This country profile was compiled by the OECD Secretariat and reflects information available as of March 2015. Further information and analysis can be found in the publication: OECD (2015) *Water Resources Allocation: Sharing Risks and Opportunities*, OECD Studies on Water, OECD Publishing. Country profiles for all of the 37 allocation regimes in 27 OECD and key partner countries surveyed for this project are available for download at: http://www.oecd.org/fr/publications/water-resources-allocation-9789264229631-en.htm.

CANADA

Overview and highlights

In Canada, water allocation is largely managed by each province and territory. This profile covers seven different allocation regimes in various provinces and one territory of Canada (Alberta, Quebec, Manitoba, Nova Scotia, Prince Edward Island, Newfoundland and Labrador, and the Yukon Territory). Recent reforms include:

- Alberta has seven major river basins, each of which has distinct geographical and hydrologic variations. A review of Alberta's water allocation management system is underway focusing on the following five issues: Managing risk and providing access to water allocations; Protecting water for environmental and other purposes; Diverting water for social and economic purposes; Maintaining legitimate and credible oversight of the system; and Enhancing the information base to support decision-making[1].
- Quebec is characterised by a wide variety of water resources. In 2009, the Quebec government adopted an act to affirm the collective nature or water resources and to provide for increased water resource protection, which sets out a new water resource allocation system.
- In Manitoba, the water allocation regime is based on the Manitoba Water Rights Act. There has been a significant reform of allocation regimes in Manitoba, aiming at environmental improvement or protection.
- In Newfoundland and Labrador, a significant reform took place 11 years ago with the proclamation of the Water Resources Act, which is binding on the Crown and incorporated several diverse pieces of water resources legislation.
- In the Yukon Territory, the Yukon Water Board is currently developing the tools necessary to assess the available quantities and flows of both surface and groundwater, and the minimum requirements for sustainable ecosystems, partially supported by the newly developed Yukon Water Strategy.

Key characteristics of these various examples include:

- The ground water and surface water are publicly owned in all of the provinces and the territory covered;
- In Manitoba, environment is the major type of water uses (80% of mean annual inflow/recharge); In the Yukon Territory, 80% of mean annual inflow/ recharge is transferred to the sea or another system.
- Water resources are considered neither "over-allocated" nor "over-used" in most of the provinces and the territory covered. However, in Alberta, water resources are considered "over-allocated" and a limit on allocations has be established to address this issue;
- There are a variety of arrangements for water entitlements. Water entitlements are unbundled from property titles in the Yukon Territory and the province of Newfoundland and Labrador, while they are riparian entitlements in Quebec. In Alberta, water entitlements are defined in various ways. They can be unbundled from property rights, riparian entitlements or granted by prior appropriation where reliability is a function of the year when the entitlement was first issued. In Manitoba, water entitlements are also granted by prior appropriation.
- If the entitlement is not used in a given period, it will be lost (e.g. "use it or lose it") in Alberta, Manitoba and Nova Scotia, while it will remain in place for the period it is issued for in Quebec and Prince Edward Island;
- Before a new entitlement can be granted, assessment of third party impacts and an environmental impact assessment (EIA) are required in Quebec and Yukon, while existing user(s) forgoing is also required in Manitoba and Newfoundland and Labrador. In Nova Scotia, a new entitlement can be granted and the size of the existing entitlements can be increased without restriction;
- Allocation trading is not allowed in most of the provinces and the territory covered, with the exception of Alberta. However, transfer or lease of water entitlements is possible in some provinces. In Alberta, allocation trading is allowed with a willing seller and buyer deciding a price, although there are several restrictions on the trade;
- In most of the provinces, abstraction charges are based on the volume of water used and do not reflect water scarcity, but the types of withdrawals monitored are different among provinces. There are no abstraction charges in Alberta and Prince Edward Island;
- In most of the provinces (except Alberta and Manitoba) as well as the Yukon Territory, there is no distinction between the allocation regimes used in "normal" and periods of extreme/severe water shortage. In Alberta, during episodes of scarcity, the Director of the Alberta Environment and Sustainable Resource Development may suspend the operation of all or part of any approval, preliminary certificate, license or registration by issuing a water management order. In Manitoba, the Crown can reduce, temporarily suspend or even cancel any licence if it is deemed to be in the public interest.

[1] For further information, see: *http://www.waterforlife.alberta.ca/03349.html*.

