

Module: Introduction**Page: Introduction**

CC0.1**Introduction**

Please give a general description and introduction to your organization.

Canadian Natural is one of the largest independent crude oil and natural gas producers in the world. The Company continually targets cost effective alternatives to develop our portfolio of projects and to deliver our defined growth plan, thereby creating value for shareholders.

We have an effective and efficient, diversified combination of assets in North America, the UK portion of the North Sea and Offshore Africa, which enables us to generate significant value, even in challenging economic environments.

Our balanced mix of natural gas, light oil, heavy oil, in situ oil sands production, oil sands mining and associated upgrading facilities, represents one of the strongest and most diverse asset portfolios of any energy producer in the world.

Our financial discipline, commitment to a strong balance sheet, and capacity to internally generate cash flows provide us the means to grow our company in the long term.

At Canadian Natural, we are committed to conducting our business in a way that embraces the key piece of our mission statement "doing it right". Environmental protection is a fundamental value of our company and this is reflected in our approach to energy development.

Our goal is to develop resources in a sustainable and responsible way. We are committed to managing and minimizing the environmental impacts of our operations during all phases of our projects. To reach high standards of environmental performance and achieve regulatory compliance, we adhere to the principles of continuous improvement, efficient operations and technological innovation.

Our Environment team works together with Management and all our operating divisions to ensure environmental stewardship is factored into our decision-making process. In 2010, we initiated an Environmental Excellence Program to enhance our environmental performance, improve communications and awareness and manage potential impacts to land, water and air. We are seeing positive and improved results across our operations.

Our Environmental Excellence Initiative focuses on working together by proactively managing our footprint, protecting biodiversity, using water efficiently, reducing

greenhouse gas (GHG) and other air emissions, and our liabilities. We foster a culture of environmental awareness where everyone has a vital role to play in identifying and mitigating environmental impacts from our operations. We emphasize environmental awareness through employee training, due diligence and communications on environmental priorities.

CC0.2

Reporting Year

Please state the start and end date of the year for which you are reporting data.

The current reporting year is the latest/most recent 12-month period for which data is reported. Enter the dates of this year first.

We request data for more than one reporting period for some emission accounting questions. Please provide data for the three years prior to the current reporting year if you have not provided this information before, or if this is the first time you have answered a CDP information request. (This does not apply if you have been offered and selected the option of answering the shorter questionnaire). If you are going to provide additional years of data, please give the dates of those reporting periods here. Work backwards from the most recent reporting year.

Please enter dates in following format: day(DD)/month(MM)/year(YYYY) (i.e. 31/01/2001).

Enter Periods that will be disclosed
Thu 01 Jan 2015 - Thu 31 Dec 2015

CC0.3

Country list configuration

Please select the countries for which you will be supplying data. If you are responding to the Electric Utilities module, this selection will be carried forward to assist you in completing your response.

Select country
Canada

Select country
United Kingdom
Cote d Ivoire
Gabon
South Africa

CC0.4

Currency selection

Please select the currency in which you would like to submit your response. All financial information contained in the response should be in this currency.

CAD (\$)

CC0.6

Modules

As part of the request for information on behalf of investors, electric utilities, companies with electric utility activities or assets, companies in the automobile or auto component manufacture sub-industries, companies in the oil and gas sub-industries, companies in the information technology and telecommunications sectors and companies in the food, beverage and tobacco industry group should complete supplementary questions in addition to the main questionnaire.

If you are in these sector groupings (according to the Global Industry Classification Standard (GICS)), the corresponding sector modules will not appear below but will automatically appear in the navigation bar when you save this page. If you want to query your classification, please email respond@cdp.net.

If you have not been presented with a sector module that you consider would be appropriate for your company to answer, please select the module below. If you wish to view the questions first, please see <https://www.cdp.net/en-US/Programmes/Pages/More-questionnaires.aspx>.

Further Information

Module: Management

Page: CC1. Governance

CC1.1

Where is the highest level of direct responsibility for climate change within your organization?

Board or individual/sub-set of the Board or other committee appointed by the Board

CC1.1a

Please identify the position of the individual or name of the committee with this responsibility

The Vice President of Regulatory, Stakeholder & Environmental Affairs is responsible for climate change strategy and issues, and reports monthly to the Management Committee, a group comprised of Canadian Natural's senior executives. Quarterly and annual Stewardship Reports are provided to the Health, Safety and Environment (HSE) Committee of the Board of Directors. In addition, an Integrated Air Emissions Working Group, reporting to the Vice President of Regulatory, Stakeholder & Environmental Affairs has been established within Canadian Natural that meets regularly to review developments related to emissions policy and reporting issues. The working group reviews Company strategies and policies, as well as management, reporting and audit systems.

CC1.2

Do you provide incentives for the management of climate change issues, including the attainment of targets?

Yes

CC1.2a

Please provide further details on the incentives provided for the management of climate change issues

Who is entitled to benefit from these incentives?	The type of incentives	Incentivized performance indicator	Comment
All employees	Monetary reward	Other: GHG emissions intensity	Greenhouse gas intensity (tonnes/boe) is one measure in the corporate performance scorecard on which performance bonuses are based.

Further Information

Page: CC2. Strategy

CC2.1

Please select the option that best describes your risk management procedures with regard to climate change risks and opportunities

Integrated into multi-disciplinary company wide risk management processes

CC2.1a

Please provide further details on your risk management procedures with regard to climate change risks and opportunities

Frequency of monitoring	To whom are results reported?	Geographical areas considered	How far into the future are risks considered?	Comment
Six-monthly or more frequently	Board or individual/sub-set of the Board or committee appointed by the Board	Canada, UK, West Africa	3 to 6 years	Risk management with regards to climate change risks and opportunities is monitored quarterly.

CC2.1b

Please describe how your risk and opportunity identification processes are applied at both company and asset level

Canadian Natural incorporates environmental considerations, risks and opportunities into all phases of our projects. Canadian Natural also works co-operatively and effectively with communities, government agencies and stakeholders to reduce potential impacts of our operations.

Canadian Natural participates in both the Canadian federal and provincial regulated GHG emissions reporting programs. We continue to quantify annual GHG emissions for internal reporting purposes. We continue to invest in people, proven and new technologies, facilities and infrastructure to recover and process crude oil and natural gas resources efficiently and in an environmentally sustainable manner.

CC2.1c**How do you prioritize the risks and opportunities identified?**

Canadian Natural uses a multi-disciplinary risk management process which considers climate change risks and opportunities as part of the Company's evaluation of business risk and opportunities.

Canadian Natural manages GHG emissions based on the following strategy elements:

- Improving energy conservation and efficiency
- Reducing emission intensity
- Developing and adopting innovative technology and supporting the associated research and development
- Improving our emission trading capability – both domestically and globally
- offsetting emissions
- Considering the life cycle costs of emission reduction in making decisions about project development.

CC2.1d

Please explain why you do not have a process in place for assessing and managing risks and opportunities from climate change, and whether you plan to introduce such a process in future

Main reason for not having a process	Do you plan to introduce a process?	Comment
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CC2.2**Is climate change integrated into your business strategy?**

Yes

CC2.2a

Please describe the process of how climate change is integrated into your business strategy and any outcomes of this process

Canadian Natural's business strategy is influenced by incorporating knowledge of climate change risks into decisions made by the Company's Management Committee and Board of Directors. Aspects of climate change risk that most influence the Company's business strategy are: future compliance costs/regulatory changes, access to markets, and reputational risk.

Within the Company's business strategy, climate change risks have reinforced the need for development of technologies to reduce emissions over the medium- to long-term, the need for sound public policy, and the need for communication about action on climate change. Climate change risk is considered when making business decisions to advance the Company's business strategy. Part of that strategy is being committed to conducting our business in a way that embraces our mission statement of "doing it right". Environmental protection is a fundamental value of our company and this is reflected in our approach to energy development. This is demonstrated in our Corporate Statement on Environmental Protection in which we recognize that every employee and contractor has a vital role to play in identifying, managing and mitigating environmental impacts from our operations. Canadian Natural's commitment to environmental management is incorporated into business activities through the following guiding principles:

- Ensure all employees and others engaged on Canadian Natural's behalf are aware of the commitment to managing environmental impacts resulting from Canadian Natural's operations;
- Identify, evaluate, manage and mitigate the environmental impacts of Canadian Natural's business during project planning, exploration, drilling, construction, operations and decommissioning;
- Ensure appropriate processes are developed and implemented to prevent pollution, including waste and emission management programs;
- Communicate with the public regarding Canadian Natural activities;
- Ensure that Canadian Natural operations comply with government regulations, industry guidelines and company policies and procedures concerning environmental management; and
- Use energy and other resources efficiently at Canadian Natural operations.

