



W0. Introduction

W0.1

(W0.1) Give a general description of and introduction to your organization.

Canadian Natural is one of the largest independent crude oil and natural gas producers in the world. We have an effective and efficient, diversified combination of assets in North America, the UK portion of the North Sea and Offshore Africa, which enables us to generate significant value. Our balanced portfolio of light, synthetic, and heavy crude oil and natural gas represents one of the strongest and most diverse asset portfolios of any energy producer in the world. Our financial discipline, commitment to a strong balance sheet, and capacity to internally generate cash flows provide us the means to responsibly and sustainably grow our Company in the long term. At Canadian Natural, we are committed to conducting our business in a way that embraces the key piece of our mission statement "doing it right". Environmental stewardship is a fundamental value of our company and this is reflected in our approach to energy development. Our goal is to develop resources in a sustainable and responsible way. We are committed to managing and minimizing the environmental impacts of our operations during all phases of our projects. To reach high standards of environmental performance and achieve regulatory compliance, we adhere to the principles of continuous improvement, efficient operations and technological innovation. Our Environment team works together with management and all our operating divisions to ensure environmental stewardship is factored into our decision-making process. Through our Environmental Excellence program, we work together to proactively reduce greenhouse gas (GHG) emissions, minimize habitat disturbance and advance reclamation, minimize the impact on the landscape to conserve high-value biodiversity and wildlife, and reduce fresh water use. We foster a culture of environmental awareness where everyone has a vital role to play in identifying and mitigating environmental impacts from our operations. We reinforce environmental excellence through employee training, due diligence and the communication of environmental priorities.

W-OG0.1a

(W-OG0.1a) Which business divisions in the oil & gas sector apply to your organization?

Upstream



W0.2

(W0.2) State the start and end date of the year for which you are reporting data.

	Start date	End date
Reporting year	January 1, 2020	December 31, 2020

W0.3

(W0.3) Select the countries/areas for which you will be supplying data.

Canada

W0.4

(W0.4) Select the currency used for all financial information disclosed throughout your response.

CAD

W0.5

(W0.5) Select the option that best describes the reporting boundary for companies, entities, or groups for which water impacts on your business are being reported.

Other, please specify

Reporting the net Canadian Natural equity share of Canadian facilities we have operational control over.

W0.6

(W0.6) Within this boundary, are there any geographies, facilities, water aspects, or other exclusions from your disclosure?

No

W1. Current state

W1.1

(W1.1) Rate the importance (current and future) of water quality and water quantity to the success of your business.



	Direct use importance rating	Indirect use importance rating	Please explain
Sufficient amounts of good quality freshwater available for use	Vital	Important	<p>Water is an important resource to the world and our operations and, as a result, protecting and using it responsibly is critical to Canadian Natural. We integrate risk management strategies throughout all our operations to balance our operational needs for water with the need to maintain the quality and quantity of this resource.</p> <p>Source water for oil and natural gas operations in Western Canada includes non-saline fresh water having less than 4,000 mg/L total dissolved solids (TDS) concentration. Our water management strategies focus on managing water use effectively and efficiently, while protecting water sources. These include:</p> <ul style="list-style-type: none"> ▪ reducing fresh water use by maximizing produced water recycling and optimizing saline water use; ▪ applying technology and increasing efficiencies to conserve fresh water use; ▪ avoiding effects to water sources by following industry-leading operating practices and regulations, and minimizing water use, fresh water withdrawals and produced water disposal where possible; ▪ monitoring of water sources, storage and reporting; and, ▪ reviewing, tracking and reporting of performance on a regular basis to senior management, who in turn report on environmental matters quarterly to the Health, Safety, Asset Integrity and Environment Committee of the Board of Directors. <p>At our oil sands mining and upgrading operations, we recycled 84% of produced water in 2020 through the use of tailings management technologies and limiting fresh water withdrawals from the Athabasca River below 30% of our annual allocation limit. On-site water storage ponds hold enough water to maintain production in the event of water withdrawal restrictions during the river's low flow periods.</p> <p>While specific projects vary in their water management strategies to account for reservoir and technology requirements, all strategies are consistently applied across Canadian Natural.</p>



	Direct use importance rating	Indirect use importance rating	Please explain
Sufficient amounts of recycled, brackish and/or produced water available for use	Vital	Important	<p>Recycled, brackish and produced water are important water sources for our operations in order to reduce fresh water and overall water use requirements. We continue to improve water recycle rates across our major thermal and oil sands mining and upgrading operations, to meet our water use targets.</p> <p>To reduce fresh water and overall use, we leverage technology to maintain an 88% produced water recycle rate in 2020 and use saline water for steam generation for thermal in situ operations. For example, at our larger thermal in situ operations, where water is required for steam generation to recover bitumen, we continue to invest in water treatment, enhanced steam generation and further development of alternative sources, such as greater use of saline and produced water.</p> <p>As a leading R&D investor in the Canadian oil and natural gas sector, we invest in a variety of research projects and continually evaluate new technologies to increase efficiencies. Water quality is a central focus in our thermal in situ operations to maintain high recycle rates. For example, produced water is treated for re-use as boiler feed for steam generation.</p>

W1.2

(W1.2) Across all your operations, what proportion of the following water aspects are regularly measured and monitored?

	% of sites/ facilities/ operations	Please explain
Water withdrawals – total volumes	100%	<p>Canadian Natural’s water withdrawal volumes are measured and monitored as a regulatory requirement typically requiring monthly and/or annual reporting to regulatory agencies.</p> <p>To maintain transparency we also publicly disclose water performance including annual withdrawal volumes of fresh and saline water for all operations in our annual sustainability/ESG report, the Stewardship Report to Stakeholders. We measure, monitor and report according to established regulatory standards and best practices.</p>



	% of sites/ facilities/ operations	Please explain
Water withdrawals – volumes by source	100%	<p>Canadian Natural’s water withdrawal volumes are measured and monitored as a regulatory requirement typically requiring monthly and/or annual reporting to regulatory agencies. We measure, monitor and report withdrawal volumes according to established regulatory standards and best practices.</p> <p>To maintain transparency we also publicly disclose water performance including annual withdrawal volumes in our annual sustainability/ESG report, the Stewardship Report to Stakeholders.</p>
Produced water associated with your oil & gas sector activities - total volumes [only oil and gas sector]	100%	<p>Canadian Natural’s produced water volumes are measured and monitored as a regulatory requirement. We measure and monitor produced water volumes according established regulatory standards and best practices.</p>
Water withdrawals quality	51-75	<p>Canadian Natural measures and monitors our surface water withdrawal quality aligned with operational parameters. We measure, monitor and report according established regulatory standards and best practices.</p>
Water discharges – total volumes	100%	<p>Canadian Natural measures and monitors all of our water discharge volumes which is a requirement of provincial and/or federal authorities within our operational areas. We measure, monitor and report according established regulatory standards and best practices.</p> <p>To maintain transparency we also publicly disclose water discharge as a percentage of our total water withdrawal for North American Exploration and Production and Oil Sands Mining in our annual sustainability/ESG report, the Stewardship Report to Stakeholders.</p>
Water discharges – volumes by destination	100%	<p>Canadian Natural measures and monitors all of our water discharge volumes by destination which is a requirement of provincial and/or federal authorities within our operational areas. We measure, monitor and report according established regulatory standards and best practices.</p>



	% of sites/ facilities/ operations	Please explain
Water discharges – volumes by treatment method	Not monitored	
Water discharge quality – by standard effluent parameters	100%	Water discharge quality is measured and monitored to ensure that the required water quality objectives are met prior to release, complying with all provincial and federal regulations pertaining to the discharge of water and surface water runoff. We measure, monitor and report according established regulatory standards and best practices.
Water discharge quality – temperature	Not monitored	Canadian Natural measures and monitors water discharge quality parameters required by regulators. Water temperature is not included in these parameters.
Water consumption – total volume	100%	Canadian Natural measures and monitors all of our water consumption volumes. We measure, monitor and report water use according established regulatory standards and best practices. To maintain transparency we also publicly disclose total water consumption volume in our annual sustainability/ESG report, the Stewardship Report to Stakeholders.
Water recycled/reused	100%	Canadian Natural measures and monitors our water recycle/reuse volumes which is a requirement of provincial and/or federal authorities within our operational areas. We measure, monitor and report according established regulatory standards and best practices.
The provision of fully-functioning, safely managed WASH services to all workers	100%	Canadian Natural provides fully functioning and safely managed potable water treatment and wash water services for all workers which includes provision of water quality, water quantity, water facilities/access, wastewater treatment/ disposal and other environmental issues according to national standards.