Legal and institutional setting for water allocation

Institution	Scale	Main Responsibilities
Alberta Environment and Sustainable Resource Development (ESRD)	Provincial/State/ Regional	Policy, Planning, Issuing entitlements, Monitoring and Enforcement
Ministry of Sustainable Development, the Environment, Fauna and Parks, Quebec	Provincial/State/ Regional	Policy, Issuing permits to take water and Enforcement
Yukon Water Board	Provincial/State/ Regional	Issuing entitlements
Department of Conservation and Water Stewardship in Manitoba	Provincial/State/ Regional	Policy, Planning, Issuing entitlements, Monitoring and Enforcement, etc.
Nova Scotia Environment	Provincial/State/ Regional	Policy, Planning, Issuing approvals, Monitoring, Enforcement.
Prince Edward Island Department of Environment, Labour and Justice	Provincial/State/ Regional	
Department of Environment and Conservation (ENVC) in Newfoundland and Labrador	Provincial/State/ Regional	Policy, Planning, Granting of permits and water rights, Quantity and quality monitoring, Enforcement, etc.

Legal context for water allocation: Common law and Roman/ Statutory Law (in Alberta, Manitoba and Newfoundland and Labrador), Roman/ Statutory Law (in Quebec, Yukon and Nova Scotia)

Legal definition of ownership of water resources: Ground water and surface water are publicly owned. In Manitoba, the water is owned by Provincial Crown. In Newfoundland and Labrador, it is defined that "The property in and the right to the use and flow of water in a body of water in the province are for all purposes vested in the Crown".

Tracking water scarcity

In Alberta, Quebec[2], Nova Scotia and Newfoundland and Labrador[3], a mapping exercise has been undertaken to identify areas where the scarcity of ground water and surface water is becoming a problem. In Manitoba and the Yukon Territory, no mapping exercise has been undertaken.

[2] For further information on the mapping exercise, see (in French): *http://www.mddefp.gouv.qc.ca/eau/souterraines/programmes/acquisition-connaissance.htm* (for groundwater), *http://www.cehq.gouv.qc.ca/hydrometrie/index.htm* (for surface water).

[3] A mapping exercise of water availability has been undertaken, although the scarcity is generally not a problem.

Allocation Regime 1st Example: The Province of Alberta

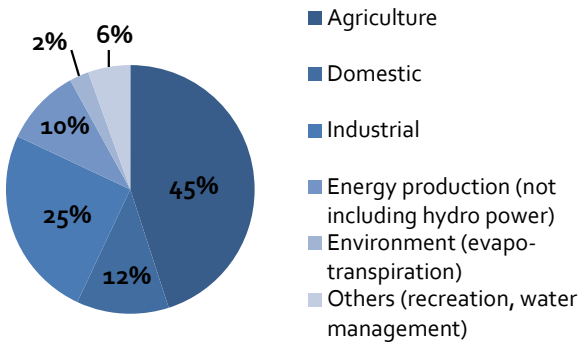
Physical features of the water resource

Alberta's water resources are comprised of seven major river basins, each of which has distinct geographical and hydrologic variations. Southern Alberta is highly irrigated and the natural flow regime has been altered by significant supporting infrastructure, while Northern Alberta is largely free of infrastructure and flows are mostly unregulated. Much of the Alberta's surface water is directly influenced by groundwater. This allocation regime is a provincial level system.

The **flow rate is managed or controlled** to some extent, as water systems are partially regulated.

There is **some non-consumptive use** in hydro power (325MW) in the Bow River Basin.

Mean annual inflow/ recharge consumed per use:



Defining the available resource pool

Are limits defined on consumptive use? Yes.

- There is a limit in the volume of water that can be abstracted, which is linked to a river basin management plan, prepared by the Alberta Environment and Sustainable Resource Development. It is a guiding document.

Are environmental-flows clearly defined? Yes.

- Alberta's minimum flows (instream flows) are defined as the science-based quantities and qualities of water that sustain the ecological integrity of riverine environments. Alberta determines recommendations for instream flows using the Alberta Desktop Method.
- Freshwater biodiversity is taken into account, while terrestrial biodiversity is not.

Are there arrangements to deal with impacts of climate change? Yes.

- Watershed management plans, groundwater research, and ongoing water conservation measures undertaken by industry and Albertans.

What is the status of resource pool? Over-allocated

- **Measures to address over-allocation:** Under current water management practices, a limit on allocations can be established for each basin, effectively placing a cap on new licenses for the river basin or groundwater aquifer once the limit has been reached.

Factors taken into account in the definition of the available resource pool

Factor	Taken into account?	If taken into account, how?
Non-consumptive uses (e.g. navigation, hydroelectricity)		
Base flow requirements	✓	A hydrologist or hydrogeologist does an assessment of the available water based on stream flows, existing other users, and water allocation agreements with other jurisdictions.
Return flows (how much water should be returned to the resource pool, after use)	✓	The rate of flow is indicated on the license and is based on the difference between the amount allocated and the consumptive use.

