citizens.



## 1.2 WHAT IS THE PRA?

This Preliminary Resilience Assessment (PRA) summarizes the methodology and principal results of the activities carried out to date by the Bureau de la résilience. In this document, you will find the city profile, together with the main shocks and stresses in Montréal, the inventory of actions already in place, as well as the perceptions of stakeholders and the public. The information presented in this document was drawn from data collections, individual meetings, and the results of workshops with numerous stakeholders. These results led to the identification of four work streams and a series of diagnostic questions that will serve as the basis for Montréal's resilience strategy.

The PRA presents an overview of the city's current resilience status, synthesizing and interpreting the information collected in Phase I. In addition to providing reference data on the city's resilience status, the PRA highlights new viewpoints, experiences and issues related to the city's resilience, as well as underlying risks and the opportunities that can be seized. The development process led to the identification of assets and shortcomings, along with problems requiring further study.

The PRA is not exhaustive or conclusive. It should be viewed, instead, as a tool meant to help the team at the Bureau de la résilience achieve progress, while giving it the means to put forward its discoveries, develop and support bold projects, and advance innovative solutions during Phase II.

# SUMMARY PROFILE OF THE CITY



Montréal is the largest city in Quebec and the second largest in Canada. With 500 Km<sup>2</sup> of space urbanized at a rate of 90% and a population of close to 2 million, Quebec's metropolis is the region's economic and cultural engine. Montréal is the world's fourth largest francophone city, with a proportion of French-speaking households in the order of 54.3%. What's more, a large majority of Montrealers (57.7%) claim to have a mastery of French and English, while 24.3% of the population of the Island of Montréal is trilingual.

**MONTRÉAL, AN HISTORIC CITY,** has been a hub for populations (Amerindian, French, English), trade and commerce since it was founded in 1642. The city was the historic center of Canada's fur trade in the 17th and 18th centuries and the economic bridgehead of the British Empire in North America in the 19th century. Its rich history continues to be told to this day. Montréal has long been recognized as the "city of a hundred steeples," an expression attributed to American writer Mark Twain, who visited the city in 1881. The city's architectural landscape and the religious fervour of its residents – who were mainly Catholic at the time – have since changed, as successive waves of immigrants of diverse origins and religions altered and enriched Montréal's heritage. This explains why Montréal is still home to the second highest number of places of worship in Canada, in spite of the closure and conversion of many of its Catholic churches.

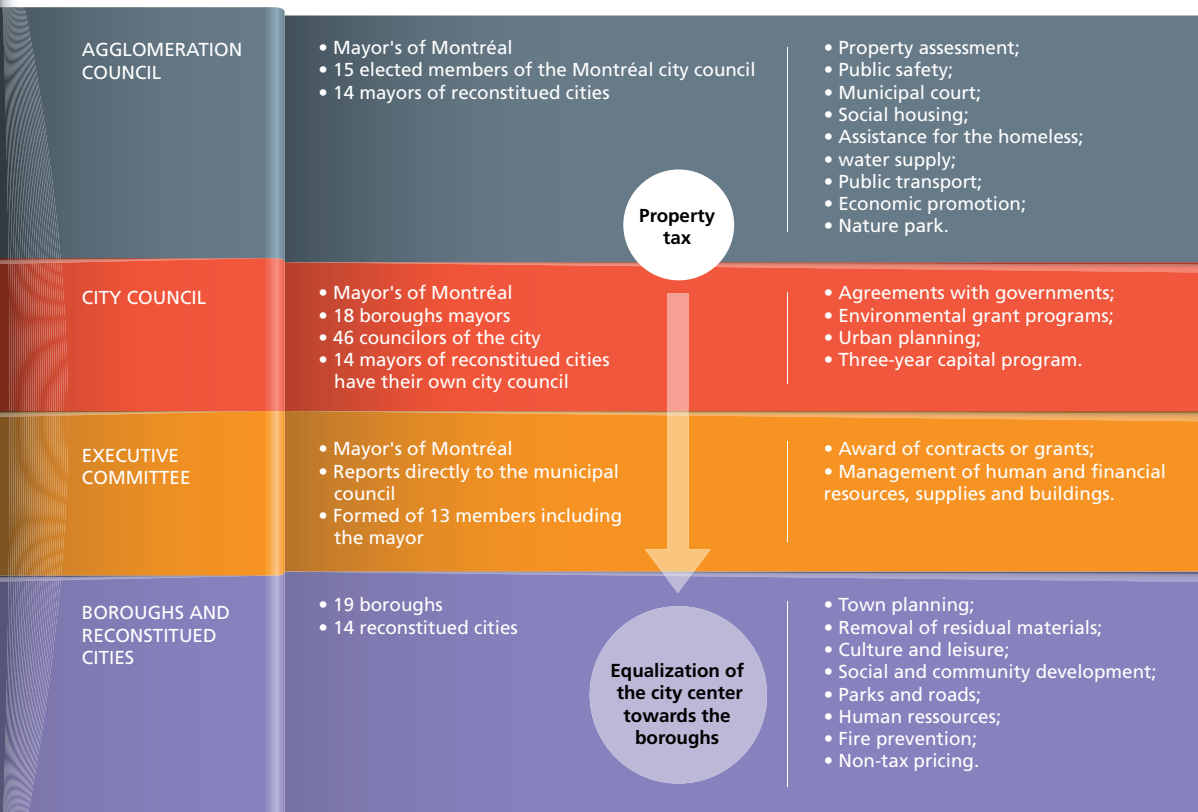
Boulevard Saint-Laurent is the dividing line between the eastern and western portions of the city. The Main, as it is known to residents, is also the historical dividing line between the city's francophone (in the east) and anglophone (in the west) communities, although this division, nowadays, continues to dissipate with the city's growing cultural diversity.

To mark its 375th anniversary, Montréal will celebrate the audacity, creativity and collaborative spirit of Montrealers by offering close to 175 activities in all of its neighbourhoods. History, art and culture, youth and cultural diversity will be front and center. Major legacy projects are also planned, including the Promenade urbaine Fleuve-Montagne, a pedestrian path connecting the city's two emblematic sites: the St. Lawrence River and Mount Royal.

**MONTRÉAL, A COMPLEX CITY**, has 19 boroughs and offers services across the Island of Montréal, including in the 14 reconstituted cities. Together, all the boroughs and reconstituted cities form the agglomeration of Montréal. City council, the city's chief decision-making body, is composed of 65 elected officials. The agglomeration council, headed by the mayor of Montréal, is made up of 31 elected officials from Montréal and the reconstituted cities. These cities also have their own municipal councils headed by their respective mayors. This division of powers renders decision-making far more complex and weighs down administrative processes. More specifically, Montréal boroughs use their own budgets to administer land use planning, drinking water distribution, and the cleanliness of public spaces. A governance review entailing a centralization of certain powers in favour of the Central City may represent a solution to this cumbersome administration. The repatriation of specific powers would make it possible to advance a unique and coherent vision of the city in terms of taxation, financing stability and predictability, equity and performance through best practices, as well as lower costs and economies of scale. In 2015, for example, the Central City repatriated snow removal powers for local road networks, and the Ville de Montréal adopted a new policy calling for minimum operating standards for snow removal on public roads so that citizens in all boroughs receive equivalent services, which was not the case prior to 2015.

## MUNICIPAL ORGANIZATION

## MAIN SKILLS



On the other hand, the Government of Quebec granted Montréal the official status of metropolis of Quebec. With the recognition of this status, the government could lend Montréal greater powers and responsibilities, to go along with additional financing sources that would allow the city to fully assume its role as a 21st century metropolis. The city's expectations revolve around a recognition of Montréal's expertise in the fight against homelessness and street work and in the provision of psychosocial and housing support—areas that require stable financing together with a concerted and multi-sector approach.

**MONTRÉAL, A COSMOPOLITAN CITY**, has the largest proportion of international immigrant populations in Quebec, and it takes in the majority of new international immigrants to the metropolitan area. Historically, these immigrant populations hail mainly from France, England, Scotland, Ireland, and Italy. It also bears mentioning that in 2011, some 10,505 people in Montréal were of aboriginal origin, accounting for 0.5% of the city's population. While some Montréal neighbourhoods remain symbolically tied to communities (i.e., Italian, Portuguese, Chinese, Hassidic, etc.), their populations have grown increasingly diverse. The arrival of some 30,000 new immigrants to Montréal each year since 2005 has spurred a deep transformation of the urban landscape. Quebec's metropolis is home to the largest Haitian community in Canada – more than 90,000 – a significant proportion of whom live in the borough of Montréal-Nord. Many immigrants also come from the countries of the Maghreb (Morocco and Algeria), Lebanon and Asia (Vietnam, the Philippines). In 2015 and 2016, the Ville de Montréal, in collaboration with social and community groups, played a vital role in taking in Syrian refugees across its territory. This situation served to highlight needs on the ground, ultimately leading to the creation of the Bureau d'intégration des nouveaux arrivants de Montréal in 2016.

**MONTRÉAL, CITY OF WEATHER EXTREMES**, experiences temperatures ranging from -40°C to 45°C. Heatwaves, glazed frost, blizzards and snowstorms oblige Montrealers to adapt to the four seasons by modifying their activities and modes of transportation accordingly. In response to this highly variable weather, Montrealers also have access to one of the world's largest underground pedestrian networks. Spanning a distance of 33 km, Montréal's underground city connects offices, businesses, services and métro stations in the heart of downtown.

Climate change will continue to have an impact on the city's weather patterns. Indeed, in 2015 the Ville de Montréal's Service de l'environnement produced the city's first climate change adaptation plan. In addition to expected increases in average temperatures, the plan accounts for a rise in GHG concentrations affecting several other climate variables, including precipitation and wind. The agglomeration of Montréal will thus be obliged to deal with changes affecting its natural and built environments, population and socioeconomic activities. Several factors unrelated to climate – aging infrastructures, land use development and sociodemographic characteristics – are also expected to amplify or (conversely) mitigate the expected repercussions.



**MONTRÉAL, A CITY WITH AN AGING POPULATION:** One in five residents of the agglomeration will be 65 or older by 2036 (compared to one in six in 2011), according to demographic projections. As the population ages, the people leaving the agglomeration are adults aged 25 to 39 with children aged 14 or under. The people leaving are often young families with children, therefore. The principal challenge lies in keeping these families and attracting new families to the city in order to ensure a sociodemographic balance in the agglomeration. The aging of the population will also create a major imbalance in the financing of public services (i.e., education, health, etc.), since these services are financed through taxation. This is sure to represent a heavy fiscal burden for future generations.

**MONTRÉAL, CITY OF TRANSPORTATION AND MAJOR INFRASTRUCTURES,** features a major road network as well as an international airport and an ocean port. Access to the island via one of its 18 bridges or road tunnel highlights the difficulties Montrealers experience when it comes to mobility. So, too, do the many infrastructure projects across city territory ( $\pm 1000$  municipal worksites in the summer / fall of 2016). The metropolitan region – and more specifically the agglomeration of Montréal – compares favourably to other metropolitan regions in North America in terms of ridership on the public transit network. In 2013, more than 516 million public transit trips were taken across the metropolitan region, including more than 416 million within the agglomeration of Montréal (trips offered by the Société de transport de Montréal). During morning peak hours, close to 50% of residents of the agglomeration of Montréal use public transit and active transportation.

In order to improve this public transit offer, the metropolitan region will soon have an electric train, giving users several effective transportation options while connecting with existing networks (métro, bus and trains). Representing an investment of \$5.9 billion, this project will be carried out under a public-public partnership, based on a new form of financing aimed at further strengthening the city's economic vitality.



