

Beyond Sustainable Buildings: Building More Resilient Cities and Communities

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2. From vulnerability to resiliency
3. From knowledge to action
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1. Introduction

- Earth: A new climate system is emerging and spreading across the planet at a feverish pace: an unavoidable urban issue
- Climate change, energy consumption, flooding, risks, uncertainty, urban vulnerability, resilience, ecological transition, collective action
 - What conceptual frameworks exist for identifying and addressing the signs of an increasingly threatening future? How can we learn from past events to build more resilient cities?
 - How can we transition to an approach that promotes co-construction and architectural and urbanistic innovation in response to climate issues?
 - How can we address the multiple issues confronting the territories and cities we develop?
 - How can adapted communications tools not only improve knowledge among local players and residents but also promote their ability to take action and adapt in order to build more resilient communities?

2. From vulnerability to resilience

- [Translation] “... vulnerability offers us a new opportunity to rethink development and urban planning....”
- “Local players are being asked to respond based on knowledge and actions that **try to reign in their voracious energy appetites through mitigation measures**, making the imperative energy transition, but also reducing their vulnerability to the impact of CC by means of **adaptation measures capable of boosting local resilience** in response to the converging constraints imposed by anticipated global changes....”

Da Cunha A., Thomas I., in 2017, La ville résiliente: Comment la construire? Chap. 1 p. 20.

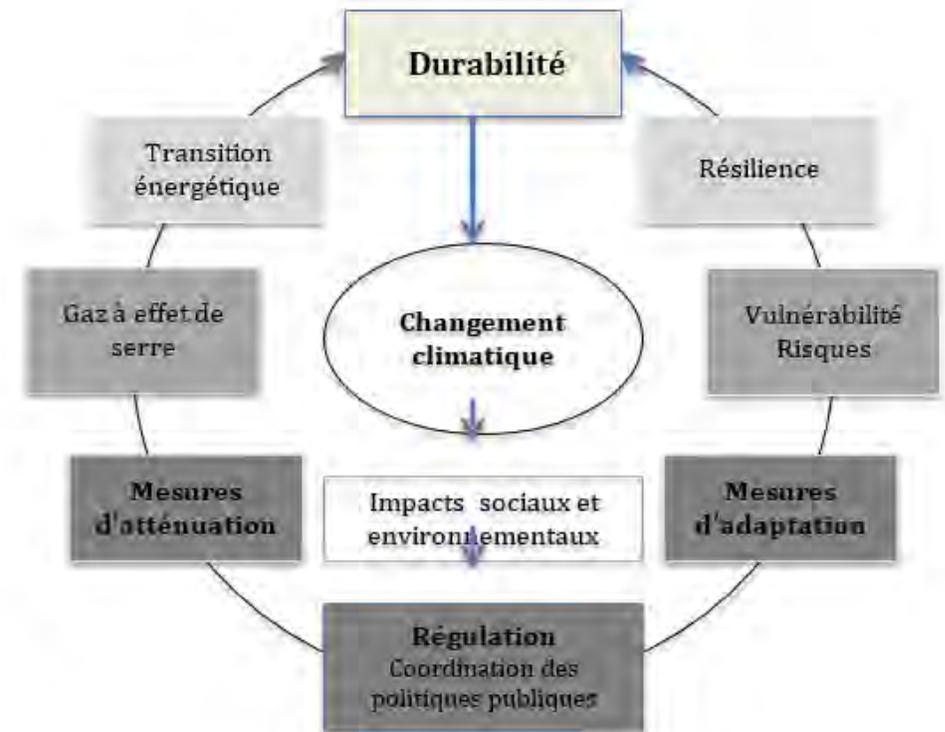


FIGURE 1 : Atténuation et adaptation : des approches complémentaires de la durabilité urbaine. Source : Da Cunha, 2017.



“City resilience is the capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow no matter what kinds of chronic stresses and acute shocks they experience.”

(Resilient New Orleans. Strategic Actions to Shape Our Future City, 2015, p.10)

Resilience is the [translation] “**ability to adapt** to a risk, and to manage or avoid its negative consequences. It may include constructing buildings that can withstand risks, or developing social systems in preparation for an emergency.”

(Marc Pelling, 2003)



La ville résiliente

Comment la construire ?

Sous la direction de
ISABELLE THOMAS et ANTONIO DA CUNHA

[Translation] “An efficient, adaptive, resilient city bases its action on **collaborative indicators and methods** addressing specific local issues in order to enlist **the inclusive support** of political and economic actors, but also professionals and residents.”