Inter-annual and inter-seasonal variability	✓	Before the license is issued, a review will be undertaken of the seasonal maximum and minimum flows using the Alberta Desktop Model. The license will specify amounts that may be withdrawn based on annual variability.
Connectivity with other water bodies	✓	The hydrologist will determine the source of the water (ground or surface), connections to other water bodies, and sharing/allocation obligations. Based on these reviews, the amount of water available for allocation will be determined.
Climate change	✓	The government has established a work plan for climate change adaptation. The first step is to develop further hydro-climate scenarios for major watersheds.

Entitlements to use water

Definition of entitlements

Are entitlements legally defined? Yes.

Are private entitlements defined? Yes, as an individual entitlement (to an individual person) or as a collective entitlement (to an institution representing water users, such as WUAs). In the case of collective entitlements, allocation of water among individual users within a group of users is based on bargaining process and informal trading.

Nature of entitlement: Water entitlements unbundled from property titles, riparian entitlements and prior appropriation where reliability is a function of the year when the entitlement was first issued. Defined as both the purpose that water may be used for and the maximum volume that may be taken in a nominated period.

Period granted for: A term of a given number of years with expectation of periodic renewal.

Return flow obligations: Specified for municipalities. Usually calculated as difference between allocation and estimated use.

Characteristics of entitlements

If the entitlement is not used in a given period, it will be lost (e.g. "use it or lose it").

Are entitlements differentiated based on the level of security of supply (or risk of shortage)? No.

Is there a possibility to trade, lease or transfer entitlements? No.

Are allocations (the amount that can be taken at any point in time) managed separately from entitlements? Yes.

Is allocation trading allowed? Yes. The transfer is voluntary, with a willing seller and buyer deciding a price. There are no administrative charges associated with a trade. The restrictions on trading are as follows: the transfer can be made only if the water can be physically transferred; the transfer must be authorised in a water management plan or through an order of Cabinet; he holder of the allocation must be in good standing; the transfer must not negatively impact other users or the aquatic environment.

Can entitlements function as a financial instrument? Yes. The license in some cases can be used as collateral for obtaining credit or a loan from a financial institution.

Type of users not required to hold a water entitlement to abstract water: Household purposes, traditional agricultural use (to raise animals and apply pesticide to crops), exempted agricultural users. Total water uses related to these groups of users account for 10 to15%. To control the adverse impacts of any increase in these uses, the Director of ESRD may impose terms and conditions on water use, reporting and monitoring.

Requirements to obtain a new entitlement or to increase the size of an existing entitlement: Assessment of third party impacts, environmental impact assessment (EIA) and permission from the director of ESRD.

Abstraction charges

There are no abstraction charges in Alberta.

Dealing with exceptional circumstances

Distinction between the allocation regimes used in "normal" and extreme/severe water shortage times? Yes.

How is the amount of water made available for allocation adjusted: Before any water is allocated to an applicant, a hydrologist will review stream flows and the availability of water. The license will then specify minimum and maximum volumes that may be used. Depending on the location and source of water, the minimum and maximum rates will vary with the season.

Definition of "exceptional" circumstances: An emergency related to water exists or may exist in all or any part of Alberta. Stakeholders are not involved in the definition.

Legal bodies declaring the onset of "exceptional" circumstances: The Lieutenant Governor in Council (Cabinet). If an emergency is declared, the Director of ESRD may issue a water management order to any person. The order may suspend the operation of all or part of any approval, preliminary certificate, license or registration; suspend a diversion of water; designate the purpose for which, and the volumes in which, water may be diverted or used.

Pre-defined priority classes

Monitoring and enforcement

Responsible authority: Alberta Environment and Sustainable Resource Development.

Types of withdrawals monitored: Agriculture, domestic, industrial, energy production and environment.

Monitoring mechanisms:

- In agriculture: various forms including metering measuring and sampling of water;
- In domestic, industrial, energy production and environment.

Sanctions: Penalties for contravening enforcement order. Part of the act may be fined or imprisoned.

Conflict resolution mechanisms? Yes. Under Section 93 of the Alberta Water Act, a person who is unable to resolve a complaint or dispute can ask the Director that the matter be reviewed. If after the review the complaint or dispute remains unresolved, the Director may appoint a mediator to assist in resolving the complaint or dispute.

Allocation Regime 2nd Example: The Province of Quebec

Physical features of the water resource

The Quebec water resource allocation regime applies to the entire territory of Quebec, which is characterised by a wide variety of physical characteristics of the water resource.

The flow rate is managed or controlled to some extent, as water systems are partially regulated.

Defining the available resource pool

Are limits defined on consumptive use? Yes.

- There is a limit on the volume of water that can be abstracted, which is not linked to any public planning document.

Are environmental-flows clearly defined? Yes.

- The Ministry uses 7Q2 (7-day quantile with a 2-year return period) as a minimum flow criterion.
- Freshwater biodiversity is not taken into account, while terrestrial biodiversity is taken into account (currently under development).

Are there arrangements to deal with impacts of climate change? Yes.

- There are two following general plans to address climate change: 2013-2020 Quebec Climate Change Action Plan[4] and Strategy for Climate Change Adaptation[5].

What is the status of resource pool? Neither over-allocated nor over-used.

Factors taken into account in the definition of the available resource pool

Factor	Taken into account?	If taken into account, how?
Non-consumptive uses (e.g. navigation, hydroelectricity)	✓	Some non-consumptive use will be subject to the new allocation regime (in development).
Base flow requirements	✓	By using 2Q7 criterion.
Return flows (how much water should be returned to the resource pool, after use)	✓	By implementing water conservation measures.
Inter-annual and inter-seasonal variability	✓	Flow requirements are based on statistical data over a 30-year period.
Connectivity with other water bodies	✓	Allocation will be given base on watershed basin approach (in development).
Climate change	✓	Under development

[4] For further information, see: *http://www.mddefp.gouv.qc.ca/changementsclimatiques/pacc2020-en.htm*.

[5] For further information, see: *http://www.mddefp.gouv.qc.ca/changementsclimatiques/strategie-adaptation-en.htm*.

Entitlements to use water

Definition of entitlements

Are entitlements legally defined? Yes.

Are private entitlements defined? Yes. A landowner has the right to take water but if the volume pumped exceeds the allocation regime threshold, some conditions may be applied.

Nature of entitlement: Riparian entitlements. Defined as the maximum volume that may be taken in a given period.

Period granted for: A term of a given number of years with the expectation of periodic renewal.

Return flow obligations: Specified as % of the entitlement or certain volume (still has to be determined).

Characteristics of entitlements

If the entitlement is not used in a given period, it will remain in place for the period it is issued for.

Are entitlements differentiated based on the level of security of supply (or risk of shortage)? Yes. The allocation regime may contain conditions defining maximum pumping rates.

Is there a possibility to trade, lease or transfer entitlements? Yes. All water withdrawal authorisations will be transferable. A transferee must, however, inform the Ministry of the transfer within 30 days after it is made. This procedure will be in force when the new regime is adopted.

Are allocations (the amount that can be taken at any point in time) managed separately from entitlements? No.

Is allocation trading allowed? No.

Can entitlements function as a financial instrument? No.

Type of users not required to hold a water entitlement to abstract water: Users who withdraw volumes less than the threshold of 75 m^3/d. To control the adverse impacts of any increase in these uses, the new act has provisions that enable the government to adopt regulation which will apply to specific areas to minimise the impacts.

Requirements to obtain a new entitlement or to increase the size of an existing entitlement: Assessment of third party impacts and an environmental impact assessment (EIA).

Abstraction charges

User category	Abstraction charge?	Basis for charge	Reflects water scarcity?
Agriculture			
Domestic			
Industrial	✓	Volumetric	No
Energy production (not including hydro power)			
Hydro power			

Dealing with exceptional circumstances

Distinction between the allocation regimes used in "normal" and extreme/severe water shortage times? No.

How is the amount of water made available for allocation adjusted: It will be revised during the renewal process (every 10 years).

Pre-defined priority classes

Monitoring and enforcement

Responsible authority: Provincial government.

Types of withdrawals monitored: Agriculture, domestic, industrial, energy production, environment and transfer to the sea or another system.

Monitoring mechanisms:

- In agriculture and environment: inspection;
- In transfer to the sea or another system: metering;
- In domestic, industrial and energy production: inspection and metering.

Sanctions: Fines and penal.

Conflict resolution mechanisms? Yes. The specificities of the mechanisms are under development.

Allocation Regime 3rd Example: The Yukon Territory

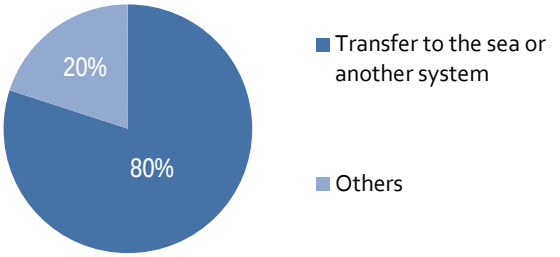
Physical features of the water resource

The water allocation regime in the Yukon covers all surface and subsurface water across the territory.

The water system is not regulated, as the flow rate cannot be controlled.

There is some non-consumptive use for the hydro power and placer mining.

Mean annual inflow/ recharge consumed per use:



Defining the available resource pool

Are limits defined on consumptive use? No.

Are environmental-flows clearly defined? No.

Are there arrangements to deal with impacts of climate change? No.

What is the status of resource pool? Neither over-allocated nor over-used.

Factors taken into account in the definition of the available resource pool

Factor	Taken into account?	If taken into account, how?
Non-consumptive uses (e.g. navigation, hydroelectricity)	n/a	
Base flow requirements	n/a	
Return flows (how much water should be returned to the resource pool, after use)	n/a	
Inter-annual and inter-seasonal variability	n/a	
Connectivity with other water bodies	n/a	
Climate change	n/a	

Entitlements to use water

Definition of entitlements

Are entitlements legally defined? Yes.

Are private entitlements defined? Yes, defined as an individual entitlement (to an individual person).

Nature of entitlement: Defined as both the purpose that water may be used for and maximum volume that may be taken in a nominated period. Water entitlements are unbundled from property titles.

Period granted for: A term of a given number of years with the expectation of periodic renewal.

Return flow obligations: Specified. In sensitive areas, minimum flows for fish habitat are defined. However, in most cases, return flows are not specified.

Characteristics of entitlements

If the entitlement is not used in a given period, it may either remain in place for the period it is issued for, or may be lost if not used for 3 years, depending on the circumstances.

Are entitlements differentiated based on the level of security of supply (or risk of shortage)? No.

Is there a possibility to trade, lease or transfer entitlements? Yes, can be leased or assigned to another user.

Type of users not required to hold a water entitlement to abstract water: Domestic users, instream users, for extinguishing a fire, or for emergency flood control or prevention.

Requirements to obtain a new entitlement or to increase the size of an existing entitlement: Assessment of third party impacts and an environmental impact assessment (EIA).

Abstraction charges

User category	Abstraction charge?	Basis for charge	Reflects water scarcity?
Agriculture	✓		No
Domestic			
Industrial	✓		No
Energy production (not including hydro power)	✓		No
Hydro power	✓		No
Others	✓		No

Dealing with exceptional circumstances

Distinction between the allocation regimes used in "normal" and extreme/severe water shortage times? No.

How is the amount of water made available for allocation adjusted: n/a.

Monitoring and enforcement

Responsible authority: n/a.

Types of withdrawals monitored: Agriculture and industrial.

Monitoring mechanisms: Self-reporting.

Sanctions: n/a.

Conflict resolution mechanisms? No, priority of right is based on license issuance date.

Allocation Regime 4th Example: The Province of Manitoba

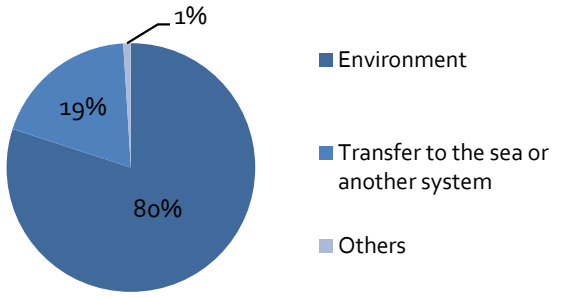
Physical features of the water resource

The water allocation regime in Manitoba covers both surface water and groundwater resources across the province through the Manitoba Water Rights Act.

The flow rate is managed or controlled to some extent, as water systems are partially regulated.

There is some non-consumptive use in the hydro power generation from generating stations that are essentially run by the river stations.

Mean annual inflow/ recharge consumed per use:



Defining the available resource pool

Are limits defined on consumptive use? Yes.

- There is a limit in the volume of water that can be abstracted, which is not linked to any public planning document.

Are environmental-flows clearly defined? No.

- Freshwater biodiversity is taken into account on a project by project basis for the most part, while terrestrial biodiversity is not taken into account.

Are there arrangements to deal with impacts of climate change? Yes.

- The prior appropriation was designed to be used in geographic regions with climates that could and did experience prolonged dry spells. The Manitoba Water Rights Act allows for cutting licensees off during times of low water availability and for the equitable re-ordering of priority through a listing in the act of the priority of purposes with domestic and municipal purposes being at the top of the list.

What is the status of resource pool? Neither over-allocated nor over-used.

Factors taken into account in the definition of the available resource pool

Factor	Taken into account?	If taken into account, how?
Non-consumptive uses (e.g. navigation, hydroelectricity)	✓	For the most part, water diversions in Manitoba do not negatively impact these other uses.
Base flow requirements	✓	Only in a couple of regulated streams.
Return flows (how much water should be returned to the resource pool, after use)		
Inter-annual and inter-seasonal variability		Surface water bodies are frozen about half the year.
Connectivity with other water bodies		
Climate change	✓	The Prior Appropriation system was designed in the 1800's to deal with the variability in climate.

Entitlements to use water

Definition of entitlements

Are entitlements legally defined? Yes.

Are private entitlements defined? Yes, defined as owned by persons, corporations, municipalities, etc.

Nature of entitlement: Prior appropriation where reliability is a function of the year when the entitlement was first issued and the priority of purpose. Defined as the purpose that water may be used for, maximum area that may be irrigated and maximum volume that may be taken in a nominated period. More broadly, the entitlement is determined by how much water the proponent is able to put to beneficial use (without waste).

Period granted for: A term of a given number of years with the expectation of periodic renewal.

Return flow obligations: Not specified.

Characteristics of entitlements

If the **entitlement is not used in a given period**, it will be lost (e.g. "use it or lose it").

Are entitlements differentiated based on the level of security of supply (or risk of shortage)? Yes. Differentiated based on a combination of first in time and priority of purpose.

Is there a possibility to trade, lease or transfer entitlements? Yes. Transfers are permitted upon sale of the business (e.g. livestock operation; irrigation farm; water park; golf course, etc.) The new owner of the land must be able to put the water to beneficial use otherwise the Crown will not transfer the license.

Can entitlements function as a financial instrument? Some banks and other financial lending institutions want to know if the livestock operation; irrigation farm; ski hill; golf course, etc. has a water rights licence and if so for how much water and the duration of the licence, etc. Many financial institutions do not inquire about such details, but some do.

Type of users not required to hold a water entitlement to abstract water: Domestic users, which includes livestock watering and crop watering, when the total annual usage does not exceed 25 000 L/day. The adverse impacts of any increase in these uses are controlled through licensing if the daily threshold of 25 000 L/day is exceeded.

Requirements to obtain a new entitlement or to increase the size of an existing entitlement: Assessment of third party impacts, an environmental impact assessment (EIA) and existing user(s) forgoing use.

Abstraction charges

User category	Abstraction charge?	Basis for charge	Reflects water scarcity?
Agriculture			
Domestic			
Industrial	✓	Volumetric	No
Energy production (not including hydro power)			
Hydro power	✓	Volumetric	No

Dealing with exceptional circumstances

Distinction between the allocation regimes used in "normal" and extreme/severe water shortage times? Yes.

How is the amount of water made available for allocation adjusted: n/a.

Definition of "exceptional" circumstances: Extended drought. Stakeholders can be involved in the definition through consultation with municipal water suppliers, the irrigation and livestock sectors, conservation districts, etc.

Legal bodies declaring the onset of "exceptional" circumstances: The Minister of Conservation and Water Stewardship. If an extended drought came along the Crown can reduce, temporarily suspend or even cancel any licence if it is in the public interest.

Pre-defined priority classes

Monitoring and enforcement

Responsible authority: Water Use Licensing Section (WULS).

Types of withdrawals monitored: Agriculture, domestic and industrial.

Monitoring mechanisms:

- In agriculture and industrial: metering;
- In domestic: Metering of municipal water systems but not individual domestic well owners.

Sanctions: Fines.

Conflict resolution mechanisms? Yes, through the normal application of the principles of good governance.

Allocation Regime 5th Example: The Province of Nova Scotia

Physical features of the water resource

The water allocation regime in Nova Scotia is a provincial level system and covers both surface water and groundwater resources throughout the province.

The flow rate is managed or controlled to some extent, as water systems are partially regulated.

There is some non-consumptive use in a number of hydropower systems.

Defining the available resource pool

Are limits defined on consumptive use? Yes.

- There are restrictions on who can abstract the water but no limit on how much water can be used. The limit is not linked to any planning document.

Are environmental-flows clearly defined? No.

Are there arrangements to deal with impacts of climate change? Yes.

- By monitoring both surface water and groundwater.

What is the status of resource pool? Neither over-allocated nor over-used.

Factors taken into account in the definition of the available resource pool

Factor	Taken into account?	If taken into account, how?
Non-consumptive uses (e.g. navigation, hydroelectricity)	✓	
Base flow requirements	✓	
Return flows (how much water should be returned to the resource pool, after use)	✓	
Inter-annual and inter-seasonal variability	✓	
Connectivity with other water bodies		
Climate change	✓	

Entitlements to use water

Definition of entitlements

Are entitlements legally defined? Yes.

Are private entitlements defined? No. Provincial water resources are managed by the province. They require an approval for all users withdrawing more than 23 000 l/day.

Nature of entitlement: Approval issued under the Activities Designation Regulations. Defined as both the purpose that water may be used for and the maximum volume that may be taken in a nominated period.

Period granted for: A term of a given number of years with the expectation of periodic renewal.

Return flow obligations: Not specified.

Characteristics of entitlements

If the **entitlement is not used in a given period**, it will be lost (e.g. "use it or lose it").

Are entitlements differentiated based on the level of security of supply (or risk of shortage)? No.

Is there a possibility to trade, lease or transfer entitlements? Yes, they can only be transferred through an assignment indenture.

Type of users not required to hold a water entitlement to abstract water: Users withdrawing less than 23 000 l/day.

Is it possible to obtain a new entitlement or to increase the size of an existing entitlement: Yes, without restriction.

Abstraction charges

User category	Abstraction charge?	Basis for charge	Reflects water scarcity?
Agriculture			
Domestic	✓	Volumetric	No
Industrial	✓	Volumetric	No
Energy production (not including hydro power)	✓	Volumetric	No
Hydro power	✓	Volumetric	No
Other	✓	Volumetric	

Dealing with exceptional circumstances

Distinction between the allocation regimes used in "normal" and extreme/severe water shortage times? No. However, Nova Scotia Environment is the responsible authority for declaring the onset of "exceptional" circumstances.

How is the amount of water made available for allocation adjusted: The amount of water made available is not varied from year to year, but previsions are put in place in the approval to ensure baseline flows or levels are maintained.

Monitoring and enforcement

Responsible authority: Nova Scotia Environment.

Types of withdrawals monitored: Agriculture, domestic, industrial, energy production and environment.

Monitoring mechanisms:

- In agriculture, domestic, industrial, energy production: annual reports;
- In environment: monitoring network.

Sanctions:

- In agriculture, domestic, industrial, energy production: summary offense tickets, warnings, directives, prosecutions;
- In environment: none.

Conflict resolution mechanisms? No.

Allocation Regime 6th Example: The Province of Prince Edward Island

Physical features of the water resource

This water extraction permitting policy (adopted in 2010) applies to all areas within the Canadian province of Prince Edward Island, and to the extraction of both groundwater and surface water for all uses.

The flow rate is managed or controlled fully, as water systems are fully regulated.

There is some non-consumptive use in hydro power (325MW) in the Bow River Basin.

Defining the available resource pool

Are limits defined on consumptive use? Yes.

- There is a limit in the proportion of water that can be abstracted, which is linked to the Water Extraction Permitting Policy, prepared by the Prince Edward Island Department of Environment, Labour and Justice.

Are environmental flows (e-flows) clearly defined? Yes.

- Groundwater: Extraction not to reduce adjacent streams by more than 35% of the mean summer natural base flow.
- Surface Water: Extraction must leave 70% of the natural median monthly flow.
- Freshwater biodiversity is taken into account through setting criteria of e-flows to ensure adequate habitat for all forms of aquatic life, while terrestrial biodiversity is not taken into account.

Are there arrangements to deal with impacts of climate change? Yes.

- Climate change impacts would be evaluated when future reviews of allocated amounts are undertaken to ensure that allocations and usage remain sustainable.

What is the status of resource pool? Neither over-allocated nor over-used for the overall water system, but partially over-allocated and over-used in one watershed. As for the latter case, the utility is required to prepare a plan to address the issue.

Factors taken into account in the definition of the available resource pool		
Factor	Taken into account?	If taken into account, how?
Non-consumptive uses (e.g. navigation, hydroelectricity)		
Base flow requirements	✓	
Return flows (how much water should be returned to the resource pool, after use)		
Inter-annual and inter-seasonal variability	✓	
Connectivity with other water bodies	✓	
Climate change	✓	

Entitlements to use water

Definition of entitlements	Characteristics of entitlements
Are entitlements legally defined? There are legally defined extraction permits, but these are not referred to as "entitlements". **Are private entitlements defined?** No. No one has 'entitled' or guaranteed access to water. The government owns the water and exercises full control to determine how it is used. **Nature of entitlement:** n/a. **Period granted for:** n/a. **Return flow obligations:** n/a.	If the **entitlement is not used in a given period**, it will remain in place for the period it is issued for. **Are entitlements differentiated based on the level of security of supply (or risk of shortage)?** Yes. Permits can be revoked or modified as necessary if there is a shortage. **Is there a possibility to trade, lease or transfer entitlements?** No.

Type of users not required to hold a water entitlement to abstract water: Users extracting less than 50 imperial gallons per minute. To control the adverse impacts of any increase in these uses, an increase would require a change in the permit which would be denied if impacts are unacceptable.

Requirements to obtain a new entitlement or to increase the size of an existing entitlement: Unused water being available within the extraction policy.

Abstraction charges

There are no abstraction charges in Prince Edward Island.

Dealing with exceptional circumstances

Distinction between the allocation regimes used in "normal" and extreme/severe water shortage times? No.

How is the amount of water made available for allocation adjusted: The water extraction permitting policy accounts for variability such that groundwater is available at all times. Surface water is conditional upon stream flow being above the monthly maintenance flow (Environmental Flow Needs: EFN).

Pre-defined priority classes

Monitoring and enforcement

Responsible authority: Provincial government

Types of withdrawals monitored: Agriculture, domestic, industrial and environment.

Monitoring mechanisms:

- In agriculture, domestic and industrial, metering;
- In environment, stream flow and groundwater level monitoring.

Sanctions:

- In agriculture, domestic and industrial: permit revoked and charges;
- In environment: n/a.

Conflict resolution mechanisms? No.

Allocation Regime 7th Example: The Province of Newfoundland and Labrador

Physical features of the water resource

This water allocation regime is a provincial level system.

The flow rate is managed or controlled to some extent, as water systems are partially regulated.

There is some non-consumptive use in hydropower generation and recreation.

Defining the available resource pool

Are limits defined on consumptive use? Yes.

- There is a limit in the volume of water that can be abstracted, but it is not linked to any planning document. Water allocations are granted on a case by case basis by the Department of Environment and Conservation.

Are environmental-flows clearly defined? No.

- However, freshwater and terrestrial biodiversity are taken into account through environmental assessment (if applicable in case of freshwater biodiversity).

Are there arrangements to deal with impacts of climate change? Yes.

- By hydrometric monitoring.

What is the status of resource pool? Neither over-allocated nor over-used.

Factors taken into account in the definition of the available resource pool

Factor	Taken into account?	If taken into account, how?
Non-consumptive uses (e.g. navigation, hydroelectricity)	✓	In the assessment.
Base flow requirements	✓	In the assessment.
Return flows (how much water should be returned to the resource pool, after use)		This factor rarely comes up.
Inter-annual and inter-seasonal variability	✓	In the hydrological analysis.
Connectivity with other water bodies		
Climate change	✓	Considered in the flooding issues.

Entitlements to use water

Definition of entitlements

Are entitlements legally defined? Yes.

Are private entitlements defined? Yes, either as an individual entitlement (to an individual person), as a collective entitlement, or to a corporation.

Nature of entitlement: Defined as both the purpose that water may be used for and the maximum volume that may be taken in a nominated period. Water permits and licenses are unbundled from property titles.

Period granted for: A term of 5 to 50 years depending on user.

Return flow obligations: Specified, if applicable.

Characteristics of entitlements

If the entitlement is not used in a given period, the water stays in the system.

Are entitlements differentiated based on the level of security of supply (or risk of shortage)? Yes, based on the assessment.

Is there a possibility to trade, lease or transfer entitlements? No.

Are allocations (the amount that can be taken at any point in time) managed separately from entitlements? Yes.

Is allocation trading allowed? No.

Can entitlements function as a financial instrument? Yes, if, for example a water bottler has a water right to access water, then it can be considered a form of security.

Type of users not required to hold a water entitlement to abstract water: Ground water for domestic use. The adverse impact arising from any increase in these uses is controlled through environmental assessment.

Requirements to obtain a new entitlement or to increase the size of an existing entitlement: It depends on the situation in the particular basin involved. Requirements may include the assessment of third party impacts, an environmental impact assessment (EIA) or existing user(s) forgoing use.

Abstraction charges

User category	Abstraction charge?	Basis for charge	Reflects water scarcity?
Agriculture	✓	Application fee	No
Domestic			
Industrial	✓	Application fee	No
Energy production (not including hydro power)	✓	Application fee	No
Hydro power	✓	Application fee	No
Others	✓	Application fee	No

Dealing with exceptional circumstances

Distinction between the allocation regimes used in "normal" and extreme/severe water shortage times? No.

How is the amount of water made available for allocation adjusted: Water allocation is based on the minimum amount of water available at all times.

Pre-defined priority classes

Monitoring and enforcement

Responsible authority: Department of Environment and Conservation.

Types of withdrawals monitored: Agriculture, industrial, energy production and environment.

Monitoring mechanisms:

- In agriculture, industrial, energy production: metering;
- In environment: hydrometric network.

Sanctions? Yes.

Conflict resolution mechanisms? Yes, case by case management by the Department of Environment and Conservation.