Canadian Natural is committed to investing in a low carbon future which includes efficient hydrocarbon energy production. Canadian Natural has project specific GHG emissions intensity targets at our large facilities, and a corporate goal to reduce emissions overall. Canadian Natural assesses performance against these targets and reports to the Management Committee and Board of Directors on a regular basis. Canadian Natural continues to invest in technology and innovation through Canada's Oil Sands Innovation Alliance (COSIA), the Climate Change and Emissions Management Corporation (CCEMC) and other technology initiatives.

To reach high standards of environmental performance and meet regulatory compliance, we adhere to the principles of continuous improvement, efficient operations and technological innovation. One of the outcomes of our strategy is our work with Environmental Impact Assessments (EIAs), which provide long-term management and mitigation strategies to ensure our major projects meet environmental, social and economic commitments developed in consultation with stakeholders. EIAs are an important component in our regulatory applications to facilitate our growth and execute our development plans. For example, for different phases of our thermal in situ oil sands projects, Primrose and Wolf Lake, Kirby and Grouse, we filed integrated regulatory applications with the Alberta Energy Regulator (AER) and the Alberta Environment and Parks (AEP) that included an EIA.

Please explain why climate change is not integrated into your business strategy

CC2.2c

Does your company use an internal price of carbon?

Yes

CC2.2d

Please provide details and examples of how your company uses an internal price of carbon

We use an internal price of carbon to evaluate returns on future projects under different potential carbon regulations, and we also use an internal price of carbon in evaluating emission reduction projects.

CC2.3

Do you engage in activities that could either directly or indirectly influence public policy on climate change through any of the following? (tick all that apply)

Direct engagement with policy makers
Trade associations
Funding research organizations

CC2.3a

On what issues have you been engaging directly with policy makers?

Focus of legislation	Corporate Position	Details of engagement	Proposed legislative solution
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Focus of legislation	Corporate Position	Details of engagement	Proposed legislative solution
Regulation of methane emissions	Support with minor exceptions	<ul style="list-style-type: none"> • Support overall focus on methane emission reductions • Need to balance actions on new versus existing sources, include an incentive-based element for early action, and take into account capital stock turnover. • Avoid regulatory duplication or overlap among jurisdictions. 	<ul style="list-style-type: none"> • Support provincial hybrid approaches to methane regulation. Advocating for an incentive-based period for reducing methane emissions prior to regulations coming into effect. Regulations to be developed for leak detection and repair and new equipment standards. • Methane regulations should be implemented in a staged approach to reflect the reductions that are delivered through the incentive-based portion of the hybrid approach.
Carbon tax	Support with minor exceptions	Support carbon pricing programs (which may or may not include a carbon tax), if there is allowance for competitiveness impacts on energy-intensive trade-exposed (EITE) sectors, and if a significant portion of revenue is used for developing technologies that will reduce carbon emissions.	Measures for EITE sectors to minimize competitiveness impact and reduce carbon leakage (e.g., performance standards based on benchmarking; offsetting fiscal measures)

CC2.3b

Are you on the Board of any trade associations or provide funding beyond membership?

Yes

CC2.3c

Please enter the details of those trade associations that are likely to take a position on climate change legislation

Trade association	Is your position on climate change consistent with theirs?	Please explain the trade association's position	How have you, or are you attempting to, influence the position?
Canadian Association of Petroleum Producers (CAPP), Oil & Gas UK	Consistent	Please see the CAPP website for a detailed description of their Climate Change policy: http://www.capp.ca/responsible-development/air-and-climate/climate-change	The Company is working with relevant parties, such as CAPP and Oil & Gas UK, to ensure that new policies encourage technological innovation, energy efficiency, and targeted research and development.

CC2.3d

Do you publicly disclose a list of all the research organizations that you fund?

No

CC2.3e

Please provide details of the other engagement activities that you undertake

CC2.3f

What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?

Canadian Natural participates in both the Canadian federal and provincial regulated GHG emissions reporting programs.

We work closely with CAPP through participation in committees/working groups to ensure that the Company's interests are represented and there is alignment with our overall climate change strategy.

For example, in 2015 Canadian Natural participated in a collaborative process with other producers and environmental organizations to work together and provide policy advice to the Government of Alberta. In November 2015, Alberta announced a significant Climate Leadership Plan that incents ongoing innovation and technology investment in the oil and natural gas sector. Canadian Natural supports the Province of Alberta's ambitious climate plan announced in 2015, taking strong leadership to reduce oil sands emissions. This new plan, along with stringent climate frameworks in several other Canadian jurisdictions, positions Alberta and Canada among the most responsible oil and natural gas producing jurisdictions globally.

Canadian Natural ensures internal alignment with tracking and reporting procedures in place and through this process our overall climate change strategy is continually reviewed. Environmental specialists in Canada and the UK track performance to numerous environmental performance indicators, review the operations of the Company's world-wide interests and report on a regular basis to the senior management of the Company, which in turn reports on environmental matters directly to the Health, Safety and Environmental Committee of the Board of Directors on a quarterly basis.

There are frequent briefings between the VP Regulatory, Stakeholder and Environmental Affairs and staff attending industry association meetings.

Our Environmental team works together with Management and all our operating divisions to ensure environmental stewardship is factored into our decision making process. In 2010, we initiated an Environmental Excellence program to enhance our environmental performance, improve communications and awareness and

manage potential impacts to water, air and land. We are seeing positive and improved results across our operations.

Our Environmental Excellence initiative focuses on working together to proactively manage our liabilities, reclaim our footprint, reduce greenhouse gas (GHG) emissions, protect biodiversity and use water efficiently. It is also important to promote an environmental culture. We foster a culture of environmental awareness where everyone has a vital role to play in identifying and mitigating environmental impacts from our operations. We emphasize environmental awareness through employee training, due diligence and communications on environmental priorities.

CC2.3g

Please explain why you do not engage with policy makers

Further Information

Page: CC3. Targets and Initiatives

CC3.1

Did you have an emissions reduction or renewable energy consumption or production target that was active (ongoing or reached completion) in the reporting year?

Intensity target

CC3.1a

Please provide details of your absolute target

ID	Scope	% of emissions in scope	% reduction from base year	Base year	Base year emissions covered by target (metric tonnes CO2e)	Target year	Is this a science-based target?	Comment
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CC3.1b

Please provide details of your intensity target

ID	Scope	% of emissions in scope	% reduction from base year	Metric	Base year	Normalized base year emissions covered by target	Target year	Is this a science-based target?	Comment
Int1	Scope 1	100%		Metric tonnes CO2e per unit of production				No, and we do not anticipate setting one in the next 2 years	Canadian Natural has project specific targets at selective operations, and a corporate emissions reduction target to reduce CO2 emission intensity and to meet any regulated requirements. Canadian Natural's overall target is to reduce the Scope 1 intensity of our different product streams over time. Because the product mix changes, an overall intensity metric would not be meaningful as a year to year comparison

CC3.1c

Please also indicate what change in absolute emissions this intensity target reflects

ID	Direction of change anticipated in absolute Scope 1+2 emissions at target completion?	% change anticipated in absolute Scope 1+2 emissions	Direction of change anticipated in absolute Scope 3 emissions at target completion?	% change anticipated in absolute Scope 3 emissions	Comment
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CC3.1d

Please provide details of your renewable energy consumption and/or production target

ID	Energy types covered by target	Base year	Base year energy for energy type covered (MWh)	% renewable energy in base year	Target year	% renewable energy in target year	Comment
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CC3.1e

For all of your targets, please provide details on the progress made in the reporting year

ID	% complete (time)	% complete (emissions or renewable energy)	Comment
			Canadian Natural's overall scope 1 emission intensity decreased by 5.6% in 2015 compared to 2014. This was due to a continued focus on gas conservation and lower intensities in our thermal and synthetic oil operations in 2015

CC3.1f

Please explain (i) why you do not have a target; and (ii) forecast how your emissions will change over the next five years

CC3.2

Do you classify any of your existing goods and/or services as low carbon products or do they enable a third party to avoid GHG emissions?

