Mapping the City of Montreal Water Service research initiatives

A development tool

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CWWA NWWC

Presentation outline

- Overview of the Montreal Water Service
- Mapping of the research initiatives
  - What projects are being conducted?
  - What are the characteristics of the project portfolio?
  - Who are the stakeholders in the ecosystem?
- Elements to reflect on
- Actions planned or started

The City of Montreal

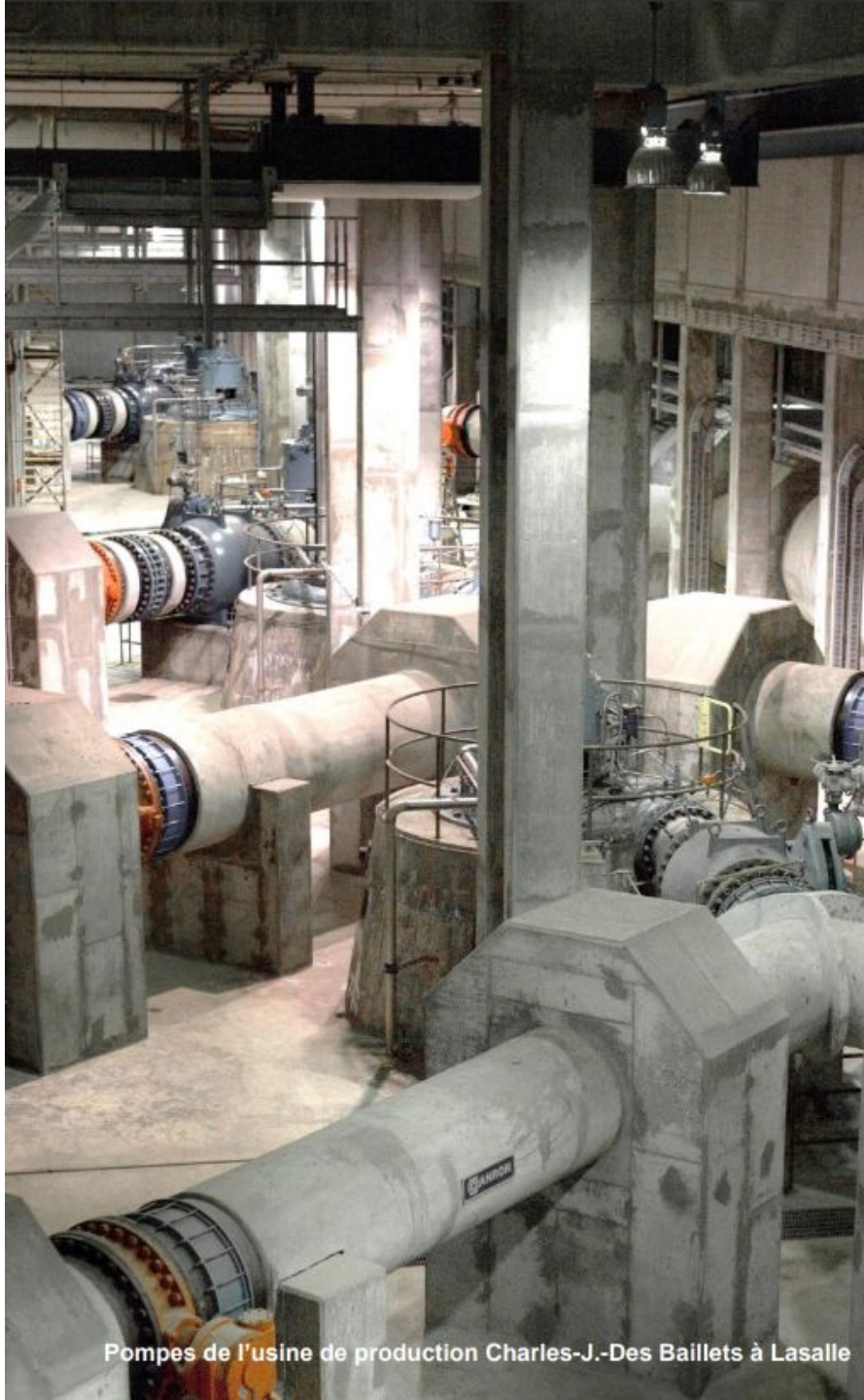
The population of the Montreal metropolitan area is 2.3 million inhabitants

The Island of Montreal covers an area of 497 km² and has approximately 200 km of shoreline.

With 4 628 inhabitants per km², Montreal is one of the most densely populated cities in Canada

The Water Service

- Staff: > 1 000
- Some assets:
  - 6 water treatment plants, 16 intakes
  - 24 storage tanks and pump stations
  - 4 455 km of water mains
  - 4 940 km of sewer mains
  - 90 km of sewer interceptors
  - 149 wastewater pumping stations
  - 19 retention basins
  - 2 wastewater treatment plants
- Total value of assets: 43.7 G$



