

Montreal's Alleys as a Climate Emergency Adaptation Strategy

Daniela Rodriguez

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The Context of the green alleys

Alleys have been part of the urban morphology of Montreal since the 1800s when they were conceived as narrow streets to access some dwellings and courtyards. As of 1890, back alleys became widespread in the city's configuration in boroughs like Le Plateau Mont-Royal, Rosemont-La-Petite-Patrie, Villeray, Hochelaga-Maisonneuve, and Notre-Dame-de-Grâce (Centre d'histoire de Montréal). However, around 1950, alleys were eliminated as part of the city's morphology in the new neighbourhoods. Furthermore, the use of the alleys changed as they became dark service streets, mainly unused, filthy and, in some areas, dangerous due to the lack of light and activity.

However, in 1980 the alleys experienced a revitalization process thanks to two complementary programs: "Opération Tournesol," a subsidy program for demolishing sheds in backyards, and the "Place au Soleil" program that transformed 58 back alleys into small parks.

The main feature of the "Place au Soleil" program was the recovery of the alleys by creating a linear park with trees and shrubs while leaving it accessible to car users when they needed it. The principle of the linear park was to transform alleys into pedestrian spaces. Therefore, the pedestrian vocation of these public areas was clearly defined, eliminating car traffic in the back alleys. Furthermore, this program redesigned the alleys to become a new green space to solve the lack of park space in some of Montreal's densely populated neighbourhoods. Consequently, "Opération Tournesol" and "Place au Soleil" generated public interest (Taquin and Waltz, 1982). The redevelopment of the alleys created a change of vision of the back alleys as unsafe and dirty places. However, despite the effort to revitalize alleys, the programs were abandoned in 1988 because of insufficient funds.

In 1995, a new proposal for enhancing alleys emerged with the creation of the first green alley in Plateau-Mont-Royal, located in Napoleon, Roy, Parc La Fontaine and Mentana streets.



First green alley from the Green Alley Program. Plateau-Mont-Royal. June 2022

The current Green Alley Program appeared due to the citizens' motivation for redeveloping alleys as public green spaces (Bur et al., 2007). The enthusiasm for green alleys was encouraged by the creation of the Éco-quartiers, also in 1995, whose mission is to provide environmental education and support citizens in their greening initiatives (Ville de Montréal, 2020).

The Green Alley Program is a bottom-up approach that promotes public participation and citizen governance. The boroughs and Éco-quartiers manage the Program, which was conceived to support the citizens' initiative to enhance back alleys and add greenery. Consequently, the Program aims to provide environmental and well-being benefits by encouraging the reduction of the heat island effect and pollution, increasing biodiversity, and improving water management by including vegetation.

Today, 13 of the 19 boroughs of the city have implemented the Green Alley Program, and there are around 578 green alleys in 11 boroughs as part of the strategy to reduce some of the adverse effects of the climate emergency and to expand green space through the neighbourhoods.

From back alleys to green alleys



Plateau (2017 vs 2022). Mont-Royal/Coloniale/Cérat. Arrondissement du Plateau- Mont-Royal Facebook (Left), Current condition of the alley June 2022 (Right).



Plateau (2019 vs 2022) Milton/Parc Ave/Prince-Arthur/Jeanne Mance. Arrondissement du Plateau- Mont-Royal Facebook (Left), Current condition of the alley. June 2022 (Right).

Green alleys as a climate emergency adaptation

Back alleys represent one of the main features of Montreal's spatial configuration since they define the morphology of many neighbourhoods in the

different boroughs. Alleys form a network of primarily underused public spaces that represent an opportunity to be transformed into green alleys to incorporate vegetation and experience a calm and diverse environment in flora, fauna, and activities, far from the noise of main avenues and congested city areas. Moreover, everyone can enjoy these benefits without leaving the neighbourhood, demonstrating the potential of adapting alleys by including vegetation in an already existing public infrastructure.

Green alleys can generate more than just local benefits. They can also become part of a city's strategy to adapt the built environment to diverse climate change effects by allocating green infrastructure and repurposing their use. Transforming back alleys into green alleys implies rearranging the space so they become quality public spaces for people instead of secondary streets for vehicular traffic.

Indeed, green alleys can mitigate the heat island effect produced by the paved surfaces by reassigning space for planting vegetation, adding permeable surfaces, and reducing or eliminating car transit to favour walkability and other active modes of transport. Furthermore, green alleys can improve water management and air quality with diverse vegetation types.

These transformations have been implemented in boroughs like Plateau-Mont-Royal, Sainte-Marie in Ville-Marie, Rosemont, Sud-Ouest, Verdun, and Mercier-Hochelaga-Maisonneuve, where some of the alley entrances are closed to car circulation and transformed with green surfaces, gardens, and trees. These rearrangements represent a significant change in the usage of alleys since greenery enhances the quality of these public spaces, generating an active and safe use due to the limited or restricted car transit.



Sud-Ouest (Left), Plateau-Mont-Royal (Center), Maisonneuve (Right).

Most green alleys improve the thermal comfort of pedestrians due to the trees and walls with vegetation that provide shade and make the alleys cooler than regular streets. Furthermore, several new alleys are adding permeable surfaces with grass or vegetation. Therefore, these transformations reduce the urban heat island effect.