Yes

CC3.2a

Please provide details of your products and/or services that you classify as low carbon products or that enable a third party to avoid GHG emissions

Level of aggregation	Description of product/Group of products	Are you reporting low carbon product/s or avoided emissions?	Taxonomy, project or methodology used to classify product/s as low carbon or to calculate avoided emissions	% revenue from low carbon product/s in the reporting year	% R&D in low carbon product/s in the reporting year	Comment
Product	Production of natural gas allows electricity generators to reduce Scope 1 greenhouse gas emissions by switching from coal to natural gas. As well, cleaner burning natural gas can be used for fleet and public transportation vehicles.	Low carbon product	Other:	18%	Less than or equal to 10%	

CC3.3

Did you have emissions reduction initiatives that were active within the reporting year (this can include those in the planning and/or implementation phases)

Yes

CC3.3a

Please identify the total number of projects at each stage of development, and for those in the implementation stages, the estimated CO2e savings

Stage of development	Number of projects	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	806	
To be implemented*	76	578580
Implementation commenced*	1	438000
Implemented*	607	3940242
Not to be implemented		

CC3.3b

For those initiatives implemented in the reporting year, please provide details in the table below

Activity type	Description of activity	Estimated annual CO2e savings (metric tonnes CO2e)	Scope	Voluntary/ Mandatory	Annual monetary savings (unit currency - as specified in CC0.4)	Investment required (unit currency - as specified in CC0.4)	Payback period	Estimated lifetime of the initiative	Comment
Energy efficiency: Processes	Canadian Natural has participated in an engine fuel gas management program which reduces Scope 1 emissions by installing equipment to reduce NOx emissions on compressors while increasing uptime and better controlling fuel usage thus also reducing methane emissions. The project has been running over the last several years.	6173	Scope 1	Voluntary				Ongoing	
Low carbon energy installation	Canadian Natural has installed electric drive compressors at our Septimus facility, thereby reducing Scope 1 emissions year over year by using cleaner power.	61688	Scope 1	Voluntary				Ongoing	
Waste recovery	Canadian Natural has a strong solution gas recovery program running at our heavy oil facilities in Alberta and Saskatchewan. Gas is conserved from crude oil production that would otherwise be vented. Scope 1 emissions are reduced.	3872381	Scope 1	Voluntary Mandatory				Ongoing	

CC3.3c

What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Employee engagement	Our Field Operations teams provide valuable input on new opportunities.
Partnering with governments on technology development	Canadian Natural is continuing our research and development (R&D) work in the Algal Carbon Conversion (ACC) Project with the National Research Council of Canada (NRC) and Pond Biofuels Inc. The initial engineering phase of the algal carbon conversion demonstration project has been completed, and the project is currently being restructured due to evolving business needs of the partners. Other facets of ACC technology development and the ACC Program continue as planned and important R&D work in this area is progressing well. At this time, partners are developing a new strategy for the deployment of the project.
Compliance with regulatory requirements/standards	Provincial and Federal governments have announced GHG emissions reduction targets from the oil and gas industry. Canadian Natural is evaluating technologies that have the potential to help achieve these targets.
Other	Canadian Natural tracks the development of new technologies and evaluates their feasibility for our operations. We evaluate different carbon price scenarios to identify available reduction options. We work closely with offset aggregators to understand new project opportunities.

CC3.3d

If you do not have any emissions reduction initiatives, please explain why not

Further Information

Page: CC4. Communication

CC4.1

Have you published information about your organization's response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s)

Publication	Status	Page/Section reference	Attach the document	Comment
In mainstream reports (including an integrated report) but have not used the CDSB Framework	Complete	Pages 45 - 47	https://www.cdp.net/sites/2016/67/2667/Climate Change 2016/Shared Documents/Attachments/CC4.1/cnq-2015-annual-report.pdf	
In other regulatory filings	Complete	Page 10 -12	https://www.cdp.net/sites/2016/67/2667/Climate Change 2016/Shared Documents/Attachments/CC4.1/cnq-2015-aif.pdf	
In voluntary communications	Complete	Section : Performance Data	https://www.cdp.net/sites/2016/67/2667/Climate Change 2016/Shared Documents/Attachments/CC4.1/2015 Annual Stewardship Report Final.pdf	

Further Information

Module: Risks and Opportunities

Page: CC5. Climate Change Risks

CC5.1

Have you identified any inherent climate change risks that have the potential to generate a substantive change in your business operations, revenue or expenditure? Tick all that apply

- Risks driven by changes in regulation
- Risks driven by changes in physical climate parameters
- Risks driven by changes in other climate-related developments

CC5.1a

Please describe your inherent risks that are driven by changes in regulation

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Emission reporting obligations	<p>In Alberta, GHG regulations came into effect July 1, 2007, affecting facilities emitting more than 100 kilotonnes of CO₂e annually. Four of the Company's facilities, the Horizon facility, the Primrose/Wolf Lake in situ heavy crude oil facilities, the Hays sour natural gas plant, and the Wapiti gas plant are subject to compliance under the regulations. The Kirby South in situ heavy crude oil facility will be subject to compliance under the regulations in 2016.</p> <p>Saskatchewan is expected to release GHG regulations that would require the North Tangleflags in-situ heavy oil facility to meet a reduction target for its GHG emissions intensity.</p>	Increased operational cost	1 to 3 years	Direct	Very likely	Unknown	unknown	<p>The Company, through CAPP, is working with Canadian legislators and regulators as they develop and implement new GHG emissions laws and regulations. Internally, the Company is pursuing an integrated emissions reduction strategy, to ensure it is able to comply with existing and future emissions reduction requirements, for both GHGs and air pollutants (such as sulphur dioxide and oxides of nitrogen). The Company continues to develop strategies that will enable it to deal with the risks and opportunities associated with new GHG and air emissions policies. In addition, the Company is working with relevant parties to ensure that new policies encourage</p>	<p>The additional requirements of enacted or proposed GHG legislation on the Company's operations will increase capital expenditures and production expense, especially those related to Horizon and the Company's other existing and planned large oil sands projects. Depending on the legislation enacted, this may have an adverse effect on the Company's financial condition.</p>

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								technological innovation, energy efficiency, and targeted research and development while not impacting competitiveness. .	

CC5.1b

Please describe your inherent risks that are driven by changes in physical climate parameters

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Change in mean (average) temperature	Changes in weather patterns	Increased operational cost	Unknown	Direct	Unknown	Unknown	unknown	Canadian Natural recognizes that climate change issues pose risks that are unpredictable although, due to the geographically diverse nature of our operations Canadian Natural does not see weather related issues as having a substantive impact.	Minimal
Sea level rise	Issues on international drilling /	Increased operational cost	Unknown	Direct	Unknown	Unknown		Canadian Natural recognizes that climate change issues pose risks	Minimal

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	operations platforms and FPSO's.							that are unpredictable although, due to the geographically diverse nature of our operations Canadian Natural does not see weather related issues as having a substantive impact.	
Change in temperature extremes	Personnel safety. Equipment issues.	Increased operational cost	Unknown	Direct	Unknown	Unknown		The Company plans for extreme weather variations through our operations. Our climate risks are primarily concerned with policy and regulation changes, not with changes in physical climate parameters	Minimal

CC5.1c

Please describe your inherent risks that are driven by changes in other climate-related developments

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Uncertainty in market signals	Unpredictable business outcomes due to climate issues.	Other: Cancelled projects	Unknown	Direct	Unknown	Unknown	unknown	Canadian Natural engages in scenario planning exercises to help identify and define various risks to the business, and then develops a variety of potential responses and strategies to manage those	Unknown due to degree of management methods that will be implemented.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								risks. The strategy is based on our six core principles for GHG emissions management. These are: <ul style="list-style-type: none"> • improving energy conservation and efficiency • reducing emission intensity • developing and adopting innovative technology and supporting associated research and development • trading capacity, both domestically and globally • offsetting emissions • considering the life cycle costs of emission reductions in decision-making about project development 	

