

C0. Introduction

C0.1

(C0.1) Give a general description and introduction to your organization.

Suncor is an integrated energy company headquartered in Calgary, Alberta, Canada. The company is strategically focused on developing one of the world's largest petroleum resource basins – Canada's Athabasca oil sands. In addition, Suncor explores for, acquires, develops, produces and markets crude oil in Canada and internationally; the company transports and refines crude oil, and markets petroleum and petrochemical products primarily in Canada. Suncor also operates a renewable energy business and conducts energy trading activities focused principally on the marketing and trading of crude oil, natural gas, byproducts, refined products, and power.

C0.2

(C0.2) State the start and end date of the year for which you are reporting data.

	Start date	End date	Indicate if you are providing emissions data for past reporting years	Select the number of past reporting years you will be providing emissions data for
Reporting year	January 1 2019	December 31 2019	Yes	1 year

C0.3

(C0.3) Select the countries/areas for which you will be supplying data.

- Canada
- United States of America

C0.4

(C0.4) Select the currency used for all financial information disclosed throughout your response.

- CAD

C0.5

(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should align with your chosen approach for consolidating your GHG inventory.

- Operational control

C-OG0.7

(C-OG0.7) Which part of the oil and gas value chain and other areas does your organization operate in?

Row 1

Oil and gas value chain

- Upstream
- Downstream

Other divisions

- Biofuels
- Grid electricity supply from gas
- Grid electricity supply from renewables

C1. Governance

C1.1

(C1.1) Is there board-level oversight of climate-related issues within your organization?

Yes

C1.1a

(C1.1a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for climate-related issues.

Position of individual(s)	Please explain
Board-level committee	The Board oversees Suncor's Enterprise Risk Management Program (the "ERM Program"). In accordance with this program, the CEO and senior management undertake a process to identify, assess and mitigate significant risks. The Board undertakes an annual review of those risks identified by the ERM program as principal risks (exposure that has the potential to impact or impair the ability of the company to meet its strategic objectives) which includes carbon risk. The Board monitors risk management actions for these risks throughout the year. In addition to Board oversight of risk management efforts, each principal risk is mapped to a Board Committee. Carbon risk is mapped to the Environment, Health, Safety and Sustainable Development Committee of the Board.

C1.1b

(C1.1b) Provide further details on the board's oversight of climate-related issues.

Frequency with which climate related issues are a scheduled agenda item	Governance mechanisms into which climate related issues are integrated	Scope of board level oversight	Please explain
Scheduled – some meetings	<ul style="list-style-type: none"> Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding annual budgets Reviewing and guiding business plans Setting performance objectives Monitoring implementation and performance of objectives Monitoring and overseeing progress against goals and targets for addressing climate-related issues 	<Not Applicable>	One of the Board's major duties is to review with management Suncor's purpose, objectives and goals and the strategies and plans for achieving them. The Board also monitors Suncor's progress toward its strategic goals and plans, and revises Suncor's direction where warranted. The Board oversees Suncor's Enterprise Risk Management Program (the "ERM Program"). In accordance with this program, the CEO and senior management undertake an enterprise-wide process to identify, assess and mitigate significant risks. The Board undertakes an annual review of those risks identified by the ERM program as principal risks (exposure that has the potential to impact or impair the ability of the company to meet its strategic objectives) which includes carbon risk. The Board monitors risk management actions for these risks throughout the year. In addition to Board oversight of risk management efforts, each principal risk is mapped to a Board Committee. Carbon risk is mapped to the Environment, Health, Safety and Sustainable Development Committee of the Board, and this committee receives quarterly reports from management. The Board is also responsible for ensuring Suncor has an effective strategic planning process, and on an annual basis reviews Suncor's annual business plan (including Suncor's annual capital budget) and in doing so endorses the strategies reflected in Suncor's long-range plan. The Governance Committee provides assistance to the Board by annually assessing Suncor's planning and budgeting process.

C1.2

(C1.2) Provide the highest management-level position(s) or committee(s) with responsibility for climate-related issues.

Name of the position(s) and/or committee(s)	Reporting line	Responsibility	Coverage of responsibility	Frequency of reporting to the board on climate related issues
Chief Sustainability Officer (CSO)	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	Quarterly
Chief Executive Officer (CEO)	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	Quarterly
Other C-Suite Officer, please specify (Executive Vice-President, Strategy)	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	Quarterly
Chief Financial Officer (CFO)	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	Quarterly

C1.2a

(C1.2a) Describe where in the organizational structure this/these position(s) and/or committees lie, what their associated responsibilities are, and how climate-related issues are monitored (do not include the names of individuals).

Describe where in the organization the position/committee lies:

The Chief Sustainability Officer (CSO) and Executive Vice-President Strategy & Operations Services (EVP Strategy) are members of the executive leadership team that reports directly to the CEO and President of Suncor. The CSO and EVP Strategy provide regular updates to the Environment, Health, Safety & Sustainable Development (EHS&SD) Committee of the Board of Directors.

A number of management councils support of Suncor's operational and strategic planning processes. One such council is the Asset Development and Execution Council (ADEC) that helps drive increased capital discipline, integration and alignment across Suncor; from planning to execution to benefit realization. The ADEC prioritizes Technology, Innovation & Sustainability and stewards the capital planning and technology portfolios to meet Suncor's greenhouse gas (GHG) goal.

Provide a clear rationale for why responsibility lies with that position/committee:

The CSO is the highest-level management position below the board level where the most significant climate-related issues ultimately are managed. Suncor's inclusion of a CSO within its corporate organization structure, demonstrates the highest level of commitment to have significant and dedicated resources responsible for the material sustainability issues facing Suncor, including climate-related issues.

Provide a description of responsibility that position/committee has within Suncor:

The CSO serves as the bridge between Management and the Board on carbon risk. As such, the CSO has the responsibility of communicating Suncor's carbon risk and mitigation measures to the Board and, conversely, translating the strategic direction from the Board into corporate action.

The CSO presents regularly to the Environment, Health, Safety & Sustainable Development (EHS&SD) Committee, which is a committee of the Board of Directors. The EHS&SD Committee's responsibilities include monitoring the effectiveness and integrity of Suncor's internal controls as they related to operational risks of the Corporation's physical assets and other matters relating to the environment, health, safety and sustainable development. The Committee is also responsible for the review of the policies and practices of the Corporation respecting operational risks as they relate to climate change.

Provide a description of the specific climate-related issues and monitoring process that position/committee has:

An example of one of the CSO's monitoring processes occurs within the EHS&SD committee at Suncor. This committee is responsible for the review of the policies and practices of Suncor in terms of operational risks, including more related to climate change. This includes assessing the risks and impacts of climate change issues on the Corporation's current business and growth plans, reviewing the impacts of emerging climate legislation and regulations and reviewing the Company's disclosures on carbon risk.

C1.3

(C1.3) Do you provide incentives for the management of climate-related issues, including the attainment of targets?

	Provide incentives for the management of climate related issues	Comment
Row 1	Yes	Incentive-based pay is designed to reward successful short-, medium-, and long-term performance in key areas. These areas include safety, sustainability, base business, growth, and financial metrics.

C1.3a

(C1.3a) Provide further details on the incentives provided for the management of climate-related issues (do not include the names of individuals).

Entitled to incentive	Type of incentive	Activity incentivized	Comment
Corporate executive team	Monetary reward	Emissions reduction project	We incentivize GHG performance by progressing projects that get us closer to our GHG goal (e.g. fuel switching, in situ pilots, renewables) and these are reflected in the business unit "growth" component of the AIP.
Business unit manager	Monetary reward	Emissions reduction project	We incentivize GHG performance by progressing projects that get us closer to our GHG goal (e.g. fuel switching, in situ pilots, renewables) and these are reflected in the business unit "growth" component of the AIP.
Other, please specify (Facility Managers)	Monetary reward	Emissions reduction project	We incentivize GHG performance by progressing projects that get us closer to our GHG goal (e.g. fuel switching, in situ pilots, renewables) and these are reflected in the business unit "growth" component of the AIP.

C2. Risks and opportunities

C2.1

(C2.1) Does your organization have a process for identifying, assessing, and responding to climate-related risks and opportunities?

Yes

C2.1a

(C2.1a) How does your organization define short-, medium- and long-term time horizons?

	From (years)	To (years)	Comment
Short-term	0	1	Risk time horizons are consistent with Suncor's Risk Management Standard.
Medium-term	1	10	Risk time horizons are consistent with Suncor's Risk Management Standard.
Long-term	10	25	Risk time horizons are consistent with Suncor's Risk Management Standard.

C2.1b

(C2.1b) How does your organization define substantive financial or strategic impact on your business?

Suncor is committed to a proactive program of enterprise risk management intended to enable decision-making through consistent identification and assessment of risks inherent to its assets, activities and operations.

Suncor defines risk as the effect on the achievement of organizational objectives and encompasses both positive opportunities and negative threats to the business. Suncor's risk assessment includes a quantitative and qualitative review of consequence and likelihood of five receptors including health & safety, financial, environmental, reputational, and regulatory impacts on Suncor's business.