(Thomas I., Da Cunha A., 2017: La ville résiliente, comment la construire? PUM, p. 298)

August 2005: Hurricane Katrina



May 2017: Floods in Quebec



Ledevor.com



La-croix.com

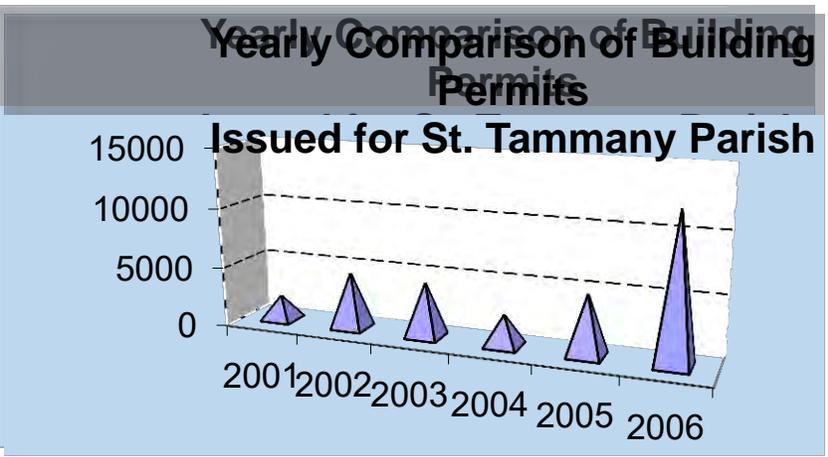
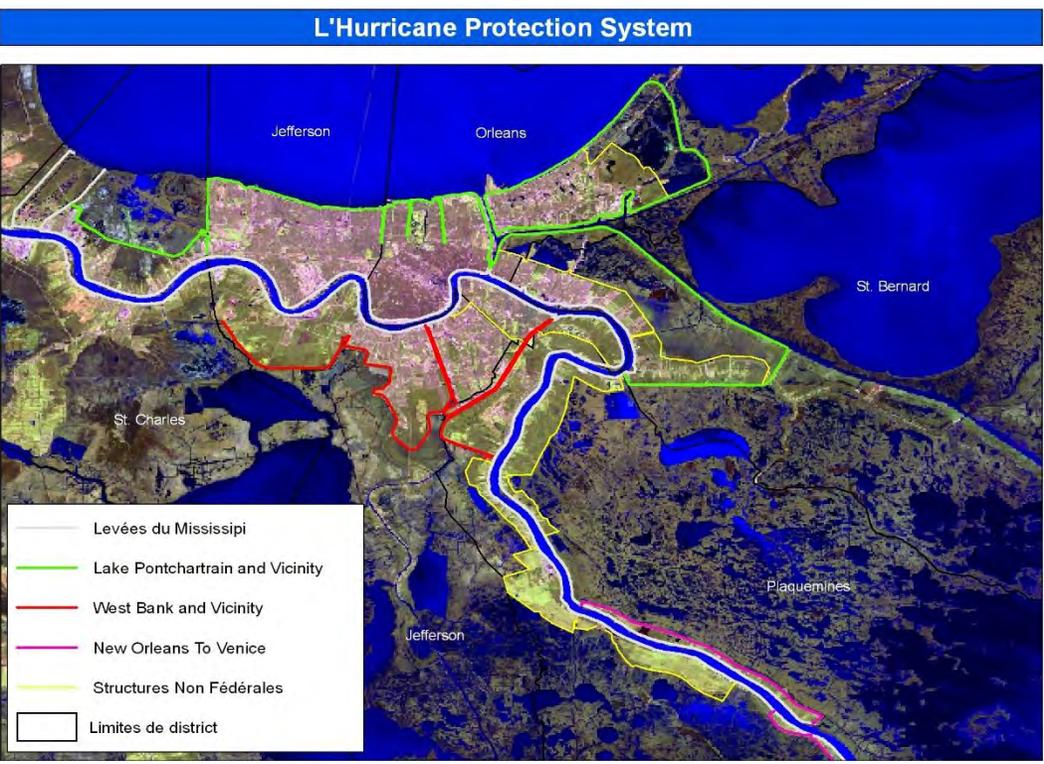


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Urban sprawl: "hurricane sprawl": destabilization of the entire region.





