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Vancouver ramps up extreme weather preparations following Alberta floods

By WENDY STUECK

B.C. communities are taking on an array of initiatives to guard against become the next Calgary

When Sadhu Johnston recently saw images of water flooding through downtown Calgary – and a few weeks later, through Toronto – his mind turned to details: How much rain had fallen, what areas were worst hit, where the water was going?

And as the cleanup in Alberta got under way, Mr. Johnston, Vancouver's deputy city manager, kept a close eye on the aftermath, touching base regularly with city staff who had been sent to Calgary to lend a hand.

"We had over 55 of our staff on the ground in Calgary for about a week, and that certainly provided us with a lot of important lessons and experiences we can learn from," Mr. Johnston said. "But the ultimate thing is that these kinds of activities we are seeing are so extreme that the best we can do is update our plans, learn from other places and do the best we can."

By "extreme activities," Mr. Johnston was referring to weather. Such events are expected to become more common and are an increasing worry for insurers, city officials and homeowners. Globally, insured losses from natural catastrophes have ranged between \$10-billion and \$50-billion a year over the past decade.

In Canada, water has surpassed fire to become the leading cause of property damage, and now costs insurers about \$1.7-billion a year, according to the Insurance Bureau of Canada.

While it is unlikely that any urban sewer system in the world could have handled the amount of rain that fell in Toronto this week – nearly 100 millimetres in a few hours, more than the city typically gets in a month – cities are looking at pipes, drains and other infrastructure to help protect homes and people from high water. In Vancouver, that strategy includes separating the city's sanitary and storm-water sewers and adding porous spots to streets and other paved areas so that some water can be absorbed into the ground instead of pouring into overloaded sewers.

Local governments across the country are pursuing similar initiatives and tweaking regulations to curb potential risks. In Beaubassin, N.B., for example, a new bylaw restricts development along the coast because of perceived risks from rising sea levels. Toronto is building bigger storm sewers and culverts to handle greater volumes of runoff, and in 2010, began using risk assessment software to identify weaknesses in services and infrastructure.

The budgets, and the stakes, are enormous. Last month, New York mayor Michael Bloomberg outlined a \$20-billion (U.S.) plan to buttress the city in the aftermath of last year's Hurricane Sandy that includes offshore breakwaters and grants for nursing homes to invest in backup power and air conditioning systems.

In Canada, the storm-proofing challenge comes as municipalities struggle to maintain and repair existing infrastructure. For years, the Canadian Federation of Municipalities has cited an infrastructure deficit: a gap between

the costs of fixing aging infrastructure and funds that municipalities have to do the job. According to the FCM, municipalities own 53 per cent of the country's infrastructure but collect 8 cents of every tax dollar, resulting in a shortfall the group puts in the \$200-billion (Canadian) range. Storm water and sewer upgrades across the country are pegged at about \$55-billion.

With more rain expected, pipe and sewer networks are expected to be overloaded.

To help local governments determine where systems are most vulnerable, the Insurance Bureau of Canada is developing what it calls the Municipal Risk Assessment Tool, or MRAT. It will look at the age and design of sewer and surface water systems, how those systems are run and maintained, and landscape elements such as elevation and slope, which can vary widely from one part of a city to another and result in different risks. The system is expected to roll out this year.

In Vancouver, nine "primary actions" include a backup power policy, an urban forest management plan and a coastal flood risk assessment. Information from that study, expected to be complete this year, will help determine how and where the city directs its money and attention.

"So is it a pillar of a bridge that may be in an area that will be affected? Is it electrical infrastructure? Is it a storm sewer outflow? And we can then say, okay, what is the best approach and what are the various options to address that in the long term?" Mr. Johnston says.

There is also human infrastructure. When some Vancouver staff went to Christchurch, New Zealand, after the 2011 earthquake, they were struck by the importance of volunteers to recovery. That sparked the Vancouver Volunteer Corps, a program that provides basic communications and emergency preparedness training to city residents.

Events such as the Alberta floods, which closed Calgary's downtown core, should also be a wake-up call for businesses, Mr. Johnston says. "Every business needs to have a continuity plan. Do they have a system in place, so they are not shut out of business for a couple of weeks. It can't just be government preparing for these events."

Over the past decade or so, there has been increasing use of so-called "green" infrastructure, which involves using vegetation and soil to disperse rainwater as it falls rather than funnelling it into a storm sewer.

In the District of North Vancouver, a 2005 landslide that killed one person helped spur guidelines for Natural Hazards Development Permit Areas. They include such elements as required setbacks from the forest to minimize fire risk and guidelines for building on the steep slopes that are common in the area. The district has also implemented a risk tolerance policy for sites exposed to landslide and flooding hazards.

"We're really trying to think long-term and think pro-actively about where and how development occurs," says Susan Haid, the district's manager of sustainable community development.

On the community planning front, the district intends to incorporate green infrastructure into planned new town centres.

Green infrastructure can be more effective, and less costly in the long run, than "engineered" systems that use pipes and cement vaults to handle runoff, says Richard Boase, the district's environmental protection officer.

And, unlike pipes and concrete that begin to deteriorate immediately, green infrastructure can increase in value. As trees grow, they soak up more carbon. Ponds, pathways and rain gardens can improve air quality or reduce utility bills. For governments facing huge building costs just to maintain services, such savings could be a powerful incentive.

The floods are providing the same kind of wake-up call that B.C. got in 2003, when it was hit by wild fires and drought, says Kim Stephens, executive director of the Partnership for Water Sustainability, a B.C. group involved in a province-wide water sustainability program.

Over the past few years, Mr. Stephens has seen municipalities develop detailed plans that put as much emphasis on area watersheds as on homes, roads and playing fields. Such planning and development, he believes, could help cities cope with the kinds of rains that pummelled Calgary and Toronto. "It's really reminding us that if you don't respect Mother Nature, and if you don't design with nature, this is what happens," Mr. Stephens says. "But that doesn't mean we can't turn the clock back."



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