Water management summary

Supporting a sustainable water future

Contents

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Letter from the Chairman

Water and energy are interrelated, and both are critical for society, economic development and the environment.

Since 1880 Imperial has consistently demonstrated unwavering high standards, pioneering Canadian spirit, and innovation leadership. Much has changed over nearly 140 years; however, remaining true to these fundamentals has kept us at the forefront in meeting the world's growing demands for energy. As Canada's largest petroleum refiner, a major producer of crude oil, a key petrochemical producer and a leading fuels marketer from coast to coast, our company remains committed to high standards across all areas of our business.

At Imperial, we take water use and conservation seriously in all aspects of our operations through our water management principles to:

- Protect human health and the environment;
- Consider local water needs when addressing operational requirements;
- Continuously improve capabilities and performance; and
- Engage stakeholders in sustainable water solutions.

This focus made it possible for our Cold Lake operations to return about one million cubic metres of annual water allocation back to the provincial government in 2017 which is enough to supply roughly 16,000 people's residential water use each year.[(1)]

In addition, Imperial is accelerating the pace of innovation in our transition from using steam to using advanced recovery technologies that use less water. The suite of projects at various stages of commercialization, development and research will support the improvement of water use intensity at our in situ oil sands facilities into the future.

This Water Management Summary provides insight on how Imperial manages water across our organization. At Imperial, we believe we can have reliable and affordable energy, a strong economy and a clean environment.

Rich Kruger
Chairman, President and CEO

Executive summary

As an integrated energy company, our business helps ensure the quality of life and energy future for Canadians.

Imperial recognizes the importance of water to local communities – to protect human health and the environment.

- We are fortunate our operations are located in areas that have ample water to balance our operational needs with economic growth, social development and environmental protection, today and for the future.
- We are committed to responsible development so future generations are not impacted by today's decisions and actions.
- We recognize and take these responsibilities very seriously to minimize impact on water in all aspects of our operations. We focus on freshwater conservation along with recycling and reuse opportunities, innovation, and efficient use of water through the design and operation of our facilities.

Imperial's current operating assets are in areas of low to medium overall water risk. Even though all of Imperial's operating sites have secure water licences and are not located in water-scarce areas, Imperial believes it's important to monitor and manage water risks.

Risk assessments identify water-related aspects of activities, projects or producing assets. We follow detailed management systems, and strictly adhere to government regulations. All operating sites collect water data to facilitate benchmarking and stewardship, and to identify and evaluate continuous improvement opportunities.

For 2017, Imperial's total freshwater consumption was 42.5 million cubic metres with a freshwater intensity of 0.99 cubic metre of water consumption per cubic metre of throughput or production. About 32.5 million cubic metres in upstream and about 10 million cubic metres in chemical and downstream were consumed with freshwater intensities of 1.56 and 0.45, respectively. Our downstream and chemical facilities have achieved strong utilization rates over the past five years with little change in water use. Over the past five years, more than 80 percent of water recovered from our oil sands production has been treated, recycled and re-used. This significantly reduces the need for freshwater withdrawals.

In the past 20 years, we've spent more than $2.1 billion in research and technology development. We've developed advanced oil recovery technologies that are more energy efficient and have lower water use intensity. In addition to in-house research, we partner with academic institutions, industry peers, and third-party companies to accelerate the pace of environmental performance improvement.

Our corporate environment policy and "Protect Tomorrow. Today" expectations are the foundation of our efforts, guided by a scientific understanding of the environmental impact of our operations. We recognize that business success depends on the economic, social and environmental health of the communities where we operate.

Protect Tomorrow. Today.

Water risks

Across Canada, the relative availability or scarcity of water varies depending on location.

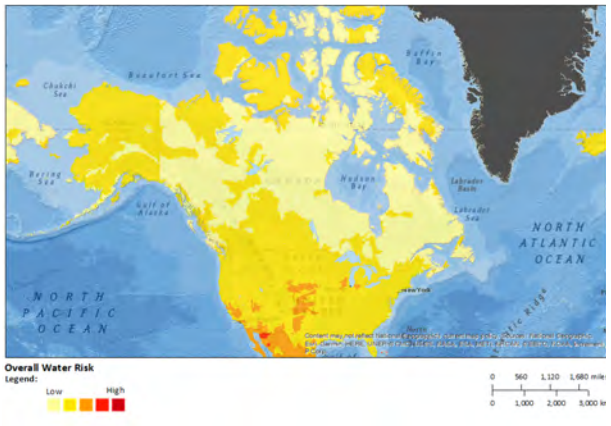
Broadly, Canada has seven percent of the world's renewable water, making it one of the world's water-wealthy nations.[2] According to the World Wildlife Fund's Water Risk Filter, Canada has a water scarcity of two percent, and is ranked 147 in water scarcity out of 184 nations with one being the most water scarce. In comparison, the United States is ranked 91 while Australia is 88. That said, water is not evenly distributed throughout the country. Approximately 60 percent of Canada's water flows northward, while 85 percent of the population lives within 300 km of the country's southern border with the United States.

The World Resources Institute (WRI) developed and maintains the Aqueduct Water Risk Atlas[3] (Aqueduct), a publicly available, global database and interactive tool that maps indicators of water-related risks, and allows for comparison across large geographies to identify regions that may require closer attention *(Gassert et al, 2014)*.

According to WRI, most of Canada has an overall water risk of low to medium with pockets of medium to high risk in the southern prairies and high Arctic.

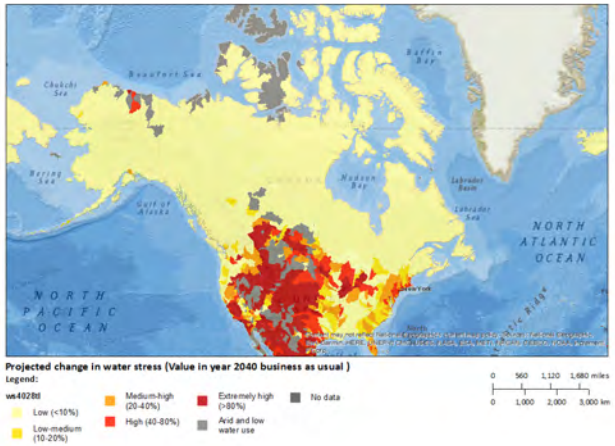
Information on future water availability is also forecast by Aqueduct for decade-scale planning.[4] Across Canada, the projected change in water stress in 2040 compared to historical conditions is generally expected to be near normal, except for a few isolated areas in the southern prairies where an increase of up to two times historical conditions is projected due to changes in water demand based on socioeconomic development *(Luck et al, 2015)*.