Conversely, Montréal is dealing with major problems stemming from its aging infrastructures. These problems can be attributed to investment deficits dating back 50 years. The city is taking steps to redress these maintenance shortfalls in years to come by investing a half-billion dollars in its road infrastructures and water supply networks. Added to these ongoing public works is the construction of the new Champlain Bridge, a vital link between the Island of Montréal and the South Shore used by more than 50 million cars annually. The new electric train will share the bridge, and the hope is that it will reduce traffic congestion.

The presence of numerous worksites has a major impact on urban mobility, causing congestion problems and slowing emergency services in several sectors on the island. Were a major event to compound this situation, there could be significant consequences.



**MONTRÉAL, A PORT CITY,** is the gateway for maritime transport bound for the Great Lakes via the St. Lawrence River. The Port of Montréal, an ocean port in the heart of the North American continent, is the only container port in the Quebec-Ontario corridor, through which two-thirds of Canadian international trade passes. As the second largest port in Canada, it is a transshipment hub for grain, petroleum products, machinery and manufactured goods. For this reason, it forms part of the main Canadian rail corridor, making Montréal an important railway city. The Port of Montréal generates \$1.5 billion in direct economic benefits to the Canadian economy, including 140 million in Québec and 14 million in Montréal. And with the growing popularity of cruise ships, Montréal is intent on carving out a niche as a destination of choice for pleasure crafts.

**MONTRÉAL, A DYNAMIC AND INNOVATIVE CITY,** is known for its exceptional artistic vitality and world-renowned creative talent. In total, Montréal's cultural sector generates an estimated \$7.8 billion in direct annual economic benefits, or about 6% of GDP in the Greater Montréal region. Global artistic enterprises such as Cirque du Soleil and the Moment Factory are a point of pride for the city. Montréal also earned the prestigious UNESCO City of Design designation in 2006, thus joining the world body's select international network of creative cities. Montréal's dynamism also finds expression in the diversity of its economy, which enhances its capacity for adaptation. And with seven industrial clusters in leading-edge fields and its high-tech sector, Montréal is also home to many knowledge- and research-driven establishments.

**MONTRÉAL, A STUDENT CITY,** is the world's top-ranked destination for foreign students. With four universities, seven higher learning institutions and 12 CEGEPS within an eight-kilometre radius, the city has the highest concentration of post-secondary students among large cities in North America. The QS World University Rankings named Greater Montréal the top university city in Canada. In the Greater Montréal region, however, the proportion of the population aged 25 to 64 holding a university degree was only 29.6% in 2011. What's more, the dropout rate is high in Montréal, though it has decreased significantly in recent years, from 24.6% in 2009 to 20.8% in 2013.





**MONTRÉAL, A GREEN AND BLUE CITY**, possesses an energy system that stands apart from that of other world regions thanks to the major part played by renewable energy—in this case hydroelectricity. In terms of water supply, two drinking water treatment plants are fed by the waterways circling the island, and together they account for 88% of Montréal's water production capacity. The city also has third largest waste water treatment plant in the world.

In addition, Montréal has some 4,000 green laneways spanning over 475 kilometres across its territory, to go along with 97 community gardens. The city's 19 large public parks, including Mount Royal Park, span some 2,000 hectares of green space. These spaces contribute greatly to the quality of life of Montrealers by curbing heat island effects and giving citizens a place to gather and practice leisure activities. The protection and enhancement of the Trame verte et bleue du Grand Montréal is an integral part of the Communauté métropolitaine de Montréal's Plan métropolitain d'aménagement et de développement.

**MONTRÉAL, AN ACTIVE AND SPORTING CITY**, is widely recognized for its know-how in staging major international sports events and the quality of its facilities. First and foremost, Montréal is a hockey mecca, and Montrealers not only take pride in their team, but they've also fostered a strong sense of belonging to their city through the rich and illustrious history of the Canadien de Montréal. All Montréal communities rally around the team's performance. Montréal is also known as North America's cycling capital, with more than 350 km of bike paths available to Montrealers across the island and beyond. This ever-expanding cycling network lets citizens of all ages maintain an active and healthy lifestyle. A bike-sharing system was also deployed across Montréal territory in 2014: the BIXI network includes 5,200 bicycles and 460 stations, and it is the first bike-sharing system to be deployed on a large scale across North America. On a cautionary note, Montréal is also the Canadian city with the highest number of cycling accidents: in 2015, seven of every 100,000 bicycle rides resulted in accidents..





## 2.1 CHALLENGES TO RESILIENCE IN MONTRÉAL

The 1998 ice storm probably stands as the greatest modern shock ever experienced in Montréal. This natural disaster quickly became a technological disaster, with the downing of the first electrical transmission lines and power outages over most of southern Quebec. In the days that followed, the situation quickly went from bad to worse, causing disruptions in essential civic infrastructures, including telecommunications and transportation. About 900,000 Quebec households lost power in the dead of winter for periods ranging from a few hours to several days. This major disaster provoked the realization, among authorities, that there were significant shortcomings in the coordination and organization of the emergency response, and that a failure in an essential network could set off a domino effect with a chain of adverse consequences.

Several mechanisms have since been put in place to ensure the safety of citizens and mitigate the consequences of such a disaster. These include the creation of the Ville de Montréal's Centre de sécurité civile and the looping of Hydro-Québec's power distribution network. Notwithstanding this event, Montréal, relatively speaking, has been spared any major disasters. This does not mean we're immune to a disruption, however, and we must prepare accordingly.

The Lac Mégantic (Québec) disaster of July 2013 served as a chilling reminder of the importance of preparation. The accident – which occurred 250 km from Montréal – sparked considerable concern about the risks associated with the transportation by rail of dangerous goods in urban environments. It saw a convoy of 72 oil-filled tank-cars derail, provoking explosions and an inferno that tore through the downtown core in the small municipality of Lac Mégantic. In all, some 47 people lost their lives. In addition to calling for answers from authorities and risk management specialists, the Lac Mégantic disaster changed perceptions of the risks posed to populations by railways and industry.

These events also led to the adoption of the first province-wide policy on civil security (Politique québécoise de sécurité civile). This provincial policy directed municipalities to develop a better knowledge of the hazards and vulnerabilities to which they are exposed, improve prevention programs, and establish forecasting and advance warning systems. In Montréal, the Schéma d'aménagement et de développement de l'agglomération de Montréal now includes provisions regulating the development of new facilities bordering railroads, in particular.

In the wake of the Lac Mégantic disaster, the federal government adopted Protective Direction No. 32 requiring that railway companies share information on the type and nature of dangerous goods transported on municipal territories. These data are used to plan emergency measures and responses. The Ville de Montréal is currently working to develop a risk analysis method that can be applied to the transportation of dangerous goods by rail.

Above and beyond shocks, a number of stresses exert significant impact on the well-being of Montréal's population, both on a day-to-day basis and in emergency situations. Poverty, lack of access to clean and affordable housing, aging infrastructures and road congestion—all these factors can have an impact on Montrealers. Plans and strategies have been put in place to respond to these challenges, and the Ville de Montréal is actively working to improve living conditions for its citizens. Montréal also boasts a number of advantages, not least the safety of its streets and neighbourhoods and the vitality of its cultural sector. Indeed, the city ranks fourth in North America on the Mercer Quality of Living Survey. Quebec entrepreneurs are more confident than they've been since 2013, according to the Business Barometer of the Canadian







Federation of Independent Business, while Montréal's unemployment rate has continued to drop in the past year. These positive developments bely underlying vulnerabilities, however: as in the case elsewhere in Canada, Montrealers are turning to food banks in greater numbers, while the unemployment rate remains high among immigrants and visible minorities.

These stresses can affect a city's ability to deal with shock if and when it occurs. In the early 2000s, for example, a shortage of rental housing units in Montréal turned into a full-fledged affordable housing crisis. In 2001, with the vacancy rate at 1.5% in Montréal, the Office municipal d'habitation de Montréal processed some 400 files in a bid to relocate households in need in the best manner possible. In spite of these efforts, the occupants of 60 households found themselves homeless on July 1, 2001. The majority of these households were made up of people living in poverty. In 2002, the vacancy rate dropped to 0.6% across the Montréal region. Drawing lessons from 2001, the Ville de Montréal anticipated the crisis looming on July 1, urging various city departments and community-based organizations to take preventive measures. A major management operation was undertaken to provide basic services to newly homeless people living in poverty (i.e., housing, transportation, storage, housing search) until they were able to resettle. The Ville de Montréal learned a great deal from this experience, including how to better evaluate and anticipate this stressor in order to prevent it from becoming a shock to its vulnerable populations.

Aging infrastructures are another example of stress morphing into shock. In May of 2013, the Ville de Montréal issued a boiled water advisory that resulted in 1.3 million Montrealers having to go without drinking tap water. The advisory stayed in force for close to 36 hours, occurring in conjunction with operations meant to bring the Atwater drinking water treatment plant – the largest such plant in Montréal – up to standard. Built in 1918, the plant underwent a number of renovations requiring that the water level in the basins be lowered. The water level dropped too low, however, with the result that the sediment at the bottom mixed into the drinking water, making it unsuitable for consumption. This event was a direct consequence of Montréal's aging infrastructures and of efforts to bring them up to standard while maintaining the offer of services.

It was in connection with these shocks and stresses that the Ville de Montréal was accepted into the 100 Resilient Cities network in December 2014, after filing its first application. Montréal stood out thanks to its directors' commitment to strengthening the city's resilience, stepping up investments, repairing and maintaining its infrastructures (i.e., bridges, tunnels, roads and waterworks), and furthering its engagement with vulnerable people. Montréal thus became the first Canadian city to be admitted into the 100 Resilient Cities network. Three other Canadian cities – Calgary, Toronto and Vancouver – have since joined the network, each after the third round of selection.

The 100 Resilient Cities network recognizes the importance of developing Montréal's capacity to offer more than emergency response, particularly in the economic and social spheres. Efforts must also be made to better understand the connection between shocks and stresses in Montréal. These analyses would promote greater learning capacity in response to disasters on the part of the city and Montrealers, thus making it possible to better target future interventions as well as prevention and risk mitigation activities. These are the challenges Montréal is called upon to meet as it develops its urban resilience strategy.





# SHOCKS AND STRESSES

The following table presents a picture of the principal shocks and stresses in Montréal. The data was compiled using documents made available by various city departments as well as stakeholders.

At the workshop in January 2016, stakeholders were also invited to identify what they deemed to be the greatest shocks and stresses in Montréal. The participants' perceptions were compiled and classified according to probability, from the highest probability of shock and stress to the lowest. The results are presented in the table below.

The plan was to have the Bureau de la résilience produce a complete risk analysis in collaboration with the concerned stakeholders and in conjunction with the implementation of the resilience strategy. This analysis will make it possible to achieve a better understanding of the vulnerabilities and connections between shocks and stresses in Montréal.

