

The opportunity

- ▶ Different aspects of water management are inter-related
- ▶ No framework for evaluating water management in all its aspects
- ▶ It is rare that a municipality has its water management audited in a comprehensive way
- ▶ No single external, independent auditing service exists based on international best management practices

3

iiAm**International Institute on Aquaresponsible Municipalities**

- ▶ **A non-profit organization founded by INRS and Université Laval**
- ▶ **Its mission is to:**
 - Set up an aquaresponsibility auditing and certification program
 - Structure scientific knowledge on municipal water management
 - Communicate best practices
 - Produce a performance report on improvements of aquaresponsible practices

4

Municipal aquaresponsibility: The concept

- ▶ **Municipal aquaresponsibility is:**
 - An integrated approach
 - that includes all actions of a municipality
 - to guarantee the responsible management of the water resources on its territory

5

Municipal aquaresponsibility: The concept

- ▶ **Aquaresponsible management's ultimate aim is to ensure:**
 - The protection and sustainable use of the water resource
 - The optimisation of the quality of water services
 - The durability of the infrastructures
 - The most advantageous costs



6

Aquaresponsibility: 17 elements

► Elements – Group 1 (*technical system*)

- ❑ Protection, conservation and responsible use of drinking water sources
- ❑ Adequate treatment and transport of drinking water
- ❑ Monitoring the quality of the distributed water
- ❑ Stormwater management including wet-weather pollution and flooding
- ❑ Adequate treatment and transport of wastewater



Aquaresponsibility: 17 elements

► Elements – Group 2 (*management*)

- ❑ Good governance and administrative accountability with respect to water-related services
- ❑ Asset management
- ❑ Adequate continued education of staff
- ❑ Optimize management of water-related human, material and financial resources



► Elements – Group 3 (*risk management*)

- ❑ Ensure risk management related to water
- ❑ Adaptation to climate change



Aquaresponsibility: 17 elements

► Elements – Group 4 (*citizen*)

- ❑ Information of/to the citizen
- ❑ Public access to the aquatic environment including recreational and touristic activities
- ❑ Responsible water use



► Elements – Group 5 (*water management*)

- ❑ Involvement in integrated river basin management
- ❑ Adequate water quality to satisfy the different uses
- ❑ Management of solid water



iiAm's auditing and certification program

- **For municipalities who:**
 - want to have their aquaresponsibility evaluated by independent experts
 - want to improve the management of their water resources
- **To be certified, a city needs to be audited on its water management, in all its aspects**

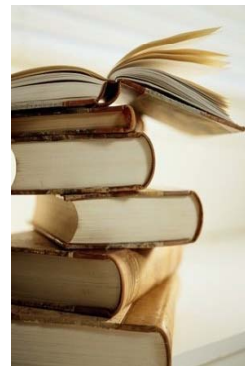
iiAm's auditing and certification program

- ▶ **17 elements and 107 indicators are evaluated**
- ▶ **What iiAm will do for the municipalities:**
 - An analysis of the current state
 - Recommendations
 - A rating of how aquaresponsible the city is

11

Methodology development

- ▶ Literature review and expert knowledge
- ▶ Definition of 17 elements to be audited
- ▶ Formulation of indicators for each element (107 in total)
- ▶ Formulation of variables to feed the indicators



12

Methodology development

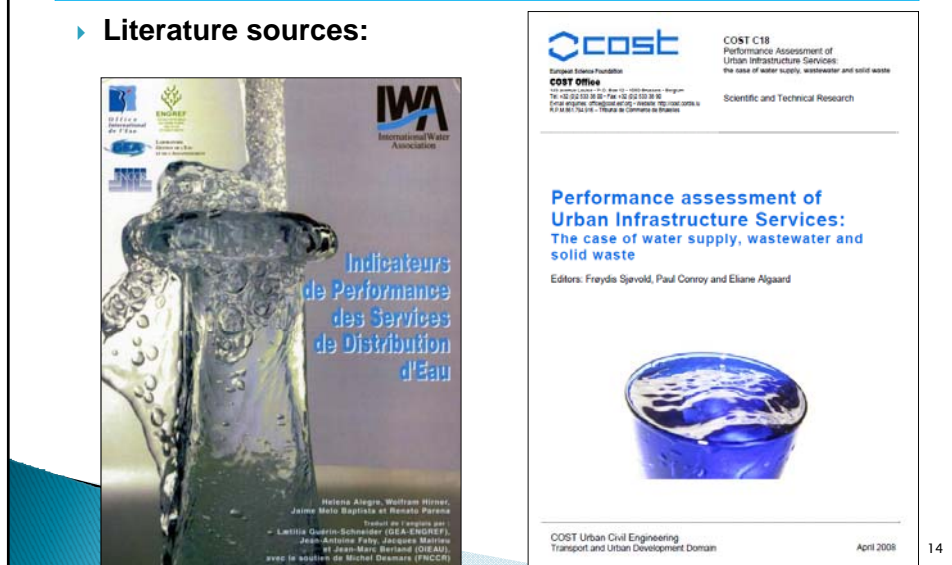
► Literature sources:



13

Methodology development

► Literature sources:



14

Methodology development

► Literature sources:



15

Methodology development

► Literature sources:



16

iiAm's auditing and certification program

► Keyword: Quality control

- International, multi-skilled team
- Local independent experts to join the auditing effort
- Collaboration of the municipality
- Based on existing data that can be verified/validated
- Data validation is integral part of the audit



17

Conducting the audit

► Collaborative and positive framework

- One coordinator named by the municipality for the whole process
- For each element the city appoints a representative
- Before the process starts:
Presentation of the process to all officials involved

18

Conducting the audit

- ▶ **Information provided by the municipality**
- ▶ **For each element**
 - A list of variables is sent to the municipality's representative
 - 1st meeting: to clarify the data requirements
 - 2nd meeting: to discuss the data provided by the municipality
 - 3rd meeting: to finalise, if needed.
- ▶ **Data analysis**
- ▶ **Report**

19

Conducting the audit

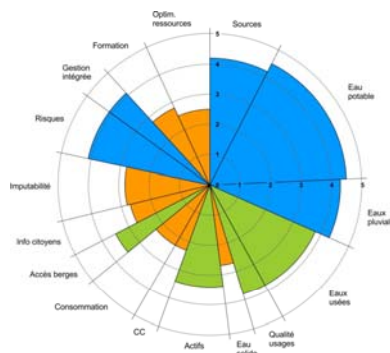
- ▶ **For each of the 17 elements of aquaresponsibility**
 - Evaluate the situation of the city
 - Assess:
 - what is done,
 - what is partially done
 - what is not done
 - Formulate and prioritize recommendations

20

Conducting the audit

► Report: Table of Contents

- Introducing the element
- Synthesis of the indicators
- Assessment
- Comparative analysis
- Prioritized recommendations
- Conclusions
- Aquaresponsibility score (/5)



► The report is confidential – owned by the municipality

21

Element 6 – Stormwater management including wet-weather pollution and flooding

► Indicators

1. Knowledge on potential wet-weather loads
2. Knowledge on the storm sewer system and stormwater transport
3. Storm sewer management
4. Knowledge on combined sewer system and transport
5. Combined sewer management
6. Capacity to collect and treat wastewater under storm conditions
7. Sewer operation and maintenance
8. Stormwater control and measures to reduce stormwater quantity
9. Flood management

22

Element 11 – Public access to the aquatic environment including recreational and touristic activities

► Indicators

1. Access to the waterfront
2. Access to the water body
3. Services and activities provided
4. Maintenance and site security
5. Protection and restoration of shorelines and ecosystems
6. Access to facilities for the disabled

An example...

23

Copenhagen



Copencabana

But not Coli-cabana

Copenhagen's mayor



Quebecabana



Quebecabana

By the St-Lawrence



Audit of Quebec City

- ▶ iiAm's pilot projet
- ▶ Quebec City = 550,000 inh., 462 km²
- ▶ Evaluation for year 2010, realized in 2011-12
 - 35 city representatives
 - 45 meetings
 - 21 out of 35 administrative units of the city involved
- ▶ Results made public by Quebec City

Audit of Quebec City

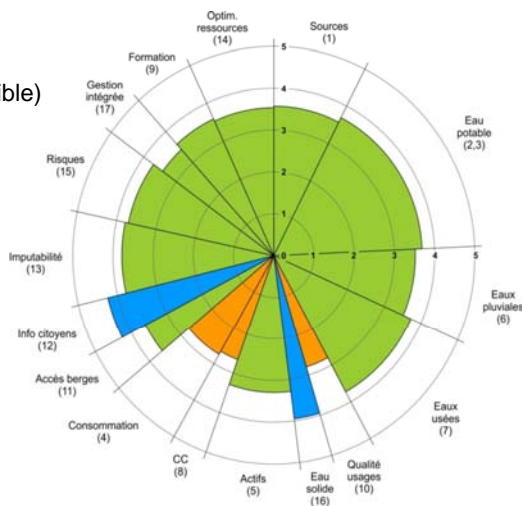
➤ **Overall score 3,54 / 5**
(on its way to become aquaresponsible)

➤ **12 priority recommendations**

- 2739 variables
- 563 findings
- 221 recommendations



Source : <http://www.utulsa.edu>



29

Concrete results for Quebec City

- ▶ According to the City's collaborators: Strong involvement of the organization on this important issue that is water
- ▶ Leverage effect for management and personnel
- ▶ Basis for setting up an action plan 2013-17 :
 - Objective: reach an aquaresponsibility score of 4/5 by 2017
 - Status quo strategy: Maintain strengths and progress made
 - Improvement strategy: Better the City's water management

30

Concrete results for Quebec City

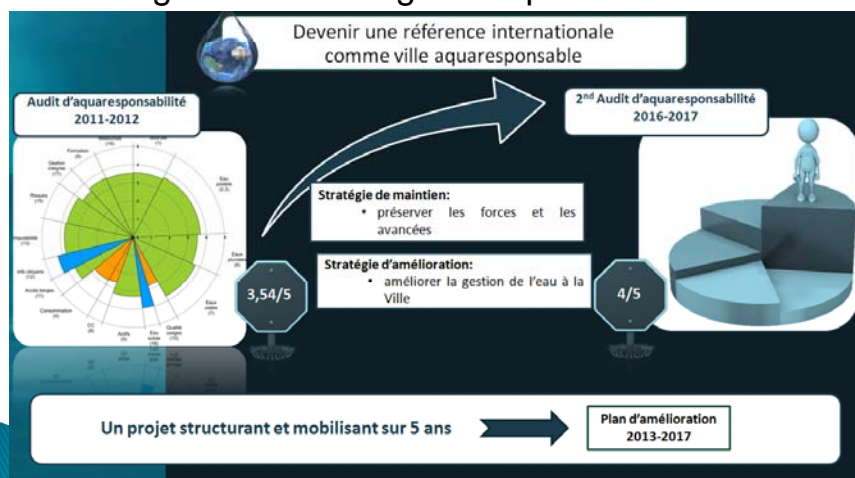
- Strategic water management plan 2013-2017
 - Public hearing at City Council on Nov 6th 2012



31

Concrete results for Quebec City

- Strategic water management plan 2013-2017



32

Conclusion

- ▶ **Aquaresponsibility audit**
 - ▶ All aspects of water management of a municipality
 - ▶ International expertise (Best Management Practices)
 - ▶ Confidential report with recommendations and score
 - ▶ Tool aimed to improve a city's aquaresponsibility
- ▶ **Collaborative positive framework for continued improvement of a city's water management**

33



Institut international de
l'aquarresponsabilité municipale
www.2iam.org



UNIVERSITÉ
LAVAL

INRS
Université d'avant-garde

Contact:
peter.vanrolleghem@gci.ulaval.ca
jpv@ete.inrs.ca