Current overall water risk



Kearl's water intake facility on the Athabasca River.

Change in water stress by 2040



Even though all of Imperial's operating sites have secure water licences and are not located in water-scarce areas,[3] Imperial believes it is critical to monitor and manage water risks.

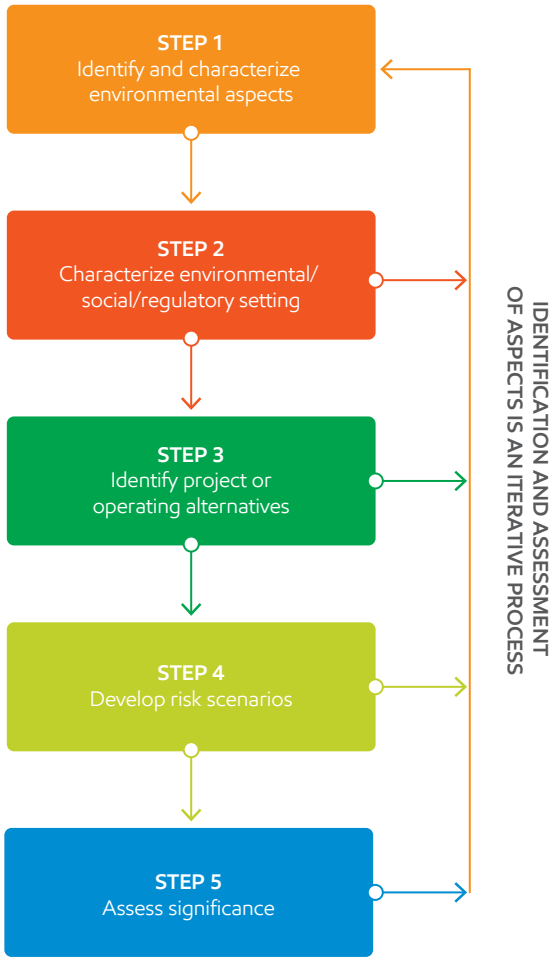
Imperial's Operations Integrity Management System (OIMS) is our overarching system outlining how our operations interact with the water environment, and how we must manage that interaction through measurement, stewardship, risk assessment and risk mitigation. OIMS includes guidance to identify potential environmental and socioeconomic issues through our environmental aspects assessment process.

Risk screenings and assessment approaches are important tools to determine the level of management and resources required to manage identified water-related risks. At Imperial, our risk assessment process for assessing environmental aspects of our operations is ISO 14001 equivalent.[5][6]

Risk assessments identify water-related environmental and socioeconomic aspects related to an activity, project or producing asset over its foreseeable lifecycle. For the oil and gas sector, the main interactions associated with water resources are withdrawal, storage, reuse and discharge. Special consideration is given to those situations that could limit withdrawals, such as regulatory requirements, seasonal fluctuations, competing demands and environmental sensitivities. Assessments are updated at regular intervals and support our annual environmental business planning process, which identifies and manages potential environmental performance enhancement opportunities.

Our major upstream and downstream facilities are located in Alberta, Ontario and the Northwest Territories. Using WRI's Aqueduct tool and the oil and gas weighting, Imperial's current operating assets are in areas of low to medium overall water risk, meaning these areas generally have good water availability which is expected to remain for the next 20 years.[3]

Environmental aspect process



Water use at Imperial

Imperial regularly reports water use information to regulatory agencies and trade associations, and includes information on water resource management on our website and in our Corporate Sustainability Summary. Imperial also reports water use metrics to Canada's Oil Sands Innovation Alliance (COSIA), to Statistics Canada, and to the International Petroleum Industry Environmental Conservation Association (IPIECA) through ExxonMobil. For 2017, our total freshwater consumption was 42.5 million cubic metres. Imperial's downstream and chemical operations used just under 10 million cubic metres; the remaining 32.5 million cubic metres was used by upstream operations.

At Imperial's downstream facilities, water usage varies due to changes in crude oil quality and refinery utilization rates. Water use includes steam production, removing salt from crude oil, making hydrogen, and as a fluid for cooling. The largest single use is for cooling hydrocarbon streams to safe temperatures. Only a portion of the water withdrawn is consumed as a chemical feedstock or lost to evaporation. The remainder of the water is returned safely back to the environment according to appropriate provincial approvals.

Our downstream and chemical facilities have achieved strong utilization rates over the past five years with little change in water use resulting in a relatively flat water use intensity.

In our upstream operations, Norman Wells, located in the Sahtu Region of the Northwest Territories, uses freshwater in a closed once-through cooling system and to maintain pressure in the oil reservoir, while our oil sands facilities' water use in Alberta is primarily driven by bitumen extraction processes.

In closed cooling systems, water is kept completely separate from hydrocarbons in separate piping, much like the coolant in your car's engine is kept completely separate from the fuel system. Norman Wells' water usage was less than 0.04 million cubic metres in 2017. This was lower than normal due to a temporary shutdown of operations in response to a shutdown of Enbridge's Line 21.

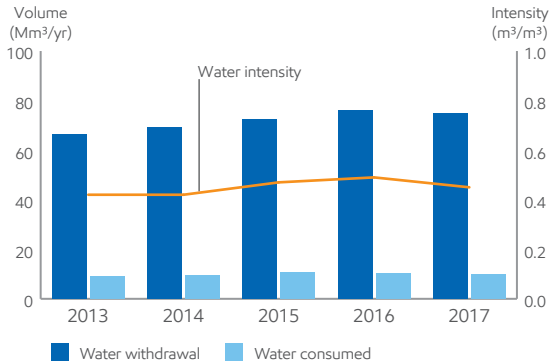
In oil sands mining, water use intensity depends on a number of factors including the project's age, stage, production plans, ore quality and facility processes. The amount of water needed for in situ operations depends on extraction technology, reservoir quality, suitable and available water sources and facility age. Both oil sands mining and in situ operations also have freshwater needs for activities like cooling, dust suppression, fire protection, drilling through non-saline formations, potable requirements, and utility requirements.

Continuous improvement by Imperial at its Cold Lake in situ facilities located in Northern Alberta, has allowed for a 20 percent reduction in our water licence allocation from Cold Lake in 2017. This is a reduction of more than one million cubic metres of annual water allocation, or a daily equivalent of about 2,800 cubic metres.