## SHOCKS | EXAMPLES

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**Meteorological** - extreme heat and cold; extreme weather events (i.e. snow, wind, hail, glazed frost, storms)

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**Geophysical** - earthquakes

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**Hydrological** - spring flooding; ice jams; frazil; flash flooding; runoff

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**Infrastructure** - major infrastructure malfunction (transportation, energy, communication); major industrial accident; accident involving the transportation of dangerous goods; cyberattack

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**Social** - violent demonstration; terrorism

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**Sanitary and food safety** - epidemic; pandemic

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## STRESSES | EXAMPLES

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**Ecological** - water pollution; atmospheric pollution; invasive species; ecosystem collapse

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**Climatological** - climate change; rise in average temperatures; increased frequency and intensity of heavy rains; increased frequency and intensity of heatwaves; increased frequency of destructive storms; increased duration of drought periods; earlier spring freshet

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**Social** - aging of the population; homelessness; social and economic inequality; integration of immigrants; food insecurity; school dropout rates; high illiteracy rates; slowdown in the health care system; affordable housing shortage; mental health disorders / psychological distress; higher obesity rates

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**Governance / political** - complex governance; corruption; lack of trust in authorities

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**Infrastructures** - aging infrastructures

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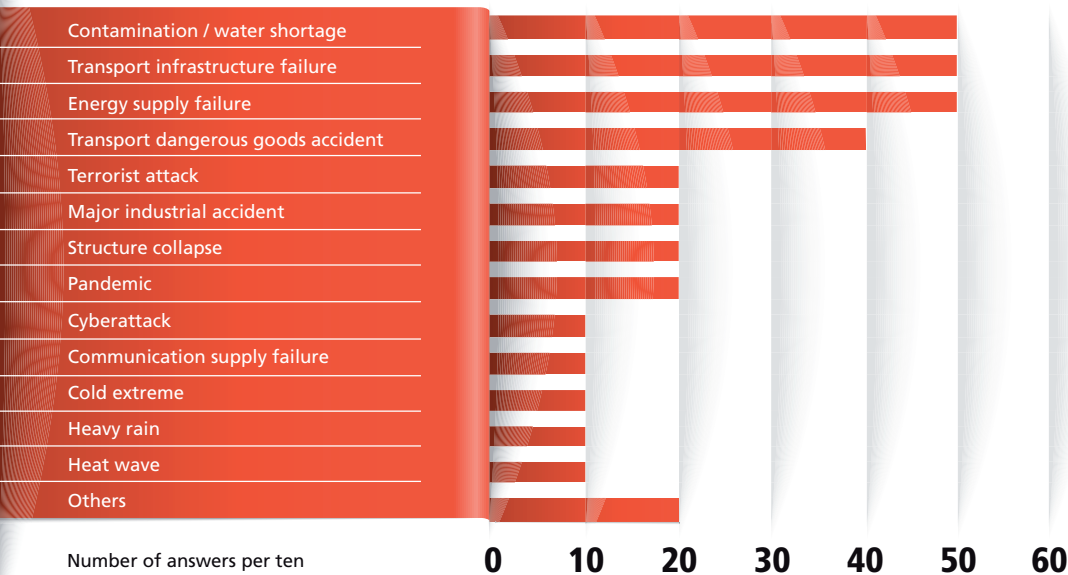


**Economic** - congestion; flight of human capital (brain drain); high unemployment; skilled labour shortages; retirements on a massive scale; decline in traditional economic models

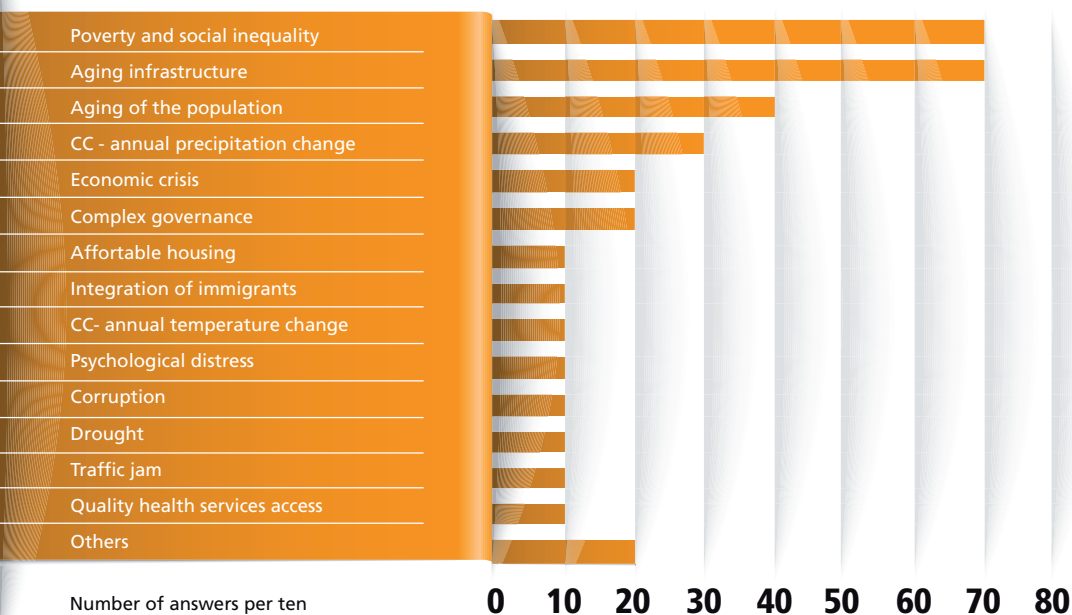
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The results of the workshop are based on the participants' perceptions. These data reflect local and international events in recent years, including the Lac Mégantic disaster and recurring problems with the water supply network in Montréal.

## PERCEPTION OF SHOCKS ACCORDING TO STAKEHOLDERS AT THE JANUARY 2016 WORKSHOP



## PERCEPTION OF STRESSES ACCORDING TO STAKEHOLDERS AT THE JANUARY 2016 WORKSHOP









# ORGANIZATION AND RESPONSIBILITIES

## 4.1 STEERING COMMITTEE

A Steering Committee composed of influential members of the Montréal community and the municipal administration was formed to support the study and development of the urban resilience strategy. Its members hail from multiple sectors and departments within the Ville de Montréal as well as from public, private and community-based organizations and universities.

The complete list of the committee's members is available in Appendix 1.

## 4.2 STAKEHOLDER COMMITTEES

Following the first workshop in January 2016, some 100 participants were divided into four working committees based on their respective areas of expertise. The four committees are representative of the challenges Montréal faces, as identified during the January workshop. In June 2016, the stakeholders convened as part a larger group, and in September of the same year they met with their respective committees. The four committees are made up of stakeholders from various communities, and the stakeholders are playing an active part in the work carried out by the Bureau de la résilience.

### RESILIENCE AGENDA SETTING WORKSHOP

#### Priorities of respondents

1. Infrastructure aging
2. Population aging
3. Urban transit and travel
4. Social issues
5. Disaster management and Urban development

#### Creation of four stakeholder committees

- Infrastructures and public utilities
- Diversity and social equity
- Prosperity and innovation
- Quality of living environments



#### **4.2.1 Diversity and social equity**

This committee studies the best means of supporting the strategies in place and improving existing initiatives in Montréal neighbourhoods meant to foster a sense of belonging and integration among citizens. In order to promote the resilience of communities, the Bureau de la résilience sought to surround itself with representatives of the city's driving forces. This broad-based representation was intended to support the Bureau de la résilience in its efforts to identify and understand promising solutions for viable and equitable social development.

#### **4.2.2 Urban Infrastructure and public utilities**

This committee was formed to study problems related to aging infrastructures, urban mobility and operational continuity in Montréal's public utilities. In order to meet these challenges in an integrated manner, the Bureau de la résilience consulted with infrastructure and public utility managers as well as risk management and climate change specialists.

#### **4.2.3 Prosperity and Innovation**

This committee has a mandate to support the Bureau de la résilience in its efforts to understand the challenges posed to Montréal's economic vitality by the aging of the population and demographic changes, the integration of new technologies, and adaptation to climate change. This group looked at new economic models and sought to anticipate general trends likely to affect the resilient, equitable and sustainable development of Québec's metropolis.

#### **4.2.4 Quality of living environments**

This committee studied the actions and orientations that Montréal could better support for purposes of ensuring the holistic and resilient urban development of its neighbourhoods. To form this committee, the Bureau de la résilience called upon Montréal specialists in sustainable land use development, public health, urban ecosystem protection, and the optimization of vacant spaces.

See Appendix 2 for the complete list of participants in the four sectoral committees.



# STAKEHOLDER ENGAGEMENT

After the first workshop in January 2016, during which the concerns related to resilience were established and the committees were formed, the Bureau de la résilience began Phase 1 activities (figure 14) by holding a meeting with the four stakeholder in June 2016. This meeting was aimed at presenting the project and demonstrating to participants the type of engagement that would be required from them during Phase 1. The team took the opportunity to present the perception survey and invite participants to complete it before sharing it with their respective networks.

To follow up on the survey answers received, individual meetings were held with 30 stakeholders, with the persons chosen with a view to ensuring that all four committees were adequately represented. Separate meetings were then held with each committee for purposes of discussing the issues and problems specific to their respective areas of expertise. The resulting discussions, coupled with the stakeholder perception survey, served to direct the subsequent work and identify potential areas of focus in phase 2.

A Steering Committee meeting was held in September 2016. Here is a summary of the activities held during Phase 1:

## COMMITMENT OF MORE THAN 1 800 STAKEHOLDERS



Workshops –  
80 participants



Project presentations

**JUNE** > **JULY** > **AUGUST** > **SEPTEMBER**



2 surveys  
1 800 réponses



30 Individual  
meetings



1 Steering  
committee  
meeting



### **Three stakeholder workshops – January to September 2016**

- **January 2016 (101 participants)**
  - Launch of the workshop
  - Presentation of the resilience program
- **June 2016 (80 participants)**
  - General meeting involving all four committees
  - Presentation of the January workshop results (stresses and shocks in Montréal)
  - Stakeholder perception survey
- **September 2016 (60 participants)**
  - Separate committee meetings (four workshops)
  - Presentation of the June workshop results and population survey
  - Discussion and validation of issues and areas of focus proposed for Phase 2

### **30 individual meetings – summer 2016**

- **Objectives:**
  - Achieve a more in-depth knowledge of stakeholder projects and plans;
  - Collate perceptions of resilience in Montréal in greater detail
- **Questions / discussion:**
  - Do you consider Montréal a resilient city, and why?
  - What initiatives make Montréal more resilient?
  - In your opinion, what weakens Montréal's resilience

### **Steering Committee meeting – September 2016**

- Overall presentation of Phase 1
- Presentation of perception survey results
- Discussion and validation of areas of focus for Phase 2

# 6

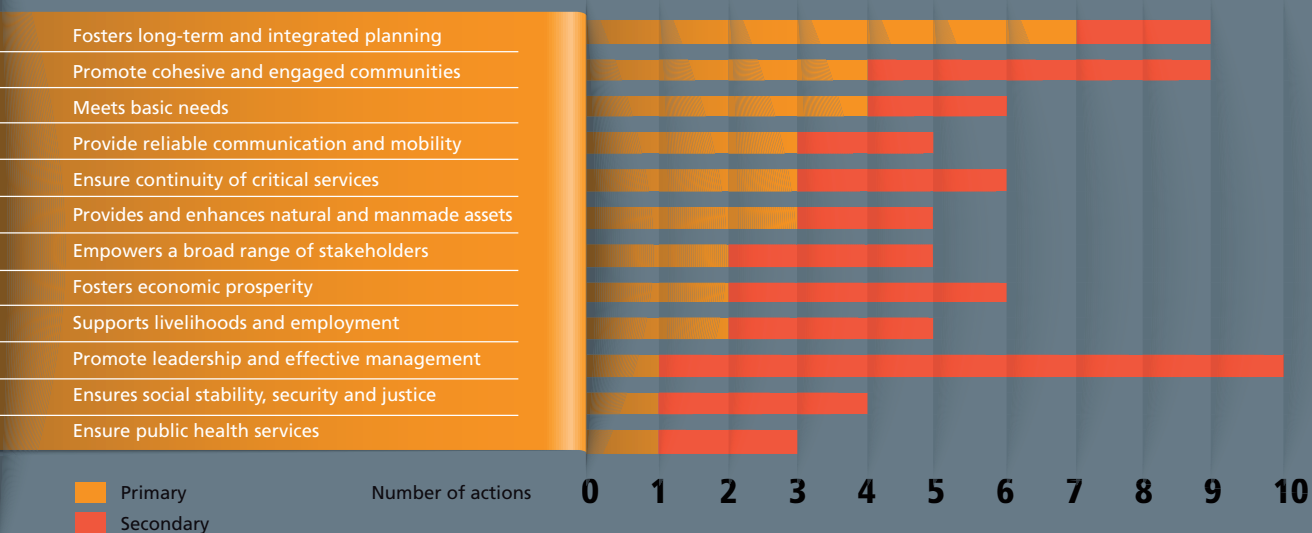
## RESULTS OF PHASE 1

### 6.1 INVENTORY OF ACTIONS BY THE CITY – WHAT IS ALREADY IN PLACE IN MONTRÉAL, AND WHO CONTRIBUTES TO RESILIENCE?

#### 6.1.1 Action survey tools

Montréal is a dynamic and innovative city where the municipal administration and urban and community development actors are invested in planning. Their efforts result in the establishment of numerous plans, programs, strategies and policies that contribute positively to the city’s resilience. These made-in-Montréal actions were compiled in the 100RC tool and are associated with the 12 sub-drivers of resilience.