CC5.1d

Please explain why you do not consider your company to be exposed to inherent risks driven by changes in regulation that have the potential to generate a substantive change in your business operations, revenue or expenditure

CC5.1e

Please explain why you do not consider your company to be exposed to inherent risks driven by physical climate parameters that have the potential to generate a substantive change in your business operations, revenue or expenditure

CC5.1f

Please explain why you do not consider your company to be exposed to inherent risks driven by changes in other climate-related developments that have the potential to generate a substantive change in your business operations, revenue or expenditure

Further Information

Page: CC6. Climate Change Opportunities

CC6.1

Have you identified any inherent climate change opportunities that have the potential to generate a substantive change in your business operations, revenue or expenditure? Tick all that apply

- Opportunities driven by changes in regulation
- Opportunities driven by changes in physical climate parameters
- Opportunities driven by changes in other climate-related developments

CC6.1a

Please describe your inherent opportunities that are driven by changes in regulation

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Fuel/energy taxes and regulations	Reduction in GHG compliance costs due to reduction in emissions.	Reduced operational costs	1 to 3 years	Direct	Likely	Low	Reduction of current cost to purchase a clean CO2 stream. Reduction of compliance costs.	An innovative method for reducing CO2 emissions is the process of adding CO2 to our tailings lines at Horizon. The Company has been testing this process and injecting a total of more than 100,000 tonnes of purchased CO2 in our tailings since 2009. Canadian Natural will transition from purchased CO2 to capturing waste CO2 from the Horizon upgrader's hydrogen plant that will be operational by 2017. The CO2 capture facility will have a capacity for 438,000 tonnes of CO2 annually.	The CO2 capture facility is a significant investment as part of Horizon's phase II/III expansion.
Fuel/energy	Reduction in	Reduced capital	>6 years	Direct	More likely	Unknown	Canadian	Canadian	Not yet

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
taxes and regulations	capital costs due to improved technology	costs			than not		Natural is pursuing a number of opportunities where technologies are being applied that offer improved environmental performance in our operations and reduce our carbon footprint. Improved technology which lowers emissions has the potential to lower both capital and operating costs.	Natural is continuing our research and development (R&D) work in the Algal Carbon Conversion (ACC) Project with the National Research Council of Canada (NRC) and Pond Biofuels Inc. The initial engineering phase of the algal carbon conversion demonstration project has been completed, and the project is currently being restructured due to evolving business needs of the partners. Other facets of ACC technology development and the ACC Program continue as planned and important R&D	determined

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								work in this area is progressing well. At this time, partners are developing a new strategy for the deployment of the project.	
Voluntary agreements	Reduction in capital costs due to improved technology	Reduced capital costs	>6 years	Direct	More likely than not	Unknown	Canadian Natural is pursuing a number of opportunities where technologies are being applied that offer improved environmental performance in our operations and reduce our carbon footprint. Improved technology which lowers emissions has the potential to lower both capital and operating costs.	Canadian Natural has the opportunity to continue research into technologies for greenhouse gas reduction through our participation in COSIA. COSIA is a collaborative hub where member companies are setting priorities, drive and share innovation in order to accelerate the pace of environmental performance improvements. The priorities for greenhouse gas management	COSIA's 13 members share technologies, research and innovation. To date, there have been 814 technologies shared, representing \$1.3 billion in execution costs.

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								<p>include: improving energy efficiency in all aspects of oil sands operations; recovering waste heat for reuse; measuring, monitoring, and verification; reducing flaring, venting and fugitive emissions; CCS of CO2 from steam generators and other large oil sands facilities; producing alternative energy; and exploring regional opportunities to reduce GHG emissions from non-industry parties. Canadian Natural expects that participation in COSIA will contribute to</p>	

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								improved greenhouse gas performance in our operations.	
Other regulatory drivers	Partnership with North West Upgrading. New technology reduces GHG emissions for upgraded products.	Increased production capacity	1 to 3 years	Indirect (Supply chain)	Virtually certain	Medium-high	Canadian Natural believes it is important to ensure conversion capacity is available in the mid and long term to support heavy oil demand and facilitate unlocking the value of the Company's vast heavy oil assets in Alberta.	The Company has a 50% interest in the North West Redwater Partnership ("Redwater Partnership"). Redwater Partnership has entered into agreements to construct and operate a 50,000 barrel per day bitumen upgrader and refinery (the "Project") Phase 1 will process 50,000 bbl/d of bitumen to finished products and will incorporate an integrated CO2 management solution.	Canadian Natural is a 50% partner in North West Redwater
Voluntary agreements	Reduction in methane emissions	Reduced operational costs	>6 years	Direct	Likely	Unknown	Capital expenditure will be required to	Canadian Natural has project specific	Not yet determined

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	under non-regulated period						retrofit equipment	targets at selective operations, and a corporate emissions reduction target to reduce CO2 emission intensity and to meet any regulated requirements. Canadian Natural's overall target is to reduce the Scope 1 intensity of our different product streams over time. This includes methane emissions. Voluntary methane emissions reduction programs that are being developed include retrofitting pneumatic devices.	
Voluntary	Funding	New	3 to 6	Indirect	Likely	Unknown	Unknown	Canadian	Not yet

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
agreements	Xprize sponsorship	products/business services	years	(Supply chain)				<p>Natural is one of eight participating COSIA member companies involved in the NRG COSIA Carbon XPRIZE, announced in 2015. The NRG COSIA Carbon XPRIZE is a 4.5 year global competition offering \$20 million to two teams best able to convert CO2 emissions into a usable product. The NRG COSIA Carbon XPRIZE has two co-title sponsors. The U.S. sponsor is NRG Energy, one of America's largest and most diverse competitive power companies. COSIA is the Canadian</p>	determined

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								<p>sponsor. The COSIA sponsorship is funded by eight oil sands companies in the form of a joint industry project led by ConocoPhillips Canada and members Canadian Natural, Cenovus, Devon, Imperial, Nexen Energy ULC, Shell and Suncor. The competition will promote and advance the discovery and development of new technologies to take CO2 emissions, which are now seen as a liability, and change them into a valuable product.</p>	

CC6.1b

Please describe the inherent opportunities that are driven by changes in physical climate parameters

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Change in temperature extremes	Canadian Natural plans for extreme weather events within its operations. The Company should not be impacted by climate changes.	Other:	>6 years	Direct	Unknown	Unknown	The opportunities associated with a change in physical climate parameters are difficult to quantify and would likely be offset by additional risks such as increased regulatory compliance or Environmental obligations. Market price signals will drive additional or fewer projects. Due to this uncertainty, these opportunities do not drive our business plans. The Company has not evaluated the potential financial implications of each of the drivers.	Not applicable	Not applicable

CC6.1c

Please describe the inherent opportunities that are driven by changes in other climate-related developments

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Changing consumer behaviour	Addition of alternative fuels to the	New products/business services	>6 years	Direct	Unlikely	Unknown	Unknown	Canadian Natural is continuing our research and	Not yet determined

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	portfolio, such as bio-fuel.							development (R&D) work in the Algal Carbon Conversion (ACC) Project with the National Research Council of Canada (NRC) and Pond Biofuels Inc. The initial engineering phase of the algal carbon conversion demonstration project has been completed, and the project is currently being restructured due to evolving business needs of the partners. Other facets of ACC technology development and the ACC Program continue as planned and important R&D work in this area is progressing well. At this time, partners are developing a new strategy for the deployment of the project.	
Reputation	Reduction in production tank venting.	Reduced operational costs	1 to 3 years	Direct	Very likely	Low	Reduced cost for Propane. Reputational benefit is difficult to	HexaCover implementation on cold heavy oil production tanks will improve fuel efficiency through less	This cost is integrated into our operations and cannot be estimated

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
							quantify.	fuel consumption, resulting in reduced CO2 emissions. Over the 10 year life of the project, we expect to avoid 27kt CO2e/year of emissions. Additionally the project will reduce odour from heavy oil production tanks.	separately.