Alleys with diverse greenery

Permeable surfaces with greenery are essential to contribute to water management. Particularly considering the adverse changes that the climate emergency is provoking, where heat waves and rain periods are intensifying (Vibert and Rouillé, 2018). Therefore, the alleys could contribute to a greater extent to the city's resilience by reducing the paved surfaces with diverse green infrastructure types to mitigate extreme weather conditions.

When alleys rely only on the environmental benefits of trees in private courtyards adjacent to the alley, they cannot reduce flood events, as illustrated in the following photo taken in June 2022.



Photo from Centre d'écologie urbaine de Montréal Facebook: June 17, 2022.

In contrast, green alleys with porous surfaces can control rainwater due to the permeable surface and the vegetation. Some examples of these interventions are Ruelle Verte Larivière in Sainte-Marie, and a new alley in Plateau-Mont-Royal part of a public space called "Water Square" (Place des Fleurs-de-Macadam). The latter is part of a multi-purpose square with retention ponds designed to capture rainwater. This feature will "allow up to 30 cm of water to be drained into the soil in less than 48 hours" (Le Plateau-Mont-Royal, 2021).





Ruelle Verte Larivière - Sainte-Marie (Left), Water Park - Plateau (Right).

New initiatives toward climate change: Ruelles Bleues Vertes

In 2017, a new initiative emerged considering green alleys an opportunity to improve rainwater management: "Ruelles bleues vertes." This project is led by the Alliance Ruelles bleues-vertes, a partnership of public and private actors that involves citizens and city authorities, aiming to test sustainable rainwater management solutions to cope with climate change.

The project will start with the construction of two alleys, Ruelle Turquoise in Mercier-Hochelaga-Maisonneuve (Viau/Ontario/Saint-Clément/Roule) and the Ruelle Bleue Verte in Pointe-Saint-Charles, next to "Bâtiment 7".



Image from www.ruellesbleuesvertes.com/le-processus/projets-pilotes

This initiative is based on the same principle of the green alleys: community engagement. Therefore, the neighbours are vital actors in transforming the green-blue alleys, and the development is according to their expectations and needs. However, green-blue alleys seek to include more extensive infrastructure to manage rainwater with water retention mechanisms and infiltration with permeable surfaces and rain gardens to reduce the volume of water that goes to the sewer. Water management serves to mitigate floods but also to reduce polluting discharges into waterways. Moreover, the green infrastructure is considered the main element to decrease the heat island effect and increase urban biodiversity as it occurs in a green alley project. Additionally, the blue-green alley projects were conceived as a strategy to promote public spaces where citizens are involved in developing and maintaining their living environment.

Given that blue-green alleys require significant infrastructural transformations, the two projects have a partnership of diverse actors. Some of them are the city of Montreal, the boroughs, the Éco-quartiers, several universities, Conseil Régional Environnement Montréal, and Action-Gardien in Pointe-Saint-Charles, La Table de Quartier Hochelaga-Maisonneuve and 7 A NOUS, administrator of "Bâtiment 7". Furthermore, the blue-green alley official website indicates that the "Green Fund" funds the project as part of Action-Climat Québec. It was possible "thanks to the contribution of the Fonds d'action québécois pour le développement durable (FAQDD) and its financial partner, the Government of Quebec."

La ruelle Turquoise

The Turquoise blue-green alley has been an ongoing project since 2017, located in Hochelaga-Maisonneuve. The aim is to link the alley with the Antenne Longue-Pointe green public area. The vision for the project is to create ponds that will collect rainwater and then absorb it into the soil.

According to the website, the project will count 900 m² of permeable surface, 1680 m² of vegetation and the potential to divert 9600 m² of stormwater from sewers, equivalent to 2.6 Olympic pools.



Current condition of the alley, June 2022 (Left), Vision of the future Blue-Green alley. Source: www.ruellesbleuesvertes.com/le-processus/projets-pilotes (Right)

Ruelle bleue-verte in Pointe-Saint-Charles

The construction of the alley, located between Le Ber and Sainte-Madeleine streets, will begin in spring 2022. The project represents an opportunity to highlight the importance of water management through a citizen participation process where different actors intervene to enhance the quality of urban environments from the environmental, social, and economic perspectives.

The blue-green alley will be a pedestrian green space between "Bâtiment 7", and two new parks designed with the participation of citizens. The alley will be linked to an urban agriculture project. It will have Bioretention areas that use rain gardens to collect the rainwater from the adjacent buildings and a public space that increases urban greening and biodiversity.





Overall, adapting alleys demonstrates the positive impact that proposals from the community can generate in repurposing unused urban spaces. Therefore, adapting alleys to improve people's quality of life on a neighbourhood scale can simultaneously enhance urban quality on a larger scale, considering the growth that the green alleys initiative has experienced in the last years and the emergence of proposals derived from the green alleys like the Blue-Green Alleys.

Consequently, the Green Alley Program and the Blue-Green Alleys can be part of the city's strategy to mitigate adverse climate change effects by increasing green infrastructure and, with it, the opportunity to be in contact with nature and improve climate conditions.

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