

2019

STEWARDSHIP REPORT TO STAKEHOLDERS



**SUSTAINABLE OPERATIONS THROUGH
INNOVATION AND CONTINUOUS IMPROVEMENT**

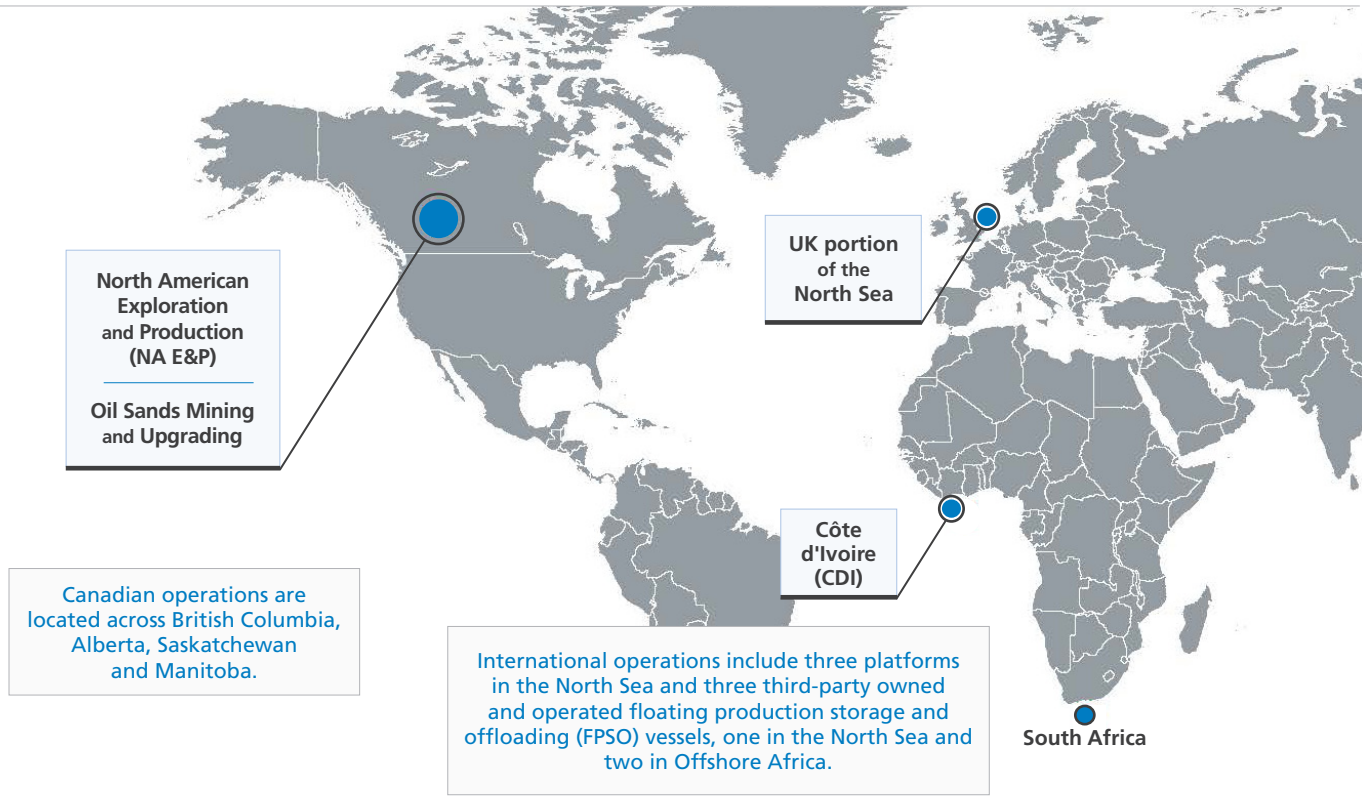


Canadian Natural

Who we are

Canadian Natural Resources Limited (Canadian Natural) is a senior independent crude oil and natural gas exploration, development and production company based in Calgary, Alberta, Canada. Our strong, diversified asset base is comprised of a balanced portfolio of light, synthetic, and heavy crude oil and natural gas.

Canadian Natural operates in Canada, the United Kingdom and Offshore Africa. We are committed to a long-term presence in the communities where we operate. Our activities create value by providing employment, business development opportunities, revenues to governments that contribute to spending on goods and services, and essential resources for public services, including health, safety, education and training.



WE LIVE OUR MISSION STATEMENT

“To develop people to work together to create value for the Company’s shareholders by doing it right with fun and integrity.”



Cover Photo
Water treatment and steam generation at Kirby North thermal operations, Alberta.

Many of the photographs in this report were provided by Canadian Natural staff. We would like to thank Jason Belliveau, Rees Lusk, Justin Mayer, Brian McCullagh and Graeme Zeiler for contributing pictures to this edition of the Stewardship Report to Stakeholders.

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Feature: Leadership towards sustainable energy

Canada is well positioned to deliver the energy the world needs

Canada's crude oil and natural gas industry is delivering leading Environmental, Social, Governance (ESG) performance amongst the top crude oil exporting countries, including transparency in its operations, compliance with the most stringent regulatory and reporting requirements in the world, and leading innovation and cleantech investment.

With a well-established track record of safe and responsible development, industry is showing resilience and continually adapting to challenges through entrepreneurship and ingenuity to deliver impressive results, including a 20% reduction in GHG intensity by Canadian oil sands projects from 2009 levels. We are on a path to ongoing improvements in performance and are strongly positioned to be resilient in a lower carbon emissions intensity economy.

The Boards of Canadian oil sands producers are highly independent and diverse

75%
independent
directors

50%
non-energy
professionals

Source: BMO Capital Markets, Oil and Gas Report, March 4, 2020.

6%

of individuals
employed by industry
are Indigenous

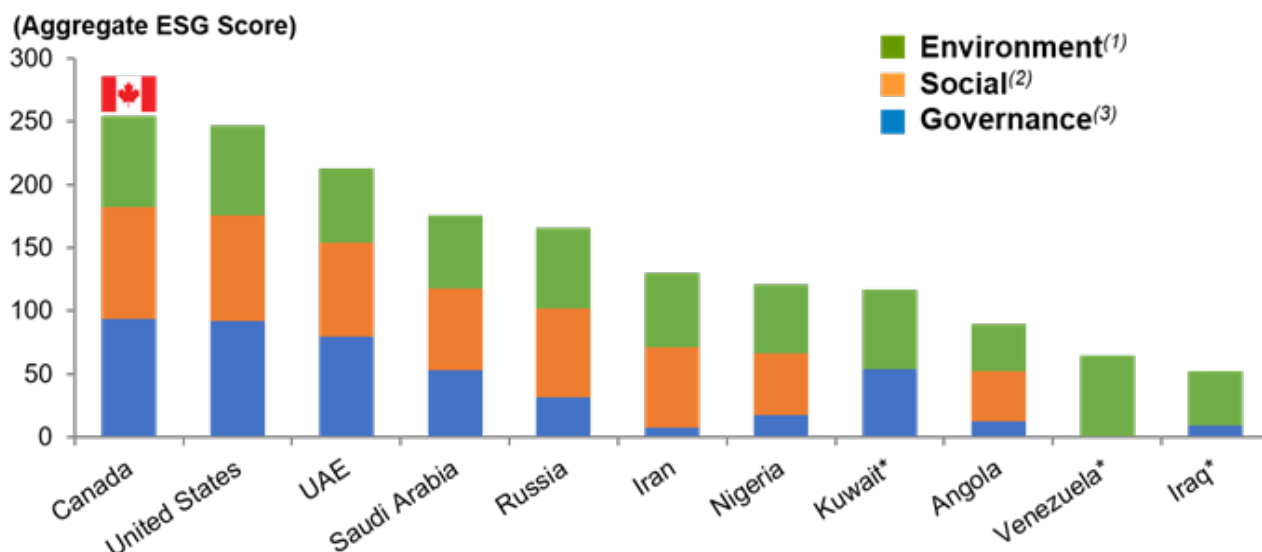
Source: CAPP, 2018 Economic Report Series, Canada's Indigenous Peoples and the Oil and Natural Gas Industry.

20%

greenhouse gas (GHG)
intensity reduction in
Canadian oil sands projects
from 2009 levels

Source: IHS Markit Canadian Oil Sands Report, July 2020.

ESG Ratings Among Top Oil Exporting Nations



(1) 2018 Yale Environment Protection Index (EPI).

(2) 2018 Social Progress Index (SPI) prepared by Social Progress Imperative.

(3) 2018 World Governance Indicators (WGI), Regulatory Quality Score.

Includes the top ten crude oil exporting countries and the United States.

*Iraq, Kuwait and Venezuela social score not shown due to insufficient data.

According to the International Energy Association (IEA), global energy demand increased by 0.9% in 2019. While demand of renewable sources of power continues to increase, the majority of the world's energy needs will still continue to be met by crude oil and natural gas for decades to come. As the world emerges from the impacts of COVID-19, all forms of energy will be needed for a strong and sustained recovery.

Canadian Natural's leading ESG approach

Canadian Natural has an integrated ESG approach that reflects a long-term commitment to sustainable development and creating value for stakeholders.



ENVIRONMENTAL HIGHLIGHTS

- Canadian Natural has a defined pathway that is driving **long-term GHG emissions reductions** with an integrated emissions management strategy that includes **investment in research and technology**, on our journey to net zero oil sands emissions.
- We **invest in water management** to increase our produced water recycle rate.
- With record numbers of reclamation projects completed, Canadian Natural is an **industry leader for abandonment and facility decommissioning** in Canada and UK offshore operations.
- Find more information in our Climate and GHG emissions management, and Environment sections in this report.



SOCIAL HIGHLIGHTS

- We work with communities near our operations, including Indigenous, to **share in the benefits of industry activity through local business development, employment and training**.
- We value the benefits of a diverse and talented workforce. When we focus on knowledge, experience, skills and background, diversity is the outcome. Our business depends on a diverse workforce of **more than 10,000 full-time employees** who take pride in 'working together' and 'doing it right'.
- Find more information in our Working Together with Communities section in this report.



GOVERNANCE HIGHLIGHTS

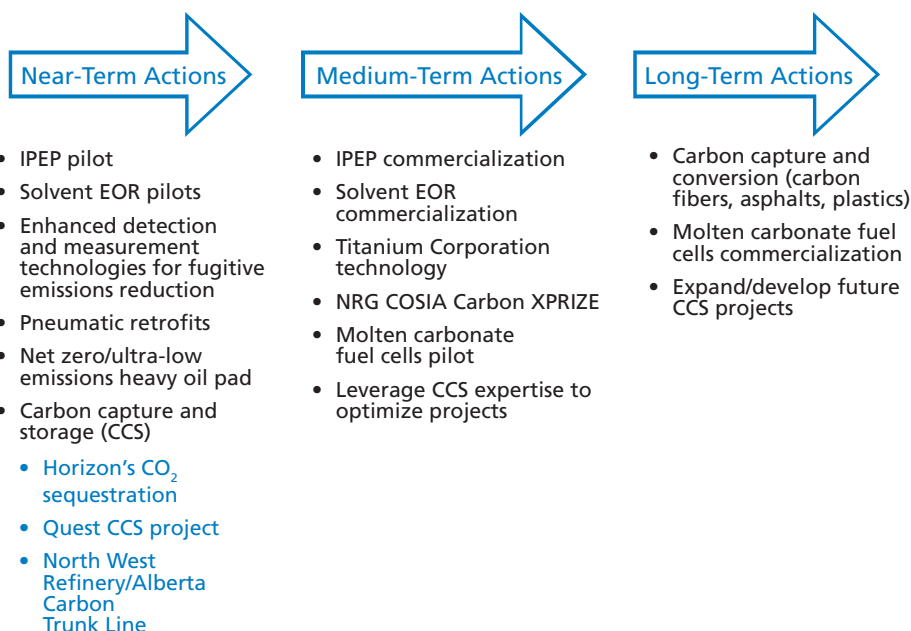
- Our Board of Directors and Management identify risks and opportunities to **mitigate risks and pursue opportunities**.
- We operate with the **highest levels of integrity and ethical standards**.
- **ConfidenceLine**, our third-party managed integrity hotline, is one of the ways employees, contractors and service providers are able to **share concerns or questions regarding integrity or unsafe work practices in a confidential and anonymous way**.
- **Executive compensation is linked to corporate performance, including safety and environmental**.
- Find more information on our [website](#).

The journey to net zero

Every day, employees are pushing the boundaries to accelerate technology development and move closer to Canadian Natural's GHG targets and, ultimately, our aspirational goal of net zero GHG emissions in the oil sands.

Our roadmap to net zero emissions includes different technologies and processes throughout the production cycle: from designing facilities to avoid emissions in the first place, to reworking existing processes to reduce emissions, to storing and/or converting or utilizing the remaining emissions.

Some of these technologies are:



Pathways to lower carbon emissions

Technology and innovation are keys to success in a lower carbon future. Canadian Natural and industry continue to advance solutions to become more effective and efficient. We continue incorporating opportunities for lower carbon emission products and renewable energy.

Power from natural gas

As one of the largest producers of natural gas, Canadian Natural delivers a lower GHG intensity energy source for power generation. For example, our International operations supply natural gas to CDI. Our Espoir and Baobab operations produce 45 million standard cubic feet of natural gas on a daily basis; the equivalent to 270 megawatts of electricity or about 23% of the country's electricity demand.

Carbon capture and utilization

Together with natural gas, carbon capture, utilization and sequestration/storage (CCUS) projects are an integral part of our pathway to long-term emissions reductions. Canadian Natural is a leader in CCUS initiatives and we continue to explore innovative technologies to store carbon dioxide (CO₂) and reduce emissions.

We support projects that reduce our environmental footprint while providing excess energy that can be



Employee involved in operations of the IPEP project.

returned to the electrical grid or used in other processes, such as our ultra-low emissions heavy crude oil pad site pilot that could be powered by a renewable energy source to capture emissions to be used elsewhere. With industry partners, we are piloting the use of fuel cells for carbon capture and electricity generation, converting algae into bio-fuel and bio-materials, and transforming waste CO₂ into valuable products.

Read more about these projects in our Advancing Innovation section on pages 24 to 28.

Message to Stakeholders

Canadian Natural marked our 30th anniversary in 2019. Over our history, Canadian Natural's strong culture and strategy have ensured continuous value growth and sustainable operations. Thirty years is a significant milestone, and what makes us proud is our culture of innovation and continuous improvement delivered by our dedicated teams working together and doing it right. Our consistent commitment has helped Canadian Natural thrive through periods of growth and downturns. We are a resilient company.

At the same time, there is growing attention by stakeholders on corporate responsibility including ESG aspects. The increased attention is new, but our commitment to doing it right is constant. Canada's crude oil and natural gas sector has a strong record of safe and responsible resource development. Leading regulatory oversight and governance practices have placed the sector ahead of other jurisdictions.

Through it all, Canadian Natural has continued to supply responsibly produced energy the world needs, while also

“...Canadian Natural has continued to supply responsibly produced energy the world needs, while also reducing GHG emissions intensity and water use, working with communities, and creating jobs...”



YEARS OF PREMIUM VALUE

reducing GHG emissions intensity and water use, working with communities, and creating jobs and government revenues to fund public services.

Canadian Natural remains one of the industry's most responsible producers and is a leader on the ESG front. We incorporate ESG practices that strengthen our long-term sustainability across all aspects of the business and at all levels of the Company.

By delivering industry leading performance, creating long-term value and driving the development and implementation of innovative technologies, we are achieving results. You will see highlights of 2019 in this report, including:

- Lowest ever corporate Total Recordable Injury Frequency, and a 20% reduction from 2018
- Decreasing pipeline leaks/1,000 km by 33% since 2015
- Abandoning 2,035 inactive wells, double from 2018, with 2,436 hectares reclaimed. 7,600+ hectares have been reclaimed in our NA E&P operations since 2015
- Continuing to ensure top tier governance in identifying, quantifying and addressing climate-related risk
- Reducing corporate GHG emissions intensity by 16% since 2015
- Awarding more than \$550 million in contracts to 150 Indigenous businesses
- Working with more than 24,000 landowners, 160 municipalities and 80 Indigenous communities



We remain committed to continuous improvement. Canadian Natural has an aspirational goal of net zero GHG emissions from our oil sands operations and has set targets to reduce intensities in emissions and fresh water use. With \$3.7 billion invested in research and development (R&D) over the last decade, leveraging technology and innovation are key elements in our long-term plan and to achieving our targets.

Part of continuous improvement includes enhancing our reporting and disclosure on ESG performance. This Stewardship Report to Stakeholders and other public documents are aligned with recommendations from recognized reporting frameworks: the Global Reporting Initiative (GRI), the Task Force on Climate-related Financial Disclosures (TCFD), and the Sustainability Accounting Standards Board (SASB).

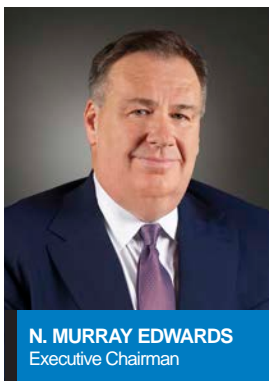
Today, our resilient and consistent approach is as important as ever. In 2020, commodity price volatility, along with global supply and demand dynamics and the COVID-19 pandemic response, have created significant challenges for the industry. It has also reminded all of us that our industry provides essential products for heating, electricity generation and transportation fuels for our daily lives.