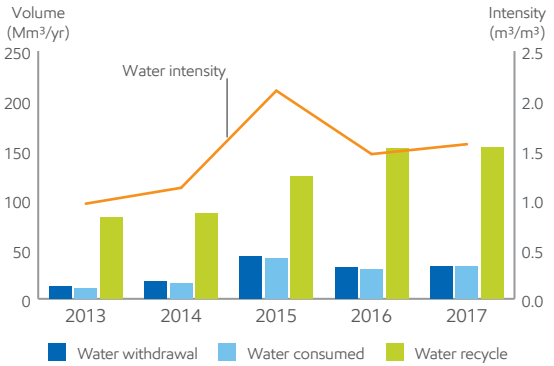
Water use at Imperial's Kearl oil sands mining operation, located in Alberta's Athabasca region, fluctuates depending upon weather conditions and operational activities. For example, freshwater intensity increased in 2015 due to increased water storage at Kearl to support the full commissioning of expansion activities.

Our upstream facilities have seen an increase in water intensity since 2013 in response to the increased production from Kearl over the same time period. **Over the past five years, more than 80 percent of water recovered from our oil sands production has been treated, recycled and re-used.** This significantly reduces the need for freshwater withdrawals. We will continue to monitor and steward water use and intensity as part of annual environmental business plans, and support opportunities to reduce freshwater usage as appropriate.

Downstream and Chemical water metrics



Upstream water metrics



Water strategy

We focus on freshwater conservation opportunities and the efficient use of water through the design, startup, operation and expansion of our facilities.

We follow detailed management systems, and strictly adhere to government regulations. We are dedicated to continuous improvement in the areas of water management. We work to achieve our water management principles by:

- Considering local needs and alternatives when sourcing water for our operations, including first identifying and then managing risks related to water availability and quality;
- Preventing spills and leaks;
- Minimizing the impact from water withdrawal, consumption, and discharges;
- Using research and operational analyses to support the continuous improvement of water-related technologies, practices and performance in our industry; and
- Collaborating with stakeholders to promote the long-term viability of source waters, watersheds and related ecosystems in areas where we operate.

Each of these actions contributes to aspects of the United Nations' Sustainable Development Goal 6 to "ensure availability and sustainable management of water and sanitation for all," as well as the Government of Canada's Federal Sustainable Development Strategy (FSDS) goal of "pristine lakes and rivers" through improved water quality, increased water-use efficiency, and the participation of local communities in improving water management.

Top: Muskeg Lake near Imperial's Kearl oil sands development was built to replace fish habitat that was disturbed by development. **Bottom:** Water management infrastructure at our Cold Lake operations.

WATER USE IN THE OIL SANDS

Water is used for a variety of purposes at our oil sands operations, including drilling, dust suppression, utility boilers, cooling applications, camps and offices. The majority of the water is used in the bitumen extraction process.

In situ methods typically involve the injection of steam into the oil sands reservoir to heat the bitumen and reduce its viscosity, allowing recovery of the bitumen.

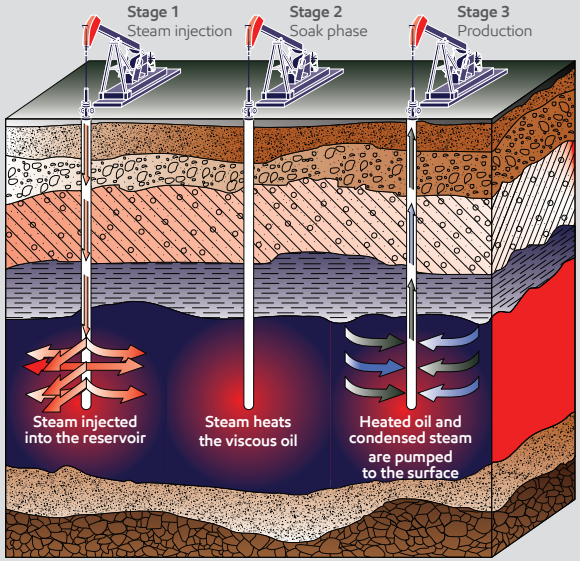
Cyclic steam stimulation (CSS) injects steam into a reservoir to recover oil from the same well over multiple cycles. Warmed lower-viscosity oil is pumped from the reservoir along with the condensed steam and sent to the processing facility. The cycle is then repeated.

Steam-assisted gravity drainage (SAGD) uses horizontal well pairs (one above the other) within the oil sands reservoir. The upper well is used to inject steam into the reservoir, where it rises through the oil sands deposits creating a steam chamber that displaces and heats the bitumen. The bitumen then flows down by gravity and is recovered by pumping the lower well.

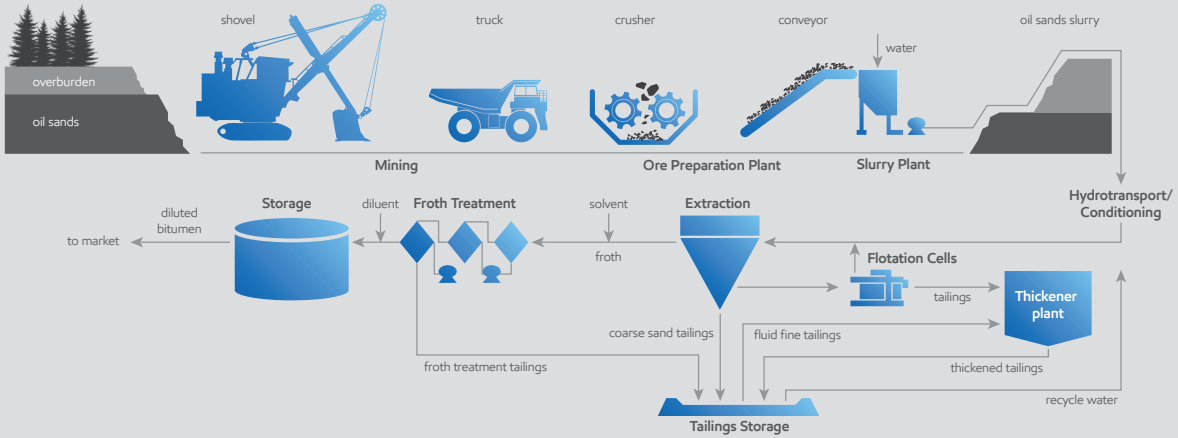
For both CSS and SAGD, the water produced along with the bitumen is separated and then either recycled or disposed of. The recycle rate depends on the supply and demand for steam in the operation, the quality of the produced water, and the treatment technology. Recycle rates are typically greater than 90 percent.

For oil sands mining, the water in the extraction process is used to slurry, transport, and separate the oil from the oil sands ore. Water sources include the recycled tailings water, river water, groundwater, and surface water runoff. By far, the largest overall water source is the recycled tailings water. After startup, it represents approximately 80 percent of the water used.

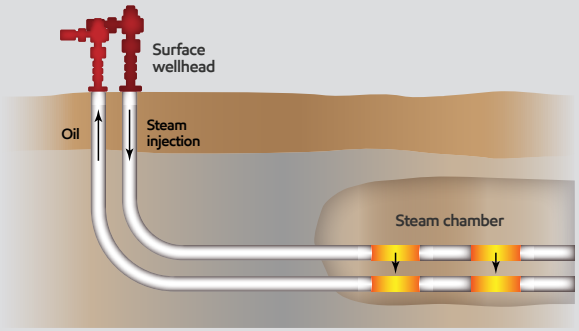
Cyclic steam stimulation (CSS)



Oil sands mining process



Steam assisted gravity drainage (SAGD)



	units	2013	2014	2015	2016	2017
Downstream and Chemical facilities [(i)]						
Water withdrawn	Mm^3/yr	66.3	69.4	72.5	76.1	74.9
Strathcona		6.9	6.8	6.8	6.7	6.7
Sarnia		54.8	57.7	61.2	64.8	63.5
Nanticoke		4.6	4.9	4.6	4.6	4.8
Water consumed	Mm^3/yr	9.1	9.6	10.5	10.4	9.9
Strathcona		4.1	4.4	4.5	4.1	4.3
Sarnia [(ii)]		3.6	3.5	4.5	4.7	3.9
Nanticoke		1.5	1.8	1.5	1.6	1.7
Water intensity	m^3/m^3	0.42	0.42	0.47	0.49	0.45
Strathcona		0.41	0.41	0.43	0.42	0.40
Sarnia		0.59	0.56	0.76	0.75	0.65
Nanticoke		0.26	0.29	0.25	0.32	0.31
Upstream facilities						
Water withdrawn	Mm^3/yr	12.3	17.2	42.5	31.9	32.7
Cold Lake		2.8	2.7	2.9	2.1	2.6
Kearl		6.8	11.9	37.4	27.4	29.9
Norman Wells		2.7	2.6	2.3	2.3	0.2
Water consumed	Mm^3/yr	10.6	15.6	41.0	30.2	32.6
Cold Lake		2.8	2.7	2.9	2.1	2.6
Kearl [(iii)]		6.8	11.9	37.4	27.4	29.9
Norman Wells		0.9	1.0	0.8	0.7	0.0
Water intensity	m^3/m^3	0.96	1.12	2.10	1.46	1.56
Cold Lake		0.32	0.31	0.31	0.23	0.28
Kearl		4.69	2.58	3.84	2.54	2.63
Norman Wells		1.32	1.34	1.41	1.31	2.34
Oil sands produced/process water recycle	Mm^3/yr	82.3	86.6	123.5	151.9	153.0
Cold Lake		29.9	28.9	35.6	35.4	39.2
Kearl		52.4	57.7	87.9	116.5	113.8
Oil sands produced/process water recycle	%	90	86	75	84	82
Cold Lake		91	92	93	94	94
Kearl		89	83	70	81	79

Mm^3/yr = million cubic metres per year

m^3/m^3 = cubic metre of fresh water consumed per cubic metre of refining throughput or upstream production

(i) The Dartmouth Refinery was shut down in 2013 and the water data has been excluded from the reporting year.

(ii) Increase in 2015 due to new cooling tower and steam loss calculation design practices.

(iii) Increased water storage in 2015 to support full commissioning of expansion activities.

The information provided is for Imperial owned and operated sites, and excludes Syncrude, XTO Canada and ExxonMobil Canada operating facilities.

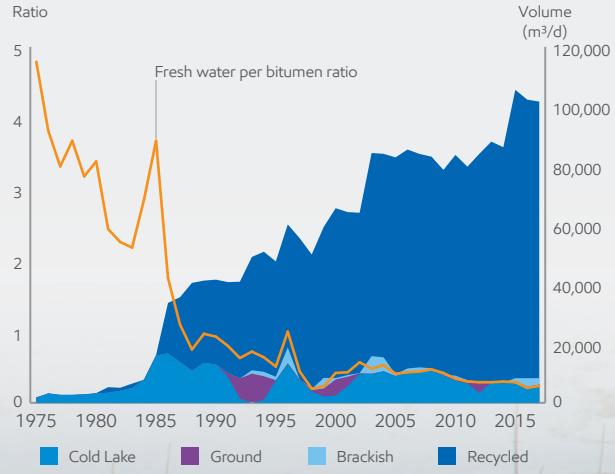
COLD LAKE OPERATIONS

Cold Lake Operations (CLO) has a secure water licence and a proven track record of reducing freshwater demand. Since commercial operation began in 1985, CLO has achieved a 90 percent reduction in freshwater intensity and a 50 percent reduction in absolute freshwater use. The initiatives that led to these improvements made it possible for Imperial to return about one million cubic metres of annual water allocation to the provincial government in 2017. This represents about a 20 percent reduction in CLO's allocation to withdraw water from Cold Lake.

The CLO strategy for water management includes maximizing produced-water recycling as well as minimizing the need for freshwater through the use of produced water and brackish water where facility capabilities allow. CLO recycles 90-95 percent of its produced water in its operations to reduce the requirement for additional freshwater. Since the early 1980s, the volume of recycled produced water used instead of freshwater has increased significantly, as has the ratio of produced water to the total volume of water use. In 2017, 94 percent of water used was produced water.

CLO continues to look for opportunities to reduce freshwater usage and will continue to do so throughout the life of the operations. Significant improvements have been captured already, and further improvements in water conservation, efficiency and productivity may be incremental. In addition, extensive monitoring is conducted to make sure that aquatic ecosystem or local drinking water supplies are not stressed by water use.

Fresh water to bitumen ratio



A view of our Strathcona Refinery.

As part of our water strategy, all operating sites collect information related to water resources, to understand their water footprint. This water data is used to facilitate benchmarking and stewardship, to prepare for risk assessment/management reviews, and to identify and evaluate continuous improvement opportunities. Key water-related metrics for Imperial are withdrawal, consumption, water use intensity and recycling.

In addition to our water metrics, we also evaluate:

- Water treatment and distribution technologies to increase efficiency and re-use opportunities, to allow use of lower-quality source water;
- Seasonal adjustments in water withdrawals, discharges, distribution and/or storage;
- Alternative water sources, including lower-quality sources or sources not competing directly with local and/or regional users; and,
- Reduction or elimination of water use through technological, chemical, operational and/or other alternative methods.

Imperial's management of water resources provides a consistent and effective methodology to identify, assess and manage water-related risks and opportunities. For example, understanding the local, regional and national perspectives that stakeholders have with regard to industry's interactions with water resources is an important step in the management process. Imperial values these perspectives on volume, quality, and wastewater to help us understand the risk of using a particular source, as well as the intrinsic value local communities' place on specific water resources. Ongoing dialogue with stakeholders and Indigenous communities is a critical part of the way we do business. For example, in 2017 we provided Indigenous community members information on Kearl's environmental performance, along with a tour of Kearl to learn more about its operation, reclamation activities and how we work to manage the withdrawal of water during low flow periods.

Imperial, together with the other industry members of Canada's Oil Sands Innovation Alliance (COSIA), has established industry freshwater use intensity targets using a 2012 baseline year for the oil sands: reduce freshwater use intensity by 50 percent by 2022 for in situ operations, while members with mining operations are committed collectively to reduce the net water use intensity from the Athabasca River and its tributaries by 30 percent by 2022. Our Kearl and Cold Lake operations are on target to support these goals.

Water samples being collected at our Kearl oil sands mining operation.

KEARL WATER MANAGEMENT

Kearl's water management plan aligns with regional initiatives in the area including the Muskeg River Interim Management Framework for Water Quantity and Quality, the Groundwater Management Framework; and Surface Water Quantity Management Framework (SWQMF) for the Lower Athabasca River.

Imperial continues to lead the development of the Oil Sands Mining Water Management Agreement under the SWQMF. The agreement is submitted annually to Fisheries and Oceans Canada, Alberta Environment and Parks, and the Alberta Energy Regulator.

The primary objectives of the Kearl Water Management Plan are to use surface water and groundwater responsibly; limit potential environmental effects on the receiving waters; and facilitate reliable access to suitable water supply.

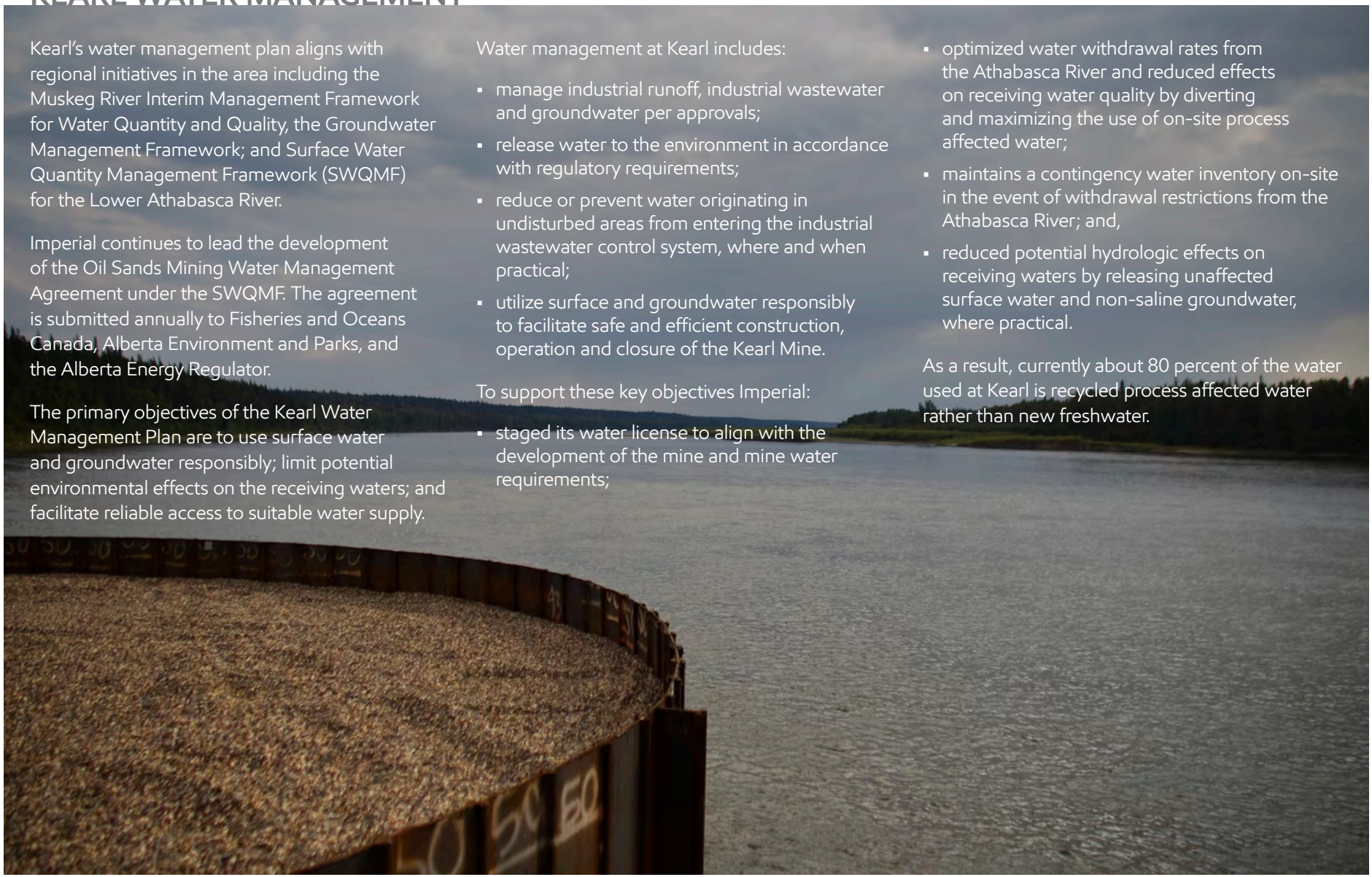
Water management at Kearl includes:

- manage industrial runoff, industrial wastewater and groundwater per approvals;
- release water to the environment in accordance with regulatory requirements;
- reduce or prevent water originating in undisturbed areas from entering the industrial wastewater control system, where and when practical;
- utilize surface and groundwater responsibly to facilitate safe and efficient construction, operation and closure of the Kearl Mine.

To support these key objectives Imperial:

- staged its water license to align with the development of the mine and mine water requirements;
- optimized water withdrawal rates from the Athabasca River and reduced effects on receiving water quality by diverting and maximizing the use of on-site process affected water;
- maintains a contingency water inventory on-site in the event of withdrawal restrictions from the Athabasca River; and,
- reduced potential hydrologic effects on receiving waters by releasing unaffected surface water and non-saline groundwater, where practical.

As a result, currently about 80 percent of the water used at Kearl is recycled process affected water rather than new freshwater.



Water innovation

We developed innovative technologies that are more efficient and lower in water use intensity.

Imperial has invested for decades in science and technology – from unlocking new sources of energy in places previously thought inaccessible for development, international partnerships and co-operative ventures, to formulating fuels, lubricants and plastics that help us all do more with less. At every link in the energy chain, including water use, Imperial seeks to advance innovation and technology to deliver energy North Americans need. In the past 20 years, we've spent more than $2.1 billion in downstream and upstream research and technology development.

We continue to look for better ways to recover oil. Imperial has been enhancing existing recovery processes and developing new technologies to improve the energy efficiencies and environmental performance of the oil sands production. In the past, we exclusively used steam to recover bitumen at in situ oil sands operations. In recent years, we've developed advanced oil recovery technologies that are more energy efficient and have lower water use intensity.

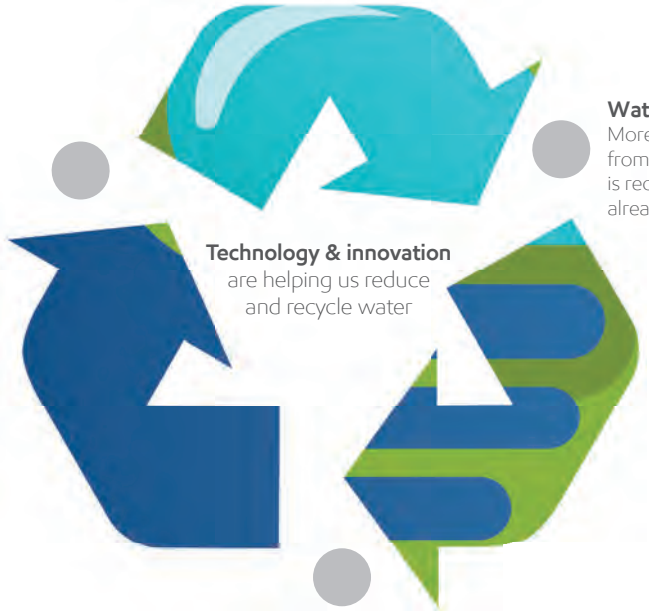
In 2001, we invented Liquid Addition to Steam for Enhanced Recovery (LASER), with the objective of reducing water and GHG emissions intensity. LASER is generally implemented mid-life of a CSS installation's lifecycle to enhance steam-only recovery. LASER thus allows additional bitumen recovery and higher production rates without incremental steam injection. LASER provides up to a 25 percent reduction in water use intensity compared to normal CSS production methods. Imperial is currently using LASER at our Cold Lake operations.

Cyclic solvent process (CSP) is a non-thermal bitumen recovery process that involves alternating cycles of liquid light hydrocarbon injection, followed by bitumen production. CSP technology has been developed through laboratory studies, simulation, field trials and demonstration pilots. The first commercial CSP pad is in the planning stage at our Cold Lake operations and has the potential to eliminate steam use for recovery at pads using CSP.

The solvent-assisted, steam-assisted gravity drainage (SA-SAGD) technology injects light hydrocarbons underground along with steam. The light hydrocarbons reduce bitumen viscosity, thus reducing water use intensity relative to traditional SAGD. This technology was advanced through a research program including laboratory studies, simulation development, and a field pilot. Imperial expects

Virtually eliminate water use
Our researchers are developing CSP technology for a commercial trial that may eliminate the use of water.

We initiated a **$100 million CSP field pilot** in 2014 to test this promising technology.



Water recycling programs
More than 80% of water recovered from our oil sands production is recycled. At Cold Lake, we've already surpassed the 90% mark.

Alternatives to steam
are key to increasing energy efficiency and reducing water intensity from our operations.

to save about 25 percent in capital costs per barrel and to reduce GHG emissions intensity and water use intensity by up to 25 percent.

Enhanced bitumen recovery technology (EBRT) is another technology under development. EBRT increases the concentration of light hydrocarbons in the steam, and could provide a 90 percent reduction in water use relative to traditional SAGD technology. We are currently advancing a field pilot to demonstrate the process and to validate it for commercial use.

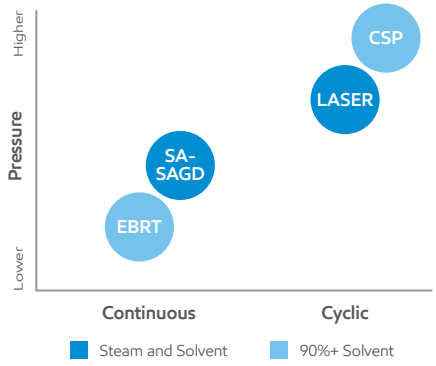
In addition to in-house research, we partner with academic institutions, industry peers, and third-party companies to accelerate the pace of environmental performance improvement in Canada. Imperial is a founding member of COSIA, an alliance of oil sands producers focused on improving environmental performance in Canada's oil sands through collaborative action and innovation. COSIA's Water Environment Priority Area (EPA) looks for innovative and sustainable water solutions for oil sands mining and in situ operations with over 200 technologies contributed, and active projects in 2017 valued at over $200 million.[7] The Water EPA has identified issues facing the industry and is working to progress opportunities in areas like improved use and management of all water resources – fresh, saline and recycled.

We continue to work to implement new technologies that require less water for our operations, collaborate with industry to reduce implications for local water resources, and we are engaged in multi-stakeholder groups to address issues in these areas.

Advanced oil recovery technologies

Liquid Addition to Steam to Enhance Recovery (LASER)
up to 10% solvent; 90% steam
Mid-life technology

Solvent-Assisted, Steam-Assisted Gravity Drainage (SA-SAGD)
20% solvent; 80% steam
Beyond SAGD



Cyclic Solvent Process (CSP)
100% solvent
Enhanced resource recovery

Enhanced Bitumen Recovery Technology (EBRT)
90% solvent; 10% steam
Additional resource potential

↓ REDUCTION IN CAPITAL INTENSITY

↓ LOWER GHG INTENSITY

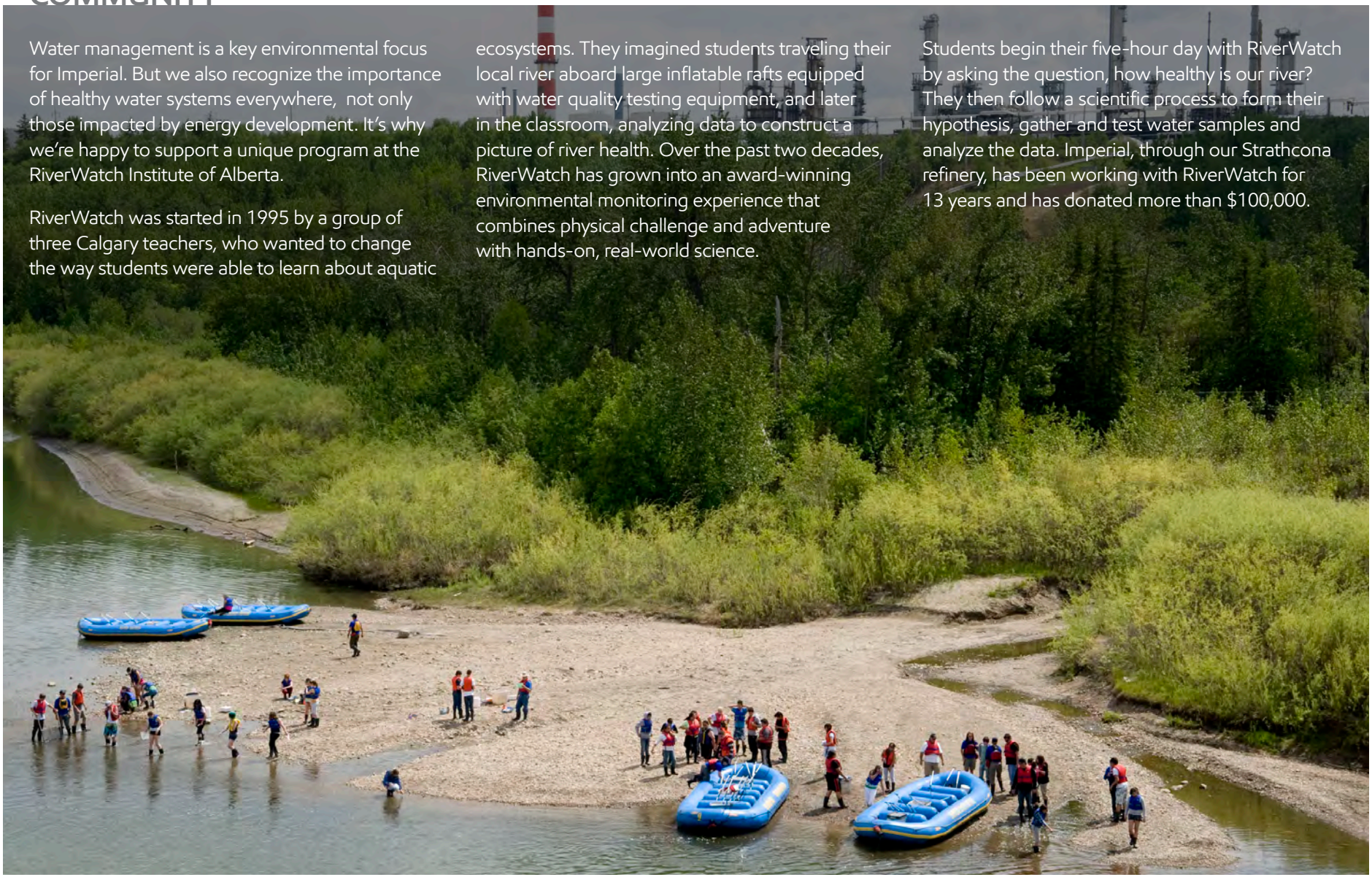
↓ LOWER WATER USE INTENSITY

COMMUNITY

Water management is a key environmental focus for Imperial. But we also recognize the importance of healthy water systems everywhere, not only those impacted by energy development. It's why we're happy to support a unique program at the RiverWatch Institute of Alberta.

RiverWatch was started in 1995 by a group of three Calgary teachers, who wanted to change the way students were able to learn about aquatic ecosystems. They imagined students traveling their local river aboard large inflatable rafts equipped with water quality testing equipment, and later in the classroom, analyzing data to construct a picture of river health. Over the past two decades, RiverWatch has grown into an award-winning environmental monitoring experience that combines physical challenge and adventure with hands-on, real-world science.

Students begin their five-hour day with RiverWatch by asking the question, how healthy is our river? They then follow a scientific process to form their hypothesis, gather and test water samples and analyze the data. Imperial, through our Strathcona refinery, has been working with RiverWatch for 13 years and has donated more than $100,000.



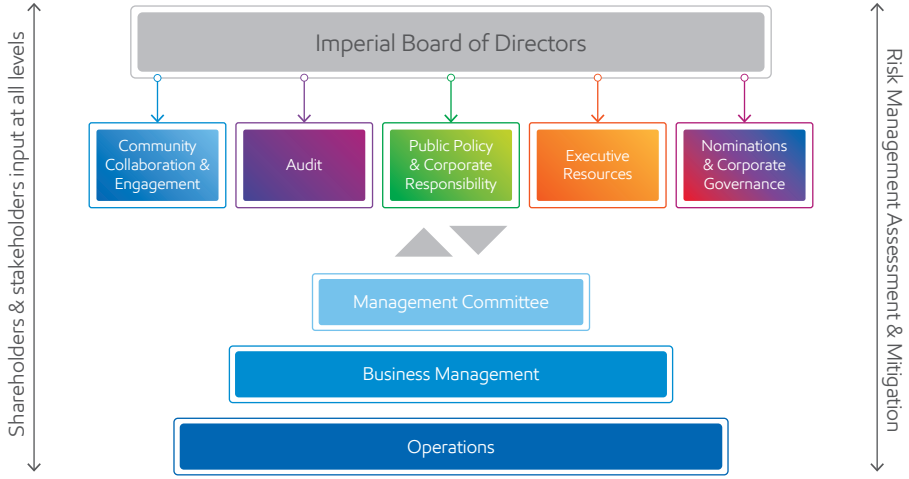
Governance

At Imperial we are committed to operating in an environmentally responsible manner everywhere we do business.

Our corporate environment policy and "Protect Tomorrow. Today" expectations are the foundation of our efforts, guided by a scientific understanding of the environmental impact of our operations. We recognize that business success depends on the economic, social and environmental health of the communities where we operate.

Imperial's operations integrity management system (OIMS) has comprehensive environmental expectations and requirements to identify and manage safety, security, health, and environmental risks. OIMS is ISO 14001 equivalent;[6] and provides a systematic, structured and disciplined approach to manage those risks holding Imperial's management accountable across business lines, facilities and projects.

Risk management oversight



In addition to OIMS, Imperial has an issue management process designed for timely issue identification, prioritization and management. Stewardship is a key step within the process, where the status of the issue is communicated to management.

Water use is one of the key issues stewarded by the Issue Management Process. Water issue updates are communicated annually to the Management Committee, business planners and their environmental representatives, to ensure potential risks and key public policy initiatives are captured in the company's business plans and regulatory compliance plans.

Imperial's Board of Directors has a public policy and corporate responsibility committee whose responsibilities include monitoring trends and reviewing current and emerging public policy issues in matters of the environment, health and safety. Corporate water use metrics are shared with the board on an annual basis. The committee's responsibilities also include reviewing the impact of proposed legislation on the operations of the corporation in matters of the environment, health and safety and to advise the directors and management as to the appropriate corporate response. Based on the committee's review and monitoring activity, the committee may recommend desirable policies and actions to the directors and management.

Disclosure/definitions

Disclosure

Imperial is committed to providing our shareholders with disclosures that impart meaningful insights about our business, including how we manage water-related risks. In addition to this document, we report water withdrawals, discharges and uses to various regulatory and trade bodies. The information provided is for Imperial-operated sites, and excludes Syncrude, XTO Canada and ExxonMobil Canada operating facilities.

Our water summary report is guided using the International Petroleum Industry Environmental Conservation Association's oil and gas industry guidance on voluntary sustainability reporting. We believe our disclosure aligns with many of the key disclosure aims of other third-party disclosure frameworks. We continue to monitor developments in water disclosure and will make adjustments to our water summary as necessary.

Related documents

Energy and carbon summary

www.imperialoil.ca/ecs

2017 Sustainability Report

www.imperialoil.ca/sustainability

Definitions

Consumption: the amount of water not returned to the original source due to usage and losses (e.g., evaporation).

Intensity: the ratio of freshwater use per hydrocarbon production. For upstream operations, intensity is the number of units of freshwater used to produce a unit of oil equivalent products. For the downstream intensity is the number of units of freshwater used compared to the throughput of hydrocarbon for the production of refined or chemical products.

Recycled: the amount of recycled produced or process water used in the extraction of the bitumen resource. Recycled produced or process water offsets the requirement for freshwater.

Utilization: a measure of how efficiently a refinery is operating. Typically, utilization is the proportion of potential design capacity that is actually used across the refinery processing units.

Withdrawal: a measure of the quantity of water removed from a source under licence over a finite period of time.

References/footnotes

References

Government of Alberta. 2008. Muskeg River Interim Management Framework for Water Quantity and Quality. Available online at https://open.alberta.ca/dataset/ba3a7d26-edfe-4e6a-8b3f-57600d1ac04c/resource/a876fb44-9310-48c2-a4ae-9cca9bd40d33/download/2008-muskegriverinterimwaterreport-jun2008.pdf

Government of Alberta. 2012. Lower Athabasca Region Groundwater Management Framework. Available online at https://open.alberta.ca/dataset/90a86c75-60a3-46aa-9893-cef9a040bc99/resource/bde418ba-c70e-4bc4-ab77-0e72d4770b6a/download/6248198-2012-08-larp-framework-groundwatermgt-finalv2.pdf

Government of Alberta. 2015. Surface Water Quantity Management Framework for the Lower Athabasca River. Available online at https://open.alberta.ca/dataset/f2ebc2f5-fe78-4dfe-be99-85d1d9fb6fe3/resource/d02751b1-c9e4-4e52-921d-72eda6497981/download/zz-6243941-2015-lower-athabasca-region-larp-surface-water-quantity-management-2015-02.pdf

Gassert, F., M. Luck, M. Landis, P. Reig, and T. Shiao. 2014. "Aqueduct Global Maps 2.1: Constructing Decision-Relevant Global Water Risk Indicators." Working Paper. Washington, DC: World Resources Institute. Available online at https://www.wri.org/publication/aqueduct-global-maps-21-indicators

Luck, M., M. Landis, F. Gassert. 2015. "Aqueduct Water Stress Projections: Decadal Projections of Water Supply and Demand Using CMIP5 GCMs." Technical Note. Washington, D.C.: World Resources Institute. Available online at https://www.wri.org/publication/aqueduct-water-stress-projections-decadal-projections-water-supply-and-demand-using

Footnotes

(1) *Based on Statistics Canada's 2013 average daily use of residential potable water per capita for Alberta.*

(2) *WWF Water Risk Filter:* http://waterriskfilter.panda.org/

(3) *WRI Aqueduct Water Risk Atlas:* https://www.wri.org/resources/maps/aqueduct-water-risk-atlas

(4) *Details on the methodology are available in "Aqueduct Water Stress Projections: Decadal Projections of Water Supply and Demand Using CMIP5 GCMs." Technical Note. Washington, D.C.: World Resources Institute by Luck, M., M. Landis, F. Gassert (2015) available online at:* http://wri.org/publication/aqueduct-water-stress-projections.

(5) *ISO 14001 – Environmental Management Systems international standard: "(an) element of an organization's activities, products or services that can interact with the environment."*

(6) *As attested by Lloyd's Register, a leading independent provider of accredited certification services.*

(7) https://www.cosia.ca/about

Imperial

After more than a century, Imperial continues to be an industry leader in applying technology and innovation to responsibly develop Canada's energy resources. As Canada's largest petroleum refiner, a major producer of crude oil, a key petrochemical producer and a leading fuels marketer from coast to coast, our company remains committed to high standards across all areas of our business.

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