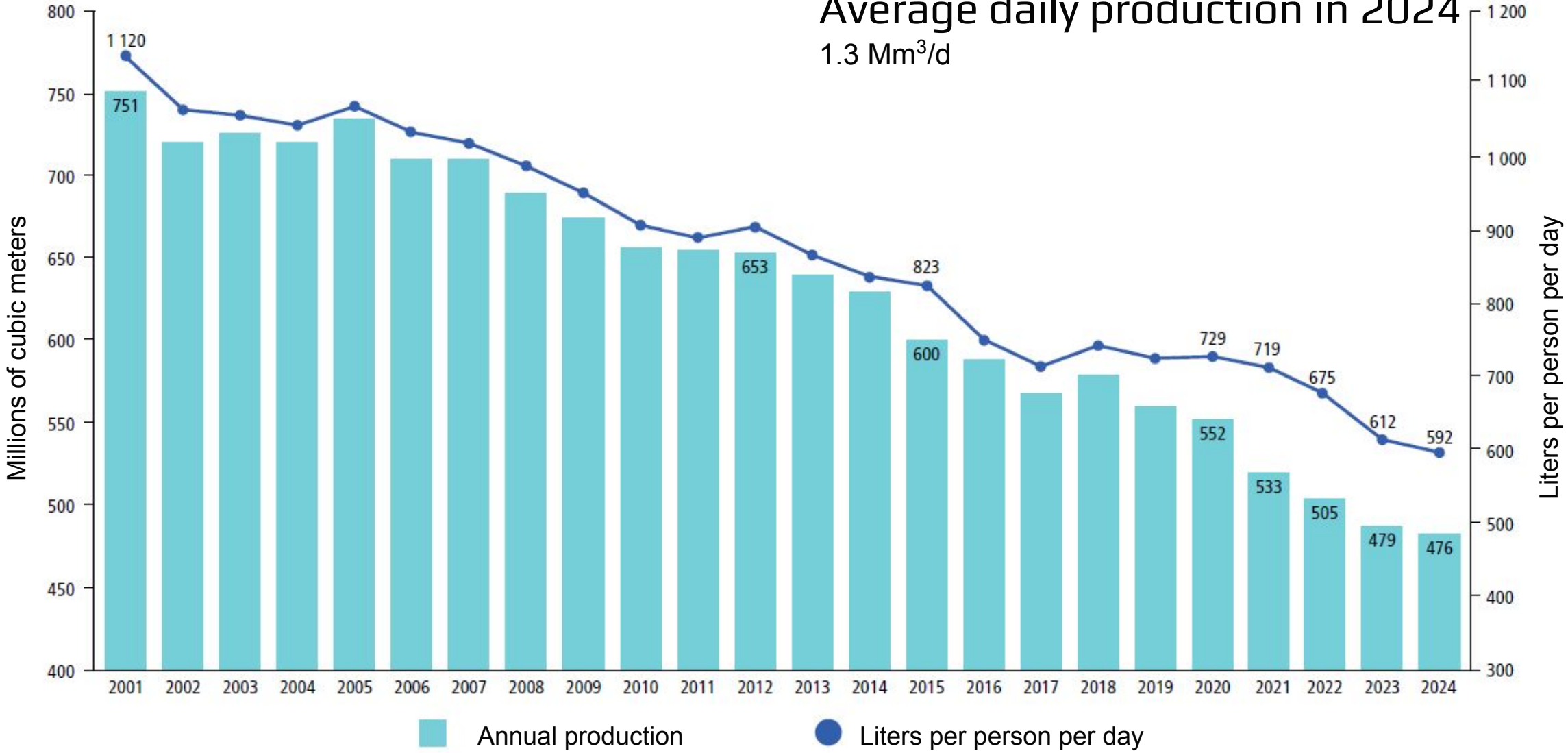
Pompes de l'usine de production Charles-J.-Des Baillets à Lasalle

The Water Service

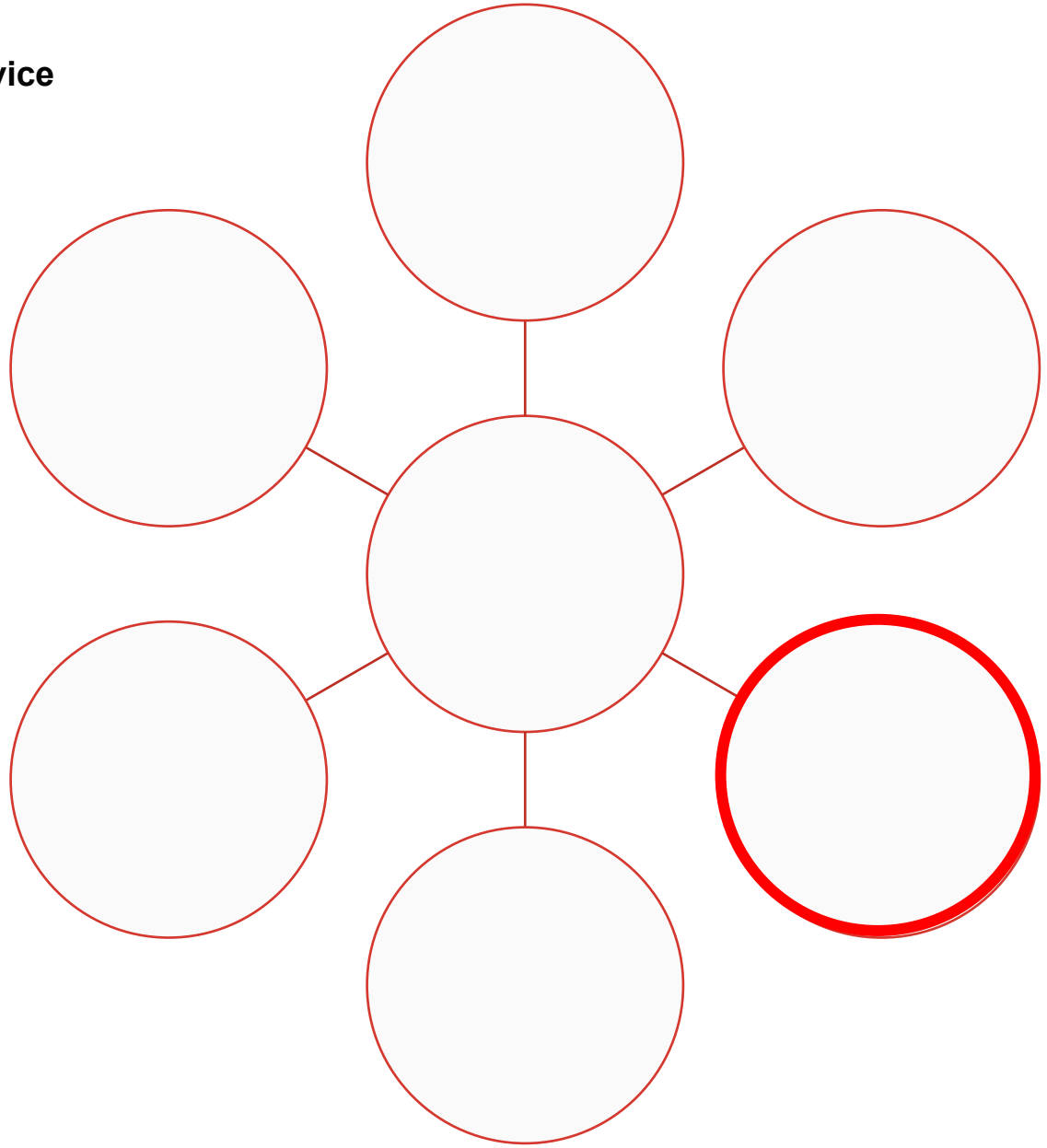
Drinking Water Annual Production Since 2001

Average daily production in 2024

1.3 Mm^3/d



The Water Service
Departments



Since 2023

Innovation, research and information group

- 3 professionnals
  - Research & innovation
  - Drinking water quality
  - Wastewater quality
- Mission
  - To develop a culture of R&I
- 1st task
  - To map the research initiatives within the Service

Research Initiatives

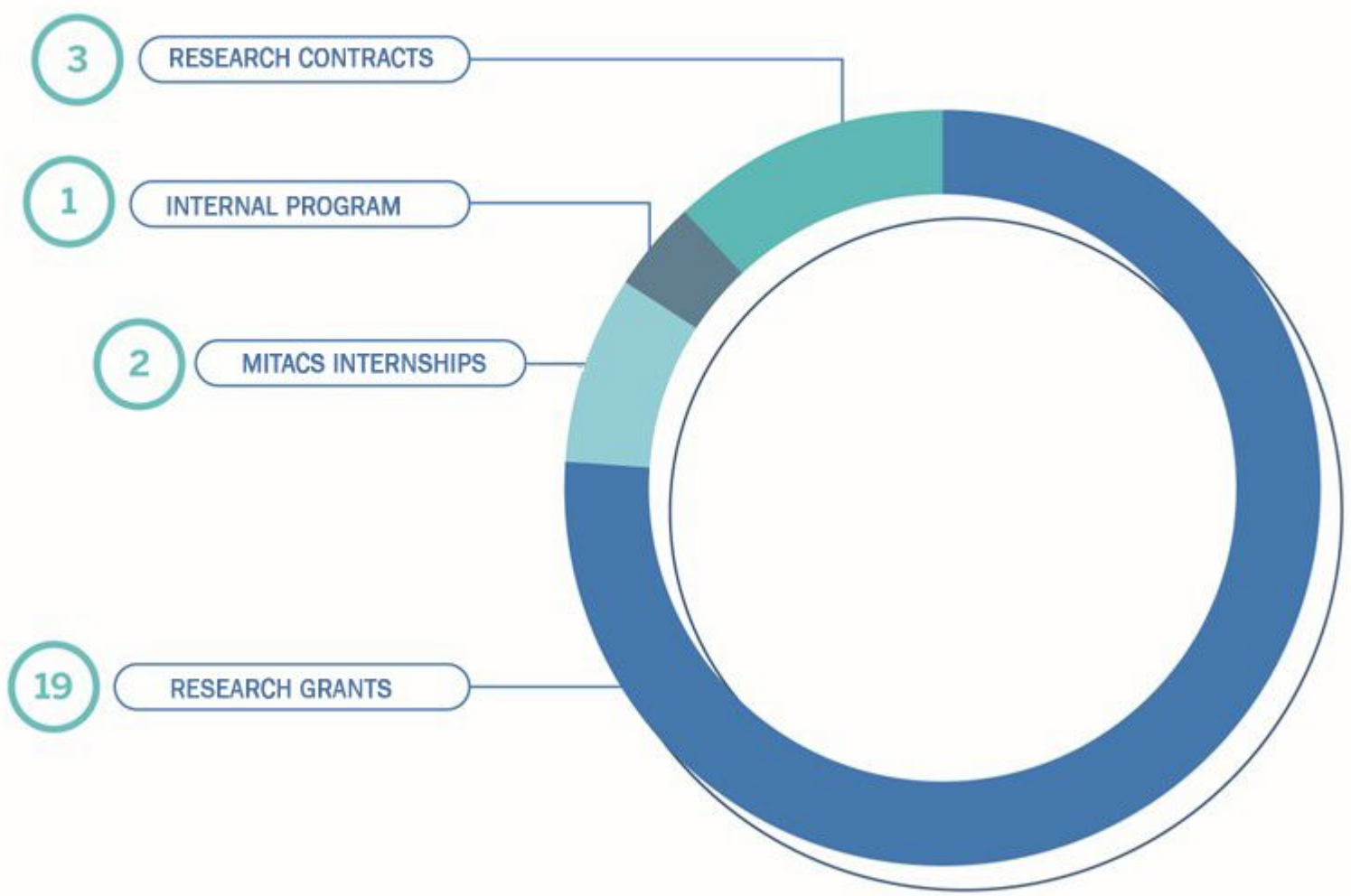
As of May 1st, 2024

Water Cycle View of Research Initiatives
Findings

- 25 ongoing projects
- No project on grey infrastructures
  - Water and sewer mains
  - Reservoirs, basins
- Focus on
  - Drinking water quality
  - Ozonation of wastewater
  - Green infrastructures
- Mapping do not include projects for which only samples/data are provided to researchers

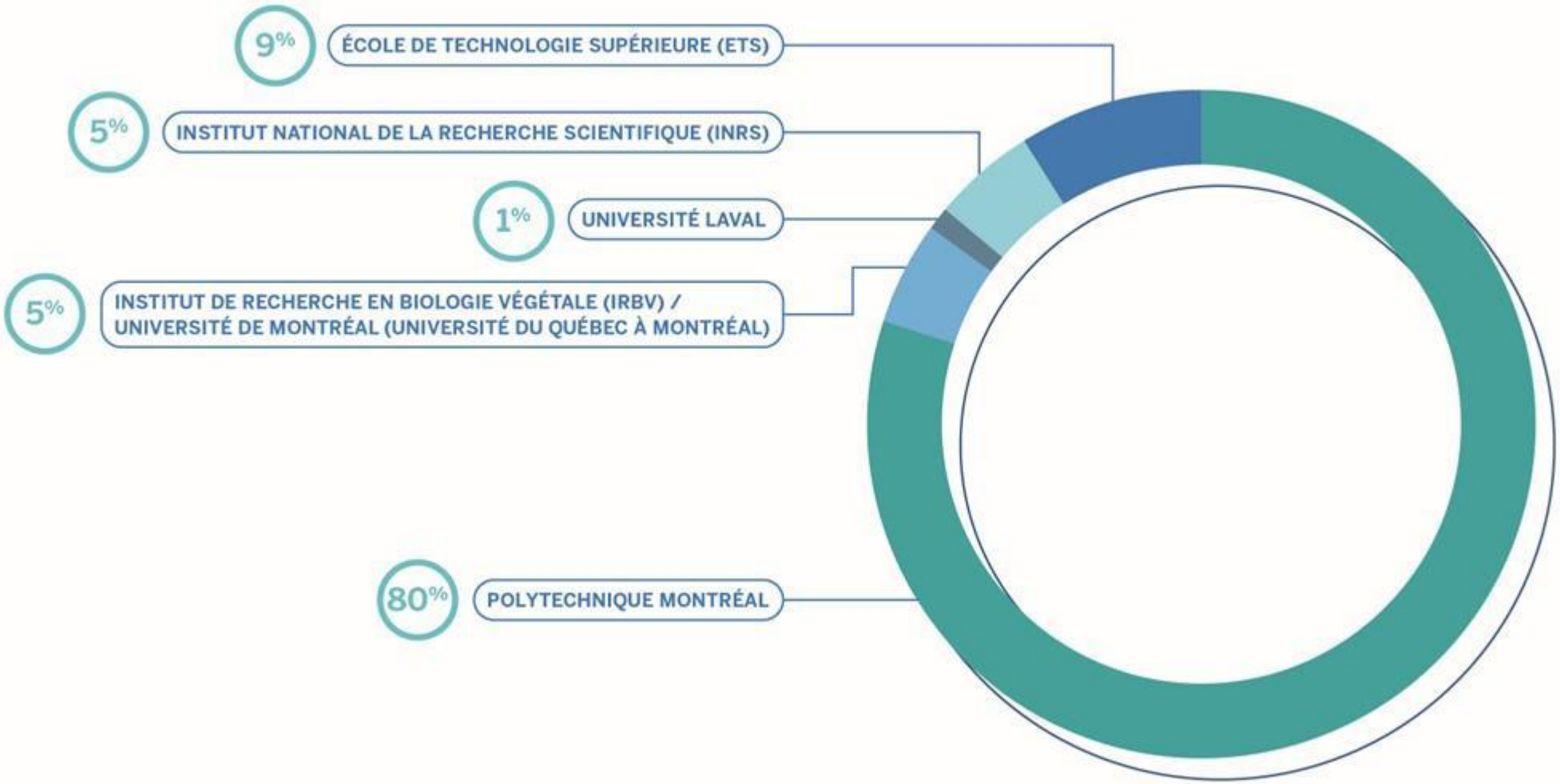
Types of Research Projects

As of May 1st, 2024



Breakdown of Contributions to Universities

As of May 1st, 2024



* Monetary + in-kind contributions

Main Research Axes

Sous-titre

Water quality from source to tap

Dedicated budget to DW Chair at Polytechnique for the last 20 years