Suncor uses a six-by-six risk matrix to determine risk level through the combination of Likelihood and Consequence of the risk occurring. The six levels of Likelihood are based on the frequency the risk may occur (e.g. Level 5 likelihood – risk occurs between 1 and 10 years). The six levels of Consequence are specific to each receptor in the assessment (e.g. a Level 3 Health & Safety consequence – one or more injuries requiring medical treatment or a Level 3 Financial consequence of \$10 million to \$250 million).

Likelihood ranges from Level 1 (consequence seen once or twice in the industry) to Level 6 (consequence is expected to occur more than once per year).

Financial consequence ranges from Level 1 (less than \$100,000) to Level 6 (greater than \$1 billion). The most significant risks are those that would have the combination of a high consequence (Level 5 or 6) and potential to occur more frequently (Level 5 or 6).

Following the assessment of likelihood and consequence and factoring in mitigation, residual risks are categorized from Level IV (lowest potential significance) to Level 1+ (highest significance) and assigned to the appropriate organization level for management.

Our most significant risks (opportunities and threats) are considered Principal Risks and are outlined in Suncor's 2020 Management Discussion & Analysis (MD&A). These risks could have a material impact on Suncor's ability to meet or support its strategic business objectives, financial condition, reserves and results of operations. The CEO is accountable for principal risk management. Further, Suncor's Board of Directors ensures there are systems in place to effectively identify, manage, and monitor the principal risks of Suncor's business, and to mitigate their impact.

Suncor considers carbon to be a principal risk.

C2.2

(C2.2) Describe your process(es) for identifying, assessing and responding to climate-related risks and opportunities.

Value chain stage(s) covered

Direct operations

Risk management process

Integrated into multi-disciplinary company-wide risk management process

Frequency of assessment

More than once a year

Time horizon(s) covered

Short-term

Medium-term

Long-term

Description of process

Suncor undertakes a corporate-wide process to identify, assess and report on significant risks including carbon as a principal risk. Carbon risk receives oversight from the full Board and executive management and systems are in place to mitigate potential impacts. Our assessment is supported by a carbon price outlook, which highlights regulations and their expected trajectory, as they apply to our assets, our upstream suppliers and our downstream products. Suncor's Enterprise Risk Management (ERM) process employs a corporate risk matrix to assess and prioritize all risks/opportunities using a measure of likelihood and consequence including reputational, financial and environmental impacts. To prioritize the risks and opportunities, our investments and capital decisions are tested against a range of variables, including alternative future energy scenarios and our carbon price outlook to ensure an expectation of a competitive rate of return over the asset life. Suncor assesses specific risks to its physical assets considering various potential operational hazards to which those assets may be subject, including the risk of extreme weather events in the areas where we operate. Extreme events include, among other things, icebergs, hurricanes, fires (including forest fires), severe winter climate conditions, prolonged periods of extreme cold or extreme heat, flooding, droughts, and other extreme weather conditions. Operational plans, business continuity plans, and insurance are all tools used to mitigate these risks. As an example, Suncor currently mitigates pack ice and iceberg risk through the design of its facilities and with its emergency response system. A continuous monitoring system tracks iceberg locations and makes projections of the expected course of the icebergs. Where an iceberg cannot be diverted, an emergency response system allows for the floating platform to be disengaged and moved to safer water, protecting the asset but resulting in production disruption. These methods lessen the likelihood and magnitude of the risk. For tropical cyclones, a continuous weather tracking service monitors storm systems in the North Atlantic. One activity to support the assessment of transitional risks and opportunities is Suncor's use of four long-term energy futures scenarios. Each scenario is plausible and could affect our operating environment and business strategy in markedly different ways. Signposts and milestones are monitored to identify critical shifts in the external context. Signposts include changes in global energy demand and supply mix, political and economic indicators, climate data and policy trends, as well as technology advances and consumer trends. An internal process for project and asset development incorporates a review of climate change implications early in the process and prior to a commitment of significant resources. An environmental engineering team, corporate technology development team, corporate strategy team and capital portfolio management team coordinate company-wide strategy for energy efficiency and advancing carbon reduction technology. Business units assess key business risks/opportunities at the facility level, including climate change. The output of this process escalates to the corporate & ERM process. Potential physical risks posed by the effects of climate change are addressed at a facility level. GHG emission forecasts are developed by facilities to understand the potential impact of identified risks allowing them to optimize their planning.

Value chain stage(s) covered

Upstream

Risk management process

Integrated into multi-disciplinary company-wide risk management process

Frequency of assessment

More than once a year

Time horizon(s) covered

Short-term

Medium-term

Long-term

Description of process

Suncor undertakes a corporate-wide process to identify, assess and report on significant risks including carbon as a principal risk. Carbon risk receives oversight from the full Board and executive management and systems are in place to mitigate potential impacts. Our assessment is supported by a carbon price outlook, which highlights regulations and their expected trajectory, as they apply to our assets, our upstream suppliers and our downstream products. Suncor's Enterprise Risk Management (ERM) process employs a corporate risk matrix to assess and prioritize all risks/opportunities using a common measure of impact and consequence; these include reputational, financial and environmental. To prioritize the risks and opportunities, our investments and capital decisions are tested against a range of variables, including alternative future energy scenarios and our carbon price outlook to ensure an expectation of a competitive rate of return over the asset life. One activity to support the assessment of transitional risks and opportunities is Suncor's use of four long-term energy futures scenarios. Each scenario is plausible and could affect our operating environment and business strategy in markedly different ways. Signposts and milestones are monitored to identify critical shifts in the external context. Signposts include changes in global energy demand and supply mix, political and economic indicators, climate data and policy trends, and also include technology advances and consumer trends. An internal process for project and asset development incorporates a review of climate change implications early in the process and prior to a commitment of significant resources. An environmental engineering team, corporate technology development team, corporate strategy team and capital portfolio management team coordinate company-wide strategy for energy efficiency and advancing carbon reduction technology.

Value chain stage(s) covered

Downstream

Risk management process

Integrated into multi-disciplinary company-wide risk management process

Frequency of assessment

More than once a year

Time horizon(s) covered

Short-term

Medium-term

Long-term

Description of process

Suncor undertakes a corporate-wide process to identify, assess and report on significant risks including carbon as a principal risk. Carbon risk receives oversight from the full Board and executive management and systems are in place to mitigate potential impacts. Our assessment is supported by a carbon price outlook, which highlights regulations and their expected trajectory, as they apply to our assets, our upstream suppliers and our downstream products. Suncor's Enterprise Risk Management (ERM) process employs a corporate risk matrix to assess and prioritize all risks/opportunities using a common measure of impact and consequence; these include reputational, financial and environmental. To prioritize the risks and opportunities, our investments and capital decisions are tested against a range of variables, including alternative future energy scenarios and our carbon price outlook to ensure an expectation of a competitive rate of return over the asset life. One activity to support the assessment of transitional risks and opportunities is Suncor's use of four long-term energy futures scenarios. Each scenario is plausible and could affect our operating environment and business strategy in markedly different ways. Signposts and milestones are monitored to identify critical shifts in the external context. Signposts include changes in global energy demand and supply mix, political and economic indicators, climate data and policy trends, and also include technology advances and consumer trends.

(C2.2a) Which risk types are considered in your organization's climate-related risk assessments?

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	Existing and future laws and regulations can impose significant liabilities on a failure to comply with their requirements. Concerns over climate change and fossil fuel extraction could lead governments to enact additional or more stringent laws and regulations applicable to Suncor and other companies in the energy industry in general. Each year, a carbon price outlook is developed, accounting for existing regulations and the expected trajectory of those regulations as they apply to our assets. Investments and capital decisions are tested against a range of variables, including our carbon price outlook, to ensure an expectation of a competitive rate of return over the asset life. Examples of current legislation imposing a cost on carbon include the Alberta Technology Innovation and Emissions Reduction (TIER) Regulation. The cost of this legislation is built into Suncor's economic evaluations.
Emerging regulation	Relevant, always included	Future laws and regulations may impose significant liabilities on a failure to comply with their requirements. Concerns over climate change and fossil fuel extraction could lead governments to enact additional or more stringent laws and regulations applicable to Suncor and other companies in the energy industry in general. Each year, a carbon price outlook is developed, accounting for existing regulations and the expected trajectory of those regulations as they apply to our assets. Investments and capital decisions are tested against a range of variables, including our carbon price outlook, to ensure an expectation of a competitive rate of return over the asset life. New carbon pricing and clean fuel regulations are being developed in several jurisdictions in which Suncor operates.
Technology	Relevant, always included	Technology is included in the annual risk assessment process of Suncor. Suncor incorporates technology into scenario planning and uses four scenarios encompassing different degrees of technological change. A review of the existing portfolio of GHG reduction technologies is also included in the annual risk assessment process. In 2019, Suncor invested approximately \$830 million in technology development and deployment and digital technologies as part of a robust strategy to optimize current assets and develop next-generation facilities.
Legal	Relevant, always included	Suncor undertakes a corporate-wide process to identify, assess and report on significant risks including carbon as a principal risk. Our assessment is supported by a carbon price outlook, which highlights regulations and their expected trajectory, as they apply to our assets. The risk assessment includes a review of financial, reputational, and regulatory impacts on Suncor's business, including the potential implications of climate litigation.
Market	Relevant, always included	As part of its ongoing business planning, Suncor assesses potential future costs associated with CO2 emissions in its operations and the evaluation of future projects, based on the company's outlook for the carbon price under current and pending GHG regulations. Suncor evaluates the potential impact of future carbon-constrained scenarios on its business strategy. The annual assessment of carbon risk as a principal risk takes into account demand destruction of fossil fuels due to changing societal trends and alternative energy incentives and mandates.
Reputation	Relevant, always included	Suncor undertakes a corporate-wide process to identify, assess and report on significant risks including carbon as a principal risk. The risk assessment includes a review of financial, reputational, and regulatory impacts on Suncor's business, including increasing public opposition to fossil fuels, and oil sands in particular.
Acute physical	Relevant, always included	In general, Suncor's operations are subject to operational hazards and risks such as, among other things, icebergs, hurricanes, fires (including forest fires), severe winter climate conditions, prolonged periods of extreme cold or extreme heat, flooding, droughts, and other extreme weather conditions. Operational plans, business continuity plans, and insurance are all tools used to mitigate these risks. As an example, Suncor currently mitigates pack ice and iceberg risk through the design of its facilities and with its emergency response system. A continuous monitoring system tracks iceberg locations and makes projections of the expected course of the icebergs. Where an iceberg cannot be diverted, an emergency response system allows for the floating platform to be disengaged and moved to safer water, protecting the asset but resulting in production disruption. These methods lessen the likelihood and magnitude of the risk. For tropical cyclones, a continuous weather tracking service monitors storm systems in the North Atlantic.
Chronic physical	Not relevant, explanation provided	Chronic risks such as rising sea level and region changes in rainfall and temperature do not pose a risk to Suncor's operations. The risks of constraints such as water withdrawal restrictions due to drought have been evaluated and not considered to be a risk to operations.

