AGRICULTURE AND WATER POLICIES: MAIN CHARACTERISTICS AND EVOLUTION FROM 2009 TO 2019[1]

CANADA

This country profile reviews recent changes in agriculture and water policies. The content of the profile is based on a survey conducted in 2019 by the OECD Secretariat[2] and additional official sources.

A. Agriculture and Water Characteristics

- Canada's agriculture mainly produces cereals, oilseeds, dairy and livestock. From 2000 to 2018, the agricultural sector underwent a shift from livestock to crop cultivation, as the share of livestock in the total agricultural production decreased from 57% to 42% in 2018 (OECD, 2020c).
- Agriculture accounted for 8% of total water abstractions in 2018 whereas irrigated lands represented 1% of the Canadian agricultural area (OECD, 2020c).
- Canada's consumption of nitrogen fertilisers has increased about twice as fast as the level of total agricultural output since the early 2000s (OECD, 2017). At the national level, the nitrogen balance remained stable between 2000 and 2018 (around 24 kg/ha), whereas the phosphorus balance went down from 2 kg/ha to 0.6 kg/ha during the same period (OECD, 2020a).

Table 1. Main challenges related to water in agriculture

Water use	Water pollution	Water-related risks
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Agricultural water abstractions represent 8% of total water abstractions	Key pollutants from the agricultural sector are phosphorus, nitrogen, coliforms and pesticides	Increase in the frequency of drought and flooding

Note: +: Minor issue; ++: Problematic issue; +++: Major issue. Source: OECD (2017, 2019, 2020c).

[1] This document, as well as any data included herein, are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

[2] For more details, Gruère, G., M. Shigemitsu and S. Crawford (2020), "Agriculture and water policy changes: Stocktaking and alignment with OECD and G20 recommendations", *OECD Food, Agriculture and Fisheries Papers*, No. 144, OECD Publishing, Paris, http://dx.doi.org/10.1787/f35e64af-en.

B. Key Agriculture and Water Policies & Main Evolution from 2009 to 2019[3]

B.1. Cross-Cutting Agriculture and Water Policies & Governance

Table 2. Key agriculture and water policies and policy changes

Key Policies	The 1970 Canada Water Act provides the general framework for cooperation between the federal level, the provinces and territories in the conservation, development and use of Canada's water resources. Joint projects between these different levels of government involve the regulation, apportionment, monitoring or surveying of water resources, and the planning and implementation of programs relating to the conservation, development and utilisation of water resources. The national government mainly concerns with environmental protection of water resources and transboundary issues while provinces are the primary authority for management of water resources.
Main Policy Evolution(s) from 2009 to 2019	The Canadian Agricultural Partnership (2018-2023), between federal, provincial and territorial governments, is helping producers continue to take action to address soil and water conservation, reduce greenhouse gas emissions and adapt to climate change. This Partnership is a 5-year agreement which provides CAD 3 billion (USD 2.2 billion) to fund strategic initiatives in the agriculture and agri-food sector.
Consistency between Agriculture and Water Policies	Agriculture and Agri-Food Canada (AAFC) has worked with provinces and territories to develop and support cost-shared programs that address water quantity and quality needs of each distinct region of Canada.

[3] Agriculture and water policies are defined here as all policies that affect the interaction between agriculture production and water.

B.2. Policies to Manage Agricultural Water Use (Quantity)

Water allocation regimes vary widely across the country. It is common for producers to have self-supplied access to water from rivers, lakes and groundwater sources, using their own infrastructure: in such areas, it is therefore unlikely for pricing to be a fee for service but rather a royalty collected by a provincial government.

Table 3. Key instruments for the management of water use

Quantified national future targets for the use of water resources in the agriculture sector No national planning targets. The protection and use of water resources is the mandate of provinces and territories who are responsible for setting targets for surface and groundwater use in their respective jurisdictions	**Metering, monitoring and reporting** Water abstractions fall under provincial and territorial jurisdiction
Quantity targets accounting for climate change *Unspecified*	**Scarcity pricing** In Canada, it is common for producers to have self-supplied access to water from rivers, lakes and groundwater sources, using their own infrastructure. Therefore it is unlikely in these areas for pricing to be a fee for service but rather a royalty collected by a provincial government.
Water entitlements ► Water entitlements are generally issued by provinces to individuals or recognised water suppliers (private and public) ► Prior allocation system used for water licensing, i.e. a licensee acquires rights to water from the first time that owner puts water to some use. Most Provinces have thresholds over which licences are required for use[4]. ► In some Provinces[5] a riparian rights system operates, meaning that a landowner is entitled to the water that is on their property. ► In Northern Canada (Yukon, Northwest Territories, Nunavut) public authority management is used, where a public authority makes decisions about water use, often implemented by a local water board. ► Quebec uses civil code management, where each ministry grants water rights that pertain to their jurisdiction. In agriculture, the Ministry of Agriculture, Fisheries and Food is responsible. ► There are also Indigenous water rights, where water rights, not extinguished before 1982 cannot be infringed upon by the government.	**Enforcement measures** Enforcement mechanisms fall under provincial and territorial jurisdiction
Proportion of cost recovery for surface water *Unspecified*	**Other policy instruments used to encourage water use efficiency** ► Subsidies, farm advice and research ► Provinces usually develop overarching water strategies to improve water efficiency, e.g. set targets ► The Agricultural Water Survey is conducted to gather information on irrigation water use, irrigation methods and practices, and sources used for agricultural purposes on Canadian farms