As part of our pandemic response, we have managed staffing levels at our operating sites to those critical for maintaining essential operations. Canadian Natural employees and contractors have worked together to remain safe and connected while ensuring business

“ With \$3.7 billion invested in research and development over the last decade, leveraging technology and innovation are key elements in our long-term plan and to achieving our targets. ”

continuity across our offices, operations and in the communities where we operate.

Thank you for taking the time to review our 2019 Stewardship Report to Stakeholders. Canadian Natural's diverse assets and effective and efficient operations combined with continuing investment in leading-edge technologies, have made us a unique, sustainable and robust company. Our innovative culture, our work with communities and our commitment to doing it right positions us to thrive for years to come.



GOVERNANCE

37.5% Independent Directors of the Board are female, achieving the Board gender diversity target of 30%

Governance Structure

Canadian Natural's governance structure consists of our Board of Directors, Board Committees, Management Committee and Operations Committees, all of them supported by policies and controls that influence corporate decisions at every level.

Board of Directors

Oversees management's risk identification assessment and mitigation processes, which include reviews of long-term strategic and operational planning; executive development and evaluation; code of conduct compliance; regulatory compliance; safety and environmental compliance; financial reporting and controllership; and information technology and security.

Health, Safety, Asset Integrity and Environmental (HSAI&E) Committee of the Board

Meets every quarter to discuss sustainability matters, related to health, safety, asset integrity, environmental risk and social initiatives, including community and Indigenous relations. The HSAI&E Committee ensures that Management has effective design and implementation of sustainability and risk management programs, including controls and reporting systems.

Nominating, Governance and Risk Committee of the Board

Reviews and monitors the status of risk management activities across the organization, including climate-related regulatory and operational risks.

Management Committee

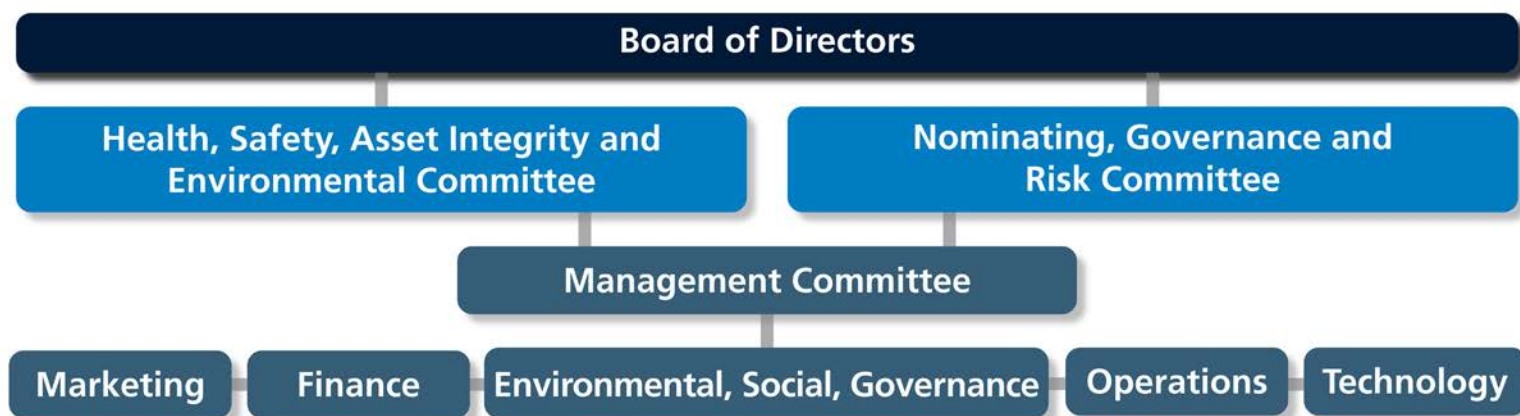
Responsible for the identification, assessment and management of risks and opportunities.

Environmental, Social, Governance (ESG) Committee

Provides internal stewardship reports to the HSAI&E Committee of the Board, reporting on sustainability performance, key indicators and actions taken to mitigate risks.

Alignment of Performance to Executive Pay

Directors oversee and monitor company-wide efforts to support, manage and improve performance. Executive compensation is aligned with performance under set categories, which include sustainability metrics related to safety, asset integrity and environmental performance.

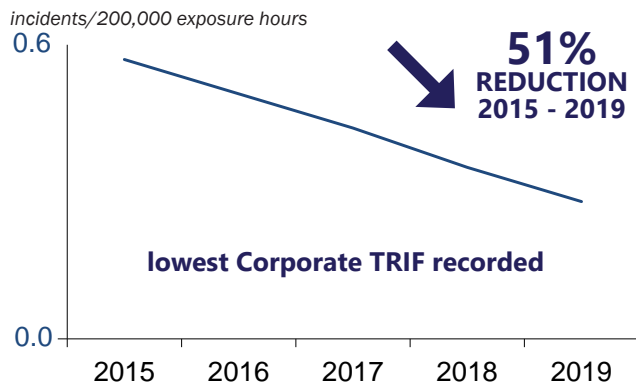


SOCIAL

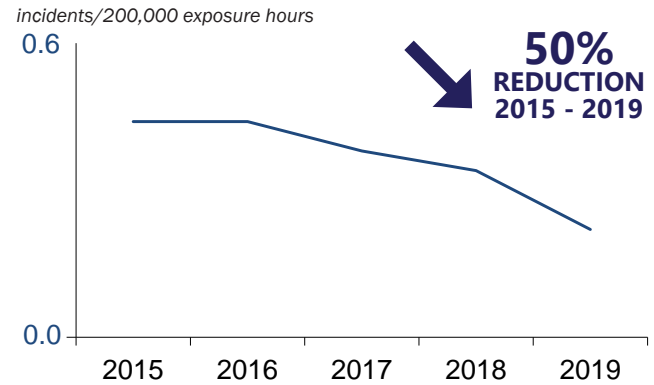
Health and Safety

Pages 12 - 15

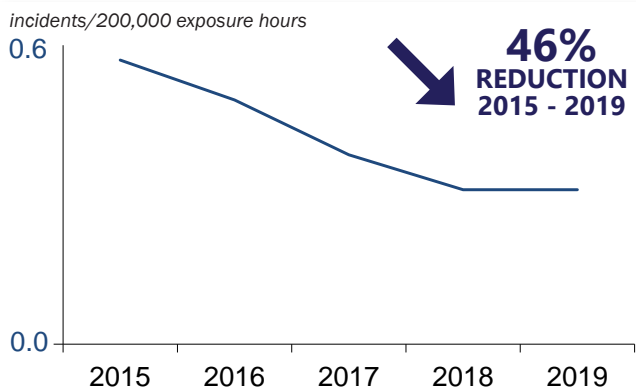
Corporate Total Recordable Injury Frequency (TRIF)



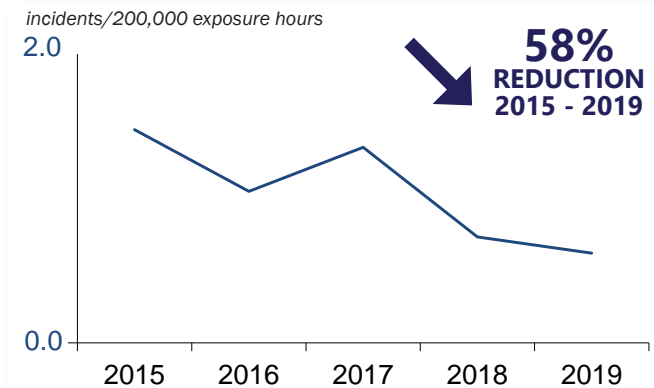
North America Exploration and Production (E&P) TRIF



Oil Sands Mining and Upgrading TRIF



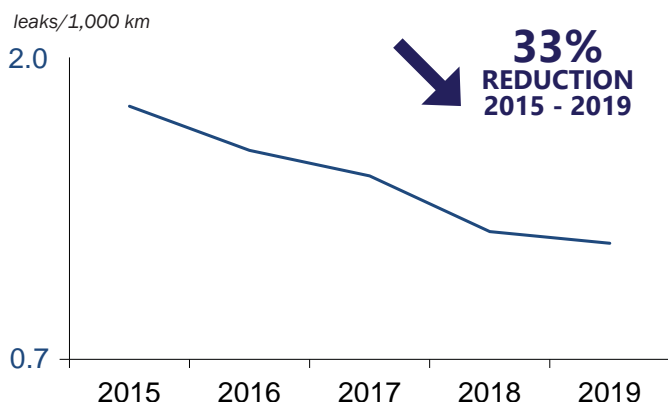
International TRIF



Asset Integrity

Pages 16 - 19

North America E&P Pipeline Incident Performance



Kirby South pipelines.

Safety is a Core Value at Canadian Natural

SOCIAL

Community

Pages 20 - 23

\$550+
million

In contracts with more than
150 Indigenous businesses

10,000+
employees

Working together
and doing it right

\$25
million

Total community investment

765

Community activities
supported/participated in



Calgary Corporate Challenge employee volunteers.

Contributions to Canadian Economy

Royalties	\$1.523 billion
Property Taxes	\$382 million
Corporate Taxes	\$354 million
Surface and Mineral Land Leases	\$172 million
Total Contributions	\$2.44 billion

Supply Chain Spending

9,000+
suppliers worldwide

\$8.06
billion

Employment Creation

79,820

Estimated Full Time Equivalent (FTE)
jobs supported by operational and
capital spending in our Canadian operations



22,620

Direct Employment

39,755

Indirect Employment
(suppliers)

17,445

Induced Employment
(economy at large)

Technology and Innovation

Pages 24 - 28

\$3.7
billion

Invested in R&D since 2009

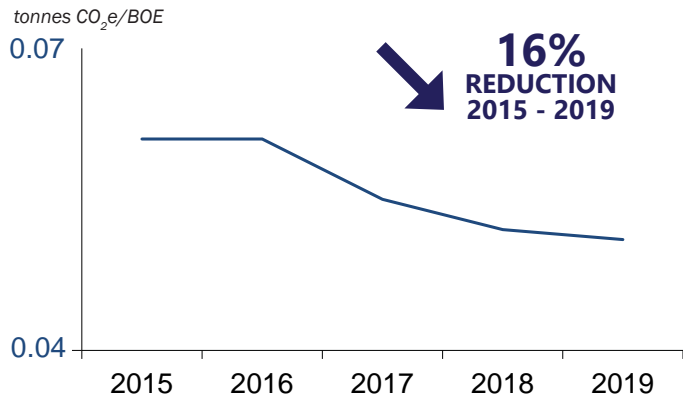
\$77.4
million

Invested in GHG research,
technologies and projects in 2019

ENVIRONMENT

Page 33

Corporate Scope 1 (Direct) GHG Emissions Intensity

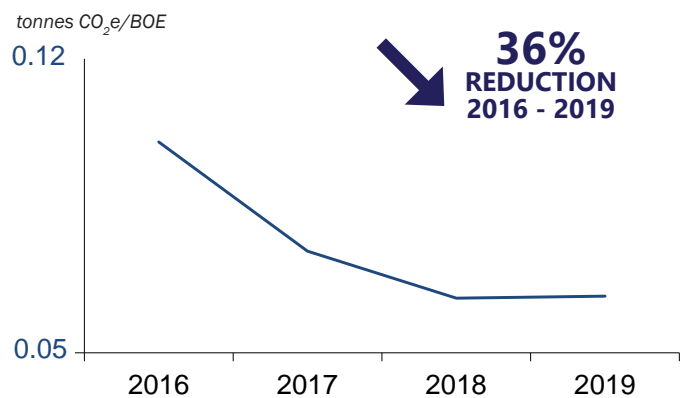


CO₂ recovery unit at Horizon.

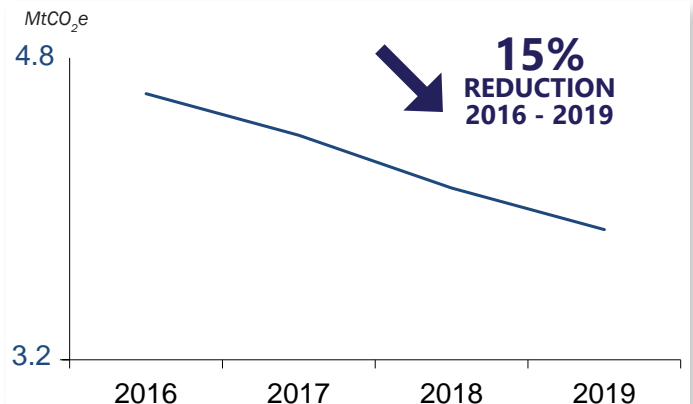
Environmental Targets

Pages 33 and 35

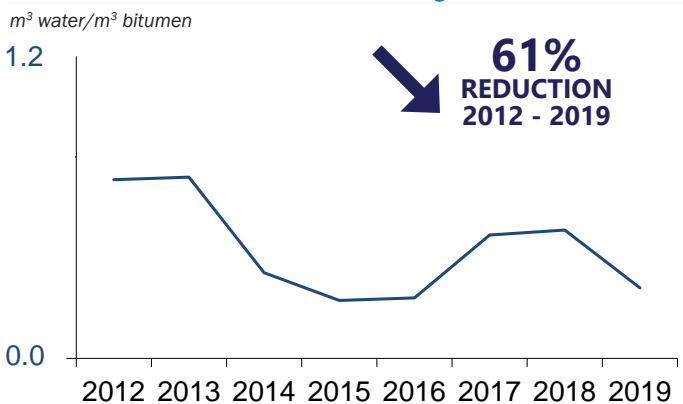
Oil Sands Mining and Thermal GHG Emissions Intensity



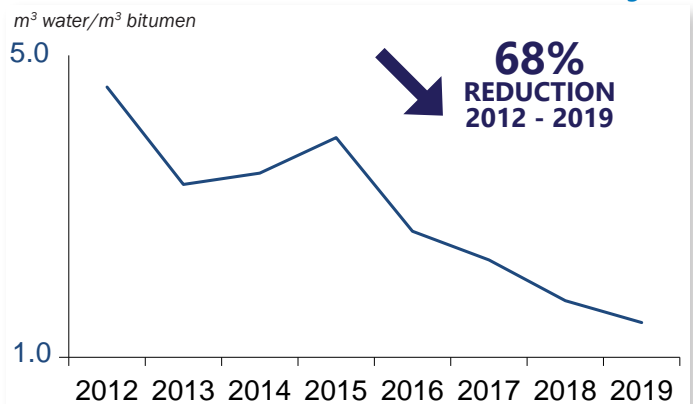
North America E&P Methane Emissions



In Situ Fresh Water Use Intensity



Oil Sands Mining Fresh River Water Use Intensity



*Includes Alberta thermal in situ facilities

*Includes river water and tributaries.

Canadian Natural is the sixth largest owner of carbon capture storage (CCS) capacity in the global crude oil and natural gas sector

Health and Safety

At Canadian Natural, safety is a core value that underlies all our activities to reach our ultimate goal of **'No harm to people; No safety incidents'**.

A crucial part of being an effective and efficient operator is the ability to protect the health and safety of employees and contractors. At Canadian Natural, **safety is a core value** that is emphasized through strong leadership and workforce participation at all levels. Management and supervisors spend significant time in the field to foster our frontline-driven safety culture, where every employee contributes to a safe workplace.

No harm to people; No safety incidents

Our teams work together to keep our Safety Excellence goal of **No harm to people; No safety incidents** top of mind. To do this, our comprehensive management systems are integrated for personal safety, process safety and asset integrity to protect workers, the public, the environment, and our equipment and facilities through robust, disciplined processes.

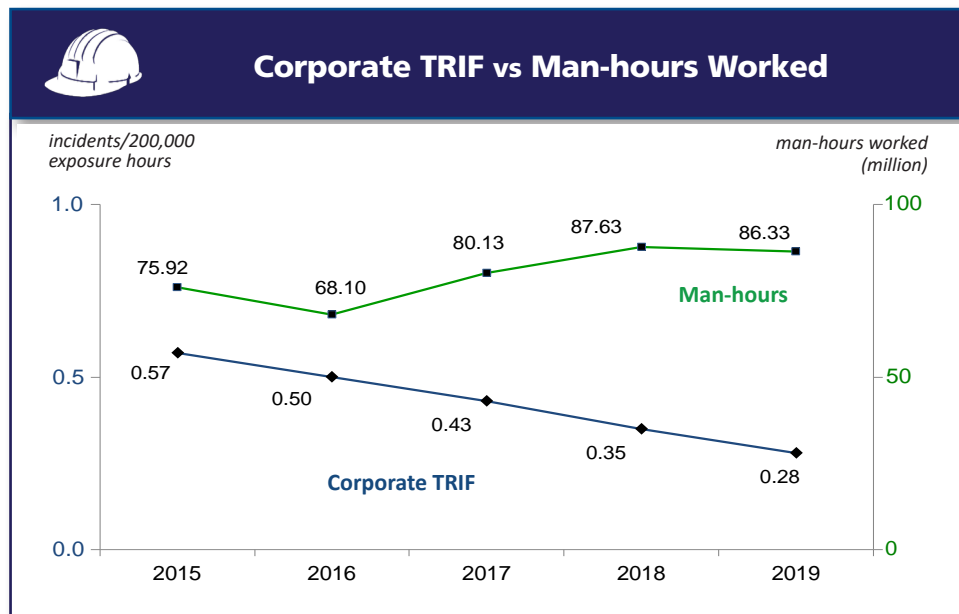
Frontline-driven safety

Canadian Natural's Safety Management System (SMS) is a key framework used to drive Safety Excellence across our operations. Workforce engagement is a key contributor to continuous improvement in our safety performance. Engagement strengthens our SMS across our operations, by workers identifying potential risks and mitigation measures. The following safety programs reflect our frontline-driven safety culture and leadership commitment to continuous improvement:

Safety leadership in the field

Senior management meets regularly with operations personnel, including field and offshore staff, supervisors and contractors.