C2.3

(C2.3) Have you identified any inherent climate-related risks with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.3a

(C2.3a) Provide details of risks identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Risk 1

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Current regulation	Carbon pricing mechanisms
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Primary potential financial impact

Increased direct costs

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

Suncor's operations in British Columbia are subject to a carbon tax which is set at \$45/tCO2e for 2020. Suncor's Alberta operations are subject to the Technology Innovation and Emissions Reduction Regulation (TIER) in 2020 which imposes a carbon price of \$30/tCO2e on emissions beyond ambitious government-set performance targets for each facility. Facilities that perform better than the target can generate and sell credits within this system. Where physical GHG reductions cannot be made at the facility, compliance may be achieved through a combination of offsets, emission performance credits or payment into a provincial technology innovation fund. Alberta oil sands facilities are also subject to a combined Emissions Limit of 100 Mt, which is driving increased investment in and deployment of new technology to collectively remain under the cap. Suncor's Ontario facilities (including the Sarnia refinery and St. Clair ethanol plant) are subject to the federal Greenhouse Gas Pollution Pricing Act (GGPPA). The GGPPA includes an economy-wide consumer carbon levy on use of fossil fuels and an Output Based Pricing System applied to industrial sectors that face international competition. The 2020 carbon price under the GGPPA is \$30/tCO2e. In 2020, Suncor's refinery in Quebec is regulated under a cap-and-trade program linked to the Western Climate Initiative (WCI) cap and trade program. Regulated refining facilities receive an allowance allocation that aligns with a benchmark performance and considers competitiveness in a trade-exposed context. Fuel suppliers are required to purchase allowances to cover the tail pipe emissions of all fuel sold, the cost of which is largely passed through to the consumer, thus acting as a carbon price on fuel consumption. In Newfoundland and Labrador, the provincial carbon pricing program is a hybrid system comprised of performance standards for large industrial facilities and a consumer carbon tax on transportation, building and other fuels combusted in the province. Performance standards for large industrial facilities are legislated under the Management of Greenhouse Gas Act and associated regulations, which apply to all facilities that emit 15,000 tCO2e or more per annum. This includes Suncor's operated Terra Nova offshore operation. Consistent with the Canadian federal carbon pricing scheme, the 2020 Newfoundland and Labrador carbon price is \$30/tCO2e.

Time horizon

Short-term

Likelihood

Virtually certain

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

56000000

Potential financial impact figure – maximum (currency)

175000000

Explanation of financial impact figure

Based on the outlook for new emissions regulations, we have updated our cost estimates. The after-tax cost per barrel of our upstream net production over the next ten years is estimated at an average of \$0.33 cents per barrel. The estimated average after-tax cost per barrel of our downstream saleable yield over this same period is \$0.13 cents per barrel.

Cost of response to risk

2000000

Description of response and explanation of cost calculation

Suncor's GHG intensity reduction goal of 30% by 2030 drives energy efficiency, fuel switching opportunities, and technology advancement. Suncor's technology strategy is driving step-change innovation to reduce GHG intensity in bitumen production and processing. COSIA's GHG technology strategy is to accelerate deployment of step-change technology. We continue to generate offset credits from our wind and cogeneration assets to reduce GHG compliance costs at other facilities. Where efficiency improvements and Emission Performance Credits from our other operations do not cover compliance requirements, Suncor purchases compliance instruments at competitive prices.

Comment

Risk Name: Escalating Climate-Related Regulatory Costs and Constraints

Identifier

Risk 2

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Reputation	Increased stakeholder concern or negative stakeholder feedback
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Primary potential financial impact

Decreased revenues due to reduced production capacity

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

Changes in public perception of integrated oil and gas companies and their operations may pose issues related to development and operating approvals or market access risk for products, which may have a material adverse effect on Suncor's business, financial condition, results of operations and cash flow. Based on data presented by Environment and Climate Change Canada, notwithstanding that Canada's oil sands proportionate share of global emissions is less than 0.2%, the development of the oil sands has figured prominently in politics, media and activist commentary on the subject of climate change. According to an IHS study, while emissions intensity has decreased over the past decade for oil sands production, oil sands refined products range between 1% - 19% higher carbon intensity on a well-to-wheels basis than products from conventional crudes. Planned growth projects to meet global energy demand may increase Suncor's absolute emissions in the next decade. Reputational damage related to GHG emissions may directly or indirectly affect the profitability of our current oil sands projects and the viability of future oil sands projects in a number of ways, including: a) creating regulatory uncertainty that challenges economic modelling of future projects and potentially delays sanctioning; b) motivating more onerous emissions regulation of those projects that could result in changes to facility design and operating requirements, thereby potentially increasing the cost of construction and operation; and c) legislation or policy that limits the purchase of oil sands crude oil by governments and other institutional consumers that, in turn, limits the market for this crude oil and reduces its price.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

0

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

A potential cost to the oil sands industry associated with climate change reputation risk is the price differential between bitumen & lighter oils caused by delays in approval of new pipelines intended to provide access of oil sands bitumen to tidewater and international markets. Please note that the range "0 to 8" identified in the potential financial impact is \$0/bbl to \$8/bbl.

Cost of response to risk

2000000

Description of response and explanation of cost calculation

Market access risk is substantially mitigated by Suncor's integrated business model where we process much of our bitumen in our own upgraders & refineries thereby avoiding the bitumen discount. Reputational risk is best managed through improved environmental performance. Our oil sands operation's energy efficiency initiatives have demonstrated tangible reduction in energy intensity since 1990. We continue to make long term tech investments towards step changes in in-situ production emissions intensity. Activities include various efforts to collaborate in industry initiatives (e.g. COSIA); our support of various academic & engineering research organizations to understand the lifecycle emissions of oil sands products; and consistent engagement with media/public to deliver factual and balanced information in a relevant and understandable format. These actions allow us to create a space for balanced dialogue. Studies have demonstrated that oil sands refined products, on a well-to-wheels basis, are on average 1% - 19% higher carbon intensity than average conventional crude-based refined products. Hence, oils sands refined products are on par with the refined products made from many international heavy crude oils including Venezuela and California.

Comment

Risk Name: Increased Stakeholder Expectations

Identifier

Risk 3

Where in the value chain does the risk driver occur?

Downstream

Risk type & Primary climate-related risk driver

Market	Changing customer behavior
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Primary potential financial impact

Decreased revenues due to reduced demand for products and services

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

Suncor produces refined products, marketed through our Petro-Canada retail network. Potential for consumer behaviour changes, as a result of increasing availability of non-fossil fuel alternatives such as electric vehicles, could reduce the demand for Suncor's fossil fuel based refined products. While it remains to be seen whether consumer adoption of alternative energy vehicles will wane in light of sustained low oil prices, we believe hybrid, plug-in hybrid, and electric vehicles will remain cost-effective additions to the passenger vehicle fleet and will, along with fuel efficiency standards, contribute to moderating growth in global gasoline demand. We also believe safety, low-cost, consumer convenience and improvements in carbon intensity mean liquid fuels will remain the primary fuel source in vehicle mobility for many years to come. Mitigating this trend, we expect that older, inefficient refining capacity will be taken out of commission in the future, somewhat balancing North American supply and demand. Retention of market share in refined product sales will become critical, likely resulting in tight retail margins in North America. However, both refined products and crude oils are easily transported into global markets.