W1.2b

(W1.2b) What are the total volumes of water withdrawn, discharged, and consumed across all your operations, and how do these volumes compare to the previous reporting year?

	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
Total withdrawals	100,924	This is our first year of measurement	This is our first year reporting CDP Water
Total discharges	18,640	This is our first year of measurement	This is our first year reporting CDP Water
Total consumption	82,284	This is our first year of measurement	This is our first year reporting CDP Water

W-OG1.2c

(W-OG1.2c) In your oil & gas sector operations, what are the total volumes of water withdrawn, discharged, and consumed – by business division – and what are the trends compared to the previous reporting year?

	Volume (megaliters/year)	Comparison with previous reporting year %	Please explain
Total withdrawals - upstream	100,924	This is our first year of measurement	This is our first year reporting CDP Water
Total discharges – upstream	18,640	This is our first year of measurement	This is our first year reporting CDP Water
Total consumption – upstream	82,284	This is our first year of measurement	This is our first year reporting CDP Water



W1.2d

(W1.2d) Indicate whether water is withdrawn from areas with water stress and provide the proportion.

Withdrawals are from areas with water stress	Identification tool	Please explain
No	Other, please specify Alberta Water Conservation and Allocation Policy (2020)	The World Resources Institute (WRI) defines a country as experiencing water stress when water supplies are less than 1,700 m3/person/year. Canada does not fit this definition. In Alberta, where most of our operations are located, the Water Conservation and Allocation Policy, 2020, identifies only Southern Alberta as a water short area. As less than 0.1% of Canadian Natural’s water use occurs within water short areas, our operations are at low risk of being affected by water scarcity. We understand the implications of water for our current and future business and integrate risk management strategies throughout all our operations. As part of our risk management approach, we review, track and report our performance on a regular basis to Senior Management, which in turn reports on environmental matters quarterly to the Health, Safety, Asset Integrity and Environment Committee of the Board of Directors.

W1.2h

(W1.2h) Provide total water withdrawal data by source.

	Relevance	Volume (megaliters/ year)	Comparison with previous reporting year	Please explain
Fresh surface water, including rainwater, water from wetlands, rivers, and lakes	Relevant	82,034	This is our first year of measurement	This is our first year reporting CDP Water
Brackish surface water/Seawater				
Groundwater – renewable				
Groundwater – non-renewable	Relevant	18,890	This is our first year of measurement	This is our first year reporting CDP Water
Produced/Entrained water				
Third party sources				



W1.2i

(W1.2i) Provide total water discharge data by destination.

	Relevance	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
Fresh surface water				
Brackish surface water/seawater				
Groundwater	Relevant	18,640	This is our first year of measurement	This is our first year reporting CDP Water
Third-party destinations				

W-OG1.3

(W-OG1.3) Do you calculate water intensity for your activities associated with the oil & gas sector?

Yes

W-OG1.3a

(W-OG1.3a) Provide water intensity information associated with your activities in the oil & gas sector.

Business division

Upstream

Water intensity value (m3)

0.18

Numerator: water aspect

Other, please specify

Freshwater consumption (in situ production)

Denominator

Other, please specify

m3 of bitumen

Comparison with previous reporting year

This is our first year of measurement

Please explain



This is our first year reporting CDP Water

Business division

Upstream

Water intensity value (m3)

1.38

Numerator: water aspect

Other, please specify

Freshwater consumption (oil sands mining)

Denominator

Other, please specify

m3 of bitumen

Comparison with previous reporting year

This is our first year of measurement

Please explain

This is our first year reporting CDP Water

W1.4

(W1.4) Do you engage with your value chain on water-related issues?

Yes, our suppliers

W1.4a

(W1.4a) What proportion of suppliers do you request to report on their water use, risks and/or management information and what proportion of your procurement spend does this represent?

% of suppliers by number

51-75

% of total procurement spend

Unknown



Rationale for this coverage

To ensure environmental standards are consistently met by all contractors, a pre-qualification process has been adopted to ensure all contractors are pre-screened and made aware of Canadian Natural’s environmental requirements. These procedures were developed and have been implemented across our operations to allow for a risk-based approach to selection, evaluation and ongoing management of contractors. Our contractor screening tool (ComplyWorks) provides an enhanced view of compliance, communication and performance for contractors and suppliers, allowing us to manage compliance at multiple levels. This facilitates information publishing, monitoring of the accuracy of information provided in a supplier’s record in various areas including Environmental policy and industry-specific supplier information that is subject to assessment and site audit. This improves industry performance and reduces risk within the supply chain. As part of the prequalification process suppliers are required to confirm that they have a written environmental policy statement and environmental management system. These responses may be used in assessing risk related to use of suppliers.

Impact of the engagement and measures of success

3,409 suppliers have subscribed to Canadian Natural’s prequalification program.

Comment

Contractors and service providers must meet or exceed Canadian Natural's approach to business. We engage with suppliers and contractors with regards to environmental policies and procedures, and expect that suppliers and partners will manage environmental parameters using sound business practices.

W1.4b

(W1.4b) Provide details of any other water-related supplier engagement activity.

Type of engagement

Onboarding & compliance

Details of engagement

Requirement to adhere to our code of conduct regarding water stewardship and management

% of suppliers by number

76-100



% of total procurement spend

Unknown

Rationale for the coverage of your engagement

Our Code of Integrity, Business Ethics and Conduct and Statement of Human Rights (Code) are integrated into our contracts for service providers, operators and management in all activities. Our Supply Management employees receive training on our Code, and review all aspects of the supplier management process, including contracts, as part of their job requirements. Environmental protection is a fundamental value of the company. We expect all staff to abide by established environmental policies and procedures. The company's operations will comply with all regulatory standards and guidelines. We operate within our licenses and regulatory approvals. The environmental management plan and operating guidelines are based on guiding principles adopted by the Company, providing the vision and strategy to manage environmental risks and liabilities, and the tools to implement necessary practices and procedures to meet performance goals, It is integral to the way in which the company conducts our business. Our policy is to seek continuous improvement in environmental performance. Staff should report any environmental concern to their Manager, Vice-President Environmental, Regulatory and Stakeholder Affairs or the Chair of the Health, Safety, Asset Integrity and Environmental Committee of the Board of Directors of the Company.

Impact of the engagement and measures of success

All service providers, operators and management are expected to abide by our Code.

Type of engagement

Onboarding & compliance

Details of engagement

Other, please specify

Requirement to adhere to Canadian Natural Environmental Management Policy

% of suppliers by number

51-75

% of total procurement spend

Unknown



Rationale for the coverage of your engagement

Suppliers for products or services which present risk to the environment including water, must adhere to Canadian Natural's Environmental Management Policy as a contractual obligation.

Environmental stewardship is a fundamental value of the company. The company recognizes that every employee and contractor performing work on behalf of Canadian Natural has a vital role in identifying, minimizing and mitigating environmental impacts from our operations to improve environmental performance. Our commitment to responsible environmental management is incorporated into business activities through the following guiding principles (relevant water-requirements included):

- Reduce the environmental footprint of our activities by continually improving energy efficiency, managing GHG and air emissions, water use and other resources; reduce and recycle waste materials and preserve and restore natural biodiversity through closure planning and reclamation;
- Manage tailings and mine waste structures, including water retention structures, safely and responsibly from design to closure; and,
- Ensure that the company's operations comply with Applicable Laws, industry guidelines and company policies and procedures concerning environmental management

Impact of the engagement and measures of success

All service providers considered to present risk are expected to abide by the Policy.