CC6.1d

Please explain why you do not consider your company to be exposed to inherent opportunities driven by changes in regulation that have the potential to generate a substantive change in your business operations, revenue or expenditure

CC6.1e

Please explain why you do not consider your company to be exposed to inherent opportunities driven by physical climate parameters that have the potential to generate a substantive change in your business operations, revenue or expenditure

CC6.1f

Please explain why you do not consider your company to be exposed to inherent opportunities driven by changes in other climate-related developments that have the potential to generate a substantive change in your business operations, revenue or expenditure

Further Information

Module: GHG Emissions Accounting, Energy and Fuel Use, and Trading

Page: CC7. Emissions Methodology

CC7.1

Please provide your base year and base year emissions (Scopes 1 and 2)

Scope	Base year	Base year emissions (metric tonnes CO2e)
Scope 1		
Scope 2 (location-based)		
Scope 2 (market-based)		

CC7.2

Please give the name of the standard, protocol or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions

Please select the published methodologies that you use

American Petroleum Institute Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry, 2009
Canadian Association of Petroleum Producers, Calculating Greenhouse Gas Emissions, 2003

CC7.2a

If you have selected "Other" in CC7.2 please provide details of the standard, protocol or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions

CC7.3

Please give the source for the global warming potentials you have used

Gas	Reference
CO2	Other: Alberta Government, Technical Guidance for Completing Specified Gas Compliance Reports, Ver 7, Table 2, GWP values for 2014
CH4	Other: Alberta Government, Technical Guidance for Completing Specified Gas Compliance Reports, Ver 7, Table 2, GWP values for 2014
N2O	Other: Alberta Government, Technical Guidance for Completing Specified Gas Compliance Reports, Ver 7, Table 2, GWP values for 2014

CC7.4

Please give the emissions factors you have applied and their origin; alternatively, please attach an Excel spreadsheet with this data at the bottom of this page

Fuel/Material/Energy	Emission Factor	Unit	Reference
Other: Fuel gas	2.121	Other: Metric t CO2e per e3m3	CAPP 2003, Form GHG SF
Other: Flared gas	2.583	Other: Metric t CO2e per e3m3	CAPP 2003, Form GHG SF
Other: Vented gas	16.512	Other: Metric t CO2e per e3m3	CAPP 2003, Form GHG SF, based on 97.3% methane content in vent gas
Other: Fugitive Emissions	7922	Other: Metric t CO2e per e3m3	Internal estimate, based on 3rd party study

Further Information

Page: **CC8. Emissions Data - (1 Jan 2015 - 31 Dec 2015)**

CC8.1

Please select the boundary you are using for your Scope 1 and 2 greenhouse gas inventory

Operational control

CC8.2

Please provide your gross global Scope 1 emissions figures in metric tonnes CO2e

19777354

CC8.3

Does your company have any operations in markets providing product or supplier specific data in the form of contractual instruments?

No

CC8.3a

Please provide your gross global Scope 2 emissions figures in metric tonnes CO2e

Scope 2, location-based	Scope 2, market-based (if applicable)	Comment
1730189	0	

CC8.4

Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?

Yes

CC8.4a

Please provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure

Source	Relevance of Scope 1 emissions from this source	Relevance of location-based Scope 2 emissions from this source	Relevance of market-based Scope 2 emissions from this source (if applicable)	Explain why the source is excluded
Emissions from fuel consumption in light company vehicles	Emissions are not relevant	No emissions from this source	No emissions from this source	Estimated to be immaterial (< 0.5%). Difficult to track accurately.
Propane use for fuel and heat on small sites	Emissions are not relevant	No emissions from this source	No emissions from this source	Estimated to be immaterial (< 0.1%).
Diesel use for backup / emergency generators in Conventional operations.	Emissions are not relevant	No emissions from this source	No emissions from this source	Estimated to be immaterial (< 0.5%). Difficult to track accurately

CC8.5

Please estimate the level of uncertainty of the total gross global Scope 1 and 2 emissions figures that you have supplied and specify the sources of uncertainty in your data gathering, handling and calculations

Scope	Uncertainty range	Main sources of uncertainty	Please expand on the uncertainty in your data
Scope 1		Data Gaps Assumptions Metering/ Measurement Constraints Other: Emission Factors	It is impractical to meter all emission sources. Other sources of uncertainty are: • Volumetric data (especially for vent volumes which are typically not metered), • Composition of fuel gas burned, • Accuracy of emission factors for N2O and CH4 (especially for compressor engines), • Fugitive emissions which are estimates at almost every facility.
Scope 2 (location-based)	More than 5% but less than or equal to 10%	Metering/ Measurement Constraints	Metering is believed to be accurate to within prescribed specifications. Emissions from electricity generation will be dependent on accuracy of emission factors used.

Scope	Uncertainty range	Main sources of uncertainty	Please expand on the uncertainty in your data
		Other: Emission Factors	
Scope 2 (market-based)	Less than or equal to 2%	Other: n/a	No market-based Scope 2 emissions.

CC8.6

Please indicate the verification/assurance status that applies to your reported Scope 1 emissions

Third party verification or assurance process in place

CC8.6a

Please provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements

Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/section reference	Relevant standard	Proportion of reported Scope 1 emissions verified (%)
Annual process	Complete	Reasonable assurance			ISO14064-3	48
Annual	Complete	Reasonable assurance			European Union Emissions Trading	5

Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/section reference	Relevant standard	Proportion of reported Scope 1 emissions verified (%)
process					System (EU ETS)	

CC8.6b

Please provide further details of the regulatory regime to which you are complying that specifies the use of Continuous Emissions Monitoring Systems (CEMS)

Regulation	% of emissions covered by the system	Compliance period	Evidence of submission

CC8.7

Please indicate the verification/assurance status that applies to at least one of your reported Scope 2 emissions figures

No third party verification or assurance

CC8.7a

Please provide further details of the verification/assurance undertaken for your location-based and/or market-based Scope 2 emissions, and attach the relevant statements

Location-based or market-based figure?	Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/Section reference	Relevant standard	Proportion of reported Scope 2 emissions verified (%)
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CC8.8

Please identify if any data points have been verified as part of the third party verification work undertaken, other than the verification of emissions figures reported in CC8.6, CC8.7 and CC14.2

Additional data points verified	Comment
Other: Calculation Methodologies	Verified for Alberta, British Columbia and UK emissions reporting
Other: Production	Verified for Alberta emissions reporting
Other: Metering and meter maintenance	Verified for Alberta, British Columbia and UK emissions reporting
Other: Data management process	Verified for Alberta, British Columbia and UK emissions reporting

CC8.9

Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?

Yes

CC8.9a

Please provide the emissions from biologically sequestered carbon relevant to your organization in metric tonnes CO2

Further Information

Page: CC9. Scope 1 Emissions Breakdown - (1 Jan 2015 - 31 Dec 2015)

CC9.1

Do you have Scope 1 emissions sources in more than one country?

Yes

CC9.1a

Please break down your total gross global Scope 1 emissions by country/region

Country/Region	Scope 1 metric tonnes CO2e
Canada	17669603
United Kingdom	995492
Africa	1112259

CC9.2

Please indicate which other Scope 1 emissions breakdowns you are able to provide (tick all that apply)

By business division

CC9.2a

Please break down your total gross global Scope 1 emissions by business division

Business division	Scope 1 emissions (metric tonnes CO2e)
North America Conventional Exploration & Production	13748880
Oil Sands Mining	3920723
CNR International	2107751

CC9.2b

Please break down your total gross global Scope 1 emissions by facility

Facility	Scope 1 emissions (metric tonnes CO2e)	Latitude	Longitude
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CC9.2c

Please break down your total gross global Scope 1 emissions by GHG type

GHG type	Scope 1 emissions (metric tonnes CO2e)
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CC9.2d

Please break down your total gross global Scope 1 emissions by activity

Activity	Scope 1 emissions (metric tonnes CO2e)

Further Information

Page: CC10. Scope 2 Emissions Breakdown - (1 Jan 2015 - 31 Dec 2015)

CC10.1

Do you have Scope 2 emissions sources in more than one country?