Time horizon

Medium-term

Likelihood

More likely than not

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

0

Potential financial impact figure – maximum (currency)

1000000000

Explanation of financial impact figure

In 2019, our refining and marketing business contributed net earnings of \$3 billion, making it a significant contributor to the company's profitability. Some of this margin would be at risk if demand for refined product decreases.

Cost of response to risk

0

Description of response and explanation of cost calculation

Suncor does not incur direct costs associated with increasing market access for our products. Costs associated with supporting marketing and monitoring transportation fuel developments and demand are integral to our business and not material. Our renewables business is operated as a revenue-generating business. Suncor has a diversified portfolio which includes a renewable energy business. Suncor supports initiatives to gain access to new international markets in the next 5-10 yrs for our crude oil and refined products. Activities: We operate Canada's largest ethanol plant by volume & as of the end of 2019 are involved in 4 operational wind projects (111MW capacity) with an additional 200MW sanctioned. Our renewables business provides first-mover advantage as consumer behaviour changes increase demand for renewable energy. We monitor alternative transportation technology and are well-positioned to invest in the provision of low carbon transportation fuels once reliability, value and environmental attributes support consumer preference shift. Suncor has supported the development of pipeline infrastructure that would improve market access & operations flexibility for our oil sands bitumen. Suncor & other oil sands companies have implemented rail as a bridging solution. The large-scale movement of oil by rail is

more costly & more carbon intensive and less safe than pipeline. Expanded pipeline links are the most efficient way to transport oil sands crude to market, given the sizable capacity advantage of pipelines, & their overall safety & reliability record. Suncor has also completed a coast-to-coast Canadian EV charging network at more than 50 Petro-Canada stations to provide a retail offering to electric vehicle owners.

Comment

Risk Name: Changing Consumer Behaviour

Identifier

Risk 4

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Acute physical	Other, please specify (Extreme events - wind storms, temperature extremes and ice bergs)
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Primary potential financial impact

Decreased revenues due to reduced production capacity

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

Suncor's upgrader facility in the Athabasca region of Northern Alberta and Suncor's refineries in Montreal, Sarnia, Edmonton and Commerce City sometimes operate in harsh weather environments, subject to expected periods of extreme cold in the winter, heat waves in the summer, and increased fire risk. The risk to Suncor is that prolonged periods of extreme cold could force these facilities to reduce capacity for periods of time to ensure worker safety and prevent undue stress on equipment. Prolonged periods of extreme heat may lead to production cuts if adequate supply of cooling water is not available. Suncor's refineries at Montreal and Sarnia have access to extremely large bodies of cooling water, so are far less exposed. This risk exists now and into the very long term > 50 yrs. Terra Nova, Suncor's only operated offshore installation, off the coast of Newfoundland, operates in an area that is subject to icebergs. There is a risk in the region of floating icebergs causing damage to our installations. This area is also subject to hurricanes. These events can create conditions that require production equipment and personnel to be moved onshore and production to be shut-in for a period of time. These known risks exist now and for the expected life of the field.

Time horizon

Long-term

Likelihood

Unlikely

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

0

Potential financial impact figure – maximum (currency)

600000

Explanation of financial impact figure

Prolonged periods of extreme weather have the potential of disrupting production, costing millions of dollars in lost revenue. The likelihood of extreme weather events remains unknown, but through our risk management processes, we expect the magnitude of impact to remain low-medium for the foreseeable future, even if increases in extreme temperature or weather variations occur.

Cost of response to risk

1000000

Description of response and explanation of cost calculation

There are no additional costs for action to protect against temperature extremes. The cost of management of the operations' physical risk mitigation is in place for the life of the asset. As these programs are applicable to multiple risks it is difficult to apportion a specific cost to managing climate-specific physical risk. The cost of iceberg tracking is shared by operators in the region, and thus the direct costs to Suncor are proportionately shared. The cost of the cyclone tracking program is shared by operators in the region and thus direct costs to Suncor are proportionately shared. Many of Suncor's facilities routinely operate in an annual temp range of -40 to +40 degrees C and facilities are built to withstand extreme weather events. However, in the event of more frequent or prolonged temp extremes, additional capital expenditure may be required to install more robust equipment, warming sheds, or water cooling processes. Suncor currently mitigates pack ice and iceberg risk through the design of its facilities and with its emergency response system. Activities: A continuous monitoring system tracks iceberg locations and makes projections of the expected course of the icebergs. Where an iceberg cannot be diverted, an emergency response system allows for the floating platform to be disengaged and moved to safer water, protecting the asset but resulting in production disruption. These methods lessen the likelihood and magnitude of the risk. For tropical cyclones, a continuous weather tracking service monitors storm systems in the North Atlantic. An emergency response system allows for critical equip and personnel to be brought ashore and for the floating platform to be disengaged and moved to safer water, protecting the asset but resulting in production disruption. Physical risks are primarily managed by the operations at a business-unit and facility level. We also maintain insurance, as appropriate, for damage to, or loss of, assets as well as production interruption, with the exception of insurance coverage for Named Windstorms.

Comment

Type of Financial Impact: Increased operating costs (e.g., inadequate water supply for hydroelectric plants or to cool nuclear and fossil fuel plants) Potential Financial Impact (\$0/day to \$600,000/day) Note: This is a range of daily cost based on the loss of production due to Terra Nova completely shutting down their production. Cost of Management (\$1,000,000) Note: There are no additional costs for action to protect against temperature extremes. The cost of management of the operations' physical risk mitigation is in place for the life of the asset. As these programs are applicable to multiple risks it is difficult to apportion a specific cost to managing climate-specific physical risk. The cost of iceberg tracking is shared by operators in the region, and thus the direct costs to Suncor are proportionately shared. The cost of the tracking program is shared by operators in the region and thus direct costs to Suncor are proportionately shared.

C2.4

(C2.4) Have you identified any climate-related opportunities with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.4a

(C2.4a) Provide details of opportunities identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Opp1

Where in the value chain does the opportunity occur?

Downstream

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Primary potential financial impact

Increased revenues through access to new and emerging markets

Company-specific description

Suncor continues to evaluate new opportunities across Canada to further build on its renewable energy portfolio. Wind power generation creates business opportunities for merchant sale of power to the grid and generation of carbon offset credits that can be used by Suncor or sold on the market. Currently, in Alberta, a wind development protocol exists which allows the developer to generate offset credits to be sold or used as a compliance option under the Alberta TIER Regulation. Of Suncor's 111 MW installed wind energy capacity, 60 MW are situated in Alberta. Suncor has also sanctioned an additional 200 MW with the Forty Mile Wind Project in Alberta. The TIER I provides the opportunity for Suncor to create offsets which reduce the compliance costs for other operations under this regulation through its renewable energy operations. Additionally, carbon pricing in major Canadian jurisdictions is making wind power more profitable as jurisdictional targets add additional renewable power. At the same time, the cost of wind power generation continues to decrease, making unsubsidized wind power cost-competitive in most jurisdictions.

Time horizon

Medium-term

Likelihood

Very likely

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

1600000

Potential financial impact figure – maximum (currency)

2400000

Explanation of financial impact figure

In 2019, Suncor and our partners have an interest in four wind power facilities. Combined, these facilities have a gross generating capacity of 111MW, enough to power about 52,000 Canadian homes and avoid approximately 110,000 tonnes of carbon emissions each year. The offsets produced by our wind facilities in Ontario and Saskatchewan are retained by the government. The financial value of our offsets in Alberta is approximately \$1.6 million to \$2.4 million/year. These offsets can be used by Suncor to offset its compliance costs.

Cost to realize opportunity

0

Strategy to realize opportunity and explanation of cost calculation

In 2019, compliance obligations for our oil sands facilities were met partially through internally generated wind energy offset credits from Suncor's wind energy projects in Alberta, generating revenue for the renewables business. Each year, Suncor calculates the tonnage of offsets generated under the protocol and submits an application under the protocol. This management method highlights the benefit of Suncor's integrated value chain as the value of offsets has been increasing with time.

Comment

Name of Opportunity: Increasing Renewable Energy Demand Cost of Management Note: Wind operations area profit generating business. We experience minimal management costs associated with creating the offset credit (measurement, documentation, application) because the power is metered.

Identifier

Opp2

Where in the value chain does the opportunity occur?

Downstream

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

Suncor complies with all Renewable Fuel Standards (RFS) in the jurisdictions within which we operate and markets fuel products. Regulatory requirements for renewable fuel such as the RFS present potential revenue opportunities for Suncor in biofuels. Governments across North America are mandating the use of ethanol in transportation fuels. Canadian regulations require an average 5% renewable fuel content in gasoline; proposed Canadian regulations also require an average annual 2% renewable content in diesel fuel. Some provincial regulations require a higher percentage blending, and others have introduced other systems such as a Low Carbon Fuel Standard or a Cap and Trade system. Suncor owns and operates the largest ethanol plant in Canada, and virtually all of the output is blended into gasoline and marketed under the Petro-Canada brand. In 2019, we invested in Enerkem Inc. which manufactures biofuels and renewable chemical products from household garbage that would otherwise be landfilled. In addition to a financial investment, a number of Suncor employees have been seconded to Enerkem's pilot facility in Edmonton.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

175000000

Potential financial impact figure – maximum (currency)

200000000

Explanation of financial impact figure

In 2019, Suncor biofuel operations produced 400 million litres of ethanol. Throughout 2019, the spot price for ethanol ranged from US\$1.26 to US\$1.61. The resulting revenue opportunity ranged from \$500M to \$650M in 2019.