W2. Business impacts

W2.1

(W2.1) Has your organization experienced any detrimental water-related impacts?

No

W2.2

(W2.2) In the reporting year, was your organization subject to any fines, enforcement orders, and/or other penalties for water-related regulatory violations?

No

W3. Procedures

W-OG3.1

(W-OG3.1) How does your organization identify and classify potential water pollutants associated with its activities in the oil & gas sector that may have a detrimental impact on water ecosystems or human health?

Potential water pollutants are identified and reported in the National Pollutant Release Inventory. The data is from sampling of water releases and from regional water quality monitoring programs. Water releases such as storm water retention ponds, are monitored in accordance with specified standards that are protective of aquatic health. Potential constituents of concern from air emissions are reported through regional monitoring, such as the Oil Sands Monitoring program. Data is verified through direct measurement, as accumulations in snow pack and in surface water. Potential groundwater pollutants are modelled using hydrogeological models and verified with groundwater sampling. Monitoring programs are designed based on models of potential releases identified in the Environmental Impact Assessment of projects which are inclusive of regional modelling of pollutant dispersal. Water quality and quantity are important to local communities and the Athabasca River has a minimum traditional flow level to maintain accessibility to traditional lands by watercraft. Water management considers this flow level within the Lower Athabasca River Water Quantity Framework. Water quality is monitored by government agencies, industry and municipalities to ensure aquatic health standards are applied and to determine background conditions when assessing effects from facility operations. This process has been established in the oil sands since the 1970s providing a baseline to monitor for change from pre-oil sands development in conjunction with the Canadian Council of Ministers of the Environment (CCME) water quality guidelines. For drilling operations, all additives to the water are publicly disclosed in accordance with the Canadian Association of Petroleum Producers (CAPP) hydraulic fracturing guidelines. Water with additives is safely disposed in keeping with standard practices to avoid pollution of surface water systems.

W-OG3.1a

(W-OG3.1a) For each business division of your organization, describe how your organization minimizes the adverse impacts on water ecosystems or human health of potential water pollutants associated with your oil & gas sector activities.



Potential water pollutant	Business division	Description of water pollutant and potential impacts	Management procedures	Please explain
Hydrocarbons	Upstream	Natural gas and fuels / petroleum products Upstream impacts: the potential for spills into water bodies near the operation where hydrocarbons are used and/or extracted/produced/refined. Downstream impacts: water contamination (groundwater) from equipment malfunction or underground storage of hydrocarbons The scale and magnitude is dependent upon various factors, such as the size, location, concentration of the pollutant.	Compliance with effluent quality standards Measures to prevent spillage, leaching and leakages Community/stakeholder engagement	Programs and Procedures are in place that all facilities operate consistent with legislation, regulations and site-specific permit conditions. Emergency response plans are in place for all major facilities and regular preparedness drills are conducted regularly.
Chemicals	Upstream	Natural gas and fuels / petroleum products Upstream impacts: the potential for spills into water bodies near the operation where hydrocarbons are used and/or extracted/produced/refined. Downstream impacts: water contamination (groundwater) from equipment malfunction or underground storage of hydrocarbons The scale and magnitude is dependent upon various factors, such as the size, location, concentration of the pollutant.	Compliance with effluent quality standards Measures to prevent spillage, leaching and leakages Community/stakeholder engagement	Programs and Procedures are in place that all facilities operate consistent with legislation, regulations and site-specific permit conditions. Emergency response plans are in place for all major facilities and regular preparedness drills are conducted regularly.
Drilling fluids	Upstream	Natural gas and fuels / petroleum products Upstream impacts: the potential for spills into water bodies near the operation where hydrocarbons are used and/or extracted/produced/refined. Downstream impacts: water contamination (groundwater) from equipment malfunction or underground storage of hydrocarbons The scale and magnitude is dependent upon various factors, such as the size, location, concentration of the pollutant.	Compliance with effluent quality standards Measures to prevent spillage, leaching and leakages Community/stakeholder engagement	Programs and Procedures are in place that all facilities operate consistent with legislation, regulations and site-specific permit conditions. Emergency response plans are in place for all major facilities and regular preparedness drills are conducted regularly.



W3.3

(W3.3) Does your organization undertake a water-related risk assessment?

Yes, water-related risks are assessed

W3.3a

(W3.3a) Select the options that best describe your procedures for identifying and assessing water-related risks.

Direct operations

Coverage

Full

Risk assessment procedure

Water risks are assessed as part of other company-wide risk assessment system

Frequency of assessment

Annually

How far into the future are risks considered?

More than 6 years

Type of tools and methods used

Tools on the market

Enterprise Risk Management

Other

Tools and methods used

Other, please specify

Corporate Integrity Management System, Corporate Environmental Management System



Comment

Water related risks are assessed specific to water source and potential effects of operations. Canadian Natural applies a risk review process using standard risk assessment tools to quantify probability and consequence of effects from operations. A registry of environmental aspects is maintained and reviewed annually to allow for any changes in activities, technologies or regulatory requirements. A life cycle perspective is applied considering planning, construction, operations and final closure. Each environmental aspect is assessed to avoid, minimize and mitigate effects and this is reviewed annually against changes in regulatory standards and advancing technologies. Internal operational controls are developed with senior management to track performance. Risk management for water is part of the Environmental Management System used to identify environmental risk and to establish control processes.

As part of the Environmental Management System (EMS) development and implementation, all activities from operations are identified and risk ranked against potential environmental aspects. Potential impacts are risk ranked and operational controls are put in place to control those risks.

Risk assessment of activities related to water are embedded in the Corporate Statement on Environmental Management and the Environmental Management System to track and review risk ranking and appropriate controls, all of which are reviewed annually by management.

Supply chain

Coverage

Partial

Risk assessment procedure

Frequency of assessment

Not defined

How far into the future are risks considered?

Unknown

Type of tools and methods used

Tools on the market



Tools and methods used

Other, please specify

Contractor screening tool

Comment

Our contractor screening tool (ComplyWorks) provides an enhanced view of compliance, communication and performance for contractors and suppliers, allowing us to manage compliance at multiple levels.

W3.3b

(W3.3b) Which of the following contextual issues are considered in your organization’s water-related risk assessments?

	Relevance & inclusion	Please explain
Water availability at a basin/ catchment level	Relevant, always included	All operations requiring source water as a part of the production process are required to complete a detailed water supply assessment prior to obtaining a water license. Surface water supplies are managed on a basin/catchment basis so must be considered accordingly in any risk assessment process.
Water quality at a basin/catchment level	Relevant, always included	Water quality will be a function of the level and type of activity within a watershed. The suitability of the water for industrial use or potential impacts on those resources resulting from our operation would all be part of the risk management process.
Stakeholder conflicts concerning water resources at a basin/catchment level	Relevant, always included	Our stakeholders are the individuals and groups we work with who have a broad interest in our operations, as well as those who live and work near, and are affected by, our operations and business. We engage with stakeholders on a regular basis and their input is important when making decisions related to our project design and implementation, and for our public reporting. Our local field-based staff connects regularly with stakeholders to provide updates and seek input regarding development plans, as well as to help identify opportunities and find solutions to help address potential environmental and social concerns. Those concerns are factored into the risk assessment during the permitting process.
Implications of water on your key commodities/raw materials	Not considered	
Water-related regulatory frameworks	Relevant, always included	The regulatory framework will dictate the nature of our operations. Our facilities could not be built and operated without adherence to all water related requirements in licenses, permits or approvals.



	Relevance & inclusion	Please explain
Status of ecosystems and habitats	Not considered	
Access to fully-functioning, safely managed WASH services for all employees	Not considered	
Other contextual issues, please specify	Not considered	

W3.3c

(W3.3c) Which of the following stakeholders are considered in your organization’s water-related risk assessments?