No

CC10.1a

Please break down your total gross global Scope 2 emissions and energy consumption by country/region

Country/Region	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low carbon electricity, heat, steam or cooling accounted in market-based approach (MWh)

CC10.2

Please indicate which other Scope 2 emissions breakdowns you are able to provide (tick all that apply)

By business division

CC10.2a

Please break down your total gross global Scope 2 emissions by business division

Business division	Scope 2 emissions, location based (metric tonnes CO2e)	Scope 2 emissions, market-based (metric tonnes CO2e)
North America Conventional Exploration & Production	1472174	0
Oil Sands Mining	258015	0
CNR International	0	0

CC10.2b

Please break down your total gross global Scope 2 emissions by facility

Facility	Scope 2 emissions, location based (metric tonnes CO2e)	Scope 2 emissions, market-based (metric tonnes CO2e)
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CC10.2c

Please break down your total gross global Scope 2 emissions by activity

Activity	Scope 2 emissions, location based (metric tonnes CO2e)	Scope 2 emissions, market-based (metric tonnes CO2e)

Further Information

Page: CC11. Energy

CC11.1

What percentage of your total operational spend in the reporting year was on energy?

CC11.2

Please state how much heat, steam, and cooling in MWh your organization has purchased and consumed during the reporting year

Energy type	Energy purchased and consumed (MWh)
Heat	
Steam	
Cooling	

CC11.3

Please state how much fuel in MWh your organization has consumed (for energy purposes) during the reporting year

62098292

CC11.3a

Please complete the table by breaking down the total "Fuel" figure entered above by fuel type

Fuels	MWh
Natural gas	50802777
Diesel/Gas oil	2342408
Refinery gas	8953106

CC11.4

Please provide details of the electricity, heat, steam or cooling amounts that were accounted at a low carbon emission factor in the market-based Scope 2 figure reported in CC8.3a

Basis for applying a low carbon emission factor	MWh consumed associated with low carbon electricity, heat, steam or cooling	Comment
Other	220718	Scope 2 emissions associated with low carbon, renewable electricity in BC

CC11.5

Please report how much electricity you produce in MWh, and how much electricity you consume in MWh

Total electricity consumed (MWh)	Consumed electricity that is purchased (MWh)	Total electricity produced (MWh)	Total renewable electricity produced (MWh)	Consumed renewable electricity that is produced by company (MWh)	Comment
7164136	2862194	4301942	0	0	Cogeneration units at Primrose & Wolf Lake, Horizon and CNRI

Further Information

Page: CC12. Emissions Performance

CC12.1

How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to the previous year?

Decreased

CC12.1a

Please identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined) and for each of them specify how your emissions compare to the previous year

Reason	Emissions value (percentage)	Direction of change	Please explain and include calculation
Emissions reduction activities			
Divestment			

Reason	Emissions value (percentage)	Direction of change	Please explain and include calculation
Acquisitions			
Mergers			
Change in output			
Change in methodology			
Change in boundary			
Change in physical operating conditions			
Unidentified			
Other			

CC12.1b

Is your emissions performance calculations in CC12.1 and CC12.1a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Location-based

CC12.2

Please describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tonnes CO2e per unit currency total revenue

Intensity figure =	Metric numerator (Gross global combined Scope 1 and 2 emissions)	Metric denominator: Unit total revenue	Scope 2 figure used	% change from previous year	Direction of change from previous year	Reason for change
.00163	metric tonnes CO2e	1	Location-based	65	Increase	Significant decrease in 2015 revenue due to lower commodity prices means that this intensity metric increased significantly.

CC12.3

Please provide any additional intensity (normalized) metrics that are appropriate to your business operations

Intensity figure =	Metric numerator (Gross global combined Scope 1 and 2 emissions)	Metric denominator	Metric denominator: Unit total	Scope 2 figure used	% change from previous year	Direction of change from previous year	Reason for change
.0692	metric tonnes CO2e	barrel of oil equivalent (BOE)	1	Location-based	5.6	Decrease	continued focus on gas conservation and lower intensities in our thermal and synthetic oil operations in 2015

Further Information

Page: **CC13. Emissions Trading**

CC13.1

Do you participate in any emissions trading schemes?

Yes

CC13.1a

Please complete the following table for each of the emission trading schemes in which you participate

Scheme name	Period for which data is supplied	Allowances allocated	Allowances purchased	Verified emissions in metric tonnes CO2e	Details of ownership
European Union ETS	Thu 01 Jan 2015 - Thu 31 Dec 2015	225605	0	995492	Facilities we own and operate

CC13.1b

What is your strategy for complying with the schemes in which you participate or anticipate participating?

As a primary strategy, Canadian Natural strives to reduce emissions wherever possible. The Company believes in supporting emerging technology.

For the Alberta system, the company strategy is to combination of banked credits and purchased credits from the Climate Change and Emissions Management Fund. These purchases are used by the Climate Change and Emissions Management Corporation to fund technology advancement projects for the province. For the EU ETS, the strategy is to meet compliance through a combination of internal reduction projects and the purchase of EUAs or CERs.

CC13.2

Has your organization originated any project-based carbon credits or purchased any within the reporting period?

Yes

CC13.2a

Please provide details on the project-based carbon credits originated or purchased by your organization in the reporting period

Credit origination or credit purchase	Project type	Project identification	Verified to which standard	Number of credits (metric tonnes of CO2e)	Number of credits (metric tonnes CO2e): Risk adjusted volume	Credits cancelled	Purpose, e.g. compliance
Credit origination	Fossil fuel switch	Septimus electrification	Other: ISO 14065	61688	61688	Yes	Voluntary Offsetting
Credit origination	Energy efficiency: industry	REMVue engine fuel management	Other: ISO 14065	6173	6173	Yes	Voluntary Offsetting

Further Information

Page: **CC14. Scope 3 Emissions**

CC14.1

Please account for your organization’s Scope 3 emissions, disclosing and explaining any exclusions

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Purchased goods and services					
Capital goods					

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Fuel-and-energy-related activities (not included in Scope 1 or 2)					
Upstream transportation and distribution					
Waste generated in operations					
Business travel					
Employee commuting					
Upstream leased assets					
Downstream transportation and distribution	Not relevant, explanation provided	0		0.00%	The Company has no downstream operations
Processing of sold products	Not relevant, explanation provided	0		0.00%	The Company has no downstream operations
Use of sold products	Not relevant, explanation provided	0		0.00%	The Company has no downstream operations
End of life treatment of sold products	Not relevant, explanation provided	0		0.00%	The Company has no downstream operations
Downstream leased assets	Not relevant, explanation provided	0		0.00%	The Company has no downstream operations
Franchises	Not relevant, explanation provided	0		0.00%	The Company has no downstream operations
Investments	Not relevant, explanation provided	0		0.00%	The Company has no downstream operations
Other (upstream)	Not relevant, explanation provided	0		0.00%	The Company has no downstream operations
Other (downstream)	Not relevant, explanation provided	0		0.00%	The Company has no downstream operations

CC14.2

Please indicate the verification/assurance status that applies to your reported Scope 3 emissions

No emissions data provided

CC14.2a

Please provide further details of the verification/assurance undertaken, and attach the relevant statements

Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/Section reference	Relevant standard	Proportion of reported Scope 3 emissions verified (%)
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CC14.3

Are you able to compare your Scope 3 emissions for the reporting year with those for the previous year for any sources?

No, we don't have any emissions data

CC14.3a

Please identify the reasons for any change in your Scope 3 emissions and for each of them specify how your emissions compare to the previous year

Sources of Scope 3 emissions	Reason for change	Emissions value (percentage)	Direction of change	Comment
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CC14.4

Do you engage with any of the elements of your value chain on GHG emissions and climate change strategies? (Tick all that apply)

Yes, our suppliers

Yes, other partners in the value chain

CC14.4a

Please give details of methods of engagement, your strategy for prioritizing engagement and measures of success

Contractors and Service Providers must meet or exceed Canadian Natural's approach to business. The Company engages with top tier supplies and contractors with regards to environmental policies and procedures. The Company expects that suppliers and partners will manage emissions performance and other environmental parameters using sound business practices.