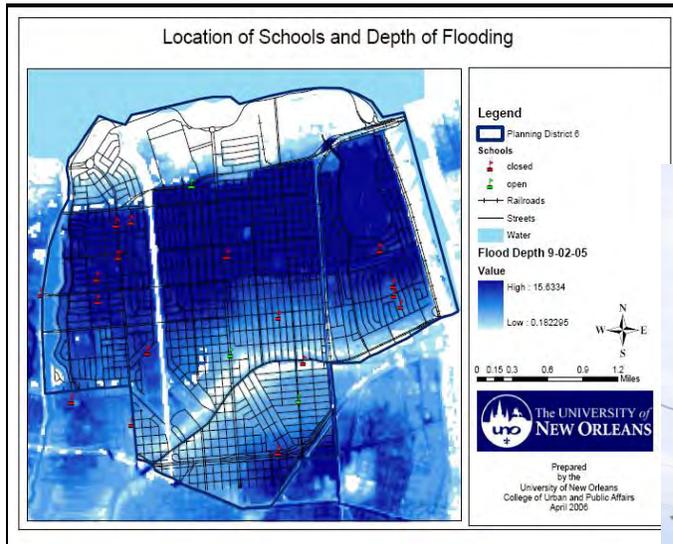
GLOBAL GREEN USA'S
HOLY CROSS PROJECT
With Lead Funding Partner
The Home Depot Foundation



Connection to municipal plan?