	Relevance & inclusion	Please explain
Customers	Relevant, always included	As an industry, we are collaborating with academic institutions to accelerate water treatment methods and continue to improve industry’s environmental performance. COSIA members have high water recycle rates and reductions in fresh water use – 36% reduction for mining and 47% for in situ compared to 2012 levels. All these factors are considered in the identification of water related aspects and the risk ranking they are assigned.
Employees	Relevant, always included	Employees are informed about water related issues through our annual Stewardship Report to Stakeholders, our ESG report. The development of this report involves numerous interviews with personnel throughout the organization.
Investors	Relevant, always included	Investors are informed of water-related risks through the annual Stewardship Report to Stakeholders and various third-party Environmental Social and Governance (ESG) disclosure platforms. We engage with a wide range of stakeholders to consider their issues and concerns about proposed developments.
Local communities	Relevant, always included	Our local field-based staff connects regularly with stakeholders to provide updates and seek input regarding development plans, as well as to help identify opportunities and find solutions to help address potential environmental and social concerns. For example, we engage with local communities in our areas of operation about new or significant changes that may impact water resources within their communities. Those concerns are factored into the risk assessment process during the permitting process.



	Relevance & inclusion	Please explain
NGOs	Relevant, sometimes included	NGO's with a vested interest in new developments or existing operations during a public review process or a Statement of Concern filed with the regulatory authority. Those concerns are factored into the risk assessment during the permitting process.
Other water users at a basin/ catchment level	Not considered	
Regulators	Relevant, always included	Regulators have always been identified as significant stakeholders in the risk assessment process and the development of appropriate operational controls.
River basin management authorities	Relevant, always included	River basin management authorities have always been identified as significant stakeholders in the risk assessment process and the development of appropriate operational controls.
Statutory special interest groups at a local level	Relevant, sometimes included	Special interest groups would receive the same consideration as the NGO's with a vested interest in new developments or existing operations. Their concerns would also be captured during a public review process or a Statements of Concern could be filed with the regulatory authority. Those concerns are all factored into the risk assessment process.
Suppliers	Relevant, sometimes included	Suppliers would be in the same category as our customers. They are an integral part of the development and ongoing operation of our facilities. Those concerns are factored into the risk assessment process during the risk assessment and permitting process.
Water utilities at a local level	Relevant, sometimes included	Water utilities at a local level with a vested interest in new developments or existing operations during a public review process or a Statement of Concern filed with the regulatory authority. Those concerns are factored into the risk assessment during the permitting process.
Other stakeholder, please specify	Not considered	

W3.3d

(W3.3d) Describe your organization's process for identifying, assessing, and responding to water-related risks within your direct operations and other stages of your value chain.

Our approach to water related integrity management works to prevent failures, by placing a strong focus on proactive management, from risk identification to mitigation. We assess each operation based on the likelihood of failure and the potential consequences of that failure. Evaluations and inspections are ongoing (including annual inspections as existing asset conditions change and new assets are acquired). Our approach to asset integrity management ensures pipelines are designed, built and operated to be safe, reliable and sustainable and to proactively prevent failures that may potentially impact water resources. These processes apply equally across all facets of our operations.

W4. Risks and opportunities

W4.1

(W4.1) Have you identified any inherent water-related risks with the potential to have a substantive financial or strategic impact on your business?

Yes, only within our direct operations

W4.1a

(W4.1a) How does your organization define substantive financial or strategic impact on your business?

Given the dynamic nature of risk, Canadian Natural uses a multidisciplinary Enterprise Risk Management ("ERM") framework to identify, assess, and mitigate risks that may affect the Company and our operations. The ERM framework incorporates a matrix approach to risk assessment that categorizes and aligns risks across operational areas, allowing teams to better understand the identified risks, their impacts on the Company's operations and the mitigation being undertaken to address these risks. This allows management to monitor potential risk exposures and the steps taken to address the identified risks or otherwise mitigate these exposures by identifying those individuals on the Company's Management Committee responsible for each of the identified risks. Reporting on the risks and related mitigating activity throughout the Company is also part of the ERM framework.

We use an Enterprise Risk Matrix to determine likelihood (probability) and impact of risks, and classify them as High, Moderate, or Low. A classification of 'High' would be considered a substantive financial or strategic impact to Canadian Natural's business. This process helps us prioritize water-related risks and determine materiality.



W4.1b

(W4.1b) What is the total number of facilities exposed to water risks with the potential to have a substantive financial or strategic impact on your business, and what proportion of your company-wide facilities does this represent?

Total number of facilities exposed to water risk	% company-wide facilities this represents	Comment
6	76-99	Canadian Natural operates a wide scope of oil and gas facilities of which those with the highest need for water are included in this response. These include oil sands mining and thermal in situ.

W4.1c

(W4.1c) By river basin, what is the number and proportion of facilities exposed to water risks that could have a substantive financial or strategic impact on your business, and what is the potential business impact associated with those facilities?

Country/Area & River basin

Canada
Mackenzie River

Number of facilities exposed to water risk

6

% company-wide facilities this represents

76-99

% company's global oil & gas production volume that could be affected by these facilities

26-50

% company's total global revenue that could be affected

21-30

Comment

The risk of water availability is related to operations with surface water withdrawal as those have greater variation in annual flows, changes in ice, sediment, climate change and potential to be affected by changes in water quality from upstream events.

W4.2

(W4.2) Provide details of identified risks in your direct operations with the potential to have a substantive financial or strategic impact on your business, and your response to those risks.

Country/Area & River basin

Canada
Mackenzie River

Type of risk & Primary risk driver

Physical
Seasonal supply variability/inter annual variability

Primary potential impact

Reduction or disruption in production capacity

Company-specific description

Water availability from the Athabasca River for the Horizon oil sands mine. This is mitigated with the construction of 28 days of water storage, a time period determined to mitigate potential water availability limitation that could result from extreme low flow conditions or water quality issues related to upstream events.

Timeframe

More than 6 years

Magnitude of potential impact

Low

Likelihood

Unlikely

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate



Potential financial impact figure (currency)

9,400,000

Potential financial impact figure - minimum (currency)

Potential financial impact figure - maximum (currency)

Explanation of financial impact

Mitigated with the construction of 28 days of water storage.

Primary response to risk

Increase capital expenditure

Description of response

Mitigated with the construction of 28 days of water storage, a time period determined to mitigate potential water availability limitation that could result from extreme low flow conditions or water quality issues related to upstream events.

Cost of response

0

Explanation of cost of response

Infrastructure mitigates this risk.

W4.2c

(W4.2c) Why does your organization not consider itself exposed to water risks in its value chain (beyond direct operations) with the potential to have a substantive financial or strategic impact?

Primary reason	Please explain
Risks exist, but no substantive impact anticipated	Canadian oil sands mining, thermal in situ and conventional operations have acquired and maintained water licenses to adequately meet planned requirements. Watershed level assessments of water availability provide assurances that water will continue to be available. As an upstream producer water licenses are obtained in areas with limited other users of water and in areas with adequate supply. Continued efficiencies in water use, recycle rates and shifting to more saline usage further reduces the need for fresh water providing greater certainty for long-term sustained access to water.

W4.3

(W4.3) Have you identified any water-related opportunities with the potential to have a substantive financial or strategic impact on your business?

Yes, we have identified opportunities, and some/all are being realized

W4.3a

(W4.3a) Provide details of opportunities currently being realized that could have a substantive financial or strategic impact on your business.

Type of opportunity

Products and services

Primary water-related opportunity

Other, please specify

Treating process water during reclamation

Company-specific description & strategy to realize opportunity

H2nanO

Canadian Natural and other oil sands producers are working with water treatment company H2nanO and researchers at the University of Toronto on a sunlight-activated, reusable treatment process for process-affected water. This treatment, called Solar Pass, uses tiny particles that when mixed with water and activated by sunlight, continuously treat and eliminate organics. Work is ongoing to validate the results of a demonstration pilot to assess the viability of treating oil sands process-affected water.