CC14.4b

To give a sense of scale of this engagement, please give the number of suppliers with whom you are engaging and the proportion of your total spend that they represent

Number of suppliers	% of total spend (direct and indirect)	Comment
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CC14.4c

If you have data on your suppliers' GHG emissions and climate change strategies, please explain how you make use of that data

How you make use of the data	Please give details
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CC14.4d

Please explain why you do not engage with any elements of your value chain on GHG emissions and climate change strategies, and any plans you have to develop an engagement strategy in the future

Further Information

Module: Sign Off

Page: CC15. Sign Off

CC15.1

Please provide the following information for the person that has signed off (approved) your CDP climate change response

Name	Job title	Corresponding job category
Bill Clapperton	Vice President, Regulatory, Stakeholder and Environmental Affairs	Environment/Sustainability manager

Further Information

Module: Oil & Gas

Page: OG0. Reference information

OG0.1

Please identify the significant petroleum industry components of your business within your reporting boundary (select all that apply)

Exploration, production & gas processing

Further Information

OG1.1

Is your organization involved with oil & gas production or reserves?

Yes

OG1.2

Please provide values for annual gross and net production by hydrocarbon type (in units of BOE) for the reporting year in the following table. The values required are aggregate values for the reporting organization

Product	Gross production (BOE)	Net production (BOE)	Production consolidation boundary
---------	------------------------	----------------------	-----------------------------------

OG1.3

Please provide values for reserves by hydrocarbon type (in units of BOE) for the reporting year. Please indicate if the figures are for reserves that are proved, probable or both proved and probable. The values required are aggregate values for the reporting organization

Product	Country/region	Reserves (BOE)	Date of assessment	Proved/Probable/Proved+Probable
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OG1.4

Please explain which listing requirements or other methodologies you have used to provide reserves data in OG1.3. If your organization cannot provide data due to legal restrictions on reporting reserves figures in certain countries, please explain this

Canadian Natural publishes production and reserves data in the Company's Annual Reports. For Reserves data, please see pages 12 to 18 of the 2015 Annual report, attached.

For the annual production values in each hydrocarbon type, please see the 2015 Annual Report on page 28, attached.

OG1.5

Please provide the average breakeven cost of current production used in estimation of proven reserves

Hydrocarbon/project	Breakeven cost/BOE	Comment
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OG1.6

In your economic assessment of hydrocarbon reserves, resources or assets, do you conduct scenario analysis and/or portfolio stress testing consistent with a low-carbon energy transition?

No

OG1.6a

Please describe your scenario analysis and/or portfolio stress testing, the inputs used and the implications for your capital expenditure plans and investment decisions

OG1.6b

Please explain why you have not conducted any scenario analysis and/or portfolio stress testing consistent with a low-carbon energy transition

As a primary strategy, Canadian Natural strives to reduce emissions wherever possible. The Company believes in supporting emerging technology. The Company engages in scenario planning exercises to help identify and define various risks to the business, and then develops a variety of potential responses and strategies to manage those risks. The strategy is based on our six core principles for GHG emissions management. These are:

- improving energy conservation and efficiency

- reducing emission intensity
- developing and adopting innovative technology and supporting associated research and development
- trading capacity, both domestically and globally
- offsetting emissions considering the life cycle costs of emission reductions in decision-making about project development

Further Information

Attachments

[https://www.cdp.net/sites/2016/67/2667/Climate Change 2016/Shared Documents/Attachments/ClimateChange2016/OG1.Productionreservesbyhydrocarbontype\(1Jan2015-31Dec2015\)/cnq-2015-annual-report.pdf](https://www.cdp.net/sites/2016/67/2667/Climate%20Change%202016/Shared%20Documents/Attachments/ClimateChange2016/OG1.Productionreservesbyhydrocarbontype(1Jan2015-31Dec2015)/cnq-2015-annual-report.pdf)

Page: OG2. Emissions by segment in the O&G value chain - (1 Jan 2015 - 31 Dec 2015)

OG2.1

Please indicate the consolidation basis (financial control, operational control, equity share) used to report the Scope 1 and Scope 2 emissions by segment in the O&G value chain. Further information can be provided in the text box in OG2.2

Segment	Consolidation basis for reporting Scope 1 emissions	Consolidation basis for reporting Scope 2 emissions
Exploration, production & gas processing	Operational Control	Operational Control

OG2.2

Please provide clarification for cases in which different consolidation bases have been used and the level/focus of disclosure. For example, a reporting organization whose business is solely in storage, transportation and distribution (STD) may use the text box to explain why only the STD row has been completed

The Company uses a single consolidation base

OG2.3

Please provide masses of gross Scope 1 carbon dioxide and methane emissions in units of metric tonnes CO₂ and CH₄, respectively, for the organization's owned/controlled operations broken down by value chain segment

Segment	Gross Scope 1 carbon dioxide emissions (metric tonnes CO ₂)	Gross Scope 1 methane emissions (metric tonnes CH ₄)
Exploration, production & gas processing	19777354	238947

OG2.4

Please provide masses of gross Scope 2 GHG emissions in units of metric tonnes CO₂e for the organization's owned/controlled operations broken down by value chain segment

Segment	Gross Scope 2 emissions (metric tonnes CO ₂ e)	Comment
Exploration, production & gas processing	1730189	

Further Information

Page: OG3. Scope 1 emissions by emissions category - (1 Jan 2015 - 31 Dec 2015)

OG3.1

Please confirm the consolidation basis (financial control, operational control, equity share) used to report Scope 1 emissions by emissions category

Segment	Consolidation basis for reporting Scope 1 emissions by emissions category
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Segment	Consolidation basis for reporting Scope 1 emissions by emissions category
Exploration, production & gas processing	Operational Control

OG3.2

Please provide clarification for cases in which different consolidation bases have been used to report by emissions categories (combustion, flaring, process emissions, vented emissions, fugitive emissions) in the various segments

Only Operational Control is used as a consolidation base.
Canadian Natural discloses consolidated company wide Scope 1 GHG emissions.

OG3.3

Please provide masses of gross Scope 1 carbon dioxide and methane emissions released into the atmosphere in units of metric tonnes CO₂ and CH₄, respectively, for the whole organization broken down by emissions category

Emissions category	Gross Scope 1 carbon dioxide emissions (metric tonnes CO ₂)	Gross Scope 1 methane emissions (metric tonnes CH ₄)
Combustion	11394768	26687
Flaring	1302058	1277
Process emissions	584808	0
Vented emissions	28026	127928
Fugitive emissions	150949	82988

OG3.4

Please describe your organization's efforts to reduce flaring, including any flaring reduction targets set and/or its involvement in voluntary flaring reduction programs, if flaring is relevant to your operations

Canadian Natural's strategy for managing GHG emissions focuses on improving energy conservation and efficiency, reducing emissions intensity, supporting associated research and development, and adopting innovative technologies. To support this strategy, we have flaring, venting, fuel and natural gas conservation programs in place.

Further Information

Page: OG4. Transfers & sequestration of CO2 emissions - (1 Jan 2015 - 31 Dec 2015)

OG4.1

Is your organization involved in the transfer or sequestration of CO2?

Yes

OG4.2

Please indicate the consolidation basis (financial control, operational control, equity share) used to report transfers and sequestration of CO2 emissions

Activity	Consolidation basis
Transfers	Operational Control
Sequestration of CO2 emissions	Operational Control

OG4.3

Please provide clarification for cases in which different consolidation bases have been used (e.g. for a given activity, capture, injection or storage pathway)

Only Operational Control is used as a consolidation base.

OG4.4

Using the units of metric tonnes of CO₂, please provide gross masses of CO₂ transferred in and out of the reporting organization (as defined by the consolidation basis). Please note that questions of ownership of the CO₂ are addressed in OG4.6

Transfer direction	CO₂ transferred – Reporting year
CO ₂ transferred in	22334
CO ₂ transferred out	

OG4.5

Please provide clarification on whether any oil reservoirs and/or sequestration system (geological or oceanic) have been included within the boundary of the reporting organization. Provide details, including degrees to which reservoirs are shared with other entities

The oil reservoir in Southern Alberta into which Canadian Natural injects CO₂ for enhanced oil recovery is included within the boundary of the reporting organization. Therefore "CO₂ transferred out" is not applicable and not reported in the table above. The reservoir is not shared with another entity.

The tailings pond at the Horizon Oil Sands project is included in the boundary of the reporting organization. The reservoir and the tailing ponds are not shared with other entities.