The impact of the plans, actions and programs listed was subdivided into two criteria, based on whether they had a “primary” or “secondary” impact on drivers of resilience.



The table above shows that the city has put forward numerous initiatives meant to *foster long-term and integrated planning*. This category includes, for example, the Plan de développement durable de la collectivité montréalaise, the Plan d'adaptation aux changements climatiques, and the Plan de transport de Montréal. These plans were recently tabled and are integrated in a transverse manner into other Ville de Montréal departments and the work of several partners. They embody a vision of resilience, and the managers of these teams are working in collaboration with the team at the Bureau de la résilience.

Another broadly represented category comes under the heading "Promotes cohesive and engaged communities." This section includes the Plan d'action montréalais de lutte contre la pauvreté et l'exclusion sociale, the Plan d'action municipal pour les aînés, the Plan d'action municipal en accessibilité universelle, as well as several community-based initiatives. While well represented, plans put forward by community-based organizations often meet specific needs; there is a lack of coordination between the services offered and the initiatives planned, however.

"Ensures public health services" emerged as the category with the lowest representation, the principal reason being that Montréal has very little competency in this area, since the related policies and plans are developed at the provincial and federal levels. The "Ensures social stability, security and justice" category is also under-represented, since the policies related to this section come under public security and are often confidential and somewhat restricted. Perceptions of security remain highly favourable among citizens, however, which suggests that these plans have positive effects.

A certain lack of connectivity and transversality between all these plans, policies and initiatives has been noted. Before a project or initiative is undertaken, it would be advisable to meet all the concerned stakeholders so as not to duplicate what already exists, on the one hand, and also to take into account the issues specific to our partners. The challenge lies in ensuring that each and everyone gets involved in the development of the project so that all the relevant angles are covered.

### **6.1.2 How Montréal is distinguishing itself**

Montréal's highly proactive municipal administration stands apart from other world cities on several levels. While the plans and initiatives cited above are not named explicitly as resilience initiatives, they play a strong part in the city's capacity to deal with the shocks and stresses to which it is exposed. These initiatives are intended to improve the living conditions for Montrealers and ensure social justice. Several plans also allow Montréal to anticipate changes in order to minimize the adverse repercussions on civic life. These well-established building blocks will serve as the basis for the development of the resilience strategy.



One such initiative is the creation of the new Bureau de l'intégration des nouveaux arrivants (BINAM) in charge of coordinating the different city departments in order to facilitate the integration of immigrants and oversee their settlement in every borough. This inter-departmental coordination allows the municipal administration to gain a more accurate picture of the immigration situation in Montréal and participate in the establishment of programs that have a real impact, particularly those that facilitate the integration of new immigrants into the workforce.

Following the federal government's decision to bring in tens of thousands of refugees, the Ville de Montréal – which takes in 70% of immigrants to Quebec – took the initiative of creating BINAM (the office for the integration of new immigrants). This department is not intended solely for refugees, however; it also serves all new immigrants intent on settling in Montréal.

The Ville de Montréal's Centre for the Prevention of Radicalization Leading to Violence constitutes another ground-breaking initiative. For the world's large cities, prudence is the watchword in this delicate area. The centre's chief mission is to assist persons who believe someone they know may harbour extremist or radical views. The creation of this centre speaks to a desire on the part of citizens to live in harmony in a diverse social environment conducive to respectful cohabitation.

With the objective of improving relations with its citizens, Montréal created an office responsible for improving client services. Born out of Montrealers' dissatisfaction with the various services offered by the city, this initiative has a mission to ensure the remarkable delivery of services to citizens, partners and business people. Always from the perspective of continued improvement, Montréal also has a Service de la performance organisationnelle (operational performance department) whose mission is to play a leadership role in projects with the objective of optimizing operations and generating lasting gains in efficiency.

**1** In June 2016, Montréal was also named the world's most dynamic and inspiring intelligent community in recognition of its use of technologies to build economic prosperity, find solutions to social problems, and improve the quality of life of its citizens. Examples of strategic orientations include efforts to release and promote open data, jointly develop solutions to urban issues together with the community, optimize user mobility in real time across city territory, and increase the offer of direct digital services to citizens and companies.





**2** The transition to renewable and sustainable energy is another area of innovation where Montréal has made a name for itself. With its 2016-2020 Transportation Electrification Strategy, the city has signalled its intention to play a global leadership role in the fight against climate change. In addition to its concrete actions, including the deployment of a network of charging stations, Montréal intends to act as a facilitator of green companies with the objective of creating an environment conducive to innovation and sustainable economic development. With this deployment, Montréal will become the first Canadian city to roll out a network of curbside electric charging stations on this scale, accessible to citizens and suppliers of self-service electric vehicles.

**3** Because children are a leading concern for the municipal administration, Montréal's Policy on Children speaks to its determination to help children realize their full potential by reinforcing its action and support in every related sphere. Through five areas of intervention, efforts will be made to meet children's cognitive, affective, physical and social needs and to ensure their optimal development while taking into account individual growth factors.

**4** The objective of the Plan d'adaptation aux changements climatiques (Climate Change Adaptation Plan), meanwhile, is to identify vulnerabilities and mitigate the adverse consequences of climate upheaval in the metropolitan region. Measures are aimed, more specifically, at reducing heat island effects, protecting biodiversity, improving surface water runoff management, and making municipal infrastructures more resilient.

**5** The Plan du développement durable de la collectivité montréalaise 2016-2020 (Sustainable Montréal 2016-2020 plan) is the third such exercise, and it identifies three challenges for the city: Montréal sobre en carbone (low carbon Montréal), Montréal équitable (equitable Montréal), and Montréal exemplaire (exemplary Montréal). This plan is an opportunity to affirm the city's commitment to working with its partners in order to transform Montréal into a sustainable city. The action plan calls for increasing the number of promising initiatives linked to sustainable development priorities, stimulating the emergence of sustainable projects, and promoting synergies.

**6** The Ville de Montréal is confronted with the reality of homelessness and its consequences. In collaboration with all the concerned actors, the city is working to improve living conditions for its most vulnerable by making considerable investments meant to stem the scourge of homelessness. The Plan d'action montréalais en itinérance 2014-2017 attests to the city's commitment to its most disadvantaged population. With this plan, the city pledges to pursue its objective to create social and community housing and put in place innovative measures to improve cohabitation in the urban space.

## 6.2 SURVEYS AND PERCEPTION TOOLS – WHAT DO STAKEHOLDERS AND THE PUBLIC THINK?

### 6.2.1 Survey

The Bureau de la résilience used a questionnaire to survey stakeholders on issues of urban resilience. Taking interest in the responses obtained, the team went on to duplicate the exercise with Montrealers using a public survey. The surveys proved to be an effective means of better understanding the perceptions of citizens and partners, but more importantly of identifying what the respondents deemed to be priorities when it comes to resilience in Montréal. The survey questions were divided into four categories:

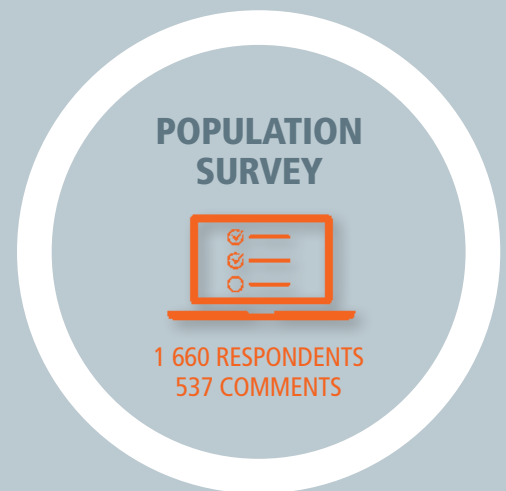
- Leadership and strategy
- Economy and society
- Infrastructure and environment
- Health and well-being

The sub-drivers of resilience served as the basis for the questions integrated into the perception tool. It was impossible to interpret the results of the perception tool, however, since an equivalent number of questions did not apply to each sub-driver. The surveys answers were thus analyzed using graphics and cross-tabulations.

Several means were used to disseminate the survey, notably:

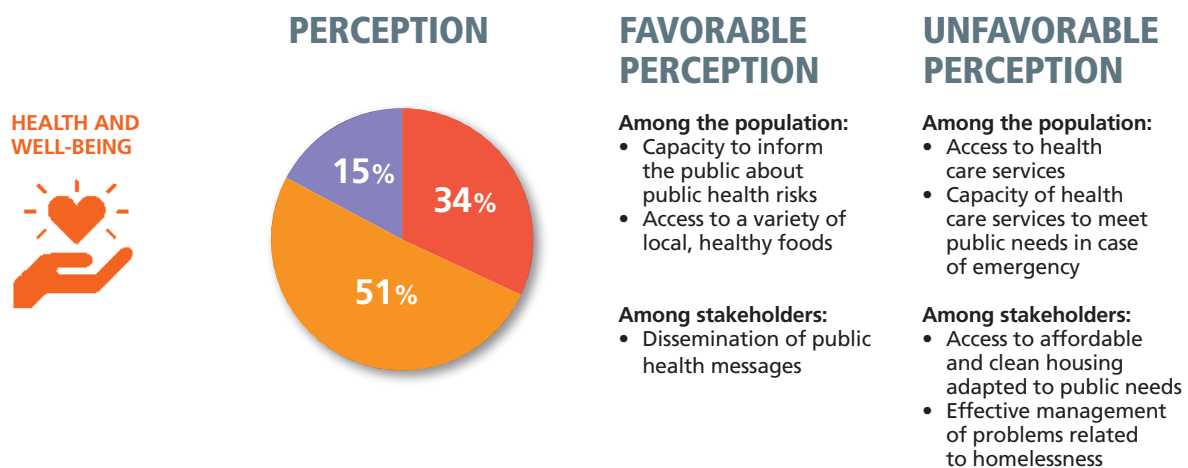
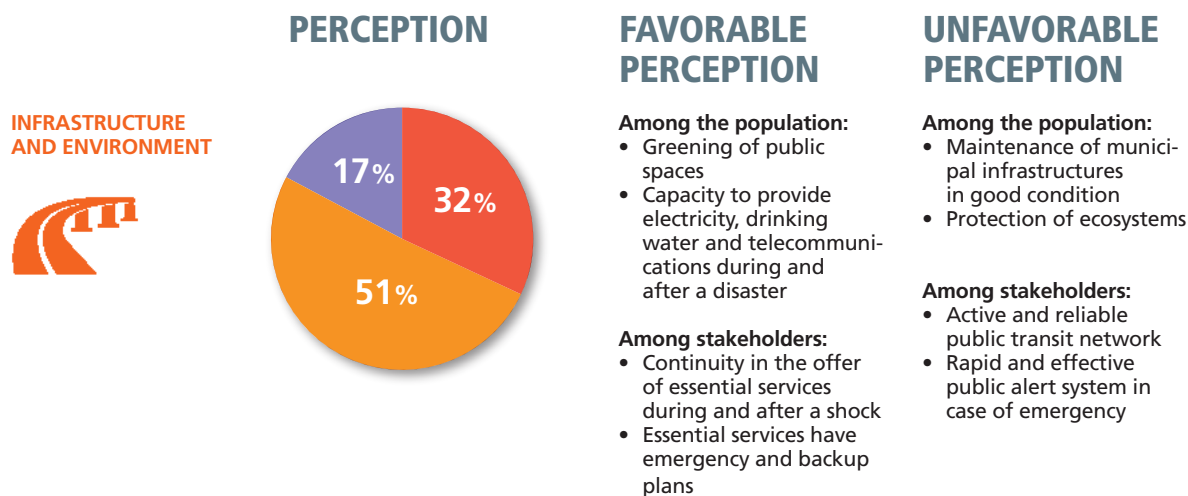
- The Ville de Montréal website
- E-mail to all Ville de Montréal employees
- The Facebook pages of the Ville de Montréal, the Bureau de la résilience and several boroughs
- Newsletters published by five boroughs
- Several partner networks

The results, although not representative of the Montreal population as a whole, were quite satisfactory, as more than 1,660 citizens responded to the survey. All the survey data is available in Appendix 3.