Demonstration Pit Lakes

Canadian Natural is among the participants in the first commercial scale demonstration pit lake designed to treat process-affected water, sequester mature fine tailings as they settle, and act as a sustainable landscape component. Through Canada's Oil Sands Innovation Alliance (COSIA), Canadian Natural contributes funds and provides technical input in the research and monitoring program of this project. We're also involved in a collaborative project with oil sands operators and InnoTech to evaluate the effects of tailings materials from different operators on water chemistry and aquatic biota. The experiments are conducted in Vegreville, AB, in an outdoor array of mesocosms or small-scale experimental columns. We are scheduled to conduct experimental trials in 2021.



Engineered Wetlands

Canadian Natural has been investigating the potential efficacy of a soil-based, reed bed treatment wetland system technology to treat oil sands process-affected water. Treatment is achieved through the action of naturally occurring soil microbes, which break down particles in the wastewater. The technology has been used with great success worldwide and may offer a cost-effective, bio-treatment process for tailings water. Canadian Natural is currently working with the technology provider to de-risk the site-based demonstration unit.

Estimated timeframe for realization

More than 6 years

Magnitude of potential financial impact

High

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact

Demonstration pit lakes and engineered wetlands have the potential to reduce operational costs and provide an environmentally effective long-term solutions.

Type of opportunity

Efficiency

Primary water-related opportunity

Other, please specify

Increasing water recycling efficiency and lowering emissions

Company-specific description & strategy to realize opportunity



The Water Technology Development Centre (WTDC)

About 80% of Alberta’s oil sands reserves can be recovered through in situ extraction technology. In situ operations use water to produce high-temperature steam that is injected into the reservoir to heat the bitumen. The water is recovered, treated and used again. In situ operators have established a world-class water technology development centre at an operating oil sands facility to conduct collaborative research that could reduce the cost of water recycling, improve the reliability and efficiency of recycling technology, and reduce the environmental footprint of facilities. The WTDC is a dedicated facility to test new technologies on ‘live’ process fluids in real-world conditions. Its unique design allows operators to share risks and costs so they can drive the development of more technologies than they could on their own. The test centre will speed technology development and implementation, shortening the current eight-year timeframe required to field test technologies and move them to commercial application, leading to an accelerated return on investment.

Estimated timeframe for realization

More than 6 years

Magnitude of potential financial impact

High

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact

- Accelerate the development and commercialization of new water treatment technologies while shortening the time required to field test.
- Increase the number of technologies tested, while collaboratively managing the risks, leveraging multi-company expertise, and lowering the costs of technology development.
- Reduce the costs of commercial facility development.

Type of opportunity

Efficiency

Primary water-related opportunity

Other, please specify

Developing new ways to treat recycled water and lower emissions

Company-specific description & strategy to realize opportunity

High Temperature Reverse Osmosis

As part of in situ oil sands development, steam is injected into the reservoir to recover bitumen from the reservoirs beneath the surface. Natural gas is used to heat water and produce steam. In a typical in situ oil sands facility, recycled water that is used to generate steam is cooled and heated as part of the treatment process and this requires additional equipment. If our facilities can be redesigned to keep the water hot throughout the treatment process, significant cost savings, and reductions in land footprint could be realized. Canadian Natural, in partnership with industry and Suez Water Technologies, is developing High Temperature Reverse Osmosis (HTRO) membranes to enable the in situ oil sands water treatment process to operate at higher temperatures, thus eliminating the need for cooling and re-heating the water. Reverse osmosis is commonly used for water treatment in other industries, but at temperatures well below 100°C.

Estimated timeframe for realization

Magnitude of potential financial impact

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact

- Significantly reduce the capital cost of new SAGD facilities.
- Significantly reduce natural gas consumption, reducing fuel costs



Type of opportunity

Products and services

Primary water-related opportunity

Other, please specify

Recovering usable chemicals from saline water

Company-specific description & strategy to realize opportunity

Mangrove Water Technologies for Saline Water Treatment

Horizon Oil Sands is a unique site with groundwater that's too salty to be used in the extraction process. Through regular operations, the water is being temporarily removed and stored. In 2019, Canadian Natural partnered with Mangrove Water Technologies Ltd, a company based in Vancouver, Canada, that is focused on commercializing a technology for the conversion of brines to desalinated water and chemicals for on-site use. The technology applies an electric current to a novel electrochemical process that combines aspects of fuel cells with electrodialysis to separate the salts into different compounds. Along with the water, it produces industrial strength hydrochloric acid, commonly used for in situ extraction, and caustic acid, used in the bitumen mining process. Canadian Natural is currently conducting a small-scale pilot to determine if it is economically and technologically feasible, and advancing the targeted environmental outcomes. If successful, a full-scale pilot could be potentially launched at Horizon in 2022.

Estimated timeframe for realization

More than 6 years

Magnitude of potential financial impact

Low

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact

- Potential to produce hydrochloric acid used in in-situ extraction that could be sold to other companies.



- Reduce operating costs through reduced risks associated with an on-site waste stream.
- Creates a high-value water treatment process for potential application in other industrial sectors, in Canada and elsewhere in the world.

W5. Facility-level water accounting

W5.1

(W5.1) For each facility referenced in W4.1c, provide coordinates, water accounting data, and a comparison with the previous reporting year.

Facility reference number

Facility 1

Facility name (optional)

Primrose and Wolf Lake Thermal

Country/Area & River basin

Canada

Mackenzie River

Latitude

54.4624

Longitude

-110.3445

Located in area with water stress

No

Oil & gas sector business division

Upstream

Total water withdrawals at this facility (megaliters/year)

3,532



Comparison of total withdrawals with previous reporting year

This is our first year of measurement

Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes

0

Withdrawals from brackish surface water/seawater

0

Withdrawals from groundwater - renewable

0

Withdrawals from groundwater - non-renewable

3,532

Withdrawals from produced/entrained water

0

Withdrawals from third party sources

0

Total water discharges at this facility (megaliters/year)

2,786

Comparison of total discharges with previous reporting year

This is our first year of measurement

Discharges to fresh surface water

0

Discharges to brackish surface water/seawater

0



Discharges to groundwater

2,786

Discharges to third party destinations

0

Total water consumption at this facility (megaliters/year)

746

Comparison of total consumption with previous reporting year

This is our first year of measurement

Please explain

This is our first year reporting CDP Water

Facility reference number

Facility 2

Facility name (optional)

Kirby Thermal

Country/Area & River basin

Canada

Mackenzie River

Latitude

55.2733

Longitude

-111.1331

Located in area with water stress

No



Oil & gas sector business division

Upstream

Total water withdrawals at this facility (megaliters/year)

750

Comparison of total withdrawals with previous reporting year

This is our first year of measurement

Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes

0

Withdrawals from brackish surface water/seawater

0

Withdrawals from groundwater - renewable

0

Withdrawals from groundwater - non-renewable

750

Withdrawals from produced/entrained water

0

Withdrawals from third party sources

0

Total water discharges at this facility (megaliters/year)

604

Comparison of total discharges with previous reporting year

This is our first year of measurement

Discharges to fresh surface water

0



Discharges to brackish surface water/seawater

0

Discharges to groundwater

604

Discharges to third party destinations

0

Total water consumption at this facility (megaliters/year)

146

Comparison of total consumption with previous reporting year

This is our first year of measurement

Please explain

This is our first year reporting CDP Water

Facility reference number

Facility 3

Facility name (optional)

Jackfish Thermal

Country/Area & River basin

Canada

Mackenzie River

Latitude

55.3057

Longitude

-110.5656



Located in area with water stress

No

Oil & gas sector business division

Upstream

Total water withdrawals at this facility (megaliters/year)

1,048

Comparison of total withdrawals with previous reporting year

This is our first year of measurement

Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes

0

Withdrawals from brackish surface water/seawater

0

Withdrawals from groundwater - renewable

0

Withdrawals from groundwater - non-renewable

1,048

Withdrawals from produced/entrained water

0

Withdrawals from third party sources

0

Total water discharges at this facility (megaliters/year)

