

Management of freshwater in Canada has evolved in response to the changing demands we have placed on water, as well as to our growing awareness of the effects of human activities on the aquatic environment. Increasing and often conflicting demands on water use make sustainable management essential. Integration of environmental, economic, and social considerations requires careful thought and attention. Governments, nongovernmental organizations, the private sector, and individuals all have important responsibilities and must work together to protect water quality and use water wisely.

We face a number of challenges in managing freshwater in Canada. Water quantity is variable, and parts of Canada have suffered from drought and flooding. Canadians are high per capita users of water, and while water is plentiful, competition is increasing among uses. Although water quality is generally good, some areas are locally or regionally polluted.

Partnerships, which are essential for managing freshwater, must adapt to changing roles of government and reductions in government support for water programs and water infrastructure. Community-based initiatives, an effective and often necessary means to manage watersheds, require support to build and maintain networks, good information, and sound science.

This monograph provides a snapshot of the state of freshwater in Canada, including water quantity, water use, and water quality; an overview of sustainable water management in Canada encompassing partnerships, an ecosystem approach, and the role of science; and a perspective on international concerns and Canada's international freshwater activities.

The State of Freshwater in Canada

Canada is a nation with abundant water resources. Annually, Canadian rivers discharge 9 percent of the world's renewable water supply to the sea. Lakes cover 7.6 percent of the Canadian land mass, wetlands 14 percent, and perennial snow and ice 2 percent.

Water Quantity

The availability of water in Canada varies from season to season and year to year. The construction of dams and the development of storage reservoirs have provided the means to manage this variability and generate hydroelectric power. When we first began building dams, often

Flooding

Flooding is essential to a healthy environment, but causes human hardship and economic loss. Major floods have occurred recently in Canada. In Quebec, the Saguenay River floods in 1996 resulted in 10 deaths and over \$800 million in damages. In Manitoba, the damages caused by the Red River flooding in 1997 have been estimated at approximately \$300 million. The Winnipeg floodway, a channel built around the city as a structural control measure, is considered to have saved several billion dollars in damages.

In Canada, we try to discourage flood-vulnerable development on the floodplain and to map flood risk areas. This has involved the mapping of over 900 communities and the designation of 320 flood risk areas. We have made progress in preparedness and prevention through the establishment of provincial forecasting centres and local conservation authorities and the work of the Canadian Coast Guard's winter icebreaking operations on the St. Lawrence and Saint John rivers.