## 6.2.2 Perception of stakeholders and citizens based on the four drivers of resilience

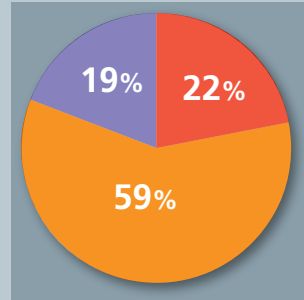
Montrealers and stakeholders were asked to answer a series of questions grouped into four main categories for purposes of soliciting their opinions concerning 34 resilience factors. The questions were framed as follows: Is your opinion of X entirely favourable, somewhat favourable, or unfavourable? The analyses demonstrated that respondents, on balance, held moderate opinions, with the exception of a few issues on which opinions were moderately unfavourable or entirely unfavourable. Two issues were perceived differently by stakeholders and citizens: *Harmonious cohabitation between citizens, and Regulations pertaining to construction in zones deemed at-risk for health and safety*. This discrepancy in perception may be attributed to a subtler understanding of these two issues – which vary greatly from one neighbourhood to the other – on the part of stakeholders. Perceptions on other issues were unanimous. Such was the case for *the enhancement of cultural diversity and the capacity to inform the population about public health risks*. The results are presented in the following table.



**ECONOMY  
AND SOCIETY**



**PERCEPTION**



**FAVORABLE  
PERCEPTION**

**Among the population:**

- Enhancement of cultural diversity
- Harmonious cohabitation among citizens

**Among stakeholders:**

- Promotion of cultural diversity
- Safety of public streets and in public places

**UNFAVORABLE  
PERCEPTION**

**Among the population:**

- Creation of and support for innovative local companies

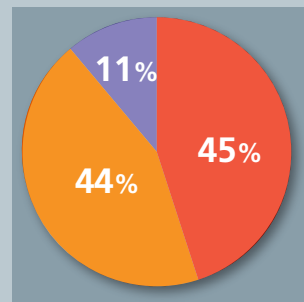
**Among stakeholders:**

- Dynamism of commercial streets
- Harmonious cohabitation between citizens

**LEADERSHIP  
AND STRATEGY**



**PERCEPTION**



**FAVORABLE  
PERCEPTION**

**Among the population:**

- Effective communications between citizens and the city
- Regulations pertaining to construction in zones deemed at-risk for health and safety

**Among stakeholders:**

- Effective communications between citizens and the city

**UNFAVORABLE  
PERCEPTION**

**Among the population:**

- Transparency of municipal management
- Ease of information-sharing between governments, companies and the community sector

**Among stakeholders:**

- Effective public awareness promotion concerning natural and anthropogenic risks
- Regulations pertaining to construction in zones deemed at-risk for health and safety

### 6.2.3 Priorities identified by citizens and stakeholders in relation to resilience

The public and stakeholder perception survey also featured the following question: *In what priority sector should Montréal take action to improve resilience?* This question was intended to identify which major areas drew negative public perceptions and to guide actions, be it by gaining a better knowledge of the initiatives already in place or implementing new solutions.

Citizens and partners were asked to choose three priorities among a selection of answers to some 20 statements. The majority answered “transportation and mobility,” “reliability of networks and infrastructures,” and “management of major risks.” The following table presents the **five priorities cited by respondents**.

PRIORITY	STAKEHOLDERS	POPULATION
1	Transportation and mobility	Reliability of networks and infrastructures
2	Land use development	Transportation and mobility
3	Reliability of networks and infrastructures	Meeting basic needs
4	Management of major risks	Public health problems
5	Quality of life	Management of major risks







## 6.2.4 Results of individual meetings with stakeholders

After the survey results and the comments and suggestions were analyzed during the June 2016 workshop, the Bureau de la résilience team conducted 30 individual interviews with stakeholders. The interviews were aimed at collating the perceptions more accurately and further reflecting on the issues that improve or weaken Montréal's capacity for resilience.

Lasting about an hour and a half, the meetings took the form of a guided discussion. Three questions served to accurately frame the discussion around the theme of resilience, and several relevant comments were retained:

- Do you consider Montréal to be a resilient city, and why?

*"It's a resilient city in terms of the problems it faces, but would it be capable of dealing with a catastrophe? I don't think so."*

*"Montréal is fragile. We need to pay attention to social inequalities, to the sense of belonging among youth, to ethnic communities, and to the anglophone community. We often hear people say that they feel like second-class citizens."*

*"Montréal has a potential for resilience, especially when you compare us to Europe and the United States. Physical insecurity is minimal, and social organization is developed in relation to the resilience of communities."*

- What initiatives make Montréal more resilient or could be established in order to enhance its resilience?

*"Various urban agriculture and community garden projects, as well as green roofs and laneways, both of which hold great potential."*

*"Developing its capacity to imagine the unimaginable and better understanding crises / catastrophes that occur elsewhere. Systematizing the lessons learned, building knowledge of crisis management, and operationalizing resilience."*

- What do you believe weakens Montréal's resilience?

*"Lack of scientific data or data poorly communicated to the public."*

*"Densification of the built environment, which should be connected to the public transit network. Densification must be overseen and planned."*

*"Difficulty reaching or communicating with certain clientele for whom the written word means nothing."*

The first question was intended to establish each partner's definition of urban resilience.

The questions were also geared to determining what initiatives or actions were being taken by the organizations consulted, including initiatives that thus far may not be associated with resilience, but that play a part in Montréal's capacity to recover in the wake of a disruption.

The following salient points came out of these meetings:

- **Transportation infrastructures:** mobility / aging infrastructures
- **Communication and risk awareness:** among citizens / within organizations
- **Governance:** division of responsibilities / non-coherence in planning
- **Housing:** access / cleanliness / shortage of social housing
- **Civic engagement:** importance of the network / mobilization of citizens
- **Economy:** lack of succession in SMEs / importance of economic diversity / use of the best and brightest from the four Montréal-based universities
- **Aging of the population:** aging workforce / higher public expenses / social isolation of these people
- **Youth:** prevention work with youth
- **Integration of immigrants:** recognition of competencies / poor understanding of new immigrants' needs



### 6.2.5 Overlapping issues

The results of these individual meetings, coupled with the data on stakeholder perceptions, made it possible to develop the concept behind the third workshop, which was presented in September 2016. This workshop saw each of the committees convene separately in order to identify and validate the main issues related to resilience in Montréal, in connection with their respective areas. To frame the discussions, four key aspects of resilience in Montréal – individual, community, organizational and territorial resilience – were addressed in connection with two issues proposed for each area. These aspects served as guidelines for integrating all the issues on different scales, from the level of the individual citizen all the way up to the agglomeration of Montréal. Participants did not contest the statements in any significant way, though a number of people offered specifics or even suggested new issues.

Participants in the September workshop were invited to validate these issues and suggest two additional issues following discussions in small groups.

COMMITTEES	RESILIENCE			
	TERRITORIAL	ORGANIZATIONAL	COMMUNITY-BASED	CITIZEN
PROSPERITY AND INNOVATION	Develop mixed neighbourhoods with a bit of everything (industry, commercial and residential)	Promote business continuity and the adaptation of continuity processes to the reality of SMEs	Integrate commercial planning into territorial planning (programming, ranking, zoning)	Promote the development of the social fabric and local networks that can be used to disseminate prevention messages
QUALITY OF LIVING ENVIRONMENTS	Carry out planning aimed at allowing the city to adapt to demographic and climate change	Communicate risks to the population	Mitigate/reduce impacts of urban nuisances and health risks on Montrealers	Promote the important role of community-based networks in supporting civic engagement
INFRASTRUCTURE AND NETWORKS	Strengthen the coordination of urban and intra-metropolitan mobility and improve management between partners	Promote the adaptation of organizations to technological and environmental challenges	Simplify governance in order to promote productivity	Promote the maintenance and repair of sustainable and safe infrastructures for citizens
DIVERSITY AND EQUITY	Offer equitable services across Montréal territory and ensure their accessibility	Improve internal discussions at the city and discussions between the city and citizens	Identify vulnerable clientele in order to ensure an adequate offer of services	Educate and communicate good behaviour (healthy habits, rights and responsibilities of tenants)



# FOCUS AREAS: A VISION FOR A MORE RESILIENT MONTRÉAL

Citizens are at the heart of Montréal. As their living environment, the city administration takes steps to facilitate their movement and meet their basic needs, including for housing, employment and education. At the community level, individual citizens have manifold complex needs, with a diversified range of priorities, both individual and collective, including environmental protection, economic and urban development, and risk management. All are priorities that, at first glance, may appear to be in opposition. How can harmonious urban development be ensured while taking into account all these priorities? This question will be top-of-mind as the Ville de Montréal's Bureau de la résilience moves forward with its work.

Montréal's resilience strategy will be developed along four lines or work streams, with the goal of simultaneously increasing urban resilience and Montréal's state of preparedness for shocks and stresses, while meeting Montrealers' various priorities. The strategy will be developed systematically, taking into account the individual, the municipal administration, the economy, and the living environment. This vision will make it possible to develop a greater understanding of the connections between and needs specific to each work stream so that actions can be put forward to meet the related challenges.

Finally, two transversal work streams – communication and innovation – will be applied to each of these sectors.



TWO BACKGROUND  
CONCEPTS

INNOVATION  
COMMUNICATION

## FOUR FOCUS AREAS

### AN ENGAGED MONTRÉAL COMMUNITY

How can we heighten community awareness of the importance of preparing for disasters as well as the importance of civic engagement and solidarity?

### A FLEXIBLE CITY THAT VALUES COLLABORATION

How can we promote joint action for purposes of better adapting to future challenges and meeting the expectations of Montrealers, both on a day-to-day basis and in times of crisis?

### AN ECONOMY THAT ANTICIPATES CHANGE

How can we adapt to new trends, anticipate future demand, and draw on economic diversity and the reliability of essential systems?

### A CITY THAT LOOKS TO THE FUTURE

How can we optimize urban development in order to respond to changes while prioritizing the harmonious mix of uses?

## 7.1 FOCUS AREA 1 - AN ENGAGED MONTRÉAL COMMUNITY

### *HOW CAN WE PROMOTE AWARENESS OF DISASTER PREPAREDNESS AMONG MONTREAL COMMUNITIES WHILE HIGHLIGHTING THE IMPORTANCE OF CIVIC ENGAGEMENT AND SOLIDARITY?*

This work stream is aimed at creating opportunities and evaluating new approaches meant to prepare the broader Montréal community to deal with disasters and support citizens. Further study in this work stream will make it possible to better understand

the circumstances under which Montréal's population would be vulnerable and use these vulnerabilities as the basis for actions by public authorities.