Cost to realize opportunity

0

Strategy to realize opportunity and explanation of cost calculation

Suncor expects that RFS will be amended to increase the required level of biofuel, creating a stable and increasing market for biofuels. Suncor manages this opportunity by continuously evaluating business and technology opportunities to expand into next generation biofuels markets to take advantage of renewable fuel standards and reduced carbon intensity. This could help to increase the magnitude of biofuels production/blending over the medium-long term (5-10 yr timeframe). Suncor has been blending ethanol in our retail fuels since 1992; Suncor's St. Clair Ethanol plant expanded capacity to 400 million litres per year in an effort to meet this growing North American demand

Comment

Name of Opportunity: Increasing Biofuels Demand Cost to Realize Opportunity Note: Suncor's biofuels business is a profit generating business. There is no net management cost.

Identifier

Opp3

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

Suncor supports the use of offsets as compliance mechanisms under existing and proposed climate change regulations. Suncor has actively engaged in the development of offset protocols where it sees opportunities to either purchase quality offsets in the market, or create offsets in our own operations. In addition to the renewable energy production (see Renewable Energy Demand opportunity in section C2.4a, above), Suncor uses natural gas cogeneration (80% efficient) to provide combined steam and power to their own facilities and exporting surplus power to the grid to displace more carbon-intensive coal-fired generation or natural gas combined cycle generation (40% efficient). Suncor operates 1.1 GW of cogeneration with surplus capacity sold to the power grid. Where surplus power is exported to the grid, Suncor is able to earn offset credits on the difference between a grid intensity level reflecting the efficiency of the cogeneration unit and a performance standard associated with natural gas combined cycle generation. This presents an opportunity for Suncor through reduction of compliance costs because these offset credits may be used as compliance instruments under Alberta's TIER regulation. Additionally, due to the must-run nature of our operations, the cogenerated power sold to the grid is highly reliable compared to other forms of generation, reducing the overall pool price for power benefiting Alberta residents. Over the past few years, Suncor has developed its internal carbon marketing capability which has helped to reduce our overall compliance cost. Suncor has an opportunity with cap and trade schemes to stimulate research and innovation in energy efficiency; earn revenue from investments made to reduce our own emissions; improve the economics of the reduction project; and develop internal capability to understand the carbon trading markets.

Time horizon

Short-term

Likelihood

Virtually certain

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

0

Potential financial impact figure – maximum (currency)

9500000

Explanation of financial impact figure

Suncor's facilities occasionally generate carbon offset credits. The bulk of these credits are generated and used in the Alberta carbon market. for Suncor's oil sands and in situ operations. With ongoing policy changes, the range of the financial impact represents our experience with emission performance credits (EPCs).

Cost to realize opportunity

400000

Strategy to realize opportunity and explanation of cost calculation

Suncor manages this opportunity through measurement, reporting, and receipt of emission performance credits, as well as a regular review of its operations for the potential to generate additional offset credits. The deployment of cogeneration technology in Suncor's in-situ facilities continues to have a significant positive impact such that Suncor can directly control its production, maintain energy security, earn emission performance credits through the sale of competitively priced surplus power and reduce the carbon intensity of the provincial electricity grid. The power sales opportunity has led to the establishment of a real time power trading desk to capture full value of the power sold to the electricity grid

Comment

Name of Opportunity: Carbon Credit Offset Generation Cost to Realize Opportunity Note: Internal capability is provided by corporate and facility based personnel with multiple duties. Total workload is approximately 2 FTE.

Identifier

Opp4

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Resource efficiency

Primary climate-related opportunity driver

Use of more efficient production and distribution processes

Primary potential financial impact

Reduced direct costs

Company-specific description

There is a natural incentive to reduce energy use. The acceleration of technological innovation to substantially change production processes and reduce GHG emissions in our operations is expected to lower energy use and, therefore, lower energy costs. The same technology that reduces energy consumption could also allow for easier and more cost effective extraction of complex unconventional resources.

Time horizon

Medium-term

Likelihood

More likely than not

Magnitude of impact

Medium-high

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

31000000

Potential financial impact figure – maximum (currency)

62000000

Explanation of financial impact figure

Energy costs are the single largest input cost in our business. We estimate that a fuel efficiency improvement of 10% to 20% will reduce natural gas costs in Suncor's production of bitumen (mining and in situ) by \$31M to \$62M per year. Technology improvements have the possibility of reducing other costs, as well, such as GHG compliance costs, water treatment costs, etc.

Cost to realize opportunity

830000000

Strategy to realize opportunity and explanation of cost calculation

One method Suncor utilizes for managing technological advancements is by being a strong advocate for carbon policy that promotes accelerated technology development. Suncor is a founding member of COSIA, a 9 member organization seeking to develop and share intellectual property on environmental technology in the oil sands. Through collaboration centered around a common interest like environment and technology stewardship, Suncor and partners are able to pool resources with the goal of making significant advancement over acting alone. As a result, we expect to see advancements benefiting the environment over the next 2-10 yrs. For example, we have been working with COSIA, to advance a regional approach to industry-wide water management practices. Over the last several years we made significant progress in taking our water strategy from the planning stage to implementation. Suncor is an active member of the CRIN, which aims to position Canada as a global leader in producing clean hydrocarbon energy from source to end use. The network brings together the oil and gas industry, innovators, investors, start-ups, policy-makers, incubators and accelerators, researchers and students. It facilitates the connections to advance technologies for use in Canada and with the potential for export to global markets emphasizing the potential impact that our country can make to help address global challenges.

Comment

Name of Opportunity: Low-Carbon Technology With Adjacent Industries and development of new technologies Cost to Realize Opportunity Note: Suncor invested approximately \$830 million in technology development and deployment, and digital technologies as part of a robust strategy to optimize current assets and develop next-generation facilities in 2019.

Identifier

Opp5

Where in the value chain does the opportunity occur?

Downstream

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Primary potential financial impact

Increased revenues through access to new and emerging markets

Company-specific description

With increasing consumer uptake of EVs, there is an opportunity to offer customers EV supercharging and increase traffic in Petro-Canada's convenience stores. Completed in 2019, Suncor has the first cross-Canada network of more than 50 fast-charging electric vehicle (EV) chargers at Petro-Canada™ stations. These stations are positioned no further than 250 kilometres apart, ensuring an EV charging station is within range on this electric highway and eliminating one of the significant barriers to EV adoption.

Time horizon

Short-term

Likelihood

Virtually certain

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

In 2019, Petro-Canada completed 50 EV fast charging stations at existing Petro-Canada stations along the TransCanada Highway, from coast-to-coast. Charging fees are determined by the minute,

Cost to realize opportunity

Strategy to realize opportunity and explanation of cost calculation

Comment

C3. Business Strategy

C3.1

(C3.1) Have climate-related risks and opportunities influenced your organization's strategy and/or financial planning?

Yes

C3.1a

(C3.1a) Does your organization use climate-related scenario analysis to inform its strategy?

Yes, qualitative and quantitative

C3.1b

(C3.1b) Provide details of your organization’s use of climate-related scenario analysis.