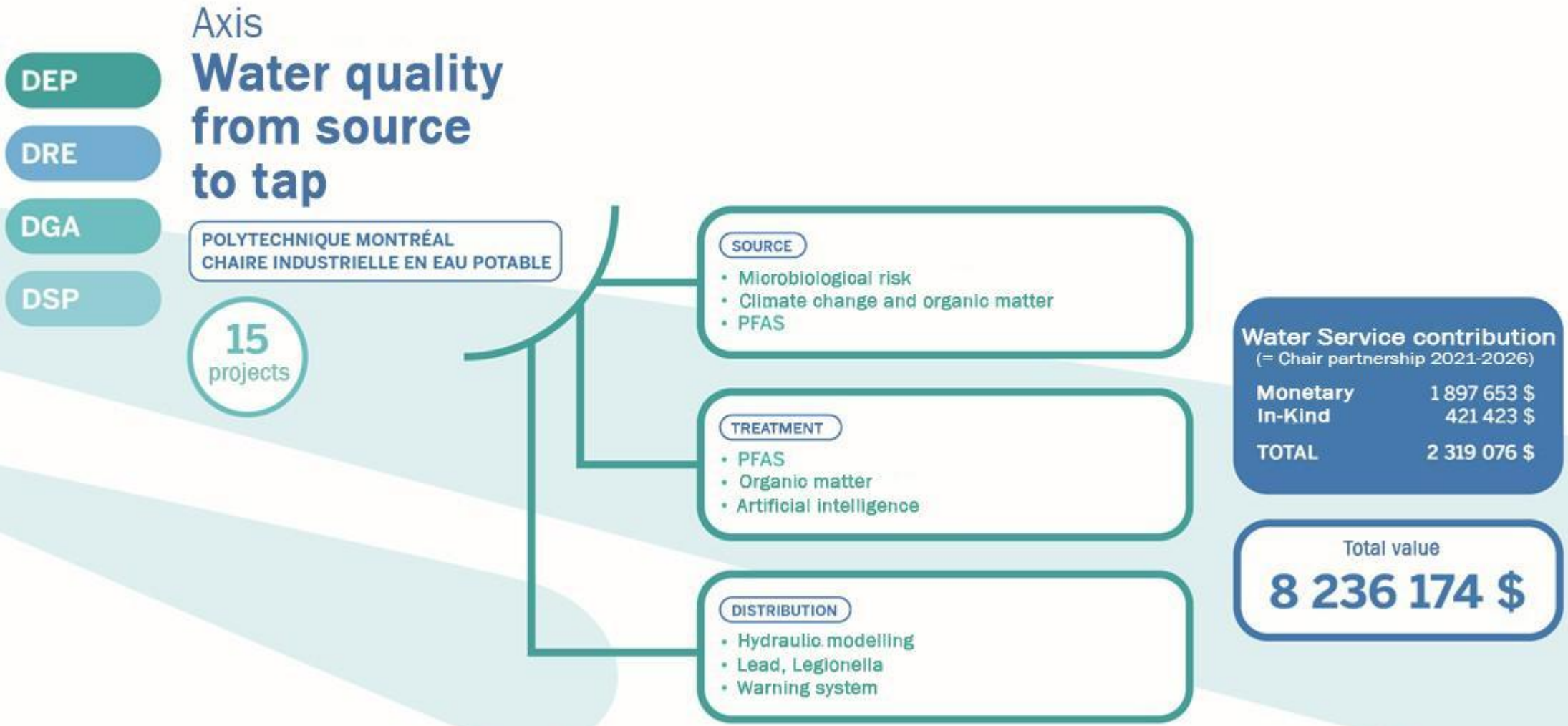
Stormwater management

Recipient of provincial funding for deployment and research

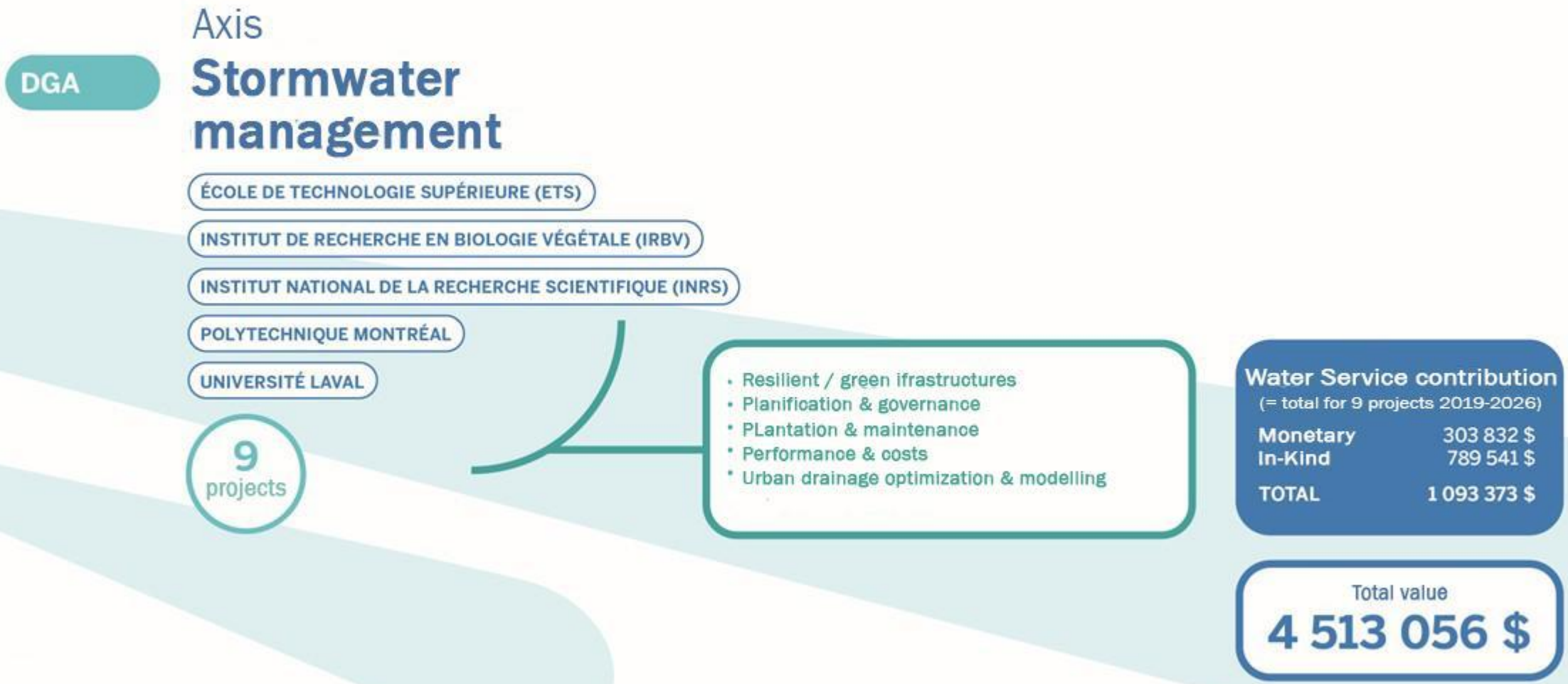
Ozonation of wastewater

WW ozonation process set to start in 2028

Research Contributions
Drinking Water Quality



Research Contributions
Stormwater Management



Research Contributions
Wastewater Ozonation