One of the challenges lies in knowing and understanding the characteristics of this population. There is widespread recognition, in Montréal, that the western part of the island, with its anglophone majority, is more affluent, while the eastern, predominantly francophone part of the city and the historically working-class Hochelaga-Maisonneuve and Sud-Ouest boroughs have higher rates of poverty. Moreover, immigrants tend to settle in specific central neighbourhoods, notably Côte-des-Neiges and Park Extension. With the arrival of new immigrants, however, these Montréal neighbourhoods have undergone demographic changes. Indeed, Statistics Canada census data show that neighbourhoods with the lowest family incomes tend to be those with the highest density of new immigrants. However, understanding these social phenomena is limited by a lack of conclusive data, since the most recent Canadian census data dates back to 2006. For the past 10 years, little data has been published on household incomes, languages spoken at home, the country of origin of respondents, and a great deal more relevant information.

What we do know, however, is that Montréal is home to people from about 120 countries speaking close to 200 languages, and that one in three Montrealers was born outside Canada. These elements reflect Montréal's plurality, and they constitute a source of diversity and richness to the city; but they also present numerous challenges, notably when it comes to communication in the event of major disasters or the prevention thereof. Achieving timely communication with the public in emergency situations represents one of the great difficulties facing the agglomeration, with the 200 languages spoken in Montréal further complicating the task for authorities.

The Montréal population also presents major shortcomings when it comes to the individual state of preparedness to deal with disaster. Recent statistics show that only one in five Quebecers has an emergency kit. The lack of awareness probably stems from the fact that Montréal has experienced few major events in recent years, fuelling the popular perception that prevention measures are of little importance. It would be interesting to know if new immigrants – who often come from countries more affected by disaster or war – are better prepared to face a major disaster. The state of preparedness of the boroughs and reconstituted cities within the Montréal agglomeration is relatively high, however. Each has an emergency measures plan that is evaluated and improved on a yearly basis. An exercise program is also in place, making it possible to simulate the opening of an emergency shelter or a mobilization undertaken by the Centre de coordination des mesures d'urgence.

## RESILIENCE IN ACTION

### Mobile clinic:

The Doctors of the World mobile clinic has been patrolling the streets of Montréal for the last year and a half in order to offer health care services to hundreds of homeless people but also to migrants living in precarity, drug addicts and sex workers.

### Partners:

Doctors of the World Canada, the Ministère de la Santé et des Services sociaux du Québec via the Agence de Montréal, the federal government's Homelessness Partnering Strategy (HPS), as well as numerous private donors.

## RESILIENCE IN ACTION

### La Grande Secousse:

Québec has taken part in this awareness campaign – first launched in California in 2008 – since 2013. The simulation's chief objective is to teach citizens living in at-risk sectors what to do in the event of a major earthquake.

In 2015, some 42,000 Quebecers took part in the Grande Secousse exercise.

### Partners:

Association de sécurité civile du Québec, Insurance Bureau of Canada, Geological Survey of Canada, Sécurité publique du Québec, Musée de la Civilisation

Like other major world cities, Montréal is facing a range of social problems, including homelessness and the aging of the population. Poverty, precarity and exclusion are on the rise, and today's so-called vulnerable people constitute a diverse population. New immigrants, for the most of part, choose to live in Québec's largest city, and too often they end up swelling the ranks of Montrealers living in precarity.

Numerous questions must be answered. Who are the people living under vulnerable circumstances? What specific management tools are available to assist them? Several interventions, measures and programs are in place to prevent these phenomena specific to large cities and help citizens in need. It is essential to determine whether these resources are adequately publicized and accessible, however. Are people in need identified by these assistance networks, and do they have access to resources?

In Montréal, several initiatives meant to fight poverty and social exclusion have been put forward. They include the Revitalisation urbaine intégrée (RUI) in eight sectors with high concentrations of poverty. Like many others, these initiatives are cited as exemplary local practices that could be duplicated in or adapted to other sectors. Civic engagement is key to successfully implementing and developing innovative projects at the neighborhood level. It is important to motivate Montrealers to engage, invest and give back to their communities. There is renewed interest in public consultation in Montréal. Be it to discuss urban agriculture, restore Parc Lafontaine and develop the downtown area, citizens, increasingly, are coming out in force, and they're making a difference. It is essential to determine how to harness and accentuate this trend.

In the course of discussions with stakeholders, several questions were raised in support of this area of focus.

- How can Montrealers be made more aware of major risks, and how can the adoption of good practices be promoted in order to develop their capacity to deal with these risks?
- How can a better job be done of identifying people in vulnerable situations so that they become known to assistance networks?
- How can we draw inspiration from exemplary initiatives in Montréal neighbourhoods, and how can best practices in urban planning be used to promote community resilience?
- How can we promote civic engagement and oversee local initiatives in order to foster greater solidarity in communities by drawing on their diversities?

## 7.2 FOCUS AREA 2 - A FLEXIBLE CITY THAT VALUES COLLABORATION

### *HOW CAN INTERNAL COLLABORATION BE PROMOTED IN ORDER TO BETTER ADAPT TO TOMORROW'S CHALLENGES AND MEET MONTREALERS' EXPECTATIONS, BOTH ON A DAY-TO-DAY BASIS AND IN CRISIS SITUATIONS?*

This work stream is aimed at studying how the city can promote its capacity for collaboration both internally and with other levels of government in order to better adapt to the challenges it faces and better meet the needs of Montrealers, both on a daily basis and in times of crisis.

Efforts are currently underway at the Ville de Montréal to improve organizational performance and the quality of the client experience (between the city and its citizens). The city manager has identified these two areas as priorities for 2017, and they present an opportunity for collaboration between the Bureau de la résilience and the departments concerned. New technologies are being implemented in these areas in order to optimize to the successful completion of tasks and improve communications with Montrealers.

Montréal must not only improve its performance on a daily basis, but it must also do a better job of anticipating the various disruptions that can adversely affect its citizens' quality of life and safety. Collaboration between city departments thus becomes the key for better understanding and adapting to specific complex problems. Such is the case, in particular, for dangerous goods stored on city territory. Internally, at the city, this issue involves civil security representatives, urban and environmental planners, as well as representatives from legal and economic development departments. Based on this internal (and external) collaboration, the city is developing a by-law that will address the various perspectives on this issue. Other internal collaboration initiatives are underway and under development, although they are not systematic and too often rely upon individuals rather than a process meant to facilitate collaboration.

The Bureau de la résilience, for its part, will attempt to integrate resilience thinking in city projects pertaining to organizational performance and the quality of the client experience. How can effective communication with citizens be achieved in times of crisis? How can new technologies be used to improve and facilitate coordination between departments tasked with preparedness and emergency measures? How can the risk culture be improved within the municipal administration, and how can we ensure that decision-making is consistent with this vision?

In 2016, the Ville de Montréal, in response to recommendations issued by the auditor general, put forward a business continuity program overseen by the Direction de la sécurité civile et de la résilience. A pilot project with the waterworks, police, fire, payroll and IT departments is now underway, and the first continuity plans should be ready by early 2018. This program will allow the city to better anticipate service disruptions in the event of a crisis and put in place solutions.



## RESILIENCE IN ACTION

### The Ville de Montréal's Centre de sécurité civile:

The Centre de sécurité civile works to prevent the risks of major disasters and coordinate the emergency preparedness and support required in the event of such an occurrence, in concert with several partners. Emergency measures workers, boroughs and central departments within the Ville de Montréal have a part to play in civil security, but so do citizens and people in the businesses community, who are called upon to take the necessary precautions to deal with any major disaster.

The Centre de sécurité civile develops policies, emergency plans as well as alarm and mobilization procedures, and it organizes training and simulation exercises aimed at improving the state of preparedness. In addition, it uses several continuous monitoring tools for purposes of timely detection and proactive intervention in the event of problematic situations.

#### Partners:

Various Ville de Montréal departments, the boroughs and reconstituted cities, as well as many external civil security partners.

## RESILIENCE IN ACTION

### Office of the Inspector General (BIG) of the Ville de Montréal:

The Inspector General has a mandate to oversee contracting processes and the execution of contracts by the Ville de Montréal or any legal person related to the city. The Inspector General's main duties include training council members, civil servants and employees to recognize and prevent breaches of integrity and non-compliance with regulations pertaining to the awarding or execution of contracts.

#### Partners:

Ville de Montréal

Another challenge facing the city lies in better taking into account the current and future needs of various Montréal actors in decision-making processes. Through the Office de consultation publique, the Ville de Montréal, in a quasi-systematic manner, is making efforts to integrate citizens in decision-making processes, particularly in the development of major new urban developments. In addition, the city has established a number of consultation initiatives, including surveys and mixed committees (i.e., merchants, community groups, citizens, etc.) with the objective of giving citizens and merchants a voice on new urban developments and the allocation of municipal budgets at the local level. These consultation methods promote ties between actors and in turn foster a better understanding of citizens' many needs; as a result, the city is better able to meet those needs and to significantly increase acceptability and a sense of belonging among local populations. As mentioned, the city has already established a number of consultations; however, these initiatives are inconsistent from one borough to the next, with some consulting a great deal, and others consulting very little.

These projects are extremely stimulating for Montréal. But with its roughly 28,000 employees and 103 elected officials – Montréal has the largest number of elected officials among Canadian cities with populations of more than 200,000 – the mayor of Montréal is at the head of a huge administration. Under these circumstances, increasing municipal effectiveness remains a daunting challenge.

This focus area, through four specific questions, is thus aimed at pursuing and facilitating internal collaboration at the city as well as external collaboration, in keeping with the city's organizational priorities and in consideration of the bill on the status of metropolis currently being studied by the Government of Quebec. The committee will address the following questions:

- How can the city foster greater inter-departmental collaboration, knowledge-sharing and organizational flexibility in order to make the municipal administration more adaptable?
- How can citizens be included in decision-making at the borough level and in the reconstituted cities, by highlighting existing initiatives for purposes of promoting buy-in to a common vision for Montréal?
- How can exchanges between the city and citizens be improved to ensure effective communication in emergency situations?
- How can the risk culture be improved within the municipal administration, and how can flexible intervention tools be adopted in order to foster a better state of preparedness for shocks and stresses?

## 7.3 FOCUS AREA 3 - AN ECONOMY THAT ANTICIPATES CHANGE

### *HOW CAN WE ADAPT TO NEW TRENDS, ANTICIPATE FUTURE DEMAND, AND DRAW ON ECONOMIC DIVERSITY AND THE RELIABILITY OF ESSENTIAL SYSTEMS?*

Montréal's economy is as textured as its citizenry is diverse. The city was built around its port and the railways that connect it to the North American continent. Today, the Port de Montréal has initiated an innovation shift intended to better adapt to a rapidly

changing environment. Climate change is sure to have an impact on the port's activities, notably as regards potential variations in water levels on the St. Lawrence River and recurring high-risk weather events. What would be the effect of a major disruption in its activities on the local and regional economy, not to mention the national supply chain? What can organizations that depend on imports and exports through the Port of Montréal and the pan-Canadian and North American rail system do to be better prepared?

Montréal's economy, like that of several other large North American cities, has long been based on its manufacturing sector, which remains important and is now made up largely of small- to medium-sized enterprises (SME). Today, Montréal's economy is particularly active in eight major sectors, including ICTs, a fast-growing industry made up of some 5,000 private enterprises accounting for about 120,000 jobs. As well, a survey of research centres in the health sciences and the amounts invested in research and development shows that Montréal is first among Canadian cities and one of just a handful of cities in the world where all the components required to manufacture an airplane are available. To say nothing of the video game industry, which generates \$1 billion and employs thousands. Also known as a cultural city, Montréal offers an infrastructure conducive to a range of leading-edge creative industries, including numerous yearly festivals.

On the whole, however, do these economic sectors have the flexibility to adapt to the socioeconomic, technological and environmental changes expected in the 21st century? A major technological challenge awaits the manufacturing sector, for one: in Quebec, as is the case elsewhere in Canada, manufacturing lags behind in terms of the modernization of equipment and robotization. This lag could be sharply felt with the expected entry into force of Canada-EU free trade agreement in 2017. Indeed, in April 2016 the Government of Québec launched a strategy meant to address this problem.

