INNOVATIVE STORMWATER MANAGEMENT:
TRANSLATING SCIENCE INTO ACTION

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KEY MESSAGES FOR DECISION MAKERS

Conventional ways of managing stormwater runoff are no longer sufficient to deal with increased climatic variability and urban densification and there is clear evidence that the flood risk and urban water pollution is increasing. To reduce these impacts requires a new approach that focuses on managing rainwater by detaining and allowing it to infiltrate in different ways at the property, the neighborhood and at the watershed scale. A wide range of innovative examples are presented that have shown to be effective solutions to mitigate these urban problems.

WHO IS THIS INFORMATION RELEVANT FOR?

This research addresses the emerging problem of increasing floods and water pollution in urban areas and provides information on innovative ways to address these problems. The information is pertinent for all those involved in stormwater design, environmental officers tasked with pollution reduction, engineers devoted to reduce flooding risk and planners and landscape architects involved in creating more environmentally friendly cities with fully functional aquatic ecosystems.

WHAT WAS THE RESEARCH FOCUS?

The CWN research examined a wide range of innovative ways to deal with urban runoff in three different cities in Canada and then conducted research to provide scientific evidence that many of these innovations are effective particularly when applied in different combination at different spatial scales. Green roofs, roofwater harvesting, improved soil depth and soil quality for lawns, pervious driveways, urban trees and raingardens were found to be the most appropriate innovations at the property scale. Redesigning roads and parking lots to allow the runoff water to flow into sand filters, swales, wetlands and ponds is an effective measure to reduce the pollution and delay the runoff before it enters urban streams.

WHAT WAS THE RESEARCH METHOD?

We identified a wide range of innovative measures to infiltrate, detain rainwater and to reduce runoff of water and contaminants during storm event. We calibrated the effectiveness of wetlands, roofwater harvesting, water use for outdoor purposes, urban trees, infiltration capacities of pervious pavement and provided a framework to reduce the flooding risks in cities. A Special publication issue was produced entitled " Innovative Stormwater Management; The way forward" and a four part video on innovative examples was produced for the Vancouver area.

WHAT WERE THE RESEARCH RESULTS?

The results showed that a combination of the proposed methods applied at the property, the neighborhood and the watershed scale were found to be effective in reducing the flood risk and significantly reduced the nutrient, metals and organic contaminants from urban land use that no longer enters urban stream though stormwater pipes. A special publication issue was produced entitled "Innovative Stormwater Management; The way forward," as well as a four part video showing innovative examples that feature the innovations that are in place in the Vancouver area.

WHAT ARE THE IMPLICATIONS FOR DECISION MAKERS?

There is an urgent need to improve conventional stormwater management in cities and the identified innovations have proven to be cost effective and significantly improve the environmental conditions in urban streams. The main challenge is to translate these results into action. The first step is to introduce these features in all new urban subdivisions where they are easy to incorporate, save financial resources and are more cost effective in reducing flooding risk and contamination than conventional approaches. The second step is to introduce a selective number of innovation when old infrastructure needs to be replaced in established urban areas. Not all of the presented innovations will be appropriate in all cities depending on climatic, topographic and environmental conditions and an adaptive approach is needed to select the most appropriate combination of options that are best suited to each watershed.

FOR FURTHER INFORMATION PLEASE SEE HTTP://MLWS.LANDFOOD.UBC.CA/VIDEOS/