1,020

Comparison of total discharges with previous reporting year

This is our first year of measurement



Discharges to fresh surface water

0

Discharges to brackish surface water/seawater

0

Discharges to groundwater

1,020

Discharges to third party destinations

0

Total water consumption at this facility (megaliters/year)

28

Comparison of total consumption with previous reporting year

This is our first year of measurement

Please explain

This is our first year reporting CDP Water

Facility reference number

Facility 4

Facility name (optional)

Peace River Thermal

Country/Area & River basin

Canada

Mackenzie River

Latitude

56.23



Longitude

-116.4739

Located in area with water stress

No

Oil & gas sector business division

Upstream

Total water withdrawals at this facility (megaliters/year)

2,618

Comparison of total withdrawals with previous reporting year

This is our first year of measurement

Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes

1,260

Withdrawals from brackish surface water/seawater

0

Withdrawals from groundwater - renewable

0

Withdrawals from groundwater - non-renewable

0

Withdrawals from produced/entrained water

1,357

Withdrawals from third party sources

0

Total water discharges at this facility (megaliters/year)

1,357



Comparison of total discharges with previous reporting year

This is our first year of measurement

Discharges to fresh surface water

0

Discharges to brackish surface water/seawater

0

Discharges to groundwater

1,357

Discharges to third party destinations

0

Total water consumption at this facility (megaliters/year)

1,260

Comparison of total consumption with previous reporting year

This is our first year of measurement

Please explain

This is our first year reporting CDP Water

Facility reference number

Facility 5

Facility name (optional)

Albian Oil Sands Mine

Country/Area & River basin

Canada

Mackenzie River



Latitude

57.1726

Longitude

-111.3334

Located in area with water stress

No

Oil & gas sector business division

Upstream

Total water withdrawals at this facility (megaliters/year)

21,074

Comparison of total withdrawals with previous reporting year

This is our first year of measurement

Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes

14,412

Withdrawals from brackish surface water/seawater

0

Withdrawals from groundwater - renewable

0

Withdrawals from groundwater - non-renewable

6,663

Withdrawals from produced/entrained water

0

Withdrawals from third party sources

0



Total water discharges at this facility (megaliters/year)

0

Comparison of total discharges with previous reporting year

This is our first year of measurement

Discharges to fresh surface water

0

Discharges to brackish surface water/seawater

0

Discharges to groundwater

0

Discharges to third party destinations

0

Total water consumption at this facility (megaliters/year)

21,074

Comparison of total consumption with previous reporting year

This is our first year of measurement

Please explain

This is our first year reporting CDP Water

Facility reference number

Facility 6

Facility name (optional)

Horizon Oil Sands Mine



Country/Area & River basin

Canada
Mackenzie River

Latitude

57.2127

Longitude

-111.4431

Located in area with water stress

No

Oil & gas sector business division

Upstream

Total water withdrawals at this facility (megaliters/year)

54,771

Comparison of total withdrawals with previous reporting year

This is our first year of measurement

Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes

54,377

Withdrawals from brackish surface water/seawater

0

Withdrawals from groundwater - renewable

0

Withdrawals from groundwater - non-renewable

394

Withdrawals from produced/entrained water

0



Withdrawals from third party sources

0

Total water discharges at this facility (megaliters/year)

0

Comparison of total discharges with previous reporting year

This is our first year of measurement

Discharges to fresh surface water

0

Discharges to brackish surface water/seawater

0

Discharges to groundwater

0

Discharges to third party destinations

0

Total water consumption at this facility (megaliters/year)

54,771

Comparison of total consumption with previous reporting year

This is our first year of measurement

Please explain

This is our first year reporting CDP Water



W5.1a

(W5.1a) For the facilities referenced in W5.1, what proportion of water accounting data has been externally verified?

Water withdrawals – total volumes

% verified

76-100

What standard and methodology was used?

All of our withdrawal data for the subject facilities is submitted to the Alberta Energy Regulator for compliance and data verification as per regulatory requirements on a monthly and annual basis. In addition, most withdrawal volumes are prepared by third party consultants who conduct quality assurance and quality control. Measurement standards are applied per the Alberta Environment Water Measurement Guidebook.

Water withdrawals – volume by source

% verified

76-100

What standard and methodology was used?

All of our withdrawal data for the subject facilities is submitted to the Alberta Energy Regulator for compliance and data verification as per regulatory requirements on a monthly and annual basis. In addition, most withdrawal volumes are prepared by third party consultants who conduct quality assurance and quality control. Measurement standards are applied per the Alberta Environment Water Measurement Guidebook.

Water withdrawals – quality

% verified

Not verified

Water discharges – total volumes

% verified

76-100



What standard and methodology was used?

All groundwater discharge volumes are monitored and reported the Alberta Energy Regulator per appropriate directives describing various aspects of water management requirements. The Alberta Energy Regulator specifies water disposal limits and includes guidance for reporting facility water streams to Petrinex. The Alberta Energy Regulator provides formulas for water make-up, water productivity ratios, and produced-water recycle used for monitoring and comparing thermal operations in Alberta. Volumetric data are published on the Alberta Energy Regulator website.

Water discharges – volume by destination

% verified

76-100

What standard and methodology was used?

All groundwater discharge volumes are monitored and reported the Alberta Energy Regulator per appropriate directives describing various aspects of water management requirements. The Alberta Energy Regulator specifies water disposal limits and includes guidance for reporting facility water streams to Petrinex. The Alberta Energy Regulator provides formulas for water make-up, water productivity ratios, and produced-water recycle used for monitoring and comparing thermal operations in Alberta. Volumetric data are published on the Alberta Energy Regulator website.

Water discharges – volume by treatment method

% verified

Water discharge quality – quality by standard effluent parameters

% verified

Water discharge quality – temperature

% verified

Water consumption – total volume

% verified

51-75



What standard and methodology was used?

The Alberta Energy Regulator provides formulas for water make-up, water productivity ratios, and produced-water recycle used for monitoring and comparing thermal operations in Alberta. Scheme volumetric data are published on the Alberta Energy Regulator website in the Thermal In Situ Water Publication.

Water recycled/reused

% verified
51-75

What standard and methodology was used?

The Alberta Energy Regulator provides formulas for water make-up, water productivity ratios, and produced-water recycle used for monitoring and comparing thermal operations in Alberta. Scheme volumetric data are published on the Alberta Energy Regulator website in the Thermal In Situ Water Publication.

W6. Governance

W6.1

(W6.1) Does your organization have a water policy?

Yes, we have a documented water policy, but it is not publicly available

W6.1a

(W6.1a) Select the options that best describe the scope and content of your water policy.

Scope	Content	Please explain
Company-wide	Description of business dependency on water Reference to international standards and widely-recognized water initiatives	The World Resources Institute (WRI) defines a country as experiencing water stress when water supplies are less than 1,700 m ³ /person/year. Canada does not fit this definition. Southern Alberta is identified as a water short area according to the 2006 Water Conservation and Allocation Policy. Water is an important resource and also important to our operations, as a result protecting and using it responsibly is critical. Canadian Natural operates in accordance with our corporate statement on environmental management that is updated annually to reflect current ISO14001:2015 standards and is signed-off by senior management.



Scope	Content	Please explain
	<p>Company water targets and goals</p> <p>Commitment to water-related innovation</p> <p>Commitment to water stewardship and/or collective action</p>	<p>This Corporate Statement on Environmental Management provides policy direction on water use and specifies our commitment to environmental performance, assessment and mitigation of potential impacts, and the consideration of social and economic factors; and addresses the responsible and safe management of water retention structures from design to closure. The discharge of water is managed in accordance with our statement to meet regulatory requirements and to reuse water in our processes. Policy direction is provided to ensure that we engage and communicate with the public regarding our activities. Within our Environmental Management System (EMS) the potential impacts to water resources are identified and controls are implemented for avoiding, mitigating and minimizing potential impacts. Projects are designed to maximize water use efficiency, and monitored and evaluated for improvements. Where appropriate, performance targets are set based on industry standards or engineered potential. The manual identifies targets to be specified as performance indicators with appropriate monitoring and reporting. Managing water withdrawals for the mining sector is through an industry cumulative system, a Water Management Agreement, updated annually and posted publicly on the AER- website. Canadian Natural’s water management strategies include: reducing fresh water use by maximizing produced water recycling and saline water use; applying technology and increasing efficiencies to conserve fresh water; avoiding effects to water sources through industry-leading operating practices and regulations, and minimizing fresh water withdrawals and produced water disposal, where possible. While specific projects vary in their water management strategies to account for reservoir and technology requirements, we work to ensure all strategies are consistently applied.</p>

W6.2

(W6.2) Is there board level oversight of water-related issues within your organization?