Climate related scenarios and models applied	Details
2DS	<p>Suncor uses three energy futures scenarios to 2050 as well as the new 2°C scenario to 2100 to assess the resiliency of our business strategy. We develop several distinct, challenging, relevant and plausible world trajectories, adjusting all variables in an internally consistent manner. Some of the aspects we consider in our scenario development include demographics, economics, environment, (geo)politics, legal, social and cultural, and technology. In 2019, Suncor developed a new 2°C scenario with IHS Markit in line with our support for both the TCFD and the Paris Agreement. This work informs our long-term business planning and corporate strategy and allows us to understand what a pathway could entail to keep global temperatures from rising 2°C, or less, by 2100 compared with pre-industrial levels. This 2°C scenario work is informing our strategy we transition to a low-carbon economy, including: - adjusting our strategy to focus on areas where we can best support efforts to transition to a low-carbon economy - developing a new ambition framework to complement our existing GHG intensity reduction goal - continuing to cultivate an integrated portfolio of low-carbon investments into our base business such as low-carbon fuel and oil, low-carbon power, enhanced consumer engagement, and carbon capture and sequestration - continuing our participation in early stage investments in innovation, technology and clean energy venture capital funds to reduce GHG emissions. Key insights Our 2°C scenario begins with a period of rising emissions, consistent with the historical trend of increasing energy use and continues until approximately 2030. At this point, a combination of cost and generational pressures, technological innovation, and political unity bring enough of the world together to take dramatic and unified action to change the trajectory of GHG emissions. Beyond a decline in GHG emissions, this transition necessitates a significant period of negative emissions in the latter half of the century. Our 2°C scenario takes a holistic view of emissions including both energy and non-energy sources. Today non-energy emissions represent approximately 25% of total GHG emissions. Aggressive emissions reduction is required in all sectors, and solutions to remove GHGs from the atmosphere are required to reduce the total concentration of CO2 by 2100. Given the global nature of this challenge, our scenario indicates that an international alliance with a shared 2°C (or lower) ambition, along with transparent collaboration in technology, trade and environmental approaches is essential. In conjunction with carbon pricing, governments encourage market-based solutions within the alliance, including open carbon markets to buy, sell and trade offsets across a vast economy. A price on carbon throughout the economy is required to reduce consumption and incent the adoption and improvement of low-carbon technology. In this scenario, carbon prices are assumed to increase to approximately US\$300 per tCO2 (in real 2018 terms) by 2100. Oil plays a continued, albeit diminished role to 2100, while renewables and nuclear power become more prominent post-2050. In the power sector, the demand for coal faces sustained pressure globally as a result of its relatively high emissions intensity. Renewables continue to gain market share on improved cost profiles, dedicated policy support and the firm capacity offered by improved storage in the form of hydro, batteries, and hydrogen. Nuclear power increases market penetration with lower costs, and new, safer technologies and policies. Oil demand in the second half of the century transitions to demand for petrochemical feedstock and materials. The decline is most pronounced in the light duty vehicle segment where electrification, biofuel and hydrogen supply opportunities are assumed. The decline is slower in the heavy goods vehicle segment, and hydrogen as a transportation fuel grows as costs come down.</p>
Other, please specify (IHS Markit)	<p>Energy future scenarios to 2050 These scenarios are all plausible and could affect our operating environment and business strategy in markedly different ways. Under each of these scenarios, including the one with the most aggressive decline in oil demand, we believe a substantial amount of oil will be required for decades as the world gets on track to meet its climate ambitions. This view is also supported by forecasts from organizations such as the International Energy Agency and the U.S. Energy Information Administration. Meeting that demand at either low, or highly volatile, oil prices will be a challenge. These scenarios also confirm the need to continually lower costs and carbon intensity throughout our business. However, as the energy system transitions away from carbon intensive sources of energy, we believe some level of hydrocarbons will continue to be needed for consumer products, transportation, agriculture and industrial uses. Each scenario has an implied crude oil price range and climate change regulatory impact. Two of the three reflect the current global aspiration toward reducing carbon emissions; what differentiates the scenarios is the context, pace and scale at which that comes about. The scenarios are used annually by the CEO, the Executive Leadership Team and the Board of Directors to assess business and growth strategy and identify alternative strategic directions. This process continues to be a useful tool for stress-testing our business on a number of key dimensions, including carbon risk. We take the following broad trends into consideration: • Forecasted population growth, the increasing need for energy in developing economies and the aspiration for a better quality of life. As such, we see the global demand for energy increasing steadily. Much of this increase is expected to come from developing countries in Asia, the Middle East, Latin America and Africa. • We believe decoupling of economic growth and carbon emissions is required to fundamentally change the energy mix. • National emissions reduction commitments made as part of the Paris Agreement will drive carbon pricing and complementary policy frameworks that are expected to accelerate energy efficiency and emissions reduction technology and incent broader scale adoption of alternative low-carbon energy. • We expect oil demand will continue to grow until approximately 2040 due to population growth, urbanization and increased living standards, but oil is expected to decline as a percentage of the global energy consumption mix. • Given natural declines, staying at current production levels, much less meeting increased demand, will require investment in new production from global shale, deep-water and oil sands reserves – a major challenge, given the reduction in capital investment due to depressed commodity prices in recent years. • We expect supply cost will continue to be moderated by industry efforts to optimize production and invest in technological advances. Along with scenarios, we also develop and annually update our signposts which are milestones to identify critical shifts in the external context. The world is in a constant state of change, sometimes moving faster than we expect. Tracking the pace and direction of the change is an integral part of our scenario work and helps us develop and evaluate strategic alternatives for our business by incorporating both global and Canadian current events, trends and actions. Signposts include changes in global energy demand and supply mix, political and economic indicators, climate data, policy and consumer trends, and technology advances. For further information please see sustainability.suncor.com</p>

C3.1d

(C3.1d) Describe where and how climate-related risks and opportunities have influenced your strategy.

	Have climate related risks and opportunities influenced your strategy in this area?	Description of influence
Products and services	Yes	Suncor's Enterprise Risk Management process and scenarios that incorporate a variety of factors relating to carbon risk have influenced our strategy. Opportunities identified in C2.4a are consistent with a transition to a prosperous low-carbon economy and include renewable energy, biofuels, carbon credits, and electric vehicle charging. The changing global energy system the need to address climate change have altered how Suncor calculates the business value of investing in projects that produce any of these products. The magnitudes of the impacts and time horizons for the four opportunities are as follows: • Renewable Energy o Magnitude = medium-low o Time Horizon = medium term • Biofuels o Magnitude = medium o Time Horizon = medium-term • Carbon Credits o Magnitude = low o Time Horizon = short-term • Electric Vehicle Charging o Magnitude = low o Time Horizon = short-term Two examples of biofuel production opportunities are Suncor's early-stage investments in Enerkem, a waste-to-biofuels and chemical producer, and LanzaJet Inc, a company working to bring sustainable aviation fuel and renewable diesel to the commercial market. Completed in 2019, Suncor now has the first cross-Canada network of more than 50 fast-charging electric vehicle (EV) chargers at Petro-Canada™ stations. These stations are positioned no further than 250 kilometres apart, ensuring an EV charging station is within range on this electric highway and eliminating one of the significant barriers to EV adoption.
Supply chain and/or value chain	Yes	Novel energy efficient technologies are increasingly becoming available to the supply chain of the oil and gas industry. Some of these technologies have been designed for this industry while others have been adapted from adjacent industries; companies that are best able to recognize and move quickly on the most relevant and impactful of these technologies have a competitive advantage. To help facilitate the sharing of innovative practices, we brought together more than 200 leaders from across Suncor and representatives from 40 of our suppliers and industry partners to participate in an interactive forum called FORGE. The two-day event enabled Suncor and our key suppliers to listen, learn, co-create, innovate, and accelerate sustainability outcomes together. New high-efficiency, low-carbon processes deployed in Suncor's core business could have a high magnitude of impact and occur over the medium-term. While we continue to reduce the emissions intensity of our liquid fuels, we are evolving and expanding our current product offering to meet growing customer demand. Through our Petro-Canada™ brand, we completed construction in 2019 of Canada's Electric Highway™, a coast-to-coast electric vehicle (EV) fast-charging network spanning more than 50 Petro-Canada™ stations. These sites are positioned no further than 250 kilometres apart and provide universal charging options to a variety of electric vehicles. We invested in level three direct-current fast chargers, a step-change technology that is built beyond the needs of today's EV technology and positioned for the future of EV charging in Canada. This exciting initiative supports customers wanting to reduce their carbon footprint with choices for their energy needs and enables us to learn more about this emerging market as we continue to evaluate options and respond to evolving customer needs.
Investment in R&D	Yes	In addition to investment in collaborative and venture capital structures, Suncor invested approximately \$830 million in 2019 in technology development and deployment, and digital technologies to optimize current assets and develop next-generation facilities. We believe technology and energy innovation has the potential to move emissions reduction from incremental to step change improvement. We are advancing a portfolio of in situ technologies with the goal of lowering the carbon intensity of producing bitumen and improve cost competitiveness. We believe the solution will be a hybrid of the technologies we're progressing with the aim to reduce energy and water use, lower capital and operating costs and improve production rates and resource recovery. There is a potentially high magnitude of impact over the long-term.
Operations	Yes	In order to meet Suncor's GHG Goal, Operations personnel have actively sought out energy efficient technologies and best practices to reduce fuel consumption. These improvements may deliver both GHG-intensity improvements and operating cost improvements, both of which are needed for success in the current oil industry. We have evaluated the outlook and cost impacts for emerging and evolving emissions regulations and how they apply to GHG emissions (scope 1 and 2), from the working interests in both our upstream and downstream assets. An improvement upon previous disclosures, these estimates more accurately reflect the integrated nature of our business. Based on confirmation of new emissions regulations, we have updated our estimates of the financial impact of Canadian climate change regulations to our upstream net production and downstream saleable yield. The after-tax cost per barrel of our upstream net production over the next ten years is estimated at an average of \$0.33 cents per barrel. The estimated average after-tax cost per barrel of our downstream saleable yield over this same period is \$0.13 cents per barrel. These figures reflect our best understanding of carbon emissions regulations, policy impacts and production forecasts at the time of publication, many of which are in flux with a high degree of uncertainty. Upstream includes Oil Sands and Exploration & Production segments. Downstream includes Refining and Logistics and biofuels production, excluding distribution. Reducing carbon costs on Suncor's business has the potential to have a high-impact over the medium-term.

C3.1e

(C3.1e) Describe where and how climate-related risks and opportunities have influenced your financial planning.