Also worth mentioning are the potential impacts of climate change on Montréal territory—impacts that could affect the natural and built environments alike, as well as populations and socioeconomic activities. Extreme weather events are occurring with increasing frequency, and they will affect the way SMEs and large corporations operate. During the 1998 ice storm, we witnessed first-hand the risks that climate change poses to our society, and we saw what happens when the essential systems we rely upon break down.

Following discussions with stakeholders on the Prosperity and Innovation Committee, have expressed that Montréal companies are not prepared to pursue their activities in the wake of a major disruption or even a smaller-scale event. A key factor behind this conclusion is that business continuity is not yet well entrenched in Quebec industries, particularly in SMEs, which often have far fewer human and financial resources to develop adequate plans. Given that 43% of North American companies faced with a major crisis are forced to close and that 29% of the remaining companies cease their operations within two years, this situation is of non-negligible importance to a resilience strategy.

## RESILIENCE IN ACTION

### Unit specialized in detecting leaks in the water supply system:

The Ville de Montréal created this unit in 2013 for purposes of detecting leaks in its water supply system. Four teams, each made up of two technicians, patrol the city and are able to cover the entire Montréal territory in the space of a year. They have a mission to detect underground leaks before they pose a more serious problem.

#### Partners:

Service de l'eau /  
Ville de Montréal

## RESILIENCE IN ACTION

### Projet Domino:

This university research project, thanks to a collaboration involving the main critical systems in Montréal and civil security authorities, led to the creation of the Domino mapping tool. This decision-making support tool includes several modules that make it possible to anticipate the cascading effects following the disruption of a system, such as the electrical power grid or water supply system.

Partners: Centre risque & performance / Polytechnique Montréal, Centre de sécurité civile / Ville de Montréal, Gaz Métro, Ministère de la Sécurité publique du Québec, Ministère de l'Économie, de la Science et de l'Innovation du Québec, Service de l'eau / Ville de Montréal, and other partners.

The aging of the population is also an issue that raised concern among our collaborators. How will companies adapt to the loss of expertise or retirements on a massive scale? With one of the lowest birth rates in the world, Quebec, like the rest of Canada, is facing a major demographic challenge. Our economy's dependence on immigration will continue to grow, as a result. According to Statistics Canada, in the absence of a sustained level of immigration or a substantial increase in the birth rate, Canada's demographic growth could fall to near zero within the next 20 years.

In this context, discussions aimed at increasing immigration are underway at both the federal and provincial levels. In Montréal, the question being asked is how can we retain new immigrants and foreign students when statistics demonstrate they have difficulty integrating into the job market? How can we keep skilled labour in the city, when young professionals, increasingly, are more mobile and sought-after across Canada and throughout the continent?

Montréal's economy is also shaped by the development of new startups and, as in many of the world's large cities, by the emergence of practices related to sharing and circular economies. What impact will these new economic models have on the resilience of Montréal-based companies?

This work stream will thus be aimed at better understanding the various challenges facing Montréal's economy and identifying potential opportunities. Four major questions will be used to address the subject:

- How can companies be made more aware of the importance of preparing for shocks and stresses in order to maintain the offer of services and minimize the impact on Montréal's economy?
- How can we ensure greater reliability of essential systems by anticipating technological and environmental risks?
- How can we better understand the importance of railway and maritime transportation for the economy and the impacts of a disruption in supply chains?
- How can new economic models strengthen or reduce the resilience of Montréal's economy?

## 7.4 FOCUS AREA 4 - A CITY THAT LOOKS TO THE FUTURE

### *HOW CAN URBAN DEVELOPMENT BE OPTIMIZED IN ORDER TO RESPOND TO CHANGES, WHILE PRIORITIZING THE HARMONIOUS MIX OF USES?*

Each week, cities across the world take in 1.4 million new immigrants. Modern populations are drawn to cities, as centers of economic activity, social connection, urban mobility, opportunity and innovation. Among North American

cities, Montréal is considered a dense and concentrated city. In fact, 60% of the Greater Montréal region lies within a 15-km radius of downtown. Forecasts suggest that by 2031 the agglomeration's population will total 2.1 million, an increase of 21% compared to 2006. Of this population, the proportion of people aged 65 and over will rise from 16% in 2011 to 21% in 2031.

These demographic changes, coupled with the anticipated impacts of climate changes and aging infrastructures, will exert greater stress on the city's natural and built environments and on the health of Montrealers. Montréal is already a densely-populated island. In order to meet new urban development demands (housing, transportation, parks, schools, etc.), the urban tools in place must be used and even improved with the objective of better overseeing these new developments and thus limiting the creation of new vulnerabilities associated with risks such as construction in flood zones or in proximity to high-risk industries. In addition, as in all the world's large cities, urban mobility is a chronic problem whose impact can be exacerbated under emergency situations. Montréal, as an island, faces specific challenges in this regard.

These realities must be taken into account now in order to mitigate adverse impacts in the future, while considering the economic costs of the choices made in the short, medium and long terms. An analysis of the costs, benefits and opportunities of redeveloping and repairing infrastructures, in particular, is necessary in order to optimize investments. These investments must ensure that Montrealers are able to maintain their quality of life and urban mobility, while also sustaining the city economic development, keeping its citizens safe, and preserving its ecosystems. The relationships between these related advantages must be better understood and supported by conclusive data that facilitate decision-making in land use development, in particular. Is it financially feasible to redevelop the city in a safe and sustainable manner? Are the principal shocks with the potential to threaten Montréal being taken into account in urban planning and infrastructure repair work?

New technologies and the contribution of massive open data also have a role to play in decision-making by public authorities. We now understand the full scope of their potential uses in fields as varied as urban mobility, communication of risks, optimization of electrical networks and territorial planning. But these new technologies can also make a society highly vulnerable, owing in particular to the growing dependence on telecommunications networks. What's more, it's important to make sense of the varied data compiled so that it serves the public interest, while ensuring the protection of citizens' privacy.



## RESILIENCE IN ACTION

### Centre de gestion de la mobilité urbaine (CGMU):

The CGMU is meant to be the heart and brains behind Montréal's smart transportation system, making it possible to accelerate the implementation of smart transportation in the city. The official launch of the CGMU is part of Montréal's Smart and Digital City strategy. The CGMU is a real-time decision-making centre meant to facilitate the mobility of citizens. It uses specialized equipment (i.e., cameras, candlestick traffic lights, variable message signs, etc.) to remotely manage traffic on the road network and react quickly in the event of an accident. For example, the equipment can be used to improve coordination during festivals or major events, or better manage traffic around major worksites.

#### Partners:

Service des infrastructures, de la voirie et des transports, Service des incendies de Montréal (Fire department), the Société de transport de Montréal, Transports Québec, Centre de sécurité civile.

## RESILIENCE IN ACTION

### Health watchdog and epidemiological surveillance:

In Quebec, the monitoring of notifiable diseases is a process through which information is collected, where possible in real time (hours, days, weeks), on public health threats with the objective of alerting public health authorities and other targeted authorities, communicating the risk to the public, and supporting the establishment of protection measures, where required.

#### Partners:

The Bureau de surveillance et de vigie (BSV) which comes under the Ministère de la Santé et des Services sociaux's Direction de la protection de la santé publique, and regional public health authorities.

With a focus on five specific questions, therefore, this focus area seeks to give closer scrutiny to the challenges Montréal will face in the future:

- How can smart transportation be used to improve urban mobility on a daily basis and facilitate movement in the event of a disaster?
- How can land use development planning better take into account natural and man-made risks and the protection of ecosystems?
- How can we take advantage of the upgrading of infrastructures to ensure that tendering conditions account for climate and demographic change, while sticking to cost-benefit analyses?
- How can we anticipate the needs of citizens in terms of housing and coordinate relocation efforts in emergency situations?
- How can we make the most of massive data and better use conclusive data to support decision-making and actions that hold related advantages?



# NEXT STEPS

Phase 1 and the completion of the PRA raised several questions that the Bureau de la résilience is anxious to answer. These questions will require new collaborations and continued engagement on the part of stakeholders. Before undertaking Phase II, however, a detailed scope-of-work plan will be devised for purposes of concentrating our efforts on meeting our objectives. The questions we need to answer are all relevant, but they span wide-ranging fields and raise several societal issues. It is therefore essential to properly structure our work. The scope-of-work plan should include research activities carried out in collaboration with partners, the 100 Resilient Cities team, our strategic partner, and the Platform partners.

The Bureau de la résilience team intends to pursue its partnership with specific key stakeholders with the goal of developing promising projects; these include the workshop on resilience presented as part of the Rencontre internationale des municipalités efficaces; participation in the Fifth Regional Platform for Disaster Risk Reduction in the Americas of the United Nations Office for Disaster Risk Reduction (UNISDR); and the establishment of an emergency communications protocol with all public security departments within the Ville de Montréal.

Phase II will provide an opportunity to analyze our focus areas while developing more in-depth diagnostic questions and fostering new collaborations. While Phase I was meant to be wide-ranging and exploratory, Phase II will be focused on forming smaller groups to find answers to more specific questions. With specialists in all fields, we will be able to evaluate projects, actions and initiatives that will be integrated into the Ville de Montréal's resilience strategy.







# APPENDICES

## APPENDIX 1

### MEMBERS OF THE STEERING COMMITTEE

Group	Name	Title and organization
Intern	Louis Beauchamp	Directeur, Service des communications
	Josée Blais	Inspecteur-chef, Service de police de la Ville de Montréal
	Patrice Boileau	Directeur général, Ville de Beaconsfield
	Diane De Courcy	Directrice, Je fais Montréal et Bureau de l'expérience client
	Michel Denis	Directeur adjoint, Service de sécurité incendie de Montréal
	Alain Dufort	Directeur général adjoint, Service de la concertation des arrondissements
	Chantal Gagnon	Directrice générale adjointe à la qualité de vie
	Stéphane Goyette	Directeur, Bureau de la ville intelligente et numérique
	Luc Gagnon	Directeur de service, Mise en valeur du territoire
	Serge Guérin	Directeur de service, Développement économique
	Roger Lachance	Directeur de service, Service de l'environnement
	Danielle Lussier	Directrice, Bureau du développement durable
	Chantal Morissette	Directrice, Service de l'eau
	Henri-Paul Normandin	Directeur, Bureau des relations internationales
Extern	Pierre Babinsky	Directeur des communications et des affaires publiques, Bureau d'assurance du Canada
	Alain Bourque	Directeur général, Ouranos
	Michel Fortin	Directeur général, SAJE accompagnateur d'entrepreneurs
	Pierre Gfeller	Président-directeur général, CIUSSS du Nord-de-l'Île-de-Montréal
	Éric Houde	Directeur des opérations, Ministère de la Sécurité publique du Québec
	Stephen Huddart	Président-directeur général, Fondation McConnell
	Marc Lapointe	Directeur, Sécurité corporative et résilience, Bell Canada
	Karel Mayrand	Directeur général pour le Québec, Fondation Suzuki
	Lili-Anna Pereša	Présidente-directrice générale, Centraide
	François Poulet	Gestionnaire régional, Gestion des mesures d'urgence, Sécurité publique Canada
	André Poulin	Directeur général, Société de développement commercial Destination centre-ville
	Marie-Christine Therrien	Professeure, École national d'administration publique
	Isabelle Thomas	Professeure, Université de Montréal
	Luc Tremblay	Directeur général, Société de transport de Montréal



# APPENDIX 2

## MEMBERS OF THE STAKEHOLDER COMMITTEES

Committee	Name	Organization
Diversity and equity	Ghalia Chahine	Système alimentaire montréalais
	Philippe Meilleur	Regroupement des centres d'amitié autochtones du Québec
	Hélène Bohémier	Office municipal d'habitation de Montréal
	Daniel Tierney	YMCA
	Ann St-Arnaud	Jeunesse au soleil
	Richard D. Daneau	Moisson Montréal
	Martin Wexler	Service de la mise en valeur du territoire, Ville de Montréal
	Michel Therrien	Arrondissement de Côte-des-Neiges
	Dre Elene Khalil	Hôpital de Montréal pour enfants
	Caroline Dusablon	CIUSSS du Centre-Sud-de-l'Île-de-Montréal
	Emmanuelle Saint-Arnaud	CIUSSS du Centre-Sud-de-l'Île-de-Montréal
	Esther Laforte	Croix-Rouge
	Sylvie Lepage et Patrice Allard	Service de la diversité et des sports, Ville de Montréal
	Isabelle Billette et Josée Blais	Service de police de la Ville de Montréal
	Lida Aghasi	Centre social d'aide aux immigrants
	Martine Côté	Institut Philippe-Pinel de Montréal
	Richard Papineau	Commission scolaire de la Pointe-de-l'Île
Bernard St-Jacques	Réseau d'aide aux personnes seules et itinérantes de Montréal	
Infrastructure and networks	Nicolas Sasseville	Aéroports de Montréal
	Martin Dumont	Hydro-Québec
	Felixpier Bergeron	Port de Montréal
	Rémi Beylot	Gaz Métro
	André Marsan	Service de l'eau, Ville de Montréal
	Éric Blain	Service de l'environnement, Ville de Montréal
	Sylvain Roy	Service des infra., de la voirie et des transports, Ville de Montréal
	André Porlier	Société de transport de Montréal
	Mathieu Gillet	Association québécoise de la maîtrise de l'énergie
	Benoît Robert	Polytechnique Montréal / Centre risque & performance
	Nathalie Bleau	Ouranos / Environnement bâti
	Annie Giraudou	Ivanhoé Cambridge
	Patrick Ricci	Division de l'exploitation du réseau artériel, Ville de Montréal
	Benoît Dupont	Université de Montréal / Réseau intégré sur la cybersécurité
	Michel Clavette	Innovation, Sciences et Développement économique Canada
Julie-Maude Normandin	École nationale d'administration publique	
Louis-Alexandre Kirouac	Bell Canada	

## MEMBERS OF STAKEHOLDER COMMITTEES

Committee	Name	Organization
Quality of living environments	Luc Gagnon	Service de la mise en valeur du territoire, Ville de Montréal
	Karine Price	Direction de la santé publique
	Pierre Barrieau	Gris Orange Consultant Inc.
	Élisabeth Liston	Société d'habitation et de développement de Montréal
	Coralie Deny	Conseil régional de l'environnement de Montréal
	Rotem Ayalon	Québec en forme
	Danielle Lussier	Bureau du développement durable, Ville de Montréal
	Christian Vermette	Bixi-Montréal
	Émilie Auclair et Jessie Pelchat	Solidarité Mercier-Est
	Isabelle Thomas	Université de Montréal / Faculté de l'aménagement
	Yona Jébrak	Université du Québec à Montréal / Département d'études urbaines
	Louise Bussière et Claude Masse	Environnement Canada
	Suzanne Lareau	Vélo Québec
Prosperity and innovation	Pascal Beauchesne	TechnoMontréal
	Laure Waridel	Centre interdisciplinaire de recherche en opérationnalisation du développement durable
	Diane De Courcy	Je fais Montréal, Ville de Montréal
	Christine Fréchette	Montréal International
	Valérie Beaulieu	Culture Montréal
	Yannick Hémond	Polytechnique Montréal / Centre risque & performance
	Nancy Neamtan	Chantier de l'économie sociale
	Mario Monette	Technoparc Montréal
	Mélanie McDonald	Institut de l'environnement, du développement durable et de l'économie circulaire
	Claude-André Mayrand	Chambre de commerce du Montréal métropolitain
	Lyndsay Daudier	Amplifier Montréal
	Renée Michaud	Polytechnique Montréal / Centre international de référence sur le cycle de vie des produits, procédés et services
	Éric Gagnon	Mouvement Desjardins
	Lynda Brault et Juliette Pinson	Société de développement commercial Quartier du canal
	France Jobin et Johanne Lavoie	Service du développement économique, Ville de Montréal

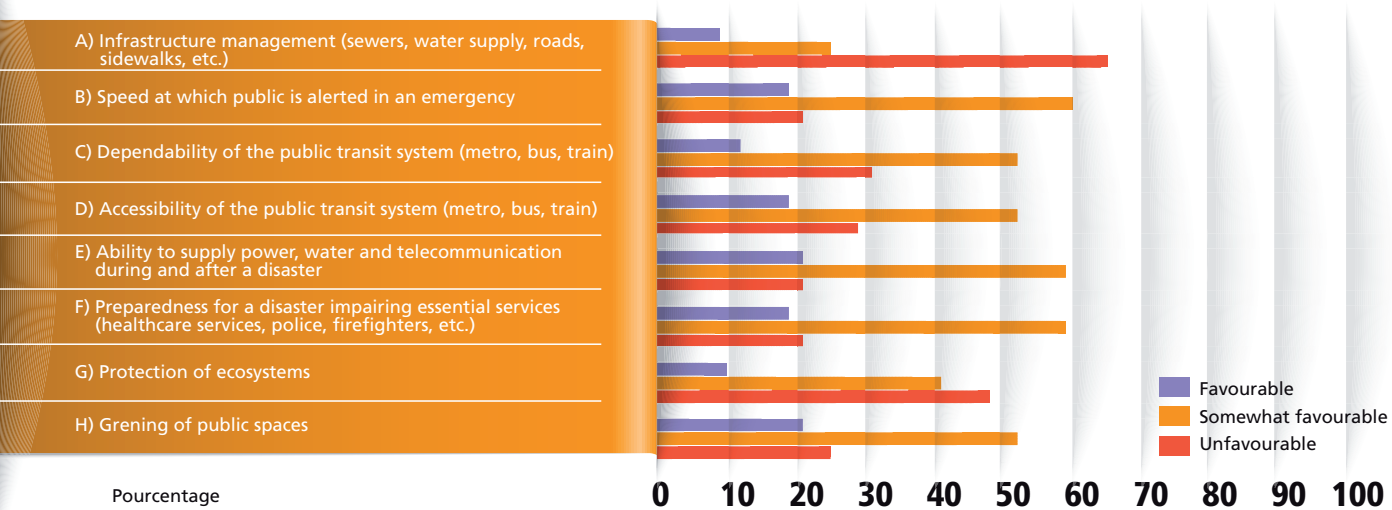
**PROFILE OF RESPONDANTS**

- 78% are university graduates
- 47% are aged 45-64
- 30% are aged 35-44
- 15% Plateau-Mont-Royal
- 15% Rosemont-La Petite Patrie
- 15% Mercier-Hochelaga-Maisonneuve
- 10% Ville-Marie
- 43% have lived on the Island of Montréal for more than 25 years
- 62% are owners
- 88% are workers
- 74% work in the public sector
- 57% are women

# APPENDIX 3

## RESULTS OF THE PUBLIC PERCEPTION SURVEY

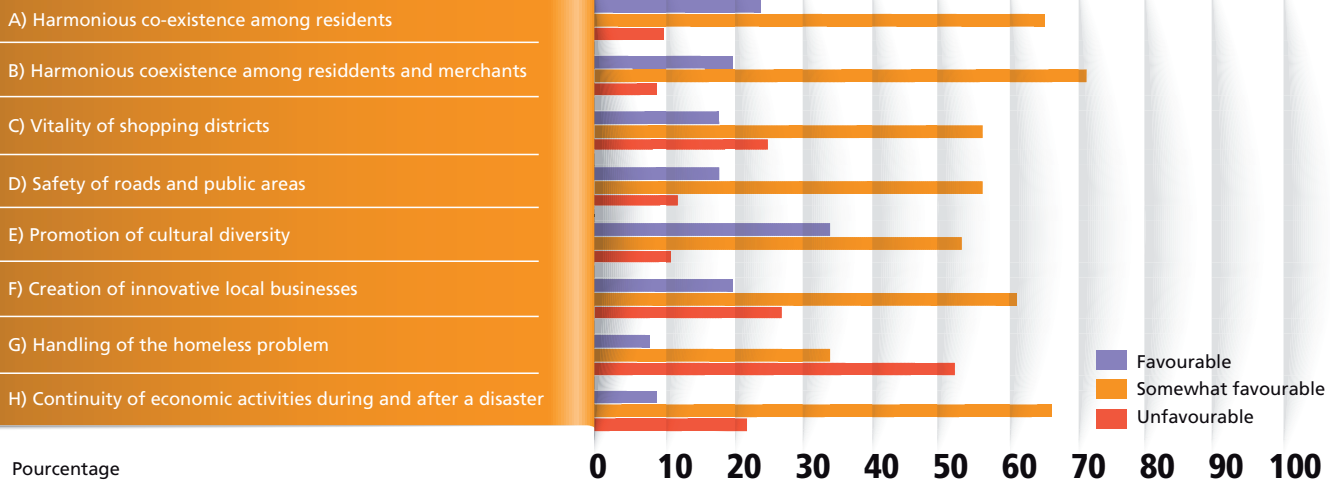
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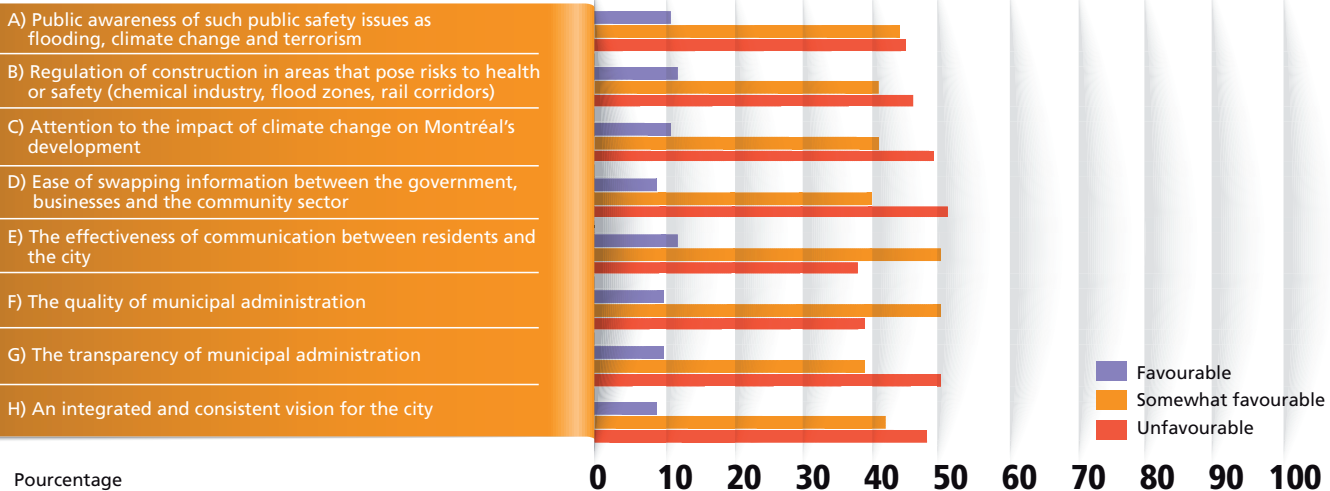
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### DO YOU HAVE A FAVOURABLE, SOMEWHAT FAVOURABLE OR UNFAVOURABLE OPINION OF...



### DO YOU HAVE A FAVOURABLE, SOMEWHAT FAVOURABLE OR UNFAVOURABLE OPINION OF...



### IN WHICH SECTORS DO YOU BELIEVE MONTRÉAL SHOULD TAKE PROMPT ACTION TO BOOST RESILIENCE? PLEASE SELECT THREE OF THE FOLLOWING SECTORS.