Yes



W6.2a

(W6.2a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for water-related issues.

Position of individual	Please explain
Director on board	<p>The Board of Directors (BOD) is responsible for overseeing and ensuring the Management Committee has appropriate and effective measures in place to create and execute strategies, including water-related issues management. The BOD brings experience & knowledge from senior positions held in the public and private sectors such as oil & natural gas, energy storage solutions, tech, legal, finance, and health. Directors on the Health, Safety, Asset Integrity and Environment Committee of the Board receive quarterly updates from the Environment, Social, and Governance Committee. They are part of the reporting process and responsible for monitoring implementation of sustainability programs. Each year, Management presents to the Board on the Environmental Stewardship Report and key developments anticipated in the following year, as well as the management of environmental risks including water and the role of innovation to address and continuously improve environmental stewardship and performance.</p>



W6.2b

(W6.2b) Provide further details on the board’s oversight of water-related issues.

Frequency that water-related issues are a scheduled agenda item	Governance mechanisms into which water-related issues are integrated	Please explain
Scheduled - some meetings	Monitoring implementation and performance Reviewing and guiding annual budgets Reviewing and guiding business plans Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding strategy Setting performance objectives	<p>Review internal stewardship reports about objectives, performance and key performance indicators and targets, and actions and initiatives undertaken to mitigate water-related risk. The Directors in the HSAI&E Committee oversee and monitor company-wide efforts to support, manage and improve our performance, and ensure the effectiveness of our sustainability programs, including health, safety, asset integrity, environmental risk and social initiatives. The Health and Safety, Asset Integrity, Environment, Stakeholder Relations and Community Investment groups report on a regular basis to Senior Management in the Environment, Social, and Governance (ESG) Committee, who in turn provide updates to the HSAI&E Committee of the Board. Progress is tracked regularly and shared across all levels of employees, including targets. The Board of Directors has responsibility for overseeing and ensuring that Management Committee has appropriate sustainability programs in place, including the identification of water-related risks and opportunities, and their implications for our business strategies across Canadian Natural. The Board of Directors provides expertise and oversight on specific ESG factors, through the roles and responsibilities of the following Board committees: Nominating, Governance and Risk Committee – Corporate governance practices and the management of enterprise risk exposure; and Health, Safety, Asset Integrity and Environment Committee – Occupational and process safety, asset integrity, environmental stewardship, regulatory, risk management, sustainability and social initiatives. Processes for identifying, assessing, and managing climate-related issues are integrated into our Enterprise Risk Management (ERM) framework. The Nominating, Governance and Risk Committee of the Board reviews and monitors the status of ERM activities, including climate-related regulatory and operational risks, and the steps Management has taken to implement mitigating actions. Performance results are reported internally through a management review process and externally through the annual sustainability report. Annual performance objectives and targets are tracked and corporate status reports are presented quarterly to senior management and Board of Directors.</p>



W6.3

(W6.3) Provide the highest management-level position(s) or committee(s) with responsibility for water-related issues (do not include the names of individuals).

Name of the position(s) and/or committee(s)

President

Responsibility

Both assessing and managing water-related risks and opportunities

Frequency of reporting to the board on water-related issues

Quarterly

Please explain

The President has responsibility for assessing and managing water-related risks and opportunities on a quarterly basis.

W6.4

(W6.4) Do you provide incentives to C-suite employees or board members for the management of water-related issues?

Provide incentives for management of water-related issues	Comment
Yes	Our Performance Scorecard has 15% of performance measured against Safety, Asset Integrity and Environment KPIs with the goal of continuous improvement. Our water-related KPIs include GHG Emissions Intensity (tonnes/BOE), due to the effect of water management on our steam-to-oil ratio (SOR) and ultimately our GHG emissions. Our executive compensation policies and procedures focus on a pay-for-performance philosophy and align with the interests of shareholders. Our compensation program is designed to: Reward creation of long-term shareholder value; Reflect short-, mid- and long-term corporate performance; Maintain an appropriate balance between base salary and short-term and long-term incentive opportunities, with a distinct emphasis on compensation that is “at risk”; Be competitive to attract and retain talented individuals; Encourage Common Share ownership by employees; and Align the pay-for-performance approach to executive compensation to the long-term interests of the shareholders.



W6.4a

(W6.4a) What incentives are provided to C-suite employees or board members for the management of water-related issues (do not include the names of individuals)?

	Role(s) entitled to incentive	Performance indicator	Please explain
Monetary reward	Other, please specify President	Reduction of water withdrawals Improvements in efficiency - direct operations Improvements in waste water quality - direct operations Other, please specify Improved recycle rates	With the exception of Canadian Natural’s Debt to Book metric, which has been established to reflect all commodity price cycles, we established 2020 performance targets as part of our 2020 budget guidance, which was released on December 4, 2019. The resulting performance measures are assigned weightings as indicated in the Performance Scorecard (available in our 2020 Management Information Circular) and the resulting overall score is utilized by the Compensation Committee to determine the performance bonus for the President. The cash bonus awarded is based on Canadian Natural’s and the individual’s performance over the year in contributing to the company meeting its yearly operating plans and its operating and financial goals as evidenced by corporate performance. Greenhouse gas emissions intensity (tonnes/BOE) is one metric in the corporate Performance Scorecard on which performance bonuses are based. How we manage water is directly tied to our overall GHG performance metric, specifically through the management of our Steam-to-Oil Ratio (SOR). This ratio describes the amount of heated water needed to produce steam to recover bitumen in the Steam-Assisted Gravity Drainage (SAGD) process, an in situ method of oil recovery. The SAGD process requires natural gas to heat the steam which results in the production of GHGs. Therefore if water is managed effectively, we can lower the SOR and in turn, lower GHG emissions.

W6.5

(W6.5) Do you engage in activities that could either directly or indirectly influence public policy on water through any of the following?

- Yes, trade associations
- Yes, funding research organizations

W6.5a

(W6.5a) What processes do you have in place to ensure that all of your direct and indirect activities seeking to influence policy are consistent with your water policy/water commitments?

Canadian Natural is engaged in the Alberta Wetland Policy development process, as well as the Water for Life Strategy, providing guidance for water use. Our involvement helps to ensure that the intent of reducing, recycling and returning water is done with an approach that aligns with our commitment to responsible water management. Water management is also coordinated amongst companies, such as the Water Management Agreement for the Lower Athabasca River and industry engagement through associations like the Canadian Association of Petroleum Producers (CAPP). Canadian Natural also supports research programs that support water policy, including multi-stakeholder approaches to water management of the Lower Athabasca to monitor and model water flows under ice conditions, the potential effects of water withdrawal and return, as well as water quality assessments. Facility-based water research programs include water efficiency improvements of treatment to increase the use of saline water and reduce fresh water in thermal projects, maximizing efficiencies of bitumen extraction in oil sands mining operations and a full cycle assessment water use in upgrading to improve recycle and reuse. We also invest in ongoing work examining water removal from tailings through several programs such as the In Pit Extraction Process currently being piloted. Our public commitments to responsible water stewardship and internal promotion help us maintain consistency with our water commitments.

W6.6

(W6.6) Did your organization include information about its response to water-related risks in its most recent mainstream financial report?

Yes (you may attach the report - this is optional)



W7. Business strategy

W7.1

(W7.1) Are water-related issues integrated into any aspects of your long-term strategic business plan, and if so how?