OG4.6

Please explain who (e.g. the reporting organization) owns the transferred emissions and what potential liabilities are attached. In the case of sequestered emissions, please clarify whether the reporting organization or one or more third parties owns the sequestered emissions and who has potential liability for them

In 2015, Canadian Natural purchased and injected 22,334 tonnes of CO2 into tailings at our Horizon Oil Sands operation, as part of the development of CO2 injection into tailings. Canadian Natural owns and is responsible for this injected CO2. Canadian Natural has the potential liability for any emissions, should they occur.

The question of transferred emissions is not applicable to CO2 injection at the Hays Enhanced Oil Recovery (EOR) project in southern Alberta since the injected CO2 is not transferred in or out of the boundary of the project. CO2 is captured from Hays gas stream separation. It is within the boundary of the reporting organization. Canadian Natural has the potential liability for any emissions, should they occur.

OG4.7

Please provide masses in metric tonnes of gross CO2 captured for purposes of carbon capture and sequestration (CCS) during the reporting year according to capture pathway. For each pathway, please provide a breakdown of the percentage of the gross captured CO2 that was transferred into the reporting organization and the percentage that was transferred out of the organization (to be stored)

Capture pathway in CCS	Captured CO2 (metric tonnes CO2)	Percentage transferred in	Percentage transferred out
Gas stream separation from natural gas purification	21326		

OG4.8

Please provide masses in metric tonnes of gross CO2 injected and stored for purposes of CCS during the reporting year according to injection and storage pathway

Injection and storage pathway	Injected CO2 (metric tonnes CO2)	Percentage of injected CO2 intended for long-term (>100 year) storage	Year in which injection began	Cumulative CO2 injected and stored (metric tonnes CO2)
CO2 used for enhanced oil recovery (EOR) or enhanced gas recovery (EGR)	21326	100%	2004	
Other: CO2 sequestration in tailings	22334	100%	2009	

OG4.9

Please provide details of risk management performed by the reporting organization and/or third party in relation to its CCS activities. This should cover pre-operational evaluation of the storage (e.g. site characterisation), operational monitoring, closure monitoring, remediation for CO2 leakage, and results of third party verification

For the Hays EOR project, monitoring is carried out per the requirements of the Alberta Energy Regulator set out in the approval for the recovery scheme. The Company monitors CO2 concentrations in all wells within and surrounding the project in order to measure performance in the scheme. surrounding wellbores are sampled for elevated CO2 to assess the containment within the reservoir and to inspect the injection line. Alberta Energy regulator completes annual audits to ensure accuracy. The volume of CO2 injected is verified to a reasonable level of assurance by our third party verifier, and accepted as part of the Specified Gas Emitters Regulation (SGER) by Alberta Environment and Sustainable Resources Development (AESRD).

For the Horizon CO2 tailings injection, monitoring and testing is carried out as part of the research and development of this sequestration method.

Further Information

Page: OG5. Sales and emissions intensity - (1 Jan 2015 - 31 Dec 2015)

OG5.1

Please provide values for annual sales of hydrocarbon types (in units of BOE) for the reporting year in the following table. The values required are aggregate values for the reporting organization

Product	Sales (BOE)
Other: Refer to Annual Report	

OG5.2

Please provide estimated emissions intensities (Scope 1 + Scope 2) associated with current production and operations

Year ending	Segment	Hydrocarbon/product	Emissions intensity (metric tonnes CO2e per thousand BOE)	% change from previous year	Direction of change from previous year	Reason for change
2015	Exploration, production & gas processing	Conventional non-associated natural gas Associated natural gas Natural gas condensate Natural gas liquids (NGL) Liquefied Petroleum Gas (LPG) Coalbed methane Shale gas Light oil Medium oil Heavy oil Bitumen (oil sands) Synthetic oil	.0692	5.6	Decrease	continued focus on gas conservation and lower intensities in our thermal and synthetic oil operations in 2015

OG5.3

Please clarify how each of the emissions intensities has been derived and supply information on the methodology used where this differs from information already given in answer to the methodology questions in the main information request

We only operate in the “exploration, production & gas processing” activity, so all emissions and intensities reported above are assigned to this activity. No difference from information already given in answer to the main information request.

Further Information

Page: OG6. Development strategy - (1 Jan 2015 - 31 Dec 2015)

OG6.1

For each relevant strategic development area, please provide financial information for the reporting year

Strategic development area	Describe how this relates to your business strategy	Sales generated	EBITDA	Net assets	CAPEX	OPEX	Comment
							For information on capital allocations, please see the 2015 Annual Report.

OG6.2

Please describe your future capital expenditure plans for different strategic development areas

Strategic development area	CAPEX	Total return expected from CAPEX investments	Comment
Renewable energy, excluding Biomass and Biofuels			Canadian Natural currently does not have revenue from renewable or clean energy technologies. The Company has R&D expenses in the development of renewable and clean energy technology, but the projects are currently in the pilot stage.

OG6.3

Please describe your current expenses in research and development (R&D) and future R&D expenditure plans for different strategic development areas

Strategic development area	R&D expenses – Reporting year	R&D expenses – Future plans	Comment
Other: New Technologies			Canadian Natural looks for ways to reduce the Company’s environmental footprint through the development and deployment of new technologies to reduce GHG emissions. The Company does this independently and through its membership in certain industry and research organizations. Examples of such projects include injection of CO2 into tailings at the Horizon Oil Sands to improve tailings properties and to sequester CO2, the testing of solar-powered pumps (to replace gas pneumatic pumps), the electrification of a new gas plant in British Columbia to take advantage of the low-carbon electricity supply in British Columbia, and the use of CO2 for enhanced oil recovery.

Further Information

Page: OG7. Methane from the natural gas value chain

OG7.1

Please indicate the consolidation basis (financial control, operational control, equity share) used to prepare data to answer the questions in OG7

Segment	Consolidation basis
Exploration, production & gas processing	Operational Control

OG7.2

Please provide clarification for cases in which different consolidation bases have been used

Only Operational Control has been used to consolidate data

OG7.3

Does your organization conduct leak detection and repair (LDAR), or use other methods to find and fix fugitive methane emissions?

Yes

OG7.3a

Please describe the protocol through which methane leak detection and repair, or other leak detection methods, are conducted, including predominant frequency of inspections, estimates of assets covered, and methodologies employed

Canadian Natural follows the CAPP Best Management Practice for Fugitive Emissions Management (CAPP 2007). The frequency of inspections varies based on type of facility.

OG7.3b

Please explain why not and whether you plan on conducting leak detection and repair, or other methods to find and fix fugitive methane emissions

OG7.4

Please indicate the proportion of your organization's methane emissions inventory estimated using the following methodologies (+/- 5%)

Methodology	Proportion of total methane emissions estimated with methodology	What area of your operations does this answer relate to?
Direct detection and measurement		
Engineering calculations	>75%	All
Source-specific emission factors (IPCC Tier 3)		
IPCC Tier 1 and/or Tier 2 emission factors		

OG7.5

Please use the following table to report your methane emissions rate

Year ending	Segment	Estimate total methane emitted expressed as % of natural gas production or throughput at given segment	Estimate total methane emitted expressed as % of total hydrocarbon production or throughput at given segment
2015	Exploration, production & gas processing		0.67%

OG7.6

Does your organization participate in voluntary methane emissions reduction programs?

Yes

OG7.6a

Please describe your organization's participation in voluntary methane emissions reduction programs

Voluntary methane emissions reduction programs that are being developed include retrofitting pneumatic devices and gas conservation from primary heavy oil beyond the requirements of AER Directive 60.

OG7.7

Were methane emissions incorporated in targets reported in CC3?

Yes

OG7.7a

Please describe how methane emissions were incorporated in your target and provide the relevant details (base year, % reduction from base year, target year) of your methane emissions reduction target if not already described in CC3

Canadian Natural has project specific targets at selective operations, and a corporate emissions reduction target to reduce CO2 emission intensity and to meet any regulated requirements. Canadian Natural's overall target is to reduce the Scope 1 intensity of our different product streams over time. This includes methane

emissions.

Canadian Natural supports overall focus on methane emission reductions, recognizing the need to balance actions on new versus existing sources, include an incentive-based element for early action, and take into account capital stock turnover.

OG7.7b

Please explain: (i) why you do not incorporate methane into your targets; and (ii) forecast how your methane emissions will change over the next five years

Further Information

CDP