In 2019, we increased senior management presence in the field through their participation in Safety Excellence Mission Statement Meetings



Total recordable injury frequency (TRIF) has decreased by more than half since 2015, while man-hours worked have increased over this time.

Safety Performance 2019

0.28

Corporate TRIF, a corporate record

↓19%

Injury reduction vs 2018

↓20%

TRIF reduction vs 2018

↓30%

North American contractor TRIF reduction vs 2018

Safety Training - 2019 Highlights

297,500+

Hours of safety and competency training; maintained high levels of safety training per employee

50,605 completed

Hours of ERP exercise training

5,051

Participants across 29 Safety Excellence meetings; increased management time spent in the field vs 2018

369 completed

Emergency Response Plan exercises; exceeding annual plan

(SEMSMs). The annual SEMSMs consist of two-day visits to our operating areas. The first day is spent with

frontline employees touring field sites, and conducting safety discussions and observations.

“ Training also plays a key role when integrating management systems. Site Supervisor Safety Training courses and Worksite Safety Observations allowed for effective safety conversations with frontline staff, middle management and contractors. ”

Brent Cote
Safety Compliance Coordinator,
Fort St. John, British Columbia

The second day provides an opportunity to discuss work challenges and successes in face-to-face meetings.

Contractor Safety Excellence Meetings

Every year, management from Canadian Natural and specific contractors get together to identify action items and develop plans to reduce injuries and incidents. Through this work, our contractor incident rate continues to decrease, improving overall corporate safety.

Worksite Safety Observation (WSO) program

This behavioural-based program uses a collaborative approach to enhance safety through positive conversations between workers, supervisors and contractors.

These safety tools have significantly reduced TRIF across our Canadian operations, and with the final implementation of the WSO program in our Côte d'Ivoire (CDI) operations, we are actively engaging employees and contractors, and have reduced injuries at our International operations by 15% from 2018.

Continuous improvement in safety management

Alignment with our SMS is important to help make our worksites safer. To raise awareness of our SMS and our safety performance, we:



Frontline employees and senior leaders during a SEMSM at Senlac operations in SK.

- Conduct annual SMS audits across our operations to enhance our systems and ensure regulatory compliance;
- Regularly communicate incident trends and safety topics to help incorporate prevention measures into daily routines; and
- Provide safety training, including employee and contractor safety and competency courses (job-related skills training).

Highlights of our 2019 continuous improvement initiatives include:

- **Streamlined Safety Orientation**
Our Common Safety Orientation (CSO) training focuses on providing consistent safety messaging developed by industry partners through Energy Safety Canada. This training introduces safe work practices to new workers in our industry, eliminating the need for other general orientation training.
- **Consistent incident reporting**
With the implementation of an enhanced incident reporting system, we have improved trend analysis and prevention of specific incidents. Over 455 people are trained and using the common database so incident prevention can be actioned to completion.

Lessons learned are summarized in a streamlined report and then leveraged.

- **Plan, prepare, execute**
Turnarounds are an opportunity to strengthen our commitment to safety as a core value by working with thousands of contractors. Together, we review job scopes and follow “plan, prepare, execute” to ensure everybody’s safety.

All our 2019 maintenance outages resulted in successful completion of all planned work and ongoing safe, steady and reliable operations.

Emergency response management

Canadian Natural’s comprehensive corporate emergency management program is based on proactive risk management, from risk identification to mitigation programs across our operations.

This program includes measures to prevent failures that could potentially lead to spills or leaks. In the event of an incident, we have emergency response plans, trained personnel and immediate access to equipment for a safe and well-coordinated response.

Priorities in 2019	Accomplishments in 2019	Priorities in 2020
Safety Management System (SMS) <ul style="list-style-type: none"> • Prepare safety action plans and audits for continuous improvement and adherence to the SMS within all business units. • Coordinate 2019 Certificate of Recognition (COR) external audit across North American operations, including conventional, thermal and mining operations. 	<ul style="list-style-type: none"> • Continued focus on SMS and frontline-driven processes and program alignment, focusing on “plan, prepare, execute”. • Completed internal SMS audits, facility inspections and training sessions, and generated action plans for continuous improvement. • Maintained our common COR for Canadian operations, which certifies that our SMS meets the requirements of the provincial Occupational Health & Safety standards. 	<ul style="list-style-type: none"> • Continue to focus on SMS awareness through SMS audits and action plans, for continuous improvement in all business units. • Coordinate annual COR external audit for all Canadian operations, including action plans for continued improvement in each business unit.
Safety Excellence <ul style="list-style-type: none"> • Maintain our focus on incident prevention and worker safety. • Continue Safety Excellence Mission Statement Meetings (SEMSMs) with field day visits and active participation of management, supervisors and frontline staff. • Support Energy Safety Canada industry initiatives in promoting worker safety. • Reinforce and complete Worksites Safety Observation (WSO) program implementation across International operations. 	<ul style="list-style-type: none"> • 20% decrease in corporate TRIF compared to 2018. • 15% TRIF reduction in International operations, as a result of introducing the Four Pillars of Safety and WSOs. • 19% reduction in injuries Company-wide from 2018. • Increased management time in the field with 29 SEMSMs (two-day field visits) and 5,051 participants. • Leveraged technology to target safety efforts specific to business units. • Supported Energy Safety Canada, aligning with industry on common issues such as lifesaving rules, safety orientation and training. • Implemented WSO program across all our operations, improving worker safety and discussions. 	<ul style="list-style-type: none"> • Continue to strengthen frontline-driven safety culture and incident prevention. • Identify alternative ways for senior leaders to continue to engage with field personnel across our operations. • Continue participation and support of Energy Safety Canada industry initiatives.

Emergency preparedness

To ensure a state of readiness and emergency response capability, we conduct hundreds of planned mock exercises with our teams each year. Exercises highlight areas of good practice, as well as opportunities for improvements to our emergency response procedures. Exercises also include tabletop and major Emergency Response Plan (ERP) exercises with regulators.

In our North Sea operations, for example, exercises tested fitness of emergency preparedness and response arrangements with contractors for Ninian North platform decommissioning.

Our strong focus on preparedness enabled an effective emergency response from our field staff during August 2019, when a natural gas pipeline incident occurred. A small volume of light condensate entered an unnamed tributary, south of



Operations employees and management conducting WSOs at Jackfish thermal operations.

Hythe, Alberta. Our ERP worked to successfully contain and clean-up the release, ensuring no impacts on public health, safety and the environment. Throughout the ERP, we maintained strong communications with regulatory agencies, local residents and officials.

Health and wellness

We take great care in ensuring that our people have many opportunities to

improve their health and wellness. Canadian Natural’s **Strive** wellness program showed record high employee participation in 2019.

For more information about *Strive*, read the [Healthy People in Healthy Workplaces](#) section on our website.

Priorities in 2019	Accomplishments in 2019	Priorities in 2020
Contractor Safety Management <ul style="list-style-type: none"> Continue support for Contractor Safety Excellence meetings to further reduce injuries and improve worker safety. 	<ul style="list-style-type: none"> 30% reduction in worker injury in NA E&P for contractors identified for Safety Excellence Meetings. Conducted all planned meetings between management from Canadian Natural and specific contractors. Completed all action plans, focusing on reducing injuries. 	<ul style="list-style-type: none"> Continue work with contractors to further improve frontline safety.
Safety Leadership <ul style="list-style-type: none"> Continue Canadian Natural senior leadership presence in the field across all operations. 	<ul style="list-style-type: none"> Senior management spent more time in the field to discuss challenges and opportunities to continuously improve safety. 	<ul style="list-style-type: none"> Continue to increase senior leadership engagement in the field across all operations.
Emergency Response <ul style="list-style-type: none"> Conduct Emergency Response Plan (ERP) training exercises at each division, focusing on key risk areas. 	<ul style="list-style-type: none"> Completed all ERP training – 369 exercises Company-wide (exceeding our planned target), including tabletop and major exercises with regulators. 	<ul style="list-style-type: none"> Continue to strengthen our ERP training to further improve our state of readiness and emergency response capability.
Wellness <ul style="list-style-type: none"> Continue to increase participation in the Strive wellness program and program reach, as part of a broader Company focus on mental wellness. Target health and wellness priority areas based on screening clinics. 	<ul style="list-style-type: none"> Achieved record high employee participation in the Strive program, with participants' benefit costs trending down over the past four years. Focused on local and targeted programming for each location, such as mental health awareness and training, working with local resources. 	<ul style="list-style-type: none"> Enhance health screening process and support to continue to increase participation and engagement in Strive.

Leveraging digital technologies to improve performance

When the quality of employee training increases, so too does overall safety on site. We are using three-dimensional (3-D) models, virtual reality (VR) and augmented reality (AR) technologies to help employees work more safely and improve operational efficiencies. VR allows staff to view and experience a life-sized plant, allowing them, for example, to walk around, go inside or even fly around a major piece of equipment.

The software is currently used by 1,500 employees at Horizon oil sands mining for a multitude of tasks, including safety investigations of near misses/incidents, onboarding and training of employees and contractors, and data analytics and model reviews. We also use work scope and execution videos for inspection and maintenance programs (such as planning and execution of turnarounds). A similar model is being developed for Albion oil sands mining, and more opportunities are being investigated to use 3-D models in other areas of the Company, such as Management of Change and facility design changes to improve asset integrity and process safety systems.



AR technology allows users to create and interact with holograms of equipment, such as the air compressor shown here.

For more information on how we are leveraging technologies to improve safety, asset integrity and environmental performance, read our [Technology and Innovation Case Studies booklet](#).

At Canadian Natural, we are committed to high standards of asset integrity to ensure safe, reliable, effective and efficient operations.

Canadian Natural has a proactive, risk-based approach to manage asset integrity and ensure the safety, compliance and reliability of our infrastructure — including pipelines, pressure equipment and tanks.

We operate one of the largest and most diverse inventories of process equipment, including thousands of kilometres of upstream pipelines and associated processing facilities across Western Canada, major oil sands operations in northern Alberta, and offshore facilities in the UK and CDI (see our operations map on page 2).

Our Asset Integrity Management System provides the framework to help us identify, assess and manage risk to prevent incidents that could impact safety, the environment and the integrity of our assets. We use this system to coordinate compliance with regulations and drive continuous improvement through goal setting, tracking and results measurement. Asset Integrity, Operations, Engineering, and Safety teams receive training and support so that risks are proactively assessed, understood, communicated and mitigated.

Process safety management

At Canadian Natural, the integrity of our process equipment is essential to maintain Company-wide safety. Our Process Safety Management (PSM) system provides the framework to prevent and control serious incidents, such as spills or leaks that involve hazardous materials.

PSM performance

We monitor our PSM performance using globally recognized industry metrics to drive continuous improvement.

In the past four years, we have been working to develop comprehensive tracking systems for process safety

Process Safety Management Performance				
Number of Tier 1 PSM events	2016	2017	2018	2019
North America Exploration and Production	34	23	32	26
Oil Sands Mining and Upgrading	2	4	4	3
International Exploration and Production	1	1	1	0
Corporate Total	37	28	37	29
<i>Corporate Tier 1 process safety incidents are defined by the American Petroleum Institute Recommended Practice 754 and the International Association of Oil and Gas Producers Report 456 as major releases or losses of primary containment of greater consequence.</i>				

events and phased implementation across our operations, engaging regularly with senior leadership to review progress. We began with an Oil Sands PSM Management Review Panel (MRP) to strategically advance improvements and continued to expand the MRPs to other operational areas. These MRPs provide PSM oversight and strengthen our process safety culture.

Our Tier 1 process safety events show an improvement of 22% in 2019 from 2018. Our focus is to continue on this trend of incident reduction through proactive management practices with ongoing education of PSM across our business units.

Management of Change

A key element in preventing process safety events is to manage the changing conditions of facilities and operations that could create potential safety, health, integrity or environmental risks. In 2019, we improved our Management of Change (MOC) process for facility modifications across our Canadian operations by:

- Developing a standardized risk analysis;
- Promoting the involvement and feedback from teams within different business areas; and
- Training employees (from senior

executives to frontline staff) on all aspects of MOC.

We are monitoring MOC process improvements to make sure changes are understood and any potential new hazards are identified.

Continuous improvement in asset integrity management

In 2019, we increased our focus on lessons learned from root cause analysis (RCA) to understand and improve our processes. Our initiatives to improve Asset Integrity included:

- **Collaboration initiative**
Using lessons learned and RCA, we increased engagement and collaboration between the Asset Integrity and Operations teams in NA E&P operations.
- **External review of Asset Integrity Management processes**
A team of industry experts, with over 160 years combined industry experience in management systems, reviewed the effectiveness of our work processes at the Horizon upgrader. The team identified and actioned four main improvement areas: communication and response processes; execution and tracking of integrity work orders; life cycle threat and replacement plans; and proactive asset condition assessment.

- Sharing of lessons learned between partners**
 We are working with our partners at the Scotford Complex to improve reliability across the AOSP. We performed an integrity assessment of the pipelines that transport product between Scotford and Albion, and conducted workshops to share knowledge and coordinate alignment between the upstream and downstream segments of the system.
- Hydrocarbon releases reduction at International operations**
 By focusing on lessons learned from RCA and Risk Based Inspection (RBI) programs at our offshore operations and with third-party operators, we reduced hydrocarbon releases from eight in 2018 to four in 2019.

Pipeline integrity

Canadian Natural's comprehensive pipeline integrity management system uses a risk-based approach to prevent pipeline failures.

We proactively assess each pipeline based on the likelihood of failure and the potential consequences of that failure, to ensure pipeline risks are understood and resources are focused appropriately. Our management system includes well-established risk-assessment tools, mitigation and monitoring activities, and spill and emergency response plans.

Proactive pipeline integrity management

Program audits, incident investigations, and a formalized continuous improvement methodology are fundamental to our pipeline integrity management system and our commitment to enhancing our programs.

Pipelines with the highest potential consequence of failure, which could have a significant impact on the environment, continue to be a focus at Canadian Natural.

Following our full review of all high-risk pipelines in 2018, we implemented improvement plans in 2019 to enhance monitoring and mitigation programs, conduct additional inspections and assess performance, and where appropriate, upgrade leak detection systems.

In 2019, our flexible pipeline riser monitoring systems at the Baobab FPSO in CDI were able to detect changes to the integrity condition of the riser. The early detection allowed us to proactively purge the riser free of gas, while we worked on a replacement solution.

Leak detection enhancing our pipeline network performance

Canadian Natural's dedicated multi-disciplinary pipeline leak detection team is critical to our pipeline network performance. The team is tasked with identifying opportunities to continuously enhance our Asset Integrity Management Program and proactively reduce consequences of pipeline failures.

Canadian Natural operates over five times more pipeline length than our nearest peer. Our leadership in pipeline integrity management is key to enhancing overall industry performance.

All our high-risk leak detection systems on liquids pipelines were assessed in 2018 and assigned inspection frequency. In 2019, we conducted



An employee performs an equipment inspection at Horizon.

339 planned tests on these pipelines, where liquids were safely drawn off at different rates to simulate leaks. Testing allowed us to evaluate how systems respond in the event of an actual leak, and identify further leak detection system improvements, such as accuracy and detection capabilities.

We continue to leverage fiber optic technology to detect small leak rates. The first system was implemented in an environmentally sensitive area in Swan Hills, Alberta. Fiber optic technology allows Operations personnel to shut down pipeline activity before a failure occurs.

Pipeline Integrity 2019

↓ 50%

Decrease in hydrocarbon releases at International operations (vs 2018)

100% completed

Planned geohazard inspections and leak detection systems tests on high-risk pipelines

↓ 4%

Decrease in pipeline leaks/1,000 km in NA E&P (vs 2018)

↓ 33%

Decrease in pipeline leaks/1,000 km in NA E&P since 2015

Pipeline water crossing management

Pipeline failures can also result from natural risks. Canadian Natural employs a comprehensive GeoHazard Management System to monitor locations where streams, rivers or slope movement could impact pipeline integrity. We identify pipelines that are at the highest risk and incorporate the information into our integrity program. We also have tools to monitor high stream flow events in real time, so we can prevent potential integrity incidents before they occur. All potential hazards are housed in a database and a risk-based prioritization method is used to plan the following year's inspections.

All locations where our pipelines cross water bodies have been proactively evaluated by geotechnical engineering experts. This assessment drives annual inspection and maintenance programs to mitigate and prevent incidents. In 2019, we completed all our planned geohazard inspections.

More information is available in the [Pipeline Integrity](#) section of our corporate website.

Pressure equipment integrity

It is important that our pressure equipment is maintained and operated in a safe manner to prevent incidents and safeguard people and the environment. Canadian Natural's Pressure Equipment Integrity Management Systems (PEIMS) defines how we manage each piece of regulated pressure equipment during its entire lifecycle.

Our PEIMS are registered and fully compliant with the jurisdictions in which we operate. They include engineering controls, inspections, monitoring, repairs and alteration requirements, to ensure safe, reliable and compliant operations.

Our 2019 PEIMS continuous improvement projects included:

“ Canadian Natural is leading a committee with industry peers to find suitable technologies that will advance leak detection for implementation on new and existing pipeline systems. We are working with a research facility to test technologies from vendors around the world. ”

Clayton Barrie,
Leak Detection Specialist

- Reducing leaks from critical equipment (boilers and heaters) in NA E&P from seven in 2017 (when this program started) to one in 2019, through enhanced inspection procedures and training.
- Completing the Alberta Boiler Safety Association (ABSA) audit successfully and our Horizon RBI program was incorporated into the scope of work done in-house.
- Initiating PEIMS alignment at our oil sands mining operations in preparation for the 2020 ABSA audit, with documentation updates and staff training to increase program effectiveness.
- Enhancing pressure equipment systems focusing on RBI processes and root cause analysis.

Structural integrity

Structural Integrity programs are in place to proactively prevent significant incidents at the operational structures that support our production facilities. We do this through careful design, safe operation and proper maintenance within the facilities' lifecycles.

North Sea and Offshore Africa facilities are subject to a range of operating conditions that can present challenges to managing infrastructure. Structural integrity inspections and repairs

involve the use of technology that has proven increasingly efficient, improving inspection safety and timelines.

Tailings dam safety

We are committed to dam integrity, monitoring and tailings management to ensure safe, reliable, efficient and effective operations. Canadian Natural follows the leading practices of the Canadian Dam Association for dam safety management. Tailings from our oil sands mining operations are stored in external (out-of-pit) and in-pit tailings facilities. When operations of each facility is completed, each tailings pit will be reclaimed to create a landscape that can support a self-sustaining, locally-common boreal forest ecosystem.

As a member of the Mining Association of Canada (MAC), Canadian Natural's AOSP operations have been audited under the MAC's Towards Sustainable Mining (TSM) program, receiving the highest rating of "AAA" for tailings management. Our Horizon operations will report as part of the TSM program for 2020.

Our tailings management program is subject to multiple external audits, internal reviews and continuous monitoring. The design, construction and performance of the tailings dams are reviewed twice annually by an Independent Review Board of internationally recognized experts in tailings dam safety. A comprehensive dam safety review is performed every five years by an independent consulting firm.

Emergency response plans are in place and tested annually to evaluate preparedness for a safe and well-coordinated response in the event of an incident with a tailings facility. Canadian Natural's dam safety program has been audited by the Alberta Energy Regulator and is compliant in all aspects.

Priorities in 2019	Accomplishments in 2019	Priorities in 2020
Process Safety Management (PSM) <ul style="list-style-type: none"> Continue to implement processes that maintain accuracy of risk-based inspection (RBI) information and evaluate operational changes that could impact risk classification. Continue to peer review and audit our RBI systems. Continue focus on hydrocarbon release reduction program and reinforcing FPSO operators' integrity programs. 	<ul style="list-style-type: none"> Completed RBI assessments of regulated units at Horizon. Completed an external peer review and an internal audit of our International RBI systems. 50% reduction in hydrocarbon releases at International operations from 2018, improving integrity processes with FPSO operators. Root Cause Analysis (RCA) at International operations identified improvement opportunities within our Management of Change (MOC) process. Implemented MOC process improvements for facility modifications across all Canadian operations. 	<ul style="list-style-type: none"> Continue to implement processes for RBI information accuracy and evaluation of operational changes. Improve MOC processes across our operations. Continue to work with FPSO operators to define and implement plans to reduce risks, based on information gathered during RBI programs and audits.
Pipeline Integrity <ul style="list-style-type: none"> Implement technical improvements identified in 2018 to ensure proactive management of high-risk pipelines, including audits of leak detection systems. 	<ul style="list-style-type: none"> Completed annual plan (339 proactive tests) of our high-risk pipeline leak detection systems to further refine effective leak identification. Completed 669 proactive inspections planned at locations where NA E&P pipelines cross water bodies. Launched "Collaboration Initiative" in NA E&P to increase participation and focus on asset integrity program improvements. 	<ul style="list-style-type: none"> Continue management program of high-risk pipelines, including proactive tests and leak detection systems for continuous improvement. Fully integrate the "Collaboration Initiative" to increase engagement and effectiveness in our mitigation and monitoring programs.
Facility Integrity <ul style="list-style-type: none"> Complete pressure equipment regulatory audits in Alberta and Saskatchewan, to further enhance the effectiveness of our PEIMS. Integrate PEIMS program across our oil sands mining and upgrading operations. Execute oil sands mining and upgrading pit stops/turnarounds. Continue reviews of critical pressure equipment across our operations, and the Corrosion Under Insulation (CUI) inspections for offshore platforms. 	<ul style="list-style-type: none"> Completed pressure equipment regulatory audits, identified opportunities for improvement and received positive feedback from regulators. Initiated PEIMS integration across oil sands mining and upgrading operations with document alignment, program rollout and training. Completed all planned turnaround/pit stops inspections and repairs at oil sands mining and upgrading operations. 85% decrease in critical equipment leaks since 2017 in our NA E&P operations. CUI inspections are reducing CUI risk across our North Sea platforms. 	<ul style="list-style-type: none"> Implement PEIMS improvement opportunities identified through inspections, RCA and audit finding across our operations. Integrate PEIMS processes across our oil sands mining operations. Execute oil sands mining and upgrading pit stops/turnarounds. Continue reviews of critical pressure equipment, and the CUI program for offshore platforms.

Leading subsea technologies for integrity management

International operations use a leading approach to subsea structural integrity. Our Jacket Integrity Management System is a key tool to mitigate and manage weather uncertainty and drive innovation. At the Ninian South Platform, we conducted targeted inspections to update our jacket reliability model to further improve structural inspections and repairs.

We have also developed a technology for underwater repairs that does not require a hyperbaric diver habitat. Microhabitat is a small hyperbaric chamber that encloses the repair area so that the diver can perform welding from outside. This method reduces overall diver risk, and improves working times and jacket accessibility.



Sunset from Ninian South Platform.

Working Together with Communities

Canadian Natural works with local communities and stakeholders to build long-term relationships based on mutual respect and shared value.

Canadian Natural is committed to a long-term presence in the communities where we operate. We regularly engage with those who live by our operations to create shared value and mutual benefit. Together, we are working to ensure a responsible, sustainable crude oil and natural gas industry.

Our stakeholders consist of a broad group in proximity to our operations in Canada, the UK and Africa — including more than 24,000 landowners, 160 municipalities and 80 Indigenous communities in Western Canada, as well as industry, governments, regulators, academia, and non-governmental groups. We work together with communities to identify opportunities for education and training, employment, business development and community investment.

Engaging stakeholders

Building and maintaining relationships with stakeholders is important to achieving long-term, positive impacts in the communities. Our field-based stakeholder and community relations advisors and area landmen connect regularly with stakeholders to provide updates, address concerns and integrate community needs into our projects.

2019 stakeholder engagement highlights

- Engaged with communities on more than 150 projects and development plans.
- Worked with local governments, rural counties and municipalities, landowners, regulators, industry and non-governmental groups to identify and work together on community concerns, including activity levels, business opportunities, emissions management, public safety, and road use. For example, we work with the Regional Municipality of Wood Buffalo and industry to promote housing, transportation and support services to improve quality of life,

Supporting Communities in 2019

765 Community activities supported/ participated in	\$550+ million In contracts with more than 150 Indigenous businesses	\$25 million Total community investment
281 Students hired for summer/cooperative work terms	154 Students supported through scholarship programs	\$12 million Invested in employee/ contractor training

encourage local employment and incent people to live in the region, including seniors.

- Participated in synergy groups (Vulcan Area Public and Petroleum Association, West Central Stakeholder Association, Calumet Synergy Group, Northern Alberta Community Energy Relations Team, Wapiti Area Synergy Partnership, Lakeland Industry and Community Association, and Beaver River Watershed Alliance) to engage in collective dialogues about local area opportunities and challenges, and work together.

Working with Indigenous communities

We meet regularly with Indigenous elected representatives, Elders and community members to discuss issues that matter and identify opportunities for mutual benefit, including business development and community investment.

Canadian Natural remains committed to working with Indigenous communities to maintain and respect traditional values and land use. In 2019, we:

- Continued to host annual tours of our operations and meet with Elders and Advisory Committee Group members.

- Held Annual Stakeholder Tailings Forums in Fort McMurray, Alberta with representatives from seven local Indigenous communities to share operations updates, discuss environmental monitoring and programs, and receive input.
- Shared information about projects and mine development plans, such as the Horizon North Pit Extension and Horizon South integration application, to provide updates and address concerns from Indigenous communities.
- Participated in and supported more than 170 Indigenous activities and cultural events.

We also have long-term agreements to formalize our working relationships with Indigenous communities where we have extensive operations. In 2019, we signed an agreement with Athabasca Chipewyan First Nation and renewed another with Cold Lake First Nations.

These agreements provide mutual benefit through education and workforce development, business development, and community investment initiatives. They also outline the processes and framework that form the basis for ongoing communication, and the approach to be followed when addressing issues and challenges.

Supporting education and training

Canadian Natural supports education and training programs designed to prepare and employ local people in the oil and natural gas industry. We continue to offer scholarship opportunities in Canada, the UK and CDI, including the Canadian Natural 'Building Futures' Scholarship program for post-secondary and undergraduate studies.

Highlights of education initiatives

- \$7.8 million donated to the University of Calgary to date, with funding going to the Canadian Natural Resources Limited Engineering Complex, chairs and professorships, scholarships, and cardiovascular care and research.
- \$460,000 donated over five years to the APPLE Schools nutrition program for remote communities in northeast Alberta and northeast British Columbia.
- Sponsored fieldhouse and gymnasium at Keyano College, as well as the Student Teacher Program that provides financial aid to students seeking their Bachelor of Education degree.
- Supported the Northeast British Columbia (NEBC) Stay in School program for Treaty 8 First Nations since 2003, helping 400 Indigenous students per year celebrate the successful completion of their primary schooling.
- Facilitated youth development workshops at the Summer Student Employment program with Fort McKay First Nation and Fort McKay Métis.
- Supported a number of Science, Technology, Engineering and Math (STEM) programs in Canada and the UK, and donated virtual reality and teaching tools to several schools.

Trades and employment opportunities

Hiring and developing local people is a priority for Canadian Natural. We work closely with local colleges to make

skilled trades programs accessible and affordable for community members, to help prepare them for a career in the trades. We also develop people through internal training and mentorship opportunities, including:

- Offering 63 internships for high school students across our Alberta operations between 2014 and 2019, in partnership with Careers: The Next Generation;
- Providing our in-house apprenticeship program for heavy equipment technicians and electricians at Horizon and the AOSP to fill positions on our maintenance team, with 21 graduates to date and 36 individuals currently enrolled;
- Sponsoring Portage College's 50th anniversary community events in 15 Indigenous communities; and
- Donating site consultant time to teach how to work on a service rig at the Northern Lights Public Schools' Trades Exposure Training Program.

Promoting local business development

Canadian Natural promotes local and regional business development opportunities through the procurement of goods and services for our operations. Hiring local workers and suppliers is mutually beneficial, leading to long-lasting partnerships and local economic development.

Indigenous businesses

We continued expanding Indigenous businesses' participation in 2019, working with more than 150 Indigenous companies and awarding more than \$550 million in contracts.

Highlights of our activities included:

- Invested in the Doig River First Nation community farm, which employs band members who have overcome personal adversity;
- Worked with numerous Indigenous

companies to decommission and reclaim wells;

- Participated in business advisory groups, such as the Northeastern Alberta Aboriginal Business Association, the Region One Aboriginal Business Association and the Grande Prairie Aboriginal Circle of Services;
- Supported the Atoske Action Group in seeking employment and training opportunities in Wabasca-Desmarais and Sandy Lake areas, working with industry, Bigstone Cree Nation, Métis Nation of Alberta, Careers: The Next Generation, Northland School Division, Northern Lakes College and the Government of Alberta; and
- Met with communities to discuss job opportunities, including Whitefish Cree Nation and Loon River First Nation.

Investing in communities

Canadian Natural's teams work together with communities to prioritize projects that promote quality of life and long-term local economic growth and development.

Significant community investments

Health, safety and wellness

- Supported STARS for 30+ years, with \$2.5 million donated over the last five years. We also continued to support HALO, the only dedicated medical rescue helicopter for southern Alberta and southwest Saskatchewan.
- \$750,000 over five years toward the Grande Prairie New Regional Hospital and cancer centre.
- \$150,000 to the Northern Lights Health Foundation for a wheelchair accessible bus to transport seniors at the new Willow Square Continuing Care Centre. We also contributed to buses for the Hythe Nursing Home Foundation and the Elizabeth Métis Settlement, to take members to doctor appointments and cultural events.

Working Together with Communities

- Contributed to the Lloydminster Regional Health Foundation 'Project Sunrise' mental health campaign.
- Supported fire departments across our operations with donations of equipment (radios, thermal imaging cameras and training systems) and contributed to the emergency and wildfire evacuee fund with Treaty 8 First Nations.

Community services

- \$2 million over five years to the Calgary-based RESOLVE campaign, to find long-term solutions to homelessness.
- Over 65 donations during the holidays to local organizations, including Santa's Anonymous, food banks and celebrations in more than 35 Indigenous communities.
- \$100,000+ donated to KidSport and the Kinsmen Foundation by our Kirby and Jackfish operations in the past two years through bottle recycling programs.
- Supported the Greenview Regional Multiplex in Valleyview, the Peace River Multiplex Centre, the Fort St. John North Peace Super Park, and local community sports.



Employees at the 2019 United Way Parade.

Employees Making a Difference in 2019

**\$2.1
million**

Donated to United Way through employee giving and corporate matching

Received the **2019 United Way President's Award** for the Calgary campaign

**\$230
thousand**

Raised through employee-led matching donation programs

**\$28
million**
Donated to United Way over 30 years

900+

Employees volunteered for 200+ organizations, including 55 employees volunteering in local fire departments

Received the **2019 Millenium Partner Award and the Employee Campaign Award** for the Oil Sands Mining campaign



Canadian Natural's Management and hospital General Manager at the opening ceremony of the Relatives' Room in one of Abidjan's hospitals in CDI. The construction of this room was funded by our International operations.

“ Helping people is the most rewarding aspect of being a firefighter, and having this service is essential for the community. We appreciate Canadian Natural being understanding and supportive of what we are doing. ”

Wade Welte
Firefighter at Richmond Fire Department
and Canadian Natural Operator
(Saskatchewan)

Employees making a difference

Canadian Natural supports employee volunteering through corporate matching of personal contributions towards select

programs and initiatives, management support of national campaigns, and providing company time.

To learn more about how we invest and work with local communities, visit our [website](#).

Working Together with Communities

Priorities in 2019	Accomplishments in 2019	Priorities in 2020
Engaging Stakeholders <ul style="list-style-type: none"> Continue to strengthen relationships with local stakeholders through ongoing engagement. Implement community action plans, and continue to enhance tracking and reporting of activities in the communities. Support project teams to meet consultation requirements. Continue work with stakeholders to support policy and regulatory competitiveness. 	<ul style="list-style-type: none"> Engaged regularly with stakeholders to identify opportunities for mutual benefit, including our participation and/or support for 765 community activities. Continued to improve tracking and reporting through integration of action plans, community investment and communications to better support the communities. Worked with government, municipalities, industry local businesses and suppliers to continue to seek support and strong policy for market access and industry competitiveness. 	<ul style="list-style-type: none"> Continue to strengthen relationships with local stakeholders through ongoing engagement. Continue to improve community action plans, with better integration, tracking and reporting of community activities. Continue work with stakeholders to support policy and regulatory competitiveness.
Education and Training <ul style="list-style-type: none"> Continue to support education and training initiatives aligned with future employment opportunities in the oil and natural gas industry. 	<ul style="list-style-type: none"> Supported trades and training programs that promote employment, science and education, including long-term opportunities for Indigenous peoples. Awarded 154 scholarships in Canada, UK and CDI. 	<ul style="list-style-type: none"> Continue to support education and training initiatives aligned with future employment opportunities in the oil and natural gas industry.
Business Development <ul style="list-style-type: none"> Work with operations and Indigenous communities to enhance long-term opportunities for local businesses and contractors. Work with Indigenous business advisory committees to expand role of Indigenous groups in joint ventures. 	<ul style="list-style-type: none"> Continued to work with Indigenous communities near our operations to identify opportunities for economic participation in our projects, including joint ventures, and increase local sourcing. Awarded more than \$550 million in contracts to Indigenous businesses and contractors — increasing from \$500 million in 2018. 	<ul style="list-style-type: none"> Continue to enhance opportunities for economic participation by Indigenous communities in our operations, building capacity among locally owned companies, joint venture and entrepreneurs.
Community Investment <ul style="list-style-type: none"> Continue to invest in priority funding areas: health and wellness, education and training, sports and recreation, social and cultural programs, and traditional practices. 	<ul style="list-style-type: none"> Contributed \$25 million in community investments (corporate sponsorships and donations, employee giving, corporate matching, in-kind donations, and funding for community-based development projects). Supported food banks and Christmas events, health and wellness services (including first responders), cultural and recreation initiatives. 	<ul style="list-style-type: none"> Continue to invest in our community investment priority areas, ensuring we respond to evolving community needs, including local recovery efforts in response to COVID-19.

Partners working together through challenging times

Heart Lake Industrial Paramedics (HIP), a joint venture between Canadian Industrial Paramedics (CIP) and Heart Lake First Nation (HLFN), has been providing paramedic and medical services to the Kirby South operations and camp since 2011. With the development of Kirby North operations, HIP's scope was expanded to include both facilities.

Through challenging times, like the COVID-19 pandemic, HIP continues to be an integral part of our response and monitoring plans. "The collaborative nature of the on-site



HIP paramedic checking equipment.

paramedics and their management have been a definite added value to our operational planning and execution," said Leighton Makowichuk, Thermal Operations Superintendent.

In 2014, CIP was acquired by International SOS, becoming an integrated health and emergency services provider. As a joint venture partner of HLFN, the company provides numerous benefits to the

community beyond health and wellness, including employment opportunities, professional development, and different youth, community and preparedness training.

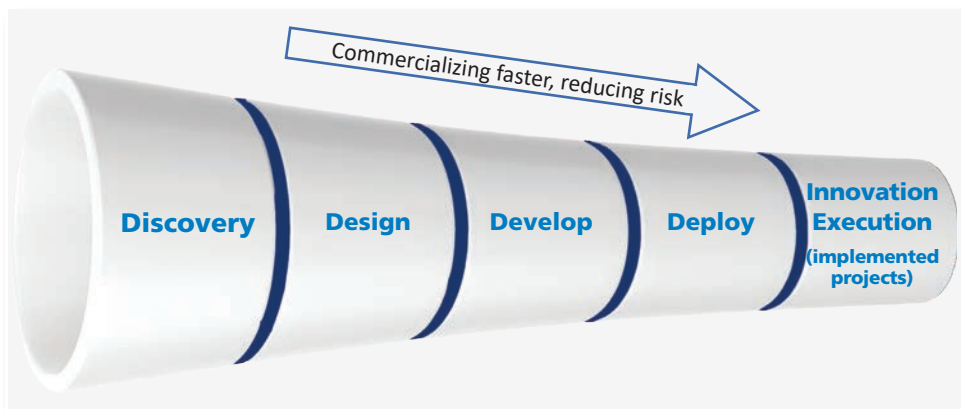
Advancing Innovation

Canadian Natural's culture of leveraging technology and innovation is key to driving sustainable operations and long-term value.

Canadian Natural is a leading R&D investor. Investment in R&D and technologies drives continuous improvement in our performance, allowing us to unlock reserves, increase production, be more effective and efficient, and reduce our environmental footprint.

“ Our culture of innovation and entrepreneurship encourages people to be involved in the solutions, work together and transfer efficiencies across our operations. ”

JohnPaul Portelli,
Lead, Technology and Innovation



Canadian Natural accelerates innovation, reducing risk and taking technologies from lab concept to pilots and on to commercialization.

\$3.7 billion

Invested in R&D since 2009

\$77.4 million

Invested in 2019 in R&D, technologies and projects to reduce GHG emissions

Working collaboratively

New technology takes time to test and commercialize, making collaboration essential when evaluating and leveraging R&D investments.

Industry and academia have been collaborating for many years, through partnerships like Canada's Oil Sands Innovation Alliance (COSIA), Petroleum Technology Alliance of Canada (PTAC), Clean Resource Innovation Network (CRIN), Petroleum Technology Research Centre (PTRC) and Natural Gas Innovation Fund (NGIF). These efforts are accelerating research and technology implementation, finding innovative solutions to industry's environmental challenges.

In 2019 alone, Canadian Natural led more than 60 projects and participated in another 37 projects at COSIA. To date, our Company has shared \$160 million in tailings, \$106 million in water, \$40 million in GHG and \$40 million in reclamation research and innovation through COSIA.

Industry also works with government

and regulators to develop policies and guidelines that enable continuous improvement and investment in environmental performance, such as GHG and methane emissions reductions, tailings and caribou management.

Reducing GHG emissions

Leveraging technology is a key part of our GHG emissions reduction strategy. In 2019 alone, Canadian Natural invested \$77.4 million in technologies and projects to reduce emissions. These projects include capturing and storing CO₂ to enhance steam efficiencies and conserve solution gas. Applied technologies and day-to-day operational efficiencies are also increasing productivity and reducing GHG emissions intensity.

In addition to our existing projects, we continue exploring technologies with the potential to make a significant difference in emissions reduction. We are evaluating the following projects:

- Liquids Enhancement and Gas

Storage ("LEGS") pilot at Septimus, with the potential to unlock liquids development while preserving natural gas production for future development;

- Use of Cyclic CO₂ injection in our Cold Heavy Oil Production with Sand (CHOPS) assets; produced CO₂ is captured and re-injected in the production cycle, which improves viscosity and flow rates, while the CO₂ remains permanently sequestered in the reservoir; and
- A net-zero/ultra-low emissions pad in our primary heavy oil operations that uses renewable sources for electricity and captures solution gas to eliminate venting.

Industry projects

Together with industry, we are researching how to turn waste CO₂ emissions into useful products, improving quantification of fugitive emissions through innovative measurement techniques and fast-tracking water treatment methods.

Examples of innovation and research work are featured in the following technology summaries. To learn more about these and other projects, read our [Technology and Innovation Case Studies](#).

Reducing our environmental footprint in the oil sands

Description: At Horizon, a field pilot is underway on an alternative bitumen extraction method — the In-Pit Extraction Process (IPEP). This involves a relocatable, modular extraction plant that processes ore and separates bitumen right in the mine pit, significantly reducing transportation of materials. Modular components can also be moved as we advance down the mine face.

IPEP produces dry stackable tailings (sand) that can be back-filled into the mine right away, without the need for tailings ponds. We continue to invest in commercial engineering activities to determine the feasibility of bitumen separation and production of dry stackable tailings.

This technology is a potential game-changer for the oil sands mining industry.



Employees overseeing operations of the IPEP project.

Benefits: IPEP has the potential to reduce GHG emissions by up to 40% from traditional mining extraction processes by decreasing material handling (less haul trucks)

and eliminating the need for fluid tailings ponds. This allows us to accelerate the reclamation process and reduces overall mining costs by \$2-3/barrel.

Treating process water during reclamation

Description: 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 SolarPass, 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 the demonstration pilot and assess the viability of this process for treating oil sands process-affected water.

Benefits: This process has the potential to assist in water treatment at the end of mine life when an oil sands facility is decommissioned.

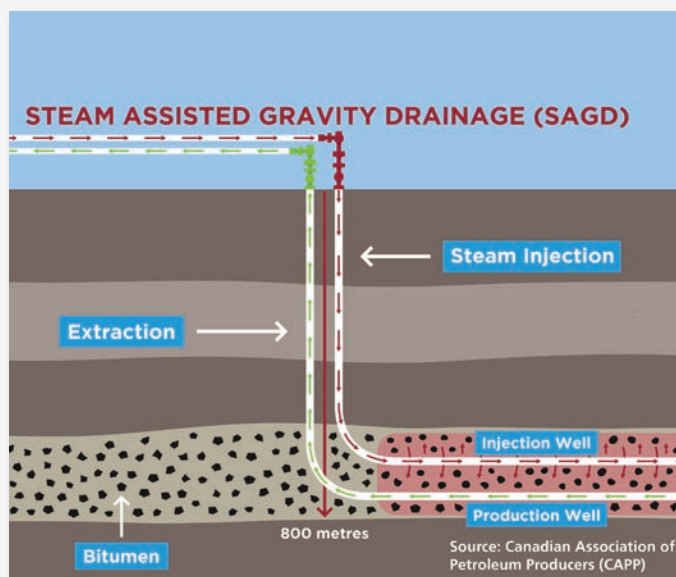


Cyclones at Horizon. Water recovered from this process can be treated by the H2nanO technology.

Reducing GHG emissions through steam efficiencies

Description: Canadian Natural is co-injecting solvent with steam to reduce fuel consumption and the amount of water needed for improving bitumen viscosity. This process helps to recover more crude oil with less steam, ultimately reducing GHG emissions. Our pilot at Kirby South is testing solvent effectiveness to increase oil recovery in a steam-assisted gravity drainage (SAGD) reservoir. Our next step will be to plan a pad-scale demonstration test to verify the commercial rates of recovery at Primrose and Wolf Lake for cyclic steam stimulation (CSS), as well as further application throughout our extensive thermal in situ asset base. Solvent enhanced SAGD is one of many projects being used to improve our thermal processes, like the co-injection of steam and a non-condensable gas like methane.

Benefits: This technology has the potential to reduce steam-to-oil ratio (SOR) and lower GHG emissions intensity by 50%, while improving water use intensity and increasing production.



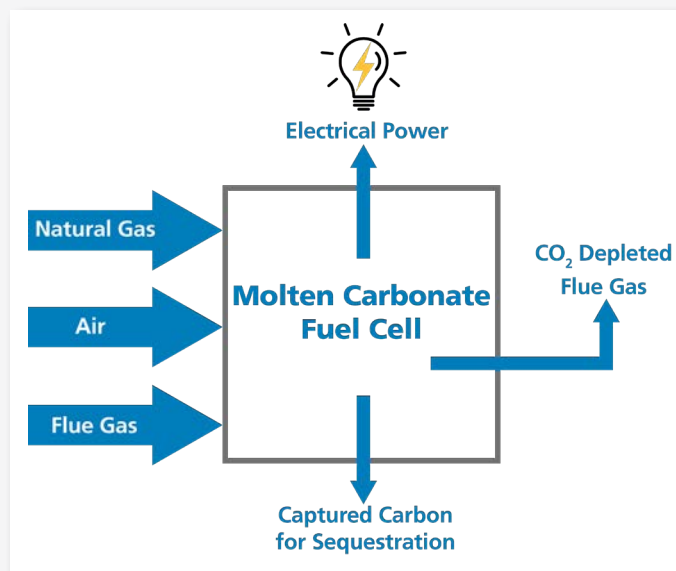
The SAGD process for resource extraction.

Capturing CO₂ for electricity generation

Description: Molten Carbonate Fuel Cells (MCFCs) are one type of fuel cell that operates at high temperatures to produce electricity, heat and water. They have been used in commercial power generation since the 1990s. An initial feasibility study by industry and Alberta Innovates showed MCFCs could be adapted to capture CO₂ and generate electricity.

Canadian Natural, in partnership with other COSIA members, is working on a pre-FEED (preliminary front end engineering and design) study evaluating the cost of piloting a 1.4 megawatt power generation project at the Scotford Upgrader (part of the AOSP) to capture CO₂ from natural gas-fired processing units and generate low-GHG electricity for on-site use or export to the Alberta electrical grid. The captured CO₂ could be used at EOR operations to increase resource recovery while the water from combustion could also be used at oil sands facilities, displacing other make-up water sources.

Benefits: This project has the potential to be a breakthrough technology for the oil sands industry, bringing the cost of carbon capture down to make it



MCFC converts CO₂ into low GHG-intensity electricity and water.

a more viable solution to reduce GHGs and generate zero-emissions electricity. It could also be applied to other industries.

Advancing our strategies to improve reclamation

Description: Our area-based reclamation program strategically groups projects by coordinating people, equipment and technologies. It is an industry-leading approach that has become the go-to model to accelerate the pace of reclamation.

The Alberta Energy Regulator expanded the area-based closure (ABC) program across industry to increase the efficiency of remediation, decommissioning and reclamation work. This approach is increasing the number of wells and pipelines remediated and abandoned, shortening the time to reclamation, and reducing costs.

In 2019, we submitted 912

reclamation certificate applications, and abandoned 2,842 pipelines and 2,035 wells (the most of any operator in Western Canada). In Alberta, Canadian Natural received 850 reclamation certificates, which is the largest number of certificates received by an operator and represents 18% of the total certificates issued in the province. We continue to actively research and monitor the ecological performance of reclaimed areas and incorporate these results into our processes to further improve reforestation.

Benefits: Our area-based reclamation approach reduces re-vegetation timelines from three to five years to two to four years (a 22-33% reduction), and adds a



Vegetation panels help protect areas being reclaimed from animal grazing.

greater diversity of natural species on reclaimed sites.

A leader in offshore platform decommissioning projects

Description: Throughout all phases of decommissioning, we have worked to ensure the safety of employees and contractors, the integrity of our facilities and environmental stewardship. International operations is a leader in offshore platform decommissioning and in 2018 it earned the Oil & Gas UK Award for Excellence in Decommissioning.

Murchison was the first platform we took out of service, and lessons learned and new technologies are being applied to the Ninian North platform decommissioning project. Innovative technologies used include a construction support vessel connected to the platform via a dynamic gangway, which allowed specialists to complete a series of 'castellated' cuts. By using this advanced diamond wire



Overview of Ninian North platform linked to a support vessel.

cutting technique, we achieved a full separation of the topsides from the jacket structure. This method helps maintain the platform's stability throughout all seasons until the top-side structure is ready to be removed in a single lift using the world's

largest construction/heavy lift vessel.

Benefits: Our platform decommissioning process incorporates and drives innovation, including the development of technology to effectively cut large steel sections for removal.

Executing on our strategy to reduce methane emissions

Description: Reducing methane emissions is a priority for Canadian Natural. Our methane reduction strategy includes:

1. A pneumatic retrofit program. Pneumatic devices use pressurized natural gas to function, some of which release low volumes of natural gas as part of their normal operation. Between 2018 and 2019, nearly 4,000 high-emitting pneumatic controllers were removed or converted to low-emitting ones.
2. A revamped Fugitive Emissions Management and Control Program to improve emissions detection with the use of enhanced technology.
3. The management of our compressor units and the proactive tie-in of wells and multi-well pads to conserve solution gas in our primary heavy oil operations. We are also improving facility design to reduce vented gas and using vapour combusting technology to convert methane to CO₂ (resulting in less CO₂ equivalent emissions).

Benefits: Throughout 2018 and 2019, our pneumatic retrofit program has resulted in a reduction of 400,000 tonnes of CO₂e/year, or the equivalent of removing 82,000 passenger vehicles from the road per year.



Compressor unit in heavy oil operations.

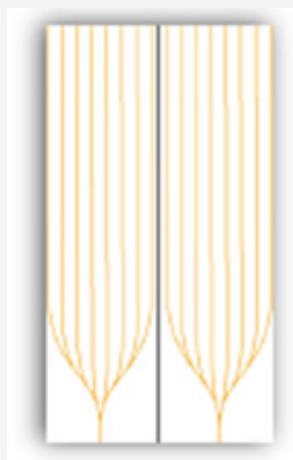
Our solution gas conservation projects to reduce venting volumes (methane emissions) have conserved 14.7 Mt CO₂e since 2015 – same as removing ~625,000 passenger vehicles annually from the road over the same period.

Optimizing multi-laterals technology to enhance productivity

Description: To improve productivity of Cold Heavy Oil Production with Sand (CHOPS) wells, Canadian Natural piloted a multi-lateral horizontal technique to increase reservoir contact. Multi-lateral horizontal wells have proven successful and effective in unlocking reserves in other areas, so we adapted the process to the unique geological parameters and production characteristics of primary heavy oil areas. Horizontal designs (dual leg horizontals, multi-lateral horizontals, and fishbone wells) are now a part of our drilling mix along with the conventional vertical wells.

Benefits: Multi-laterals and fishbone wells are showing increased recovery, higher initial oil rates, improved economics and reduced land footprint.

Multi-lateral



Fishbone



Multi-lateral and fishbone well design configurations.

Climate and GHG Emissions Management

Canadian Natural delivers long-term value and sustainability through climate and GHG emissions management.

The world needs more Canadian energy

Canada's resources are safely and responsibly developed with world-leading standards, under comprehensive regulatory oversight and emissions regulations, and significant technology investment. The country's crude oil and natural gas sector is responding to environmental challenges, using Canadian ingenuity to improve performance and being a leader in ensuring the cleanest upstream products in the world.

Canada's significant oil sands mining resources are long life no decline, manufacturing-like operations that can have one of the clearest routes to net zero emissions of any global crude oil asset. We are well positioned to be resilient in a lower carbon emissions intensity economy. These long life assets provide the opportunity for investments in innovation to achieve levels of intensity below the global average, making them valuable for long-term energy security and global GHG reductions.

Canadian leadership on climate change

The Government of Canada's commitments to reducing GHG emissions, along with climate frameworks in several Canadian jurisdictions, positions our country as among the most responsible crude oil and natural gas producing jurisdictions globally. Canadian Natural supports Canada's leadership in the Paris Agreement as a pathway to reduce emissions and drive innovation. We also support federal and provincial government goals to reduce methane emissions by 45% by 2025. As of 2019, Canadian Natural has reduced our methane emissions by more than 15% in our NA E&P operations since 2016.

Canadian Natural and the Canadian crude oil and natural gas sector are delivering game-changing environmental performance. We recognized the need to reduce GHG emissions, leveraging technology and Canadian ingenuity to deliver results, and will continue to do so.

Many of the technologies used to reduce or eliminate GHG emissions in the extraction of oil and natural gas can also be used by end users in other industries like cement production and agriculture, as well as in office buildings and homes, accelerating the reduction of GHG emissions in Canada and globally.

Global energy needs

Access to affordable, reliable, and abundant crude oil and natural gas unlocks human potential and raises quality of life. The United Nations (UN) relates general social and health outcomes directly to greater energy consumption. Canadian Natural's activities also contribute toward the [UN Sustainable Development Goals \(SDGs\)](#) that are detailed on our website.

As the world population continues to grow, projected to exceed nine billion by 2040, along with expanding

economies and the middle class, independent analyses from energy firms and agencies forecast that crude oil and natural gas will remain an important part of the global energy mix in the future.

As the world emerges from the impacts of COVID-19, all forms of energy will be needed for a strong and sustained recovery.

Governance and risk management

Canadian Natural believes that robust governance and the efficient and effective management of sustainability issues is essential to the long-term success of our Company and continued value creation for our shareholders.

Board oversight of climate change risks and opportunities

Canadian Natural's Board of Directors provides expertise and oversight on ESG factors, through the Health, Safety, Asset Integrity and Environmental (HSAI&E) Committee and the Nominating, Governance and Risk Committee. See the organizational chart on page 30.

Risk identification and management

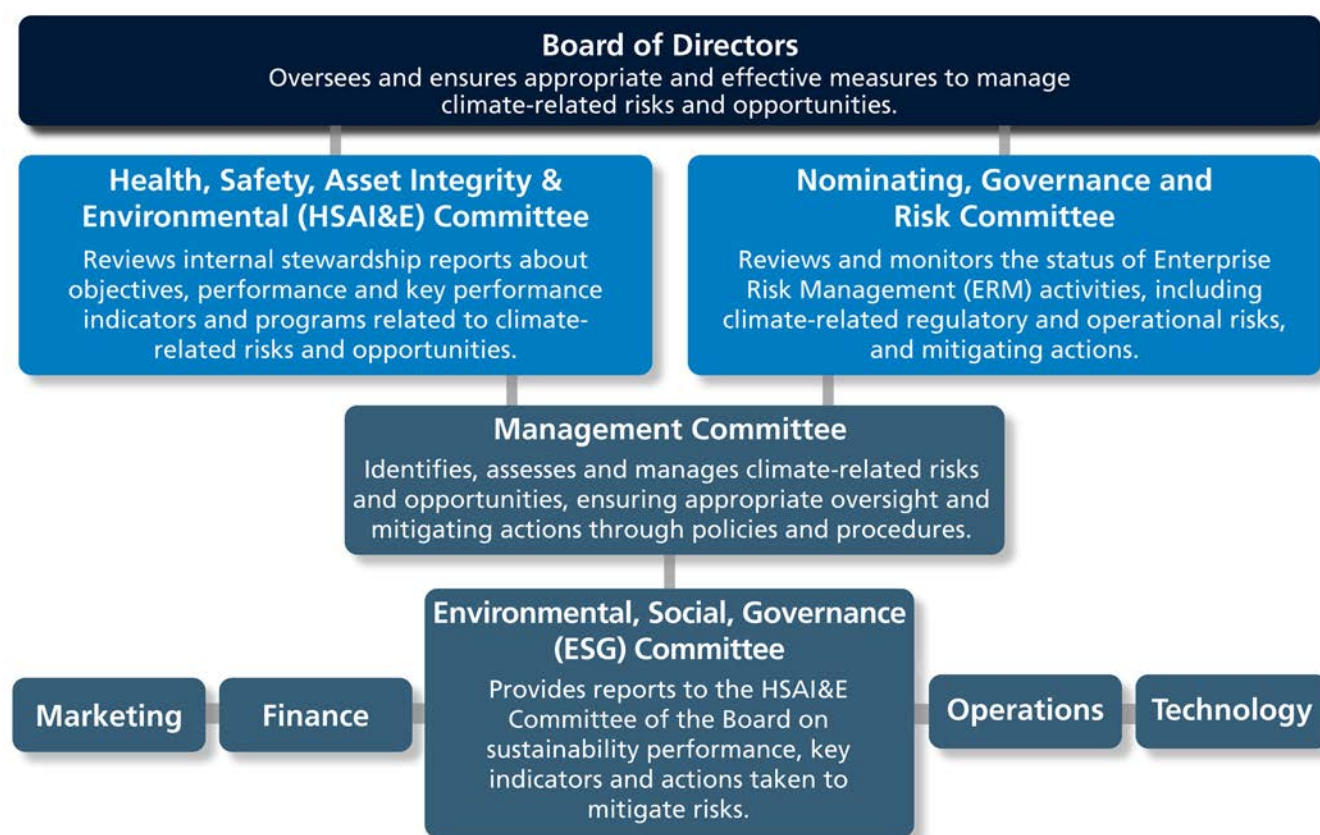
Management Committee is responsible for the identification, assessment and management of climate-related risks and opportunities that have the potential to impact Canadian Natural. Our multi-disciplinary risk management process incorporates climate risks and opportunities, while considering current and potential policies and regulations as part of our business evaluation, all of which is coordinated through our corporate Enterprise Risk Management (ERM) framework.

Read more about our governance and oversight of climate-related risks in the [Sustainability Governance and Stewardship](#) section of our website.



Steam generators at Jackfish facilities. Effective water management is an integral piece of lowering our GHG emissions intensity.

Climate and GHG Emissions Management



Alignment to executive compensation

Canadian Natural's Board of Directors, through the Directors on the Compensation Committee, focus on aligning executive pay for performance, assessing the Corporation's performance including sustainability metrics related to safety, asset integrity and environment. Performance is evaluated against a specific target range and/or a benchmark determined by prior period performance to drive continuous improvement. For example, the corporate GHG emissions intensity target range in 2019 was 0.048 to 0.058 tonnes/BOE to which Canadian Natural achieved 0.051 tonnes/BOE, a reduction from 2018.

ESG performance reporting

Performance results are reported internally through a management review process. Our external reporting aligns with recommendations from the Financial Stability Board (FSB) [Task Force on Climate-Related](#)

[Financial Disclosures \(TCFD\)](#), and the [Sustainability Accounting Standards Board \(SASB\)](#). Our reporting is through this annual sustainability report, [CDP Climate Change Questionnaire](#), and financial disclosures, such as our [Annual Information Form](#) and [Management Information Circular](#).

We engage with investors and stakeholders to better understand relevant factors viewed as important. As a result, our reporting levels for sustainability performance are assessed on an ongoing basis for potential enhancement to ensure value is being provided to our Board of Directors, investors and stakeholders.

Integrated GHG emissions management strategy

Canadian Natural is strongly committed to doing our part to lower GHG emissions, and helping to position Canada as the supplier of choice for safe, secure, affordable, reliable, and environmentally responsible energy the world needs.

We are seeing meaningful results today and will continue to create long-term value on our journey to net zero oil sands emissions through a comprehensive strategy and investments in technology and innovation. Our integrated strategy includes:

- Integrating emission reduction in project planning and operations;
- Leveraging technology to create value and enhance performance;
- Investing in R&D and supporting collaboration;
- Focusing on continuous improvement to drive long-term emissions reductions;
- Leading in Carbon Capture and Sequestration/Storage (CCS);
- Engaging proactively in policy and regulation to effectively manage climate risks and opportunities, including trading capacity and offsetting emissions; and
- Considering and developing new business opportunities and trends.

Canadian ingenuity and technology to deliver reductions

Canadian Natural has a defined pathway to drive long-term GHG emission reduction and improve efficiencies by developing and adopting technology. Our plan includes:

- **Leadership in CCS projects.** We integrate state-of-the-art carbon reduction technologies in our projects, including CO₂ capture capacity at our Horizon operations, a 70% interest in the Quest CCS facilities at the Scotford Upgrader, a 50% stake in the North West Redwater Sturgeon Refinery, and CO₂ capture at the Hays natural gas plant for Enhanced Oil Recovery. These projects combined are capable of storing 2.7 million tonnes/year of carbon dioxide equivalent (CO₂e), the same as taking ~576,000 passenger vehicles off the road per year.
- **Technology development and execution.** Canadian Natural is actively evaluating and developing a wide range of unique projects with the potential to make a significant difference in emissions intensity reduction. Projects are profiled in our Advancing Innovation section, on pages 24-28 and in our [Technology and Innovation Case Studies booklet](#).
- **Methane emissions reductions.** An effective way to decrease methane emissions is through solution gas conservation and pneumatic controller retrofit projects. Throughout 2018 and 2019, we conserved 400,000 tonnes of CO₂e through removal or replacement of pneumatic devices. Another reduction of approximately 130,000 tonnes of CO₂e per year with 1,300 controller retrofits is targeted in 2020. In 2019, we also completed an inventory of thousands of pumps and instruments to identify future projects for retrofit or removal.
- **Natural gas production as a lower emissions intensity source for global markets.** Canadian Natural's natural gas assets are an important part of our balanced portfolio. Natural gas is a reliable and affordable energy source for power generation, with less than half the carbon footprint of coal. Canada can help reduce net global emissions by supplying Liquefied Natural Gas (LNG) to global markets. Canadian LNG projects are projected to provide leading GHG performance and a preferred source of energy in a lower carbon emissions economy. These net global emission reductions should receive recognition domestically and internationally as contributing towards Canada's climate change commitments.
- **Natural gas to power local communities.** In our International operations, we supply natural gas to CDI, producing 45 million standard cubic feet of natural gas on a daily basis, the equivalent to 270 megawatts of electricity. This represents about 23% of the country's electricity demand.
- **Cogeneration power.** In our Primrose and Wolf Lake (PAW) thermal and oil sands mining and upgrading operations, we use natural gas for power through cogeneration units. Cogeneration allows these facilities to simultaneously produce electricity and recover waste heat to meet the sites' steam and electricity demands. By using the waste heat to make steam, we help reduce emissions as our energy consumption is lower than it would be if we produced electricity and heat energy separately.



The Quest Carbon Capture and Storage facility at the Athabasca Oil Sands Project (AOSP).

Climate and GHG Emissions Management

- **Renewable energy sources for electricity.** At our Septimus and Noel natural gas processing plants in BC, we use hydroelectricity to drive electric compressor motors. Septimus has avoided 325,439 tonnes of CO₂e since 2011 when it started operating, while Noel avoided 56,600 tonnes since gaining ownership of the plant in 2014.
- **Operational efficiencies.** We implement efficiencies to increase productivity and reduce our environmental footprint. Operational efficiencies are described in our Advancing Innovation section on page 24.



Aerial view of the Septimus plant in BC.

Resiliency of Canadian Natural's strategy

As part of evaluating climate change related risk and opportunities, Canadian Natural reviews independent external scenario analyses developed by energy firms and agencies representing a range of hypothetical paths of development through to 2040.

These external scenario analyses are a tool used to support business planning and identification of risks and opportunities. A number of variables and assumptions are considered related to markets, commodity prices, policy, regulation, technology, efficiency and reputation, and incorporate a range of assumptions for lower carbon emissions environments. This process has influenced our investments in CCS and carbon utilization projects, as well as the potential use of molten carbonate fuel cells, and research into the production of biofuel from algae.

As the world evolves toward a lower carbon emissions energy system, we expect there will be improved, less carbon intensive ways of producing and consuming crude oil and natural gas. Across the range of ambitious climate change scenarios, the expectation is that there will be substantial global production and consumption of crude oil and natural gas for decades to come. According to the IEA 2019 Sustainable Development (most stringent) climate scenario, crude oil demand

would be close to 70 million barrels per day by 2040 from 2019 levels of approximately 100 million barrels per day. While global demand is potentially impacted in 2020, the expectation is that crude oil and natural gas remains an important part of the global energy mix for the foreseeable future.

In addition, global demand for natural gas is expected to grow, continuing to be an important source of energy and a way to significantly lower global GHG emissions. Natural gas is an integral part of Canadian Natural's plan and the pathway to a lower carbon emissions future. As one of the largest producers of natural gas in Canada, Canadian Natural's natural gas assets deliver improved environmental performance as a clean burning hydrocarbon.

Canadian Natural's 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. The strength of our assets, along with our integrated GHG Emissions Management Strategy, helps to mitigate climate change risks to our reserves. As a result, Canadian Natural believes that our reserves face limited risk even under more ambitious climate change scenarios.

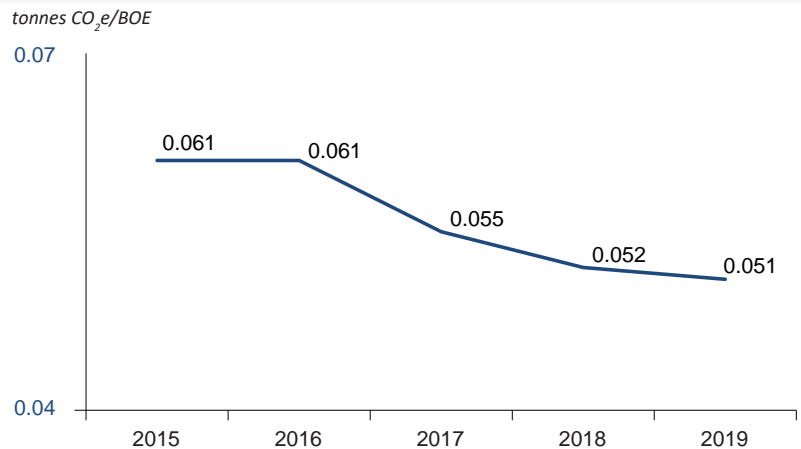
Leading Performance

Targets

Our long life low decline oil sands assets provide the opportunity for investing in innovation improvements to achieve levels of intensity below the global average, making these assets valuable and resilient for long-term energy security and global GHG reductions.

- **Long-term net zero in the oil sands**
Canadian Natural's long-term aspirational goal is net zero oil sands emissions through leading environmental performance and technology, innovation and continuous improvement.
- **Medium-term reduction targets**
In addition to project specific GHG emissions intensity targets at our large facilities, we have the following medium term emission reduction targets:
 - 25% reduction in oil sands GHG emissions intensity by 2025, from a 2016 baseline. As of 2019, Canadian Natural has reduced oil sands emissions intensity by 36%.
 - 20% reduction in North America E&P methane emissions by 2025, from a 2016 baseline. As of 2019, Canadian Natural has reduced methane emissions by 15%.

Corporate Scope 1 (Direct) GHG Emissions Intensity



Corporate GHG Emissions Intensity

16%
reduction
since 2015

Corporate GHG emissions intensity

14.7
MT CO₂e
solution gas
conserved since 2015

Same as removing ~625,000
passenger vehicles annually from
the road over the same period

2.7
MT CO₂e/Year
capture capacity

Sixth largest owner of CCS capacity in
the global crude oil and natural gas
sector, based on data from the Global
Carbon Capture and Storage Institute



Horizon facilities at sunrise.

Environmental stewardship is embedded in all phases of our activities.

Our Environmental Management System provides the structure to identify and assess environmental risks in our operations. As part of that system, we implement appropriate mitigation strategies to minimize impacts in all phases of our projects, from planning through to design, operation and final reclamation.

We focus on continuous performance improvement through comprehensive practices, investments in technology and innovation, and collaborations with different groups.

Land management

Canadian Natural develops every project with a vision and plan to manage our impact on the land, to return all our worksites to a healthy ecosystem upon completion of our activities. With record numbers of projects completed, Canadian Natural is an industry leader for abandonment and facility decommissioning in Canada and offshore UK.

Area-based programs

In our conventional and thermal operations, we continue to geographically group well and pipeline abandonments, remediation and reclamation activities, to take sites out of service in a safe and environmentally sound manner. Through this area-based program we are strategically reclaiming large contiguous areas, increasing our abandonment activity year-over-year, more efficiently and cost-effectively. Read more about our area-based strategy in the Advancing Innovation section on page 27 of this report.

In 2019, we planted almost 400,000 trees across our conventional and thermal operations, prioritizing diversity of species. To date, we have planted almost 2 million trees in our NA E&P operations.