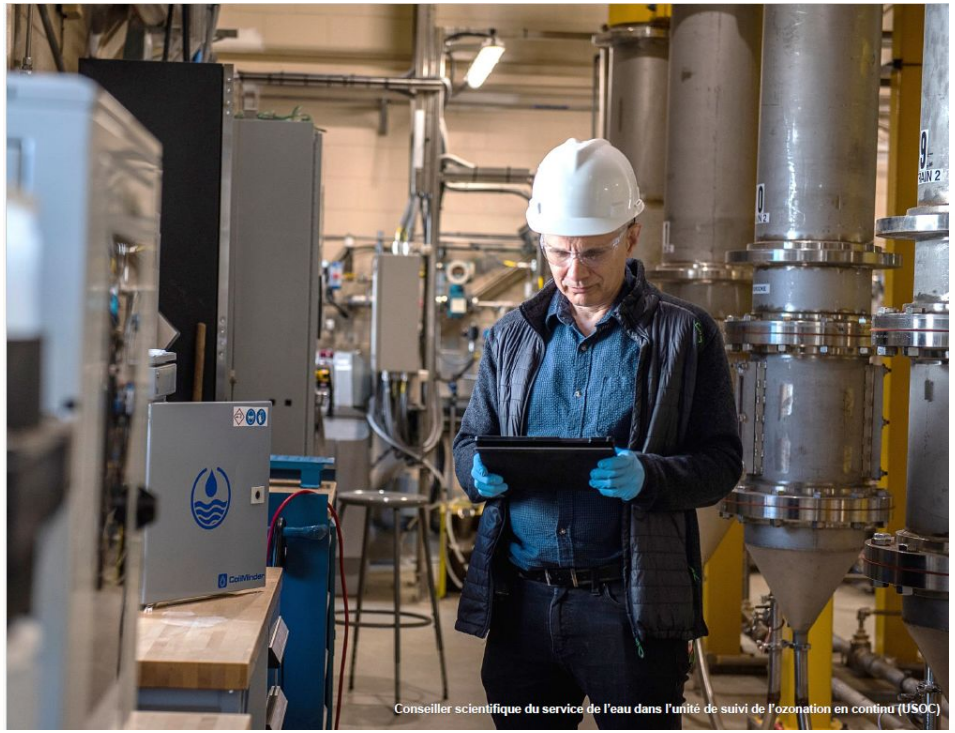
DEEU

Axis

Ozonation of wastewater

VILLE DE MONTRÉAL

O3 pilot project


Conseiller scientifique du service de l'eau dans l'unité de suivi de l'ozonation en continu (USOC)

- WW treatment optimization
- Emerging contaminants

Water Service contribution
(= estimation of operating costs 2024-2025*)