	Financial planning elements that have been influenced	Description of influence
Row 1	Revenues Direct costs Indirect costs Capital expenditures Capital allocation Acquisitions and divestments Access to capital	Suncor's carbon price outlook (to assess all investments/projects) utilizes a carbon price range from \$30/tonne to \$100/tonne on an increasing percentage of emissions to ensure projects are expected to provide a competitive IRR under expected carbon regulations. Stress testing is done as appropriate. While carbon pricing has increased operating costs, the current regulations have not materially impacted Suncor's revenues. Materiality of impact on revenue may increase with tightening regulations. The greatest impact on revenue will arise from oil price and oil demand. From an opportunity perspective, Suncor is already active in wind and biofuels. Carbon pricing or cap and trade regulations apply in most of the jurisdictions in which Suncor operates assets. These prices have increased operating costs (although at some facilities, carbon credit generation has offset the cost of compliance). Financial risks associated with increasing carbon prices are affecting investment decisions within Suncor. The portfolio of growth options is being prioritized to take into account the carbon-intensity of the proposed operation. Demand for oil products, commodity prices, and opportunities to reduce operating costs of some existing operations are currently the greatest drivers regarding the value and rate of return of Suncor's portfolio of assets. Carbon intensity and associated carbon costs of assets are considered during potential acquisitions and divestitures. The current initiatives toward divestment of oil & gas commitments have caused certain investors and insurers to either reduce or eliminate their exposure to the sector. Notwithstanding the efforts of those few to divest from oil & gas, some new investors have entered oil and gas positions and some remaining investors have been willing to increase their investment in oil and gas, so the net impact on Suncor is negligible at this time. Risks and opportunities that influence financial planning range from short- to long-term.

C3.1f

(C3.1f) Provide any additional information on how climate-related risks and opportunities have influenced your strategy and financial planning (optional).

Suncor's Climate Risk and Resilience Report, discloses Suncor's best assessment of the business risks associated with climate change and the transition to a low-carbon economy – as well as strategies Suncor is taking to mitigate those risks. This report is publicly available on Suncor's website (sustainability.suncor.com/en/).

C4. Targets and performance

C4.1

(C4.1) Did you have an emissions target that was active in the reporting year?

Intensity target

C4.1b

(C4.1b) Provide details of your emissions intensity target(s) and progress made against those target(s).

Target reference number

Int 1

Year target was set

2015

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 1+2 (location-based)

Intensity metric

Metric tons CO₂e per unit of production

Base year

2014

Intensity figure in base year (metric tons CO₂e per unit of activity)

0.42

% of total base year emissions in selected Scope(s) (or Scope 3 category) covered by this intensity figure

99

Target year

2030

Targeted reduction from base year (%)

30

Intensity figure in target year (metric tons CO₂e per unit of activity) [auto-calculated]

0.294

% change anticipated in absolute Scope 1+2 emissions

30

% change anticipated in absolute Scope 3 emissions

0

Intensity figure in reporting year (metric tons CO₂e per unit of activity)

0.3738

% of target achieved [auto-calculated]

36.66666666666666

Target status in reporting year

Underway

Is this a science-based target?

No, but we anticipate setting one in the next 2 years

Please explain (including target coverage)

Our goal is a 30% reduction in GHG emissions intensity by 2030 (scope 1 and 2 emissions only). If current production remained flat, we would expect a similar reduction in absolute emissions. However, planned production growth during this timeframe would add incremental absolute emissions, albeit at a lower GHG emissions intensity.

C4.2

(C4.2) Did you have any other climate-related targets that were active in the reporting year?

No other climate-related targets

C-OG4.2c

(C-OG4.2c) Indicate which targets reported in C4.1a/b incorporate methane emissions, or if you do not have a methane-specific emissions reduction target for your oil and gas activities, please explain why not and forecast how your methane emissions will change over the next five years.

In addition to participating in a voluntary methane emission reduction program, Suncor has incorporated methane emissions into the company-wide goal to reduce total GHG emission intensity of the production of oil and petroleum products by 30% by 2030. As a result of having our methane-specific emissions already incorporated in the company wide GHG intensity reduction goal, the need to have an additional methane goal is redundant. Progress on our GHG intensity goal by 2030 requires emissions reductions, including methane, across our facilities. Efforts and technologies specific to managing methane emissions are pursued through a dedicated group within Suncor, in support of the 2030 GHG goal. This group is looking at technologies to better understand area fugitive emissions of methane (i.e. from tailings ponds and mine faces) and identify opportunities to reduce these sources of methane.

C4.3

(C4.3) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.

Yes

C4.3a

(C4.3a) Identify the total number of initiatives at each stage of development, and for those in the implementation stages, the estimated CO2e savings.

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	9	132403
To be implemented*	27	177831
Implementation commenced*	3	144000
Implemented*	7	26736
Not to be implemented	0	0

C4.3b

(C4.3b) Provide details on the initiatives implemented in the reporting year in the table below.

Initiative category & Initiative type

Energy efficiency in production processes	Waste heat recovery
---	---------------------

Estimated annual CO2e savings (metric tonnes CO2e)

2492

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

188058

Investment required (unit currency – as specified in C0.4)

500000

Payback period

1-3 years

Estimated lifetime of the initiative

3-5 years

Comment

Initiative category & Initiative type

Energy efficiency in production processes	Waste heat recovery
---	---------------------

Estimated annual CO2e savings (metric tonnes CO2e)

1443

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

108889

Investment required (unit currency – as specified in C0.4)

500000

Payback period

4-10 years

Estimated lifetime of the initiative

3-5 years

Comment

Initiative category & Initiative type

Energy efficiency in production processes	Waste heat recovery
---	---------------------

Estimated annual CO2e savings (metric tonnes CO2e)

10139

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

765011

Investment required (unit currency – as specified in C0.4)

1000000

Payback period

1-3 years

Estimated lifetime of the initiative

3-5 years

Comment

Initiative category & Initiative type

Energy efficiency in production processes	Process optimization
---	----------------------

Estimated annual CO2e savings (metric tonnes CO2e)

760

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

57376

Investment required (unit currency – as specified in C0.4)

500000

Payback period

4-10 years

Estimated lifetime of the initiative

3-5 years

Comment

Initiative category & Initiative type

Energy efficiency in production processes	Process optimization
---	----------------------

Estimated annual CO2e savings (metric tonnes CO2e)

1774

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

133877

Investment required (unit currency – as specified in C0.4)

3000000

Payback period

21-25 years

Estimated lifetime of the initiative

3-5 years

Comment

Initiative category & Initiative type

Energy efficiency in production processes	Waste heat recovery
---	---------------------

Estimated annual CO2e savings (metric tonnes CO2e)

1504

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

113491

Investment required (unit currency – as specified in C0.4)

500000

Payback period

4-10 years

Estimated lifetime of the initiative

3-5 years

Comment

Initiative category & Initiative type

Energy efficiency in production processes	Process optimization
---	----------------------

Estimated annual CO2e savings (metric tonnes CO2e)

8613

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

649898

Investment required (unit currency – as specified in C0.4)

500000

Payback period

<1 year

Estimated lifetime of the initiative

3-5 years

Comment

C4.3c

(C4.3c) What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Dedicated budget for low-carbon product R&D	Our pursuit of new oil sands extraction technology and process innovation is one method that is used to manage the potential cost of complying with emerging carbon regulations and policy frameworks. The development of low carbon technologies is also a key aspect of Suncor's efforts to meet its GHG goal. In 2019, Suncor spent approximately \$830 million on technology development and deployment and digital technologies targeting the reduction of capital expenditures, lowering operating costs and environmental performance improvements. The unique nature of our processes could afford us the opportunity to fundamentally reduce our emissions intensity and enhance the way we responsibly develop Canada's oil sands resources. For example, we are piloting innovative technologies for bitumen resource recovery that use electromagnetic heating in combination with solvent dilution, potentially reducing the need for water and significantly reducing the energy (GHG) required from steam generation. Another technology under development that uses no water instead uses vaporized hydrocarbon solvents to heat a bitumen reservoir. The solvent dilutes and mobilizes bitumen for efficient and effective extraction.
Employee engagement	Suncor employees take individual accountability for reducing waste and improving energy efficiency as part of our employee engagement initiative and Green Ambassador Program. This initiative extends from lunchtime sessions on energy conservation to recognizing employees for energy efficiency and special recognition for GHG emission reduction projects through our President's Operational Excellence Awards. Additionally, initiatives are underway to engage with business units and employees in regard to methods of meeting our GHG goal, including presentations at internal conferences and articles in internal communication channels (e.g. website, email updates).
Internal price on carbon	An internal carbon price is applied in the annual business planning process for each of our facilities to understand the impact that the expected carbon regulations will have on our operating costs. The internal cost of carbon is also applied to all of our potential growth projects and strategies to assess the viability of the projects over the long term, under both our base and stress cases.
Internal incentives/recognition programs	We incentivize GHG performance by progressing projects that get us closer to our GHG goal (e.g. fuel switching, in situ pilots, renewables) and these are reflected in the business unit "growth" component of the executive AIP.
Marginal abatement cost curve	Suncor applies internal and external marginal abatement cost curves to prioritize mitigation projects and rank specific opportunities. The carbon price outlook is used to evaluate abatement economics.
Partnering with governments on technology development	Suncor collaborates with the following government-based organizations: Emissions Reduction Alberta supports projects that help Alberta to reduce greenhouse gas emissions and adapt to climate change. Alberta Innovates - to help drive research and accelerate technologies that improve overall environmental performance.
Other	Partnering with Academia - Suncor provides in-kind and/or funding support toward academic research in the areas of energy systems, energy & climate change policies, carbon lifecycle modelling and analysis, technology development and carbon sequestration initiatives.
Other	Energy Management Systems (EMS) - Energy is one of Suncor's largest inputs creating a natural incentive for us to continue to reduce our overall energy use and the related emissions. The EMS includes both installed energy monitoring equipment as well as a process followed at each of our key operating facilities that provides real time energy information to operators, allowing them to correct and optimize energy inputs on a continuous basis.
Other	Operational Reliability and Continuous Improvement driven by Suncor's focus on operational excellence is another method used by our company to increase our efficiency and thereby reducing Suncor's emissions. Suncor's operational excellence extends through our integrated business, applying consistent stringent standards and practices to improve overall performance. GHG benefits include reduced downtime and start-up.