Working with COSIA, we are expanding our knowledge on commercial-scale



Fort McKay Métis Elder and Fort McKay First Nation Cultural and Special Events Lead with Canadian Natural employees during a traditional planting protocol ceremony held at the Muskeg River Mine in August 2019.

tree and shrub growing. In 2019, we also started wetland reclamation trials at PAW thermal in situ operations focusing on vegetation re-establishment and wildlife use.

Progressive reclamation in the oil sands region

At our oil sands mining and upgrading operations, we continue to progressively reclaim land, working with communities and industry to monitor and improve practices. For example, in 2019 we continued to work with Indigenous communities to enhance tailings management and end of mine reclamation work.

Together with the Fort McKay

Community Advisory Group, we developed and implemented traditional protocols for tree planting, which include private Smudge Ceremonies and the teachings of Tobacco Blessings with Fort McKay Elders prior to tree planting at the Albion and Horizon sites.

We were also part of the COSIA Fall Field Tour, which included visits to our Oskähtakaw Sākāhikan Jackpine Compensation Lake Gunna Teoway (photo on page 37) and 'Mrs. T's Lake', bringing together representatives from industry, academia, forestry and environmental services to share knowledge and best practices of land reclamation.

To date, we have planted more than 2.3 million trees in the oil sands mining region.

Platform decommissioning

We continue to work toward final decommissioning of Murchison and Ninian North platforms. We developed sub-sea technology for more effective decommissioning work. Read about how decommissioning is driving innovation on page 27 of this report.

“ By working with Indigenous communities, we can include environmental, social and spiritual components to make our reclamation work more successful. ”

Ainslie Campbell,
Lead, Environment

Reclamation and Decommissioning

4.3 million

Trees planted to date across operations

7,600+

Hectares reclaimed in NA E&P since 2015; equivalent to ~9,400 Canadian football fields

2,160

Hectares reclaimed in NA E&P in 2019; 56% increase from 2018

1,628

Hectares reclaimed to date in oil sands mining

2,842

Pipelines abandoned in 2019

2,035

Inactive wells abandoned in 2019, a corporate record; 57% more than in 2018; industry leading

912

Reclamation certificates submitted in 2019; industry leading

Water use

Canadian crude oil and natural gas are produced under some of the highest standards in the world, including strict water use regulations for fresh water withdrawals, waste water disposal and hydraulic fracturing.

Canadian Natural's water management strategies focus on managing water use effectively and efficiently to reduce fresh water use and protect water sources. To do this, we apply technologies that maximize produced water recycling and use saline water for steam generation to reduce fresh water use. Our strong commitment is reflected in our water targets and performance:

- 50% reduction of in situ fresh water intensity (m³ water/m³ bitumen) by 2022, from a 2012 baseline. As of 2019, we have reduced the in situ fresh water intensity by 61%.
- 30% reduction in mining fresh river water intensity (m³ water/m³ bitumen) by 2022, from a 2012 baseline. As of 2019, we have reduced the mining fresh river water intensity by 68%.

Highlights of our water performance include:

- **High recycle rates in thermal in situ operations**
Average non-saline water use is near historic lows at PAW, with fresh water use down by 14% and recycled produced water volumes up by 4.6%

from 2018. At PAW, total water use in 2019 was comprised of 84% recycled produced water, 13% saline water and 3% fresh water. At Kirby, fresh water use increased slightly with the addition of Kirby North in May 2019. At Jackfish, the first commercial steam-assisted gravity drainage project to use 100% saline water for steam generation, the recycling rate is over 92%.

- **Tailings reduction technologies as part of water management**
CO₂ sequestration and tailings technologies help maintain a high water recycle rate at our oil sands mining and upgrading operations, limiting fresh water withdrawals from the Athabasca River to one-third of our annual licensed allocation. As a result, water use intensity at Horizon decreased to 1.94 barrel of water/

barrel of synthetic crude oil from 2.15 in 2018, and at Albion to 1.18 barrel of water/barrel of bitumen compared to 1.46 in 2018.

In collaboration with industry, we continue to improve water use through best practices, innovation and shared results. COSIA members reduced fresh water use by 18% in mining and 42% of in situ operations compared to 2012 levels. We are also evaluating and developing water treatment methods, including saline water treatments and high temperature reverse osmosis. Many of these treatments are being tested at the Water Technology Development Centre, a dedicated facility that opened in 2019, where industry is accelerating testing and commercialization of technologies. Learn more about these projects in our [Technology and Innovation Case Studies](#) booklet.

Water use in 2019

92%+

Produced water recycle rate at Kirby

92%

Produced water recycle rate at Jackfish; 100% saline water use

86%

Produced water recycle rate at PAW

↓ 82%

Fresh water use intensity reduction at PAW since 2008

↓ 21%

Reduction in water withdrawals from the Athabasca River from 2018; 28% of authorized withdrawal limit

↓ 17%

Reduction in water use intensity at oil sands mining vs. 2018; 86% of water used is recycled

Priorities in 2019	Accomplishments in 2019	Priorities in 2020
Environmental Management System (EMS) <ul style="list-style-type: none"> Continue alignment of procedures, training and increased awareness, to fully integrate the oil sands mining and upgrading EMS. Complete corrective actions in preparation for ISO14001:2015 surveillance assessment for UK operations. Continue work with internal teams and contractors to reduce spills. 	<ul style="list-style-type: none"> Completed external Regulatory Compliance Audit at our oil sands mining and upgrading operations, resulting in improvements to procedures and training. Enhanced alignment and consistency across EMS procedures for oil sands mining operations. Completed all requirements for the ISO14001:2015 Standard and all corrective actions. 12% reduction in spills across operations from 2018 — 31% decrease in spills at Horizon, 21% decrease at Albion, and the lowest number and volume of spills recorded at International operations. 	<ul style="list-style-type: none"> Align NA E&P environmental procedures to complete Company-wide EMS integration. Complete requirements for our integrated mining operations to meet the Mining Association of Canada (MAC) Towards Sustainable Mining standards. Maintain ISO14001:2015 Certification for UK operations. Continue to reduce spill volumes and numbers through analysis of cause and type of spill.
Regulatory <ul style="list-style-type: none"> Continue to focus on incident reduction and maintain environmental compliance. Complete action plan to improve diluent recovery performance. 	<ul style="list-style-type: none"> Maintained compliance performance above industry average in AB, and satisfactory inspection rate in BC. Established a process to improve efficiency and consistency of monitoring and reporting at NA E&P facilities based on the <i>Alberta Environmental Protection and Enhancement Act (AEPEA)</i>. Reduced annual diluent loss at Horizon as a result of operational and equipment modifications. 	<ul style="list-style-type: none"> Implement improvements for environmental monitoring and reporting of AEPEA conditions to enhance tracking and resolution of incidents.
Water Use <ul style="list-style-type: none"> Maintain high water recycle rates across our major thermal and oil sands mining and upgrading operations. Continue research and collaboration work to reduce fluid tailings (FT) and advance post-mining solutions. 	<ul style="list-style-type: none"> High produced water recycle rates at thermal and oil sands mining and upgrading operations. Continued treatment trials to further improve oil and water separation for discharges in our offshore operations. Continued tailings research and projects to increase fine capture and further reduce FT generation, which will help accelerate water recycling and tailings reclamation. 	<ul style="list-style-type: none"> Continue to improve water recycle rates across our major thermal and oil sands mining and upgrading operations, to meet our water use targets. Continue research and collaboration work to advance mine closure.

Biodiversity and wildlife

We assess our impact and incorporate long-term biodiversity and reclamation planning into our programs to maintain the regional characteristics of each ecosystem and reduce impacts on wildlife.

Regular wildlife, biodiversity, aquatic and reclamation monitoring and research provide us with up-to-date data to improve mitigation and deterrent programs.

Highlights of our activities include:

- Caribou conservation and restoration**

Continued work with government, industry, academia and stakeholders to study and implement a

combination of caribou conservation strategies to ensure a shared working landscape that allows caribou to co-exist with responsible development of resources.

For example, we support an annual maternal penning population augmentation program led by First Nations in northeast BC. In 2019, we started work on a multi-year initiative to restore over 200 km of legacy seismic lines in northeastern Alberta (initiated by Devon Canada), being completed under the Forest Resource Improvement Association of Alberta (FRIAA) in conjunction with Alberta Environment and Parks. This work is being used as a template

for future seismic restoration projects that will be developed in association with area-based closure projects.

- Bird deterrent system**

An additional radar unit was installed at the Horizon Aerodrome to detect bird presence, direction, elevation and speed at greater distances (up to 50 km), and to adjust landings and takeoffs of charter aircraft. This unit can also be adjusted to detect larger birds, for example, during whooping crane migrations over oil sands operations, to better understand migratory and resident water fowl movement patterns.

Priorities in 2019	Accomplishments in 2019	Priorities in 2020
Abandonment and Reclamation <ul style="list-style-type: none"> Continue advancing efficient area-based abandonment and reclamation programs. Complete Murchison final decommissioning steps with the abandonment of subsea well. Advance Ninian North platform decommissioning work and remove the topsides. 	<ul style="list-style-type: none"> Established area-based closure programs in our NA E&P operations. Submitted 912 reclamation certificates, and abandoned 2,035 wells and 2,842 pipelines. 2,160 hectares reclaimed in NA E&P, and 276 in oil sands mining and upgrading. Initiated reclamation of approximately 200 hectares at the Muskeg River Mine tailings pond. Completed reservoir plugs and downhole phase of Murchison decommissioning project. Completed topsides removal preparation work at Ninian North with innovative cuts of the jacket. 	<ul style="list-style-type: none"> Continue advancing reclamation projects across our Canadian operations. Complete abandonment of Murchison subsea well by setting final well barriers, and recovering seabed equipment. Complete topside removal and disposal campaign for Ninian North platform for dismantlement and recycling.
Biodiversity and Wildlife <ul style="list-style-type: none"> Ongoing assessment of oil sands mining and upgrading wildlife, fisheries and reclamation programs to minimize cumulative effects on biodiversity. 	<ul style="list-style-type: none"> Initiated a five-year monitoring program at one of our compensation lakes and improved our monitoring of wildlife returning and using reclaimed areas. Executed seasonal fish and wildlife monitoring programs. 	<ul style="list-style-type: none"> Integrate our monitoring programs with other regional monitoring to improve understanding of changes to biodiversity and wildlife, working with industry and Indigenous communities to enhance programs. Work on wetland and caribou plans aligned with APEA reporting requirements.
Research and Development <ul style="list-style-type: none"> Complete Horizon fugitive emissions monitoring campaigns with Emissions Reduction Alberta (ERA). Continue bird migration, reclamation and tailings planning and research. 	<ul style="list-style-type: none"> Completed fourth and final field campaign of GHG Fugitive Emissions Monitoring with ERA. Progressed mining technology and environmental monitoring with the installation of a long range radar system to monitor migratory patterns, and continued research and reclamation to reduce tailings impacts. 	<ul style="list-style-type: none"> Complete a synthesis report on findings of Fugitive Emissions Monitoring program and prepare recommendations for alternative methods to measure emissions. Activate long range, real-time, radar to monitor bird migration to reduce bird contact with tailings ponds. Assess tailings pond reclamation research.

- Wildlife monitoring**
 An Early Successional Wildlife Dynamics Program in the Athabasca Oil Sands Region is showing that a diversity of species typically found in mature boreal forests are returning to and re-establishing on older reclaimed sites (greater than 20 years), including insects, small mammals, amphibians and birds.



Lake Gunna Teoway, compensation lake at Jackpine Mine operations.

Performance Data

The Company's performance data is based on operated assets.

From June 1, 2017 onward, North American Exploration and Production (NA E&P) operations include the Peace River Complex, and oil sands mining and upgrading operations include the Albian mines (bitumen production). From Q2 2019 onward, NA E&P operations include Kirby North, Jackfish and additional primary heavy oil assets.

The Company's GHG emission estimates are prepared internally using reported production volumes and generic emission factors. Scope 1, direct GHG emissions reporting is based on operational control, excluding non-operated emissions. Scope 2, indirect GHG emissions account for emissions from the generation of energy purchased and consumed by the Company. Facilities subject to third party verification for direct and indirect emissions are Albian, Horizon, Primrose and Wolf Lake (PAW), Peace River Complex, Kirby South, Jackfish, Hays, Wapiti, Brintnell, all British Columbia and UK operations.

EMPLOYMENT

Distribution of Canadian Natural Employees

Number of employees	2016	2017	2018	2019
North America Exploration and Production	4,210	4,496	4,395	4,857
Oil Sands Mining and Upgrading	2,667	5,097	4,948	4,979
International Exploration and Production	393	380	366	344
TOTAL	7,270	9,973	9,709	10,180

Exposure hours (millions) — based on a 12-hour shift	2016	2017	2018	2019
North America Exploration and Production	34.83	42.18	44.71	42.88
Oil Sands Mining and Upgrading	28.98	34.05	37.94	38.23
International Exploration and Production	4.29	3.90	4.98	5.22
TOTAL	68.10	80.13	87.63	86.33

ECONOMIC CONTRIBUTIONS

Contributions to economies (\$ millions)	2016	2017	2018	2019
Community Investment	9.1	12.4	15.3	25.0
Contracts with Indigenous businesses and services	320	370	500	550
Payments to suppliers	7,172	7,457	8,275	8,096

SAFETY

Total Recordable Injury Frequency (TRIF) per 200,000 hours worked (employees and contractors)	2016	2017	2018	2019
North America Exploration and Production	0.44	0.38	0.34	0.22
Oil Sands Mining and Upgrading	0.49	0.38	0.31	0.31
International Exploration and Production	1.03	1.33	0.72	0.61
Corporate	0.50	0.43	0.35	0.28

Lost Time Incident (LTI) ⁽¹⁾ frequency per 200,000 exposure hours	2016	2017	2018	2019
Corporate	0.06	0.06	0.06	0.04

(1) LTI is an injury incident where a worker is unable to return to work the next scheduled day.

Fatalities (employees and contractors)	2016	2017	2018	2019
North America Exploration and Production	0	0	0	0
Oil Sands Mining and Upgrading	0	0	0	0
International Exploration and Production	0	0	0	0

Regulatory inspections compliance (% satisfactory)	2016	2017	2018	2019
Alberta	84.7	84.2	84.5	83.6
British Columbia	89.7	86.0	73.0	79.2

GHG and AIR EMISSIONS

Scope 1, Direct GHG emissions intensity (tonnes CO ₂ e/BOE) ⁽¹⁾	2016	2017	2018	2019
North America Exploration and Production	0.057	0.058	0.059	0.059
Oil Sands Mining and Upgrading ⁽²⁾	0.079	0.045	0.037	0.036
International Exploration and Production	0.067	0.067	0.059	0.051
Corporate	0.061	0.055	0.052	0.051

(1) Includes total direct emissions from combustion, flaring, formation CO₂, and other venting and fugitive leaks from equipment.

(2) Combined emissions intensity of Horizon's synthetic crude oil and Albian's bitumen production (as of June 1, 2017).

Scope 1, Direct GHG emissions (million tonnes CO ₂ e) ⁽¹⁾	2016	2017	2018	2019
North America Exploration and Production	12.84	13.30	12.99	13.76
Oil Sands Mining and Upgrading	3.91	5.94 ⁽²⁾	7.45 ⁽²⁾	6.91
International Exploration and Production	2.03	1.79	1.53	1.45

(1) Includes total direct emissions from combustion, flaring, formation CO₂, and other venting and fugitive leaks from equipment.

(2) Increase reflects Albian's bitumen production from June 1, 2017 onward and full year of Albian operations as of 2018.

Direct GHG emissions from fuel consumption ⁽¹⁾ (million tonnes CO ₂ e)	2016	2017	2018	2019
North America Exploration and Production	8.70	9.43	9.40	10.48
Oil Sands Mining and Upgrading	2.16	3.38	4.35	4.21
International Exploration and Production	1.17	1.04	1.03	0.93

(1) Self-generated electricity. Includes GHG emissions from operated cogeneration plants.

Scope 2, Indirect GHG emissions (million tonnes CO ₂ e) ⁽¹⁾	2016	2017	2018	2019
North America Exploration and Production				
Electricity consumption (TWh) - total	2.44	2.63	2.79	2.85
Electricity consumption (TWh) from renewable sources	0.16	0.19	0.21	0.18
Indirect GHG emissions	1.50	1.69	1.47	1.54
Oil Sands Mining and Upgrading ⁽²⁾				
Electricity consumption (TWh)	0.45	1.07	1.86	1.65
Electricity indirect GHG emissions	0.29	0.30	0.46	0.36
Steam imports (PJ)	-	11.06	19.02	18.47
Steam indirect GHG emissions	-	0.70	1.20	1.19
Total indirect GHG emissions	-	1.00	1.66	1.55

(1) Purchased electricity.

(2) Includes Albian's electricity and steam from third-party cogeneration plant.

Total natural gas flared (10 ³ m ³)	2016	2017	2018	2019
North America Exploration and Production	95,217	100,504	96,209	97,742
Oil Sands Mining and Upgrading ⁽¹⁾	27,267	24,536	20,422	14,357
International Exploration and Production	296,339	292,458	195,233	210,702

(1) Flaring at Oil Sands Mining and Upgrading operations is associated with turnaround activity.

Total natural gas vented (10 ³ m ³)	2016	2017	2018	2019
North America Exploration and Production	126,898	109,093	102,467	98,762

Performance Data

Total methane emissions (million tonnes CO ₂ e)	2016	2017	2018	2019
North America Exploration and Production	4.61	4.38	4.11	3.89

NO _x emissions (tonnes)	2016	2017	2018	2019
North America Exploration and Production	56,231	54,086	55,310	49,191
Oil Sands Mining and Upgrading	6,662	12,189	15,141	15,866
International Exploration and Production ⁽¹⁾	2,732	2,118	1,663	1,576

(1) UK only

SO _x emissions (tonnes)	2016	2017	2018	2019
North America Exploration and Production	5,994	6,639	6,863	9,364 ⁽²⁾
Oil Sands Mining and Upgrading	3,409	2,419	2,693	2,737
International Exploration and Production ⁽¹⁾	246	149	105	179

(1) UK only.

(2) Emissions increased compared to 2018 due to acquisitions.

LAND

Abandonment, remediation and reclamation projects	2016	2017	2018	2019
North America Exploration and Production				
Number of active operated wells	50,736	53,013 ⁽¹⁾	52,643	49,986
Number of inactive operated wells ⁽²⁾	21,433	23,292	23,638	28,946
Number of wells abandoned	406	771	1,293	2,035
Number of pipelines abandoned	766	1,309	2,886	2,842
Number of reclamation certificates submitted	604	604	1,012	912
Number of reclamation certificates received	1,046	596	717	893
Hectares reclaimed (area reclamation certified)	2,329	1,273	1,383	2,160
Trees/seedlings planted	231,000	301,410	144,417	394,773
Oil Sands Mining and Upgrading				
Hectares reclaimed	78	769 ⁽³⁾	176	276
Trees/seedlings planted	325,750	353,790	582,144	571,193

(1) Increase in active operated wells as a result of asset acquisitions.

(2) Based on the Alberta Energy Regulator's definition for inactive well sites.

(3) Includes Albion's cumulative total, reflecting consistent and integrated approach across Oil Sands Mining and Upgrading operations.

Facility decommissioning, North America Exploration and Production	2016	2017	2018	2019
Number of facilities and well equipment removed ⁽¹⁾	17	58	84 ⁽²⁾	287
Number of site remediations projects completed or reviewed and ready for reclamation	13 ⁽³⁾	4	53 ⁽³⁾	203
Number of ongoing remediation projects	131	217	348	351

(1) 2016-2018 figures represent facilities removed only. As of 2019, well equipment has been included (88 facilities removed and 199 well equipment removal projects)

(2) Restated due to facility reclassification.

(3) Restated to include projects reviewed.

WATER

Total water withdrawal by source (m³), North America Exploration and Production	2016	2017	2018	2019
Fresh water total	7,306,334	8,049,014	11,051,001	10,113,576
Surface water	3,213,505	3,494,353	4,251,926	3,595,432
Groundwater	4,092,829	4,554,661	6,799,075 ⁽²⁾	6,518,144
Saline groundwater total	8,563,228	6,965,776	8,894,751	6,941,833
Produced water and flowback generated	38,084,306	46,909,914	48,050,282	58,504,149
Produced water recycled ⁽¹⁾ (%)	87.6	82.8	82.8	83.3
Water discharge (%)	13.3	18.1	18.3	17.6
Total water consumption	20,595,015	23,081,837	28,232,949	26,808,580
Total water withdrawal	53,953,868	61,924,704	67,996,034	75,559,558

To align with Sustainability Accounting Standards Board (SASB) recommendations, enhanced water performance disclosure includes produced water volumes, percentage of water discharged and water consumption (water consumed in operations that does not include water recycled/returned). As a result, fresh and saline water data from 2016 to 2018 has been restated. Flowback is the recovered hydraulic fracturing fluid that returns to the surface during a hydraulic fracturing operation that may often be mixed with produced water.

(1) For major thermal in situ (Kirby South, Kirby North, PAW, Peace River Complex and Jackfish) and conventional (Pelican Lake, Nipisi, Wembley, Sweeny and Pierson) operations.

(2) Increase in fresh groundwater use at Pelican Lake, and at Kirby North in preparation for start-up in 2019.

Total water withdrawal by source (m³), Oil Sands Mining and Upgrading	2016	2017	2018	2019
Fresh water total ⁽¹⁾	17,837,887	71,699,611	76,106,449	65,732,435
Surface water	17,837,887	66,171,622	68,662,002	59,381,433
Ground water	na	5,527,989	7,444,447	6,351,002
Saline water total ⁽²⁾	986,002	284,965	581,636	396,102
Water from recycled sources (%)	90.3	81.5	80.0	86.0
Volume of water recycled ⁽³⁾	202,859,520	209,510,852	230,915,471	238,540,155
Water discharge (%) ⁽⁴⁾	na	2.0	3.3	10.1
Total water withdrawal	18,823,889	71,984,576	76,688,085	66,128,537

To align with SASB recommendations, enhanced water performance disclosure is provided and surface water numbers were restated.

(1) From 2017, water withdrawals from the Athabasca River and all other surface water sources for Horizon and Albion are reported. Data for 2016 includes Horizon water withdrawals from the Athabasca River. Fresh water withdrawals remain well below authorized withdrawal limits.

(2) Includes water used in Albion's production process, and Horizon's saline water from depressurization in the mine that is not used in our production process.

(3) Volumes of water recycled are greater than water withdrawn as water is recycled more than once through the process.

(4) Albion clean water discharge from settling ponds designed to remove sediment.

Total water discharge (m³), International Exploration and Production	2016	2017	2018	2019
North Sea	21,231,547	19,010,686	15,225,509	17,633,300
Offshore Africa	1,622,168	1,644,372	1,752,764	1,597,195
Total water consumption ⁽¹⁾	22,339,092	16,341,125	16,842,513	23,686,883 ⁽²⁾

(1) Sea water injection (lifted and treated sea water injected downhole to improve production of the fields).

(2) Water injection increased at Ninian Central Platform, and Baobab and Espoir FPSOs. Water injection maintains the pressure within the reservoir to improve production.

Oil in water content (mg/l), International Exploration and Production	2016	2017	2018	2019
North Sea ⁽¹⁾	16.65	16.67	16.42	16.63
Offshore Africa	14.29	11.03	11.66	19.51

(1) Oil in water content remains well below regulatory requirement of <30 mg/l.

SPILLS

Reported to regulatory agencies, according to jurisdictional requirements, including oil, produced water and refined products.

Number of reportable spills	2016	2017	2018	2019
North America Exploration and Production	241	270	281	276
Oil Sands Mining and Upgrading	42	102	128	93
International Exploration and Production	14	10	11	2

Performance Data

Spills (continued)

Volume spilled (m³)	2016	2017	2018	2019
North America Exploration and Production	1,998	2,122	1,572	1,824
Oil Sands Mining and Upgrading ⁽¹⁾	2,749	9,239	20,613	8,100
International Exploration and Production	0.79	1.29	1.04	0.02

(1) Majority of spills are from tailings lines (low risk spills consisting of water, sand, silt and trace oil). All spills were contained on lease. 2018 spill volumes were from Horizon's Bitumen Production area pump box that was modified to reduce spills.

Number of spills and leaks/production (MMBOE)	2016	2017	2018	2019
North America Exploration and Production	1.06	1.18	1.29	1.18
Oil Sands Mining and Upgrading	0.92	0.86	0.69	0.54
International Exploration and Production	0.46	0.37	0.42	0.07

Volume spilled or leaked/production (m³/MMBOE)	2016	2017	2018	2019
North America Exploration and Production	8.8	9.3	7.2	7.8
Oil Sands Mining and Upgrading	60.0	77.6	111.3	46.8
International Exploration and Production	0.03	0.05	0.04	0.0

Number of leaks/1,000 km pipeline	2016	2017	2018	2019
North America Exploration and Production	1.60	1.49	1.25	1.20

WASTE

Weight of waste (tonnes)	2016	2017	2018	2019
North America Exploration and Production				
Hazardous waste - Off-site disposal (third-party)	61,727	55,419	78,327	80,943
Non-hazardous waste	1,789,526	2,367,446	2,014,071	2,038,575
On-site disposal (owned)	1,056,017	1,644,364	1,142,440	1,396,864
Off-site disposal (third-party)	733,509	723,082	871,631	641,711
Oil Sands Mining and Upgrading				
Hazardous waste - Off-site disposal (third-party)	57	153	493	306
Hazardous waste recycled	1,261	6,028	8,005	316 ⁽³⁾
Non-hazardous waste	21,294	14,381	17,697	15,568
On-site disposal (owned)	21,058	13,078	13,281	15,130
Off-site disposal (third-party)	236	1,303	4,416	438 ⁽⁴⁾
Non-hazardous waste recycled	8,268	23,379	40,186	38,874
International Exploration and Production⁽¹⁾				
Hazardous waste	55	94	173	49
Hazardous waste recycled	70	31	42	74
Non-hazardous waste	254	437	297	112
Scrap metal recycled ⁽²⁾	8,628	15,500	15,284	419
Other non-hazardous waste recycled	788	670	367	533

Waste information focuses on oilfield waste, including fluid and solid waste based on a conversion of all volumes to tonnes.

Oil Sands Mining and Upgrading waste data fluctuates year to year with timing and size of turnarounds.

Hazardous waste includes streams such as tank clean out fluids and sludge, wastewater treatment and solids, filter cake and filters and other substances.

Non-hazardous waste includes oilfield waste such as hydrocarbon and salt impacted soils, spent lubricating oil, drilling waste and produced sand.

Waste sent to recycling facilities includes empty containers, lube oil, batteries, filters, tires, scrap metal and other miscellaneous recyclables.

(1) All International operations waste is disposed of or treated at third-party facilities. Ninian South has a dedicated drill cuttings re-injection well, therefore no drilling waste is sent to shore.

(2) Includes Murchison decommissioning project from 2016-2017, and Murchison and Ninian North decommissioning projects in 2018.

(3) Hazardous waste recycled in Oil Sands Mining and Upgrading operations decreased due to a reclassification of used lube oil.

(4) Non-hazardous waste off-site disposal in Oil Sands Mining and Upgrading decreased, with most waste being recycled.

Forward Looking Statements

Certain statements relating to Canadian Natural Resources Limited (the "Company") in this document or documents incorporated herein by reference constitute forward-looking statements or information (collectively referred to herein as "forward-looking statements") within the meaning of applicable securities legislation. Forward-looking statements can be identified by the words "believe", "anticipate", "expect", "plan", "estimate", "target", "continue", "could", "intend", "may", "potential", "predict", "should", "will", "objective", "project", "forecast", "goal", "guidance", "outlook", "effort", "seeks", "schedule", "proposed", "aspiration" or expressions of a similar nature suggesting future outcome or statements regarding an outlook. Disclosure related to expected future commodity pricing, forecast or anticipated production volumes, royalties, production expenses, capital expenditures, income tax expenses and other guidance provided throughout the Company's Management's Discussion and Analysis ("MD&A") of the financial condition and results of operations of the Company, constitute forward-looking statements. Disclosure of plans relating to and expected results of existing and future developments, including, without limitation, those in relation to the Company's assets at Horizon Oil Sands ("Horizon"), the Athabasca Oil Sands Project ("AOSP"), Primrose thermal projects, the Pelican Lake water and polymer flood project, the Kirby Thermal Oil Sands Project, the Jackfish Thermal Oil Sands Project, the North West Redwater bitumen upgrader and refinery, construction by third parties of new, or expansion of existing, pipeline capacity or other means of transportation of bitumen, crude oil, natural gas, natural gas liquids ("NGLs") or synthetic crude oil ("SCO") that the Company may be reliant upon to transport its products to market, and the development and deployment of technology and technological innovations also constitute forward-looking statements. These forward-looking statements are based on annual budgets and multi-year forecasts, and are reviewed and revised throughout the year as necessary in the context of targeted financial ratios, project returns, product pricing expectations and balance in project risk and time horizons. These statements are not guarantees of future performance and are subject to certain risks. The reader should not place undue reliance on these forward-looking statements as there can be no assurances that the plans, initiatives or expectations upon which they are based will occur.

In addition, statements relating to "reserves" are deemed to be forward-looking statements as they involve the implied assessment based on certain estimates and assumptions that the reserves described can be profitably produced in the future. There are numerous uncertainties inherent in estimating quantities of proved and proved plus probable crude oil, natural gas and NGLs reserves and in projecting future rates of production and the timing of development expenditures. The total amount or timing of actual future production may vary significantly from reserves and production estimates.

The forward-looking statements are based on current expectations, estimates and projections about the Company and the industry in which the Company operates, which speak only as of the date such statements were made or as of the date of the report or document in which they are contained, and are subject to known and unknown risks and uncertainties that could cause the actual results, performance or achievements of the Company to be materially different from any future results, performance or achievements expressed or implied by such forward-looking statements. Such risks and uncertainties include, among others: general economic and business conditions (including as a result of effects of the novel coronavirus ("COVID-19") pandemic and the actions of the Organization of the Petroleum Exporting Countries ("OPEC") and non-OPEC countries) which may impact, among other things, demand and supply for and market prices of the Company's products, and the availability and cost of resources required by the Company's operations; volatility of and assumptions regarding crude oil and natural gas and NGLs prices including due to actions of OPEC and non-OPEC countries taken in response to COVID-19 or otherwise; fluctuations in currency and interest rates; assumptions on which the Company's current guidance is based; economic conditions in the countries and regions in which the Company conducts business; political uncertainty, including actions of or against terrorists, insurgent groups or other conflict including conflict between states; industry capacity; ability of the Company to implement its business strategy, including exploration and development activities; impact of competition; the Company's defense of lawsuits; availability and cost of seismic, drilling and other equipment; ability of the Company and its subsidiaries to complete capital programs; the Company's and its subsidiaries' ability to secure adequate transportation for its products; unexpected disruptions or delays in the mining, extracting or upgrading of the Company's bitumen products; potential delays or changes in plans with respect to exploration or development projects or capital expenditures; ability of the Company to attract the necessary labour required to build, maintain, and operate its thermal and oil sands mining projects; operating hazards and other difficulties inherent in the exploration for and production and sale of crude oil and natural gas and in mining, extracting or upgrading the Company's bitumen products; availability and cost of financing; the Company's and its subsidiaries' success of exploration and development activities and its ability to replace and expand crude oil and natural gas reserves; timing and success of integrating the business and operations of acquired companies and assets; production levels; imprecision of reserves estimates and estimates of recoverable quantities of crude oil, natural gas and NGLs not currently classified as proved; actions by governmental authorities (including production curtailments mandated by the Government of Alberta); government regulations and the expenditures required to comply with them (especially safety and environmental laws and regulations and the impact of climate change initiatives on capital expenditures and production expenses); asset retirement obligations; the adequacy of the Company's provision for taxes; the continued availability of the Canada Emergency Wage Subsidy ("CEWS") or other subsidies; and other circumstances affecting revenues and expenses.

The Company's operations have been, and in the future may be, affected by political developments and by national, federal, provincial, state and local laws and regulations such as restrictions on production, changes in taxes, royalties and other amounts payable to governments or governmental agencies, price or gathering rate controls and environmental protection regulations. Should one or more of these risks or uncertainties materialize, or should any of the Company's assumptions prove incorrect, actual results may vary in material respects from those projected in the forward-looking statements. The impact of any one factor on a particular forward-looking statement is not determinable with certainty as such factors are dependent upon other factors, and the Company's course of action would depend upon its assessment of the future considering all information then available.

Readers are cautioned that the foregoing list of factors is not exhaustive. Unpredictable or unknown factors not discussed in the Company's MD&A could also have adverse effects on forward-looking statements. Although the Company believes that the expectations conveyed by the forward-looking statements are reasonable based on information available to it on the date such forward-looking statements are made, no assurances can be given as to future results, levels of activity and achievements. All subsequent forward-looking statements, whether written or oral, attributable to the Company or persons acting on its behalf are expressly qualified in their entirety by these cautionary statements. Except as required by applicable law, the Company assumes no obligation to update forward-looking statements in the Company's MD&A, whether as a result of new information, future events or other factors, or the foregoing factors affecting this information, should circumstances or the Company's estimates or opinions change.

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Our 2019 Stewardship Report to Stakeholders aligns with recommendations from the Financial Stability Board Task Force on Climate-Related Financial Disclosures (TCFD) and the Sustainability Accounting Standards Board (SASB). The Report includes consolidated ESG and economic disclosures from the Global Reporting Initiative (GRI) Sustainability Reporting Standards and the Oil and Gas Sector Supplement. Our activities also contribute towards the United Nations Sustainable Development Goals (SDGs). Our disclosures and sustainability content are summarized in the [TCFD disclosures index](#) and [GRI, SASB and SDG disclosures index](#) as well as the [Corporate Responsibility](#) section of our website.

We welcome your comments and suggestions on this report.

Canadian Natural produces a separate Annual Report, which is also available online.



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