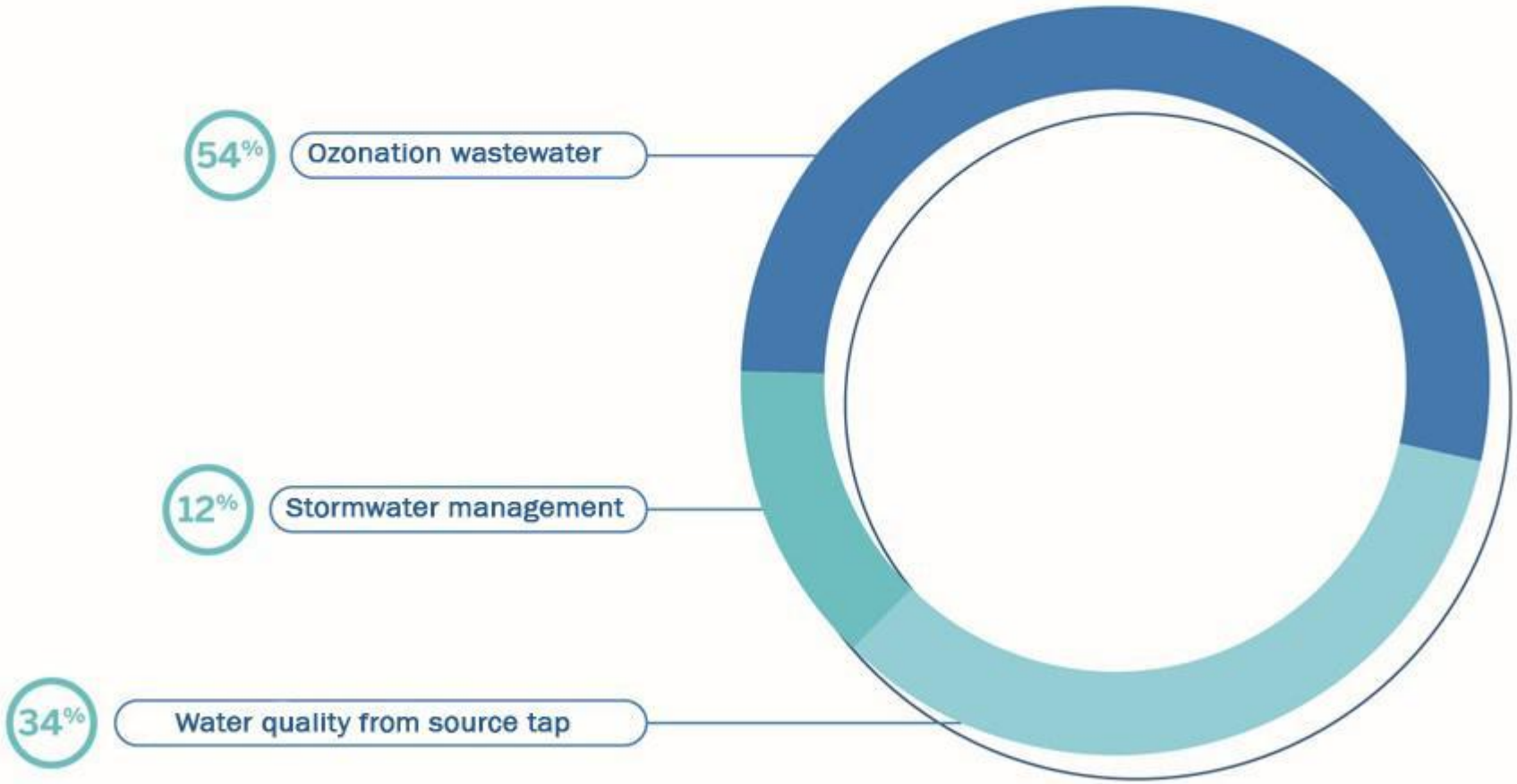
TOTAL 1 460 664 $

*Labor cost, consumables & services

Total value
To be defined

Research Contributions

Annual Average per Axis



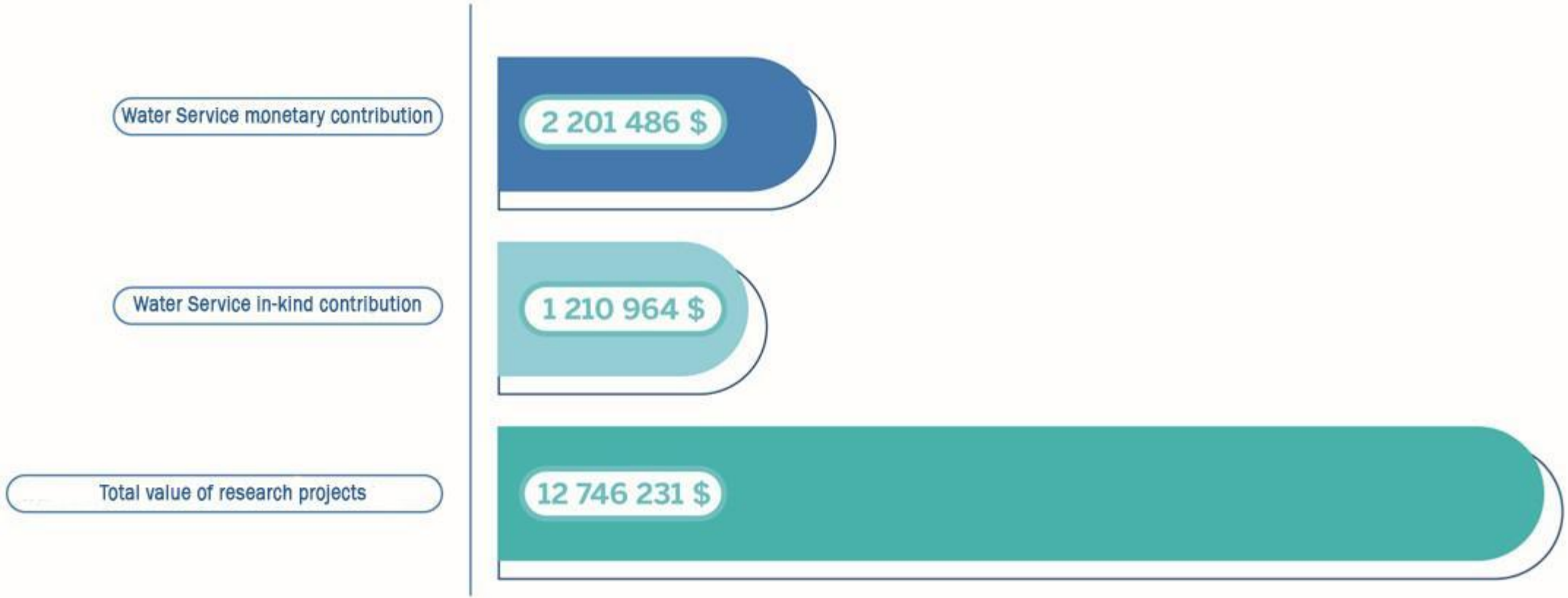
*Monetary + in-kind contribution

Research contributions
Findings

- 5/6 departments implicated in research
- No systematic way of evaluating in-kind contributions
  - Between departments
  - Projected vs achieved
  - No yearly report
- The O_3 pilot project represents > 50% of our annual contributions on average
  - Operating costs vs contributions

Research Ecosystem

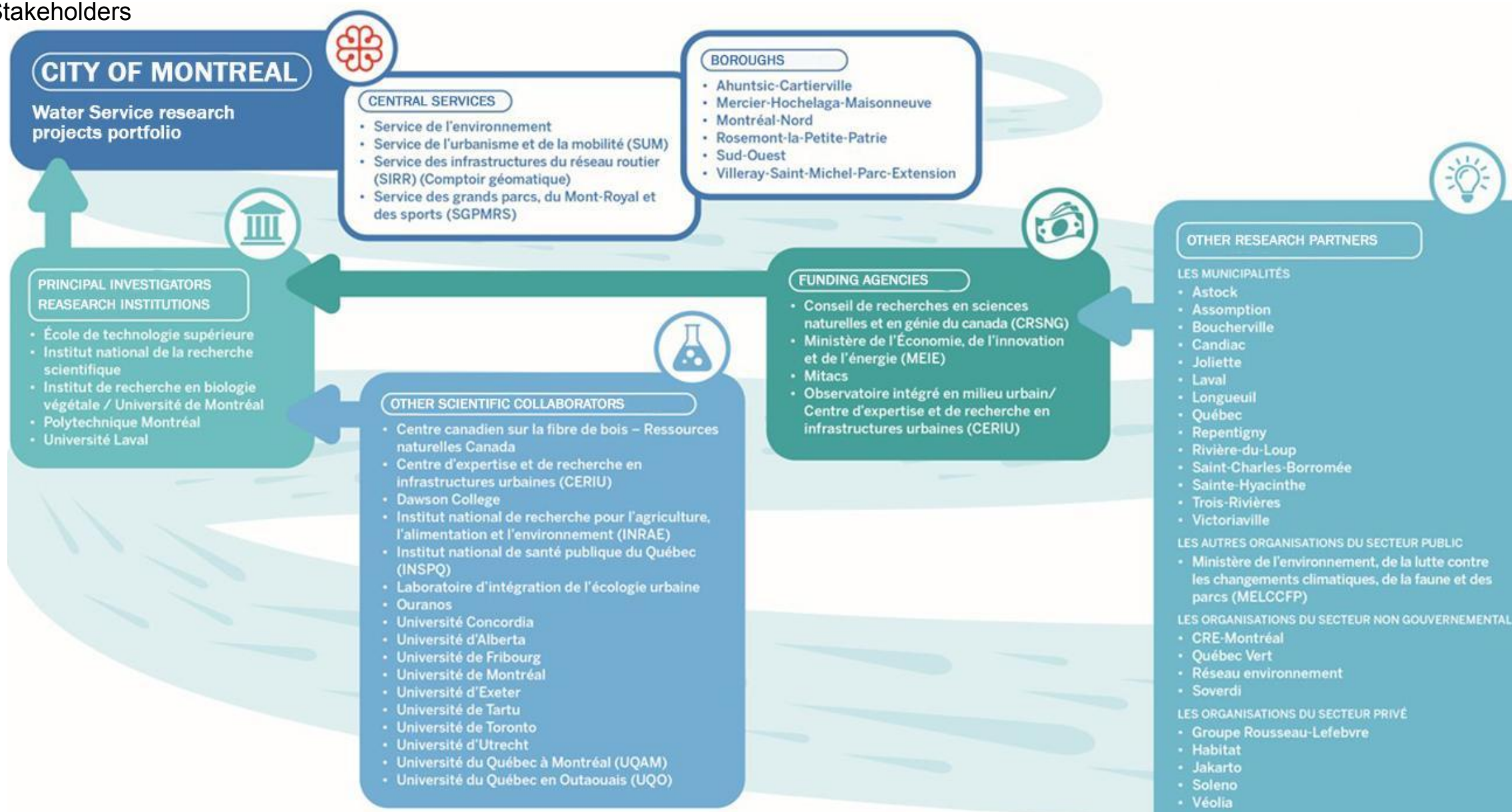
Total Value of Research Projects



*Polytechnique Chair 2021-2026
+ 9 projects stormwater axis 2019-2016

Research Ecosystem

Other Stakeholders



- First integrated view of research activities performed within the Service
- One tool to manage R&I
  - Blind spots / strategic questions / tracking the evolution
- Some points to reflect on
  - Should we expand our research through all the water cycle?
  - Should we work on formalising the identification of research needs?
  - Should we review our project portfolio?
  - Would it be relevant to develop a research agenda for the whole Service?

- Other considerations to look into
  - What are the research outcomes for the Water Service?
  - How is the intellectual property managed and what are the outputs for the Water Service?
  - What is the role of our laboratories?
  - How can we better promote, inform and share the research information/results within the Water Service?

Actions Planned or Started
Since Original Mapping

- New research projects
  - Water distribution and energy efficiency (Concordia U.)
  - Long-term prediction of water demand (McGill U.)
  - Reinforced concrete infrastructures affected by alkali-reaction (Mc Gill U.)
- Review of project portfolio
  - 2021-2026 partnership with the Polytechnique DW Chair coming to a close
  - Creation of a committee “Water quality, research and innovation”
- Dedicated section for research and innovation on the Water Service future intranet

Questions ?

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Water Service

Innovation, Research and Information section chief

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Montréal