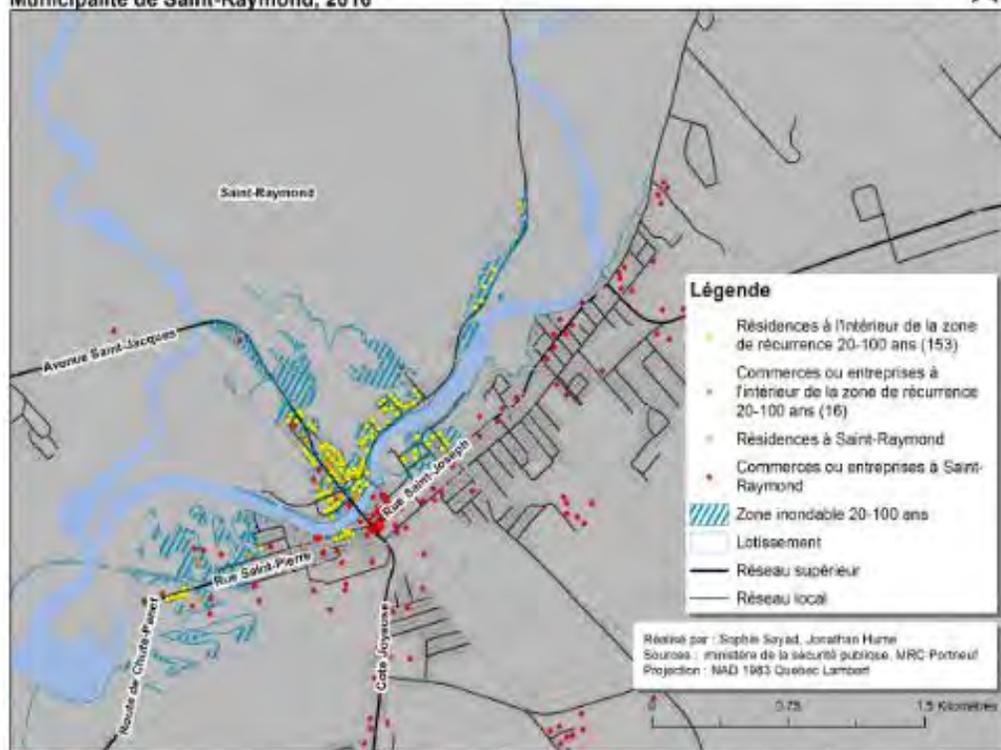




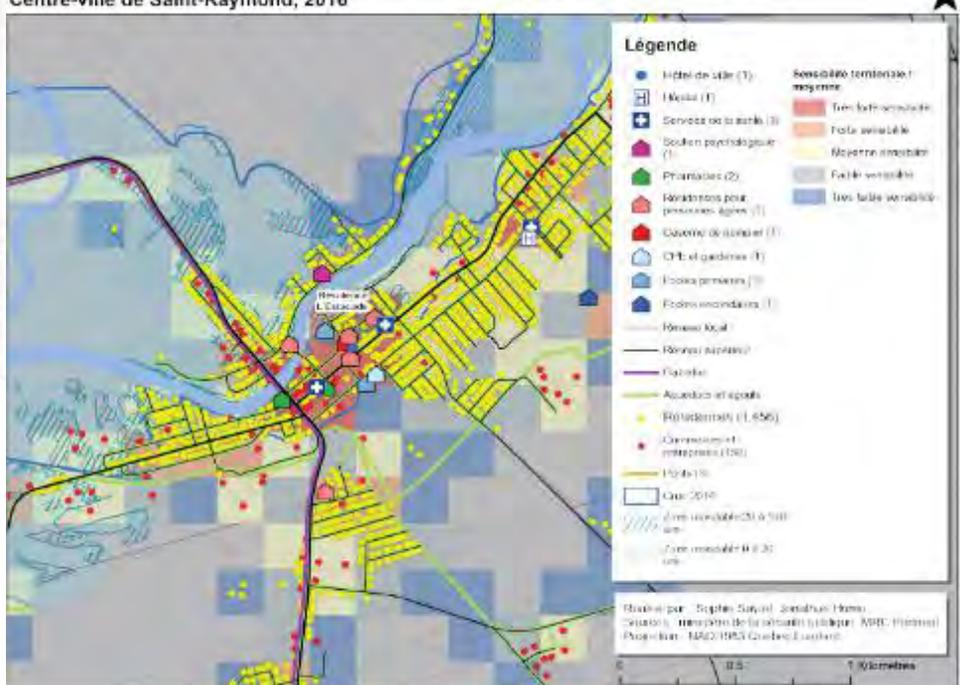


3. From knowledge to action

Les résidences ainsi que les commerces et entreprises à l'intérieur de la zone de récurrence de 20-100 ans
Municipalité de Saint-Raymond, 2016



Portrait de l'indice de sensibilité territoriale (IST) avec un maillage de 200 m par 200 m
Centre-ville de Saint-Raymond, 2016



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Multiple Lines of Defense Strategy

Comprehensive Recommendations to Sustain Coastal Louisiana



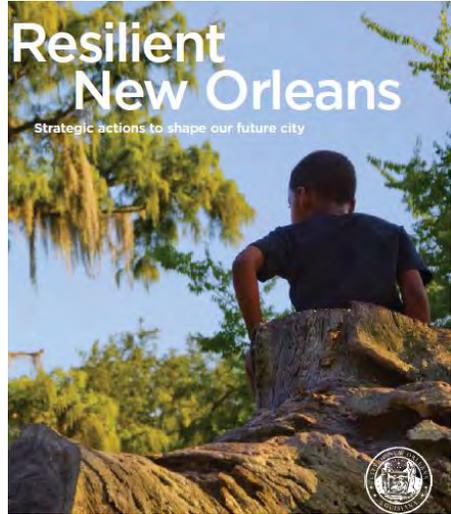
Source: John Lopez, Lake Pontchartrain Basin Foundation

The proposed distribution of Lines of Defense in southeast Louisiana:



- 1) Gulf of Mexico shelf
- 2) barrier islands
- 3) sounds
- 4) marsh land bridges
- 5) natural ridges
- 6) manmade ridges
- 7) flood gates
- 8) flood levees
- 9) pumping stations
- 10) elevated homes & buildings
- 11) evacuation routes

Objective 1 - *Adapt to thrive*



We are a city that embraces our changing environment.

We will:

- Advance coastal protection and restoration
- Invest in comprehensive and innovative urban water management
- Incentivize property owners to invest in risk reduction
- Create a culture of environmental awareness at every stage of life
- Commit to mitigating our climate impact



Excerpt from *Resilient New Orleans. Strategic Actions to Shape Our Future City*, 2015



ONGOING ACTION



Rain gardens and home elevations, seen here in the Lower Ninth Ward, are examples of ways homeowners can invest in risk reduction.

Excerpt from *Resilient New Orleans. Strategic Actions to Shape Our Future City*, 2015 / Photos: I Thomas

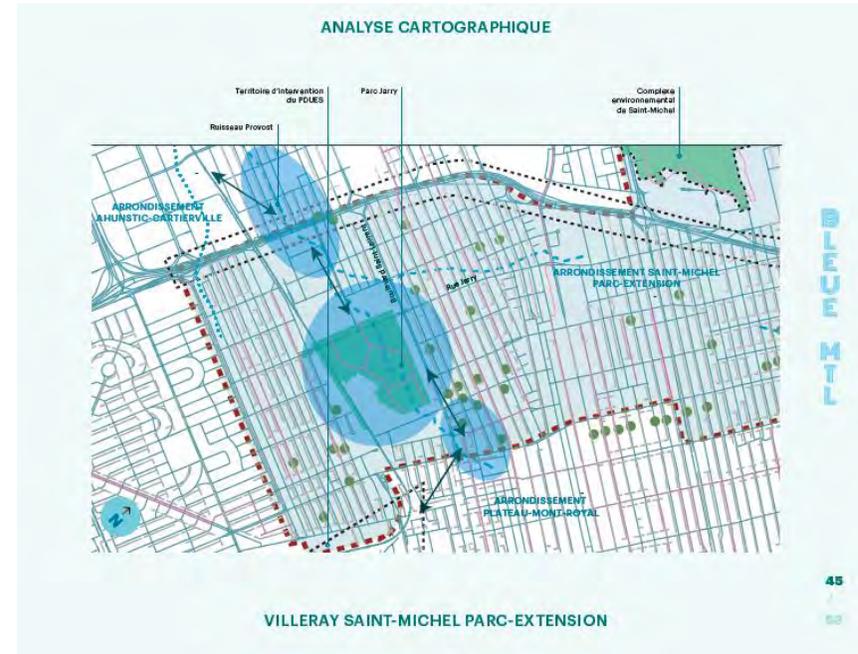
Direction 2- Take action to protect our living environment

Action 10: Plan for resilient construction methods, standards and rules and the inclusion of green infrastructure