	Are water-related issues integrated?	Long-term time horizon (years)	Please explain
Long-term business objectives	Yes, water-related issues are integrated	> 30	Water use planning considers certainty for access to water for the life of a project, up to 50 years. Project planning requires confirmation of water sources through long-term surface water flow measurements or project specific groundwater flow data to augment regional data to model potential aquifer impact. The Horizon Oil Sands Mine was planned to manage surface and groundwater in consideration of risks related to restrictions in water withdrawal from the Athabasca River during extreme low flow events.
Strategy for achieving long-term objectives	Yes, water-related issues are integrated	> 30	To address potential limitations to water access, water storage for 28 days was constructed to maintain water access and aquatic ecology of the Athabasca River. For the Horizon, Muskeg River and Jackpine oil sands mines, water impacts to fisheries was integrated into the project planning with the creation of compensation habitat, three lakes, to replace the disturbance created. Water use and replaced aquatic habitat are monitored to ensure performance measures are met, water use is within water license limits and cumulative withdrawals for all oil sands operations and is meeting habitat replacement requirements.
Financial planning	Yes, water-related issues are integrated	> 30	Water processing at oil sands mines requires the tailings water storage for recycle to avoid additional water withdrawals and ensure constituents of concern are managed prior to return to the environment. Water is managed to reduce fluid tailings and minimize water storage with a long-term plan to return the water, subject to meeting release requirements. Planning for the long-term management includes supporting innovation and technology such as water reduction through piloting the In Pit Extraction Process, improved water use efficiency in bitumen extraction and increased sediment removal from the tailings water through the injection of CO2 captured at our hydrogen plant and injected into the tailings. These programs require timelines to develop the technology, conduct pilots and to commercial operations.



W7.2

(W7.2) What is the trend in your organization’s water-related capital expenditure (CAPEX) and operating expenditure (OPEX) for the reporting year, and the anticipated trend for the next reporting year?

Water-related CAPEX (+/- % change)

0

Anticipated forward trend for CAPEX (+/- % change)

0

Water-related OPEX (+/- % change)

0

Anticipated forward trend for OPEX (+/- % change)

0

Please explain

This information is not currently disclosed.

W7.3

(W7.3) Does your organization use climate-related scenario analysis to inform its business strategy?

Use of climate-related scenario analysis	Comment
Yes	Canadian Natural reviews independent external scenario analyses developed by energy firms representing a range of global oil and natural gas demand levels through to 2050. These analyses are used to support business planning and identification of risks & opportunities. We consider variables & assumptions related to markets, commodity prices, policy, regulation, tech development, energy efficiency and reputation, and incorporate assumptions for lower carbon emissions environments. This process has influenced our investments in projects, including the Water Technology Development Centre, designed to allow collaborative research that could reduce the cost of water recycling, improve the reliability and efficiency of recycling technology, and reduce the environmental footprint of facilities. Climate-related management of risks and opportunities is monitored every quarter, with risks assessed every 6 months or more frequently, considering risks that impact us as far as 6+ years out.



W7.3a

(W7.3a) Has your organization identified any water-related outcomes from your climate-related scenario analysis?

Yes

W7.3b

(W7.3b) What water-related outcomes were identified from the use of climate-related scenario analysis, and what was your organization’s response?

	Climate-related scenarios and models applied	Description of possible water-related outcomes	Company response to possible water-related outcomes
Row 1	Other, please specify Other climate-related scenarios and models	The analysis provided context of the cumulative effects of water use on the Athabasca River, accounting for changes in glacial flow, rainfall, storm events, and potential changes in upstream agricultural, industrial and municipal uses. The result was a detailed review of water use processes to use water efficiently and thereby use water to its greatest value and to improve recycle rates and introduce technologies such as CO2 injection into tailings as a way to improve the settling of sediment in the water.	We plan and design for projects where water volumes and accessibility are important to the long-term operation of the facilities, such as in oil sands mining. Projections out several decades into the future provided benchmarks for project planning and allowed for a reasonable estimate of a likely case where water availability could be reduced.

W7.4

(W7.4) Does your company use an internal price on water?

Row 1

Does your company use an internal price on water?

Yes



Please explain

Water availability is factored into projects in several ways, including long-term water availability and the systems to process and treat water, and for completion of reclamation at project closure. Internal pricing ensures that the liability of a project and its economics are for the full cycle of a project. Project costs are specific to water source used, its abundance, and its use. Options for water sources and their relative costs are considered, as is the environmental effects of choices like the use of saline water and water treatment compared to fresh water. For example, the Horizon oil sands mine included infrastructure requirements for water withdrawal from the Athabasca to avoid potential interruptions in water availability under low flow events, the efficiency of water use to improve recycling and the return of water to the environment at the end of the project, including natural treatment processes in constructed wetlands and other treatment options.

W8. Targets

W8.1

(W8.1) Describe your approach to setting and monitoring water-related targets and/or goals.

Levels for targets and/or goals	Monitoring at corporate level	Approach to setting and monitoring targets and/or goals
Business level specific targets and/or goals	Targets are monitored at the corporate level	Canadian Natural sets targets to incent continuous improvement processes. Targets may be for specific operations such as water recycle rates for thermal projects, cumulative water withdrawal by all oil sands mining operations or benchmarking to industry standards for water efficiency use. Water recycle rates have shown steady improvement, achieving better than 80% in mining and 95% in thermal operations. Fresh water use for thermal and oil sands mining has declined, using more treated process water and saline water sources for thermal and efficiencies in mining operations has reduced water needs as well as increased water recycle. For in situ, Canadian Natural’s corporate target is a 50% reduction in fresh water intensity (m3 water/m3 bitumen) by 2022 compared to 2012 fresh water use. As of 2019, the in situ fresh water intensity has reduced by 61%. Canadian Natural’s oil sands mining target is a 30% reduction in fresh river water intensity (m3 water/m3 bitumen) by 2022 compared to 2012. As of 2019, we have reduced the mining fresh river water intensity by 68%. Targets are also established as industry initiatives such as the performance goals for water established through Canada’s Oil Sands Innovation Alliance (COSIA) for water use intensity that we apply at our operations (water use intensity of fresh water to bitumen of 1.5 for mining and 0.18 for thermal).



		<p>Targets must be measurable to be effective and monitoring programs are conducted to track progress towards targets. The targets for water use are also established for watersheds through regional management frameworks that include limits and triggers for management actions for water quantity and quality, such as the Lower Athabasca River Regional Plan. Canadian Natural measures water use in all operations, monitors recycle efficiency rates, discharge amounts and water return from thermal injection and in bitumen processing. Water use and recycle follows the hydraulic fracturing guiding principles and operating practices developed through CAPP, which in addition to disclosing all additives to water used in drilling the water sourcing, measurement and reuse is reported. Regulatory standards such as the Alberta Energy Regulator (AER) Directive 081 define water conservation and allocation requirements that Canadian Natural includes in project designs and operation.</p>
--	--	---

W8.1a

(W8.1a) Provide details of your water targets that are monitored at the corporate level, and the progress made.

Target reference number

Target 1

Category of target

Water use efficiency

Level

Country level

Primary motivation

Water stewardship

Description of target

For in situ, our corporate target is a 50% reduction in fresh water intensity (m3 water/m3 bitumen) by 2022 from 2012 levels. As of 2019, the in situ fresh water intensity has reduced by 61%. Our oil sands mining target is a 30% reduction in fresh river water intensity (m3 water/m3 bitumen) by 2022 from 2012 levels. As of 2019, we have reduced the mining fresh river water intensity by 68%.



Quantitative metric

% increase in water use met through recycling/reuse

Baseline year

2012

Start year

2012

Target year

2022

% of target achieved

100

Please explain

Targets to be reset in 2021.

W9. Verification

W9.1

(W9.1) Do you verify any other water information reported in your CDP disclosure (not already covered by W5.1a)?

No, we do not currently verify any other water information reported in our CDP disclosure

W10. Sign off

(W10.1) Provide details for the person that has signed off (approved) your CDP water response.

Job title	Corresponding job category
President	President