[4] Prior allocation is used to manage water rights in Western provinces of British Columbia, Alberta, Saskatchewan, and Manitoba, and to some extent in Nova Scotia.
[5] Ontario and Eastern Canada

B.3. Policies to Control Agricultural Water Quality

In 1987, the Canadian Council of Ministers of the Environment (CCME) issued Canadian Environmental Quality Guidelines (EQGs) for the Protection of Agricultural Water Uses. The EQGs are nationally endorsed, although provincial and territorial jurisdictions may develop their own science-based criteria, guidelines, objectives and standards.

Table 4. Key instruments to improve water quality

National water quality data collection tools	**Main policy instruments**
► Federal and Provincial governments use streamflow and water quality monitoring and many other databases. ► The Agricultural Water Survey is conducted to gather information on sources and quality of water used for agricultural purposes on Canadian farms. ► Key metrics of the risk to water quality are modelled through the Agri-Environmental Indicators (Nitrogen, Phosphorus, Coliforms and Pesticides data).	New binational phosphorus reduction targets for Lake Erie's western and central basins and nearshore priority areas, adopted by Canada and the United States in February 2016. The Federal Government has also committed CAD 44.84 million over five years (2017-2022) to Canada's Great Lakes Protection Initiative, CAD 26 million of which is allocated to prevent toxic and nuisance algae in Lake Erie. ► *Regulatory*: Federally, the Fisheries Act and the Canadian Environmental Protection Act address water quality, but provinces and territories have their own regulations suited to their geographic area and pollutant concerns ► *Economic*: The Canadian Agricultural Partnership launched in 2018 provides cost-share programming on beneficial management practices (renewed every five years) ► *Information*: Since 2009, AAFC has launched a new Living Laboratories initiative whose aim is to facilitate communication and knowledge transfer between researchers and producers about sustainable farming practices including practices relating to water quality.
Spatial tools (e.g. topological, geometric, or geographic data analysis) to target policies in specific areas Earth observation data helps inform the agri-environmental indicators which help to shape agricultural water policy at the federal level and the provincial levels	**Enforcement measures** Federally, if an individual contravenes the Fisheries Act, the Canadian Environmental Protection Act or the International River Improvements Act, they can be subject to a fine or imprisonment, or both

Note: Underline indicates changes since 2009

B.4. Policies to Manage Climate-Induced Water Risks

Table 5. Water risks and responses

	Droughts	Floods
Reported Trends	Evidence of the costs of drought is increasing. There are observed incidences of increased drought in the Prairies provinces.	The frequency of flooding appears to be increasing, based on anecdotal evidence of damage to infrastructure and increase in flooding of unseeded acres due to spring floods.
Key Policies	Support payments for drought adaptation and mitigation in agriculture are funded through the Canadian Agricultural Partnership. Support for construction of on-farm water storage dams, irrigation systems improvement and wetland assessment and enhancement. Ad hoc climate related risk management and extension programmes, and technical guidance, such as building small ponds to store water and conservation tillage to retain soil moisture The AgriRecovery Framework helps Canada's agricultural producers recover by providing financial assistance for the extraordinary costs necessary for recovery.	Cost-shared beneficial management practices are funded through the Canadian Agricultural Partnership which addresses flood adaptation and mitigation. The beneficial management practices that support flood adaptation and mitigation are: sub-surface drainage, wetland restoration and enhancement, wetland assessments, and erosion control, habitat structures and riparian enhancements. The AgriRecovery Framework helps Canada's agricultural producers recover by providing financial assistance for the extraordinary costs necessary for recovery.
Main Changes from 2009 to 2019	In 2019, the Government announced CAD 1 million (USD 745 000) federal budget commitment to develop a strategy for land and water management in the Prairies. The strategy will be developed in partnership with the provinces of Saskatchewan, Alberta and Manitoba, along with Indigenous stakeholders, academics and private sector groups.	-
Factoring of Climate Change in Policies	Not estimated, although climate change mitigation and adaptation measures have increased since 2009. There is ongoing extensive research, especially regarding agricultural adaptation to climate change.	

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