C4.5

(C4.5) 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

C4.5a

(C4.5a) 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

Product

Description of product/Group of products

Cogeneration Power

Are these low-carbon product(s) or do they enable avoided emissions?

Low-carbon product

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify (Electricity Grid Factors – Environment Canada National Inventory Report , 1990-2017, Part 3, Annex 13 Electricity in Canada: Summary and Intensity Tables In 2019, we used the updated GWP's released in the IPCC fourth assessment report (2007).)

% revenue from low carbon product(s) in the reporting year

0.3

% of total portfolio value

<Not Applicable>

Asset classes/ product types

<Not Applicable>

Comment

With the cogeneration operations in Upstream facilities, Suncor is amongst the largest power producers in Alberta. Suncor facilities use cogeneration to produce combined steam and power, providing considerable energy efficiency gains. These facilities also export a surplus of power to the Alberta provincial power grid, reducing end user power customers by displacing coal power generation and less efficient natural gas generation with cleaner generation. 0.3% is the % revenue value associated with cogeneration as a portion of total revenue in 2019 Electricity Grid Factors – Environment Canada National Inventory Report , 1990-2016, Part 3, Annex 13 Electricity in Canada: Summary and Intensity Tables Global Warming Potentials – Environment Canada Global Warming Potentials <http://www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=CAD07259-1> For the 2019 reporting year we have used the updated GWP's released in the IPCC fourth assessment report (2007).

Level of aggregation

Product

Description of product/Group of products

Wind/Renewable Power

Are these low-carbon product(s) or do they enable avoided emissions?

Low-carbon product

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify (Electricity Grid Factors – Environment Canada National Inventory Report , 1990-2017, Part 3, Annex 13 Electricity in Canada: Summary and Intensity Tables In 2019, we used the updated GWP's released in the IPCC fourth assessment report (2007).)

% revenue from low carbon product(s) in the reporting year

0.1

% of total portfolio value

<Not Applicable>

Asset classes/ product types

<Not Applicable>

Comment

Suncor produces renewable wind energy. The use of this power enables end users to avoid scope 2 emissions that would have otherwise been consumed through reliance on fossil-fuel power generation. The wind projects in Alberta, Saskatchewan and Ontario reduce the regional grid intensity factor. 0.1% is calculated based on revenue from renewable power sales as a portion of total revenue in 2019. Electricity Grid Factors – Environment Canada National Inventory Report , 1990-2016, Part 3, Annex 13 Electricity in Canada: Summary and Intensity Tables Global Warming Potentials – Environment Canada Global Warming Potentials <http://www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=CAD07259-1> For the 2019, reporting year we have used the updated GWP's released in the IPCC fourth assessment report (2007). Assumptions – Capacity factors for each contributing wind farm are assumed calculated to be 35% (average of all wind farms).

Level of aggregation

Product

Description of product/Group of products

Biofuels

Are these low-carbon product(s) or do they enable avoided emissions?

Low-carbon product

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify (In 2019, we used the updated GWP's released in the IPCC fourth assessment report (2007).)

% revenue from low carbon product(s) in the reporting year

0.7

% of total portfolio value

<Not Applicable>

Asset classes/ product types

<Not Applicable>

Comment

Suncor's Ethanol Plant (St. Clair, Ontario) produces biofuel that is blended into gasoline to reduce the carbon intensity of the fuel purchased by our customers in our downstream operations. Suncor avoids close to 0.6 million tonnes of CO2e per year through the development, deployment and operation of renewable energy facilities. These avoided emissions are not currently deducted from our reported corporate wide GHG totals. 0.7% is calculated based on revenue from ethanol sales as a portion of total revenue from our St. Clair Ethanol plant (excluding government funding) in 2019. Global Warming Potentials – Environment Canada Global Warming Potentials <http://www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=CAD07259-1> For the 2019 reporting year we have used the updated GWP's released in the IPCC fourth assessment report (2007).

C-OG4.6

(C-OG4.6) Describe your organization's efforts to reduce methane emissions from your activities.

Suncor's methane reduction efforts begin with all registered facilities being surveyed annually for leaks. All detected leaks to atmosphere are immediately fixed as a safety hazard. We also do not vent gas streams such as associated gas, tank blankets, compressor vents or compressor starters; we conserve when we can (if a low pressure system exists that we can tie into) and flare the gas as a minimum. Some small remote sites without electrical power use natural gas to run pneumatics, but these are gradually being replaced by small instrument air or solar powered control packages. An additional source of methane emissions is from tailings ponds and exposed mine surfaces at Suncor's oil sands facilities. New monitoring technology is being developed to help the industry better understand the locations and timing of methane emissions from these sources. Monitoring technology development includes open path sensors that can measure methane concentrations along a line over the source areas, methane concentration sensors mounted on drones or fixed wing airplanes that can measure the concentrations of methane along screens or boxed downwind of facilities, and satellite-mounted sensors that measure methane in the air column above facilities. These detection technologies will help Suncor to better understand where and when methane emissions come from areal sources, helping allow for improved reduction efforts. Methane reduction efforts being examined in regards to emissions from tailings ponds include looking into froth treatment technologies and tailings handling techniques that may reduce the precursors to methane building up in tailings ponds.

C-OG4.7

(C-OG4.7) Does your organization conduct leak detection and repair (LDAR) or use other methods to find and fix fugitive methane emissions from oil and gas production activities?

Yes

C-OG4.7a

(C-OG4.7a) Describe the protocol through which methane leak detection and repair or other leak detection methods, are conducted for oil and gas production activities, including predominant frequency of inspections, estimates of assets covered, and methodologies employed.

In compliance with provincial, state and federal regulations where Suncor operates, our facilities meet the requirements of regulatory approvals and operate in compliance with the Canadian Council of Ministers of Environment (CCME) Environmental Code of Practice for the Measurement and Control of Fugitive VOC Emissions From Equipment Leaks (Oct 1993). In addition to complying with existing regulatory requirements, Suncor works with COSIA to develop new methods of detecting fugitive methane emissions. These research efforts are followed by regulators in an effort to continuously improve methane emissions technologies, standards, and regulations. One recent example of an innovative methane emissions detection technology is a satellite-based methane detection sensor that can quantify methane concentrations directly above industrial facilities at a spatial resolution of approximately 50 m.

C-OG4.8

(C-OG4.8) If flaring is relevant to your oil and gas production activities, describe your organization's efforts to reduce flaring, including any flaring reduction targets.

Intermittent flaring during process fluctuations is part of Suncor's oil production activities. Suncor does not have a separate goal for reducing flaring in operations. However, as flaring is included in scope 1 emissions, Flaring Reduction Programs are currently covered within the scope of Suncor's GHG intensity reduction goal. This reduction goal aims to reduce total GHG emission intensity of the production of oil and petroleum products by 30% by 2030, and as a result of this goal, GHG intensive processes, such as flaring, are encouraged to be reduced through energy efficiency goals applied to the business unit level. These energy efficiency goals will help contribute to Suncor's company-wide GHG goal, and ultimately help lower the intensity of Suncor's production by 2030.

In Flaring Reduction Programs, Suncor is making efforts to manage and minimize the flaring. For example, at Suncor's Terra Nova offshore petroleum facility, flare management practices are implemented that are consistent with the World Bank Global Flaring Initiative. In Suncor upstream oil sands facility, great efforts have been put in fuel gas optimization which includes developing better fuel gas blending controller and utilization. The implementation of those projects has allowed a better fuel gas distribution within the plant and therefore minimizes fuel gas and hydrogen flaring.

C5. Emissions methodology

C5.1

(C5.1) Provide your base year and base year emissions (Scopes 1 and 2).

Scope 1

Base year start

January 1 2010

Base year end

December 31 2010

Base year emissions (metric tons CO2e)

17073028

Comment

Direct emissions - definition and category aligned with Environmental Canada GHGRP guidance

Scope 2 (location-based)

Base year start

January 1 2010

Base year end

December 31 2010

Base year emissions (metric tons CO2e)

1841748

Comment

Purchased low-carbon electricity and steam use grid electricity emission factor and general steam emission factