COMPLETED | PROJECT

DESIGN AND PLANNING FOR THE RENEWAL OF STORMWATER MANAGEMENT INFRASTRUCTURE IN A CONTEXT OF ADAPTATION TO CLIMATE CHANGE

PROJECT LENGTH

7 months
Completed in March 2008

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CONTEXT

Stormwater management infrastructure accounts for a significant part of a municipality's built heritage. Climate change may well modify the intensity and frequency of extreme precipitation events, with significant impacts on many components of the urban hydrologic cycle (drinking water supply, water treatment, stormwater management, combined sewer system overflows, etc.). The main consequences in terms of stormwater management will be a significant increase in runoff and peak flows, and a greater risk of flooding and backflow in urban environments.

OBJECTIVE

Develop an approach to integrate climate change considerations into strategies and protocols for preparing plans for upgrading stormwater management infrastructure.

ACHIEVEMENTS

The study made it possible to identify and describe issues relating to the replacement and renewal of urban drainage infrastructures in a context of climate change.

A series of steps was proposed to integrate climate change considerations into the planning approach, so as to help better adapt urban systems to climate change. It was found that taking climate change into account in planning interventions calls for a broader approach to improving stormwater management techniques. Accordingly, a simple procedure for defining design criteria in a context of climate change was prepared.

The study also showed that:

- Possible adaptation measures must not only consider a change in the probability of intense rain events, but also the complete spectrum of rainfall events.
- The design life of system components and the timescale for climate projections require an adaptive management approach, one that takes into account uncertainties in scenarios of climate change and makes it possible to consider and compare trends in risks and system performance according to multiple intervention plans.
- The key barriers to overcome to implement the proposed approach are of financial and organizational nature.

OUTLOOK

- Apply the approach and validate it using case studies.
- Modify the approach for small municipalities by identifying indicators that can be evaluated using easy to access data, and suggest simple guidelines and procedures to help these municipalities in drawing up intervention plans and evaluating risk in a context of climate change.

PARTNERS

- Ouranos
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- Université Laval

FUNDING

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- Ouranos

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PROJECT OVERVIEW

- Identify and describe the potential impacts of climate change in terms of stormwater management.
- Document current urban drainage infrastructure design practices and procedures.
- Evaluate the adaptation capacity of municipalities with regard to climate change and urban infrastructures.
- Develop an approach that considers climate change in management plans and the preparation of intervention plans.

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