Ex. : Villeray – St-Aubin Creek – Provost Creek

Ex. : Site Outremont, Campus Mil



Direction 2- Taking action to protect our living environment

Action 11: Cost-benefit analysis of flood mitigation measures

Un projet de Water Square dans Lachine-Est envisagé

Par Lisa Latouin
Covad



REGIONAL > TVA MONTREAL > MONTREAL > LE PLATEAU MONTREAL SONGE A CONSTRUIRE UN WATER SQUARE

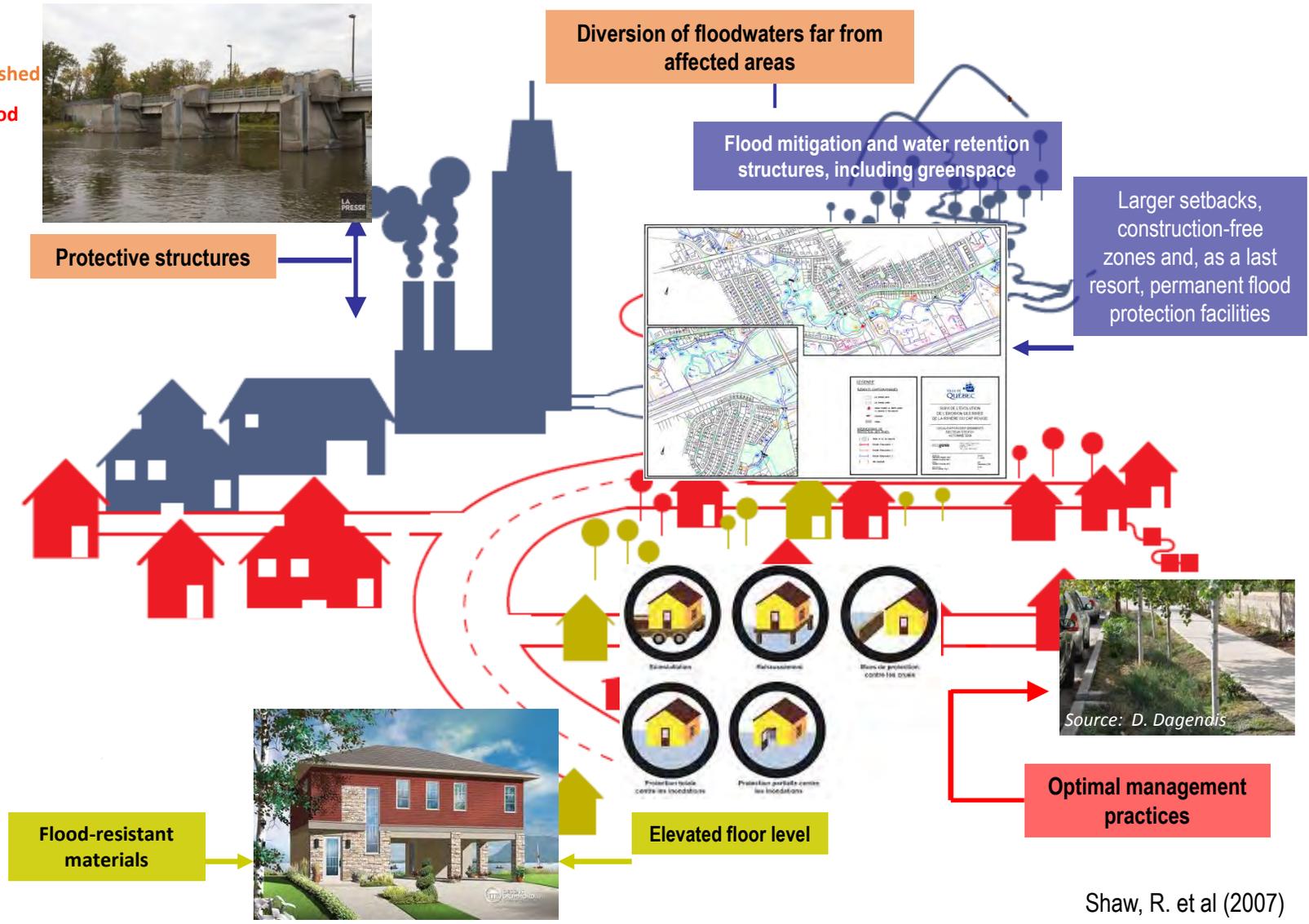
Espace public

Le Plateau-Mont-Royal songe à construire un «Water Square»

Sarah Dacoust-Braut - Agence OMI | Publié le 8 novembre 2018 à 00:00 - Mis à jour le 8 novembre 2018 à 00:00



- Scales**
- Region/watershed
 - Neighbourhood
 - Building



Shaw, R. et al (2007)

4. Strengthening resiliency: improving adaptability and communication

Raise awareness today

Create a **culture of resilience**

[Translation] “To build resilient cities demands that local players **realize** their community’s social and territorial vulnerability.

“Risk awareness programs not only **inform** residents about their situation, but also equip them with the **ability to act and to learn** new, responsible behaviours and thereby **improve** their resilience.”

In: Thomas I., Da Cunha A., La ville résiliente : comment la construire?, p. 295 PUM 2017



1

SENSIBILISER

Faire prendre conscience
du risque

SENSITIZE



2

ÉDUCUER

Faciliter les comportements
d'adaptabilité et de prévention

EDUCATE



3

MOBILISER

Accélérer le développement
des réflexes de protection et
d'entraide *La norme*

MOBILIZE



4

VALORISER

Maintenir les comportements
préventifs par la valorisation

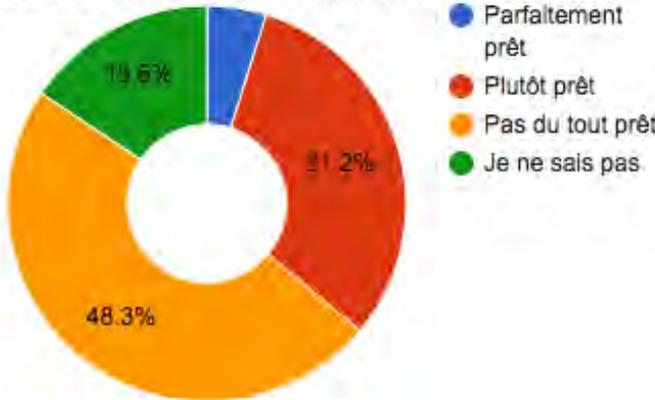
APPRECIATE



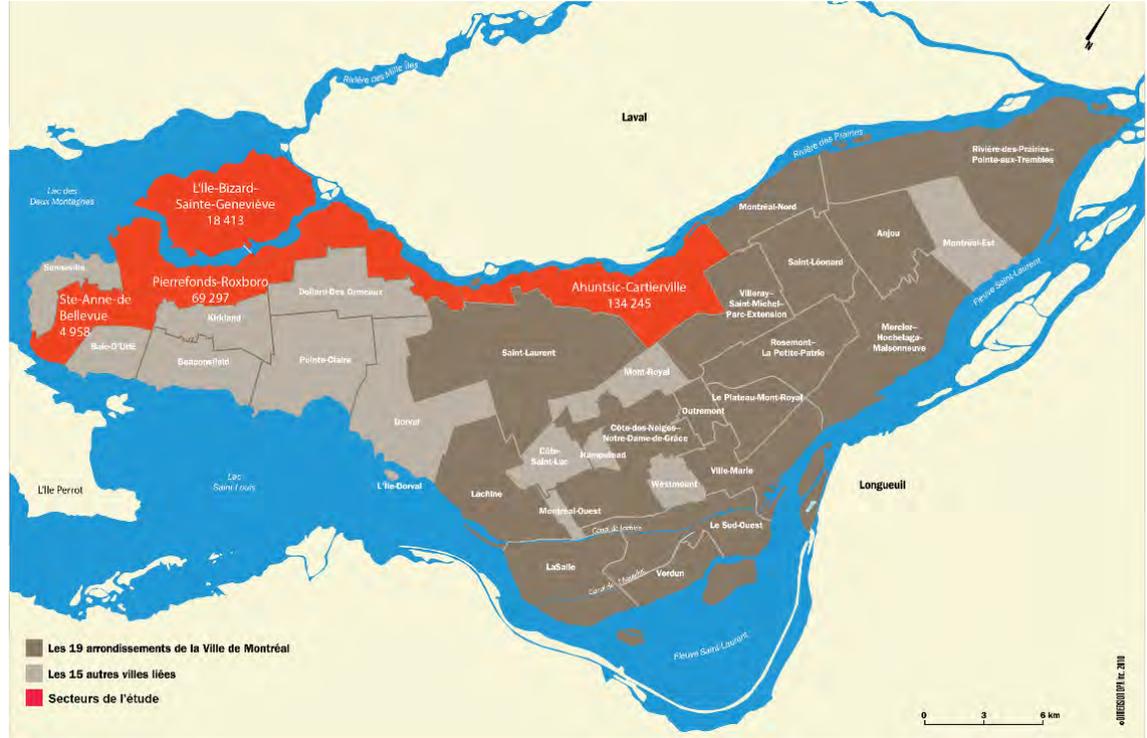
Risk perception and preparation: Montreal

10. Vous sentez-vous prêt à faire face à un risque s'il survenait aujourd'hui ?

Dans le cas d'un risque d'inondation



- Parfaitement prêt
- Plutôt prêt
- Pas du tout prêt
- Je ne sais pas



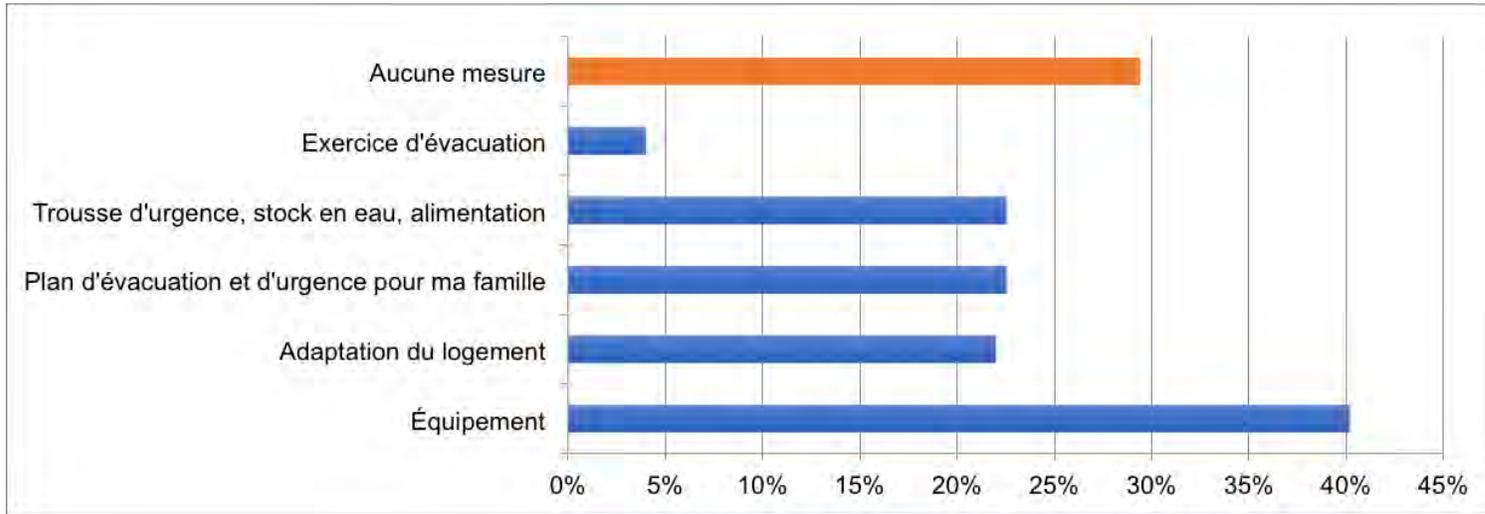
Risk preparation status

Source: Nathalie Francès, UdeM based on Ligre software, 2018



Risk perception and preparation: Montreal

Preparation measures:



Measures taken by Pierrefonds-Roxboro residents following the 2017 flood
Source: Nathalie Francès based on research data gathered door-to-door and using Ligre software, 2018



Source : Arrondissement de Pierrefonds-Roxboro



Source : Arrondissement de Pierrefonds-Roxboro

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Sécurité publique 
Québec

Montréal 

Recovery / Prevention: Home protection: NOLA

Adapted architectural designs

Home visits by technical experts

Instructional workshops on protection and sustainable construction

Educational vignettes



Certified house

Source: Waterwise, NOLA

Prevention: Resilient practices: New Orleans

Innovative adaptation tools;

Environmental restoration;

Investment, training on building or converting buildings to make them more resilient;

Development of an environmental culture for every age.



5. Conclusion: What principles characterize the resilient city and resilient community?

Awareness
Communication
Diagnostics
Urban and architectural innovation



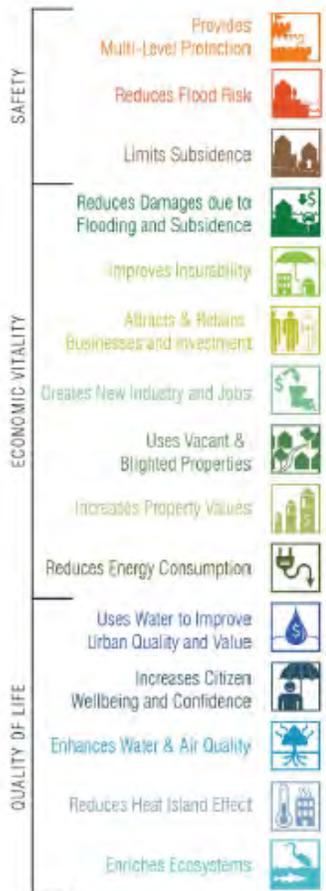
Prevention
Co-construction
Participation
Experimentation



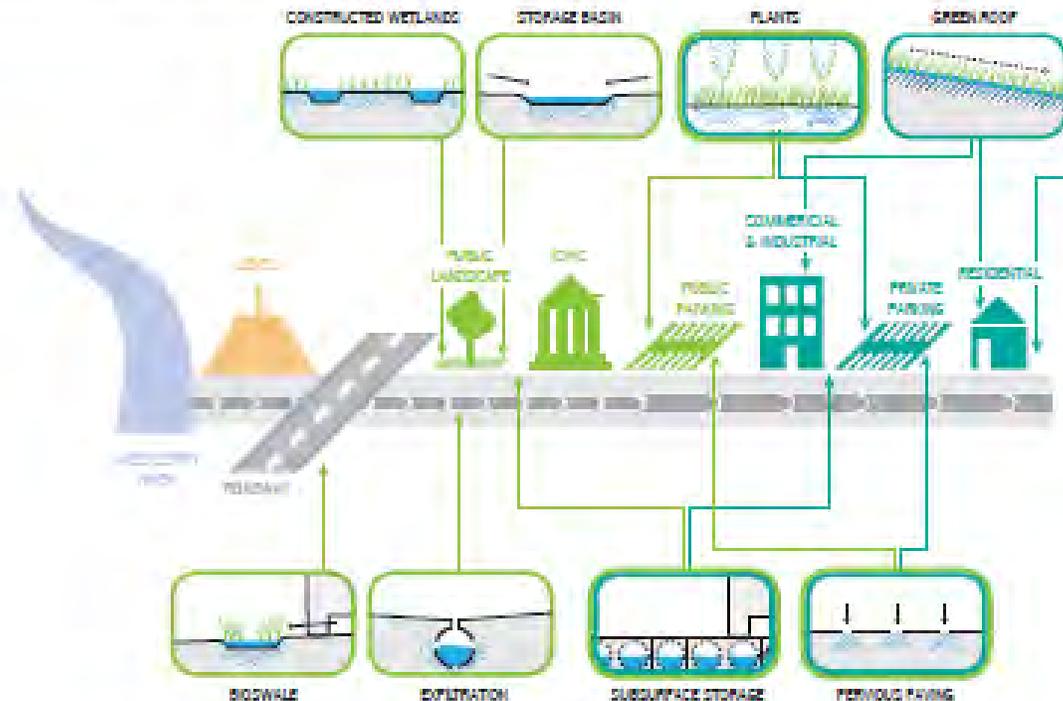
Learning
Empowerment
Incentives
Integrated development



Physical adaptation
Behavioural change
Resilient construction of cities and communities adapted to local realities



Operations & Maintenance of the Proposed System
roles for traditional water managers and other public entities



The Urban Water Plan's Benefits
The Plan has numerous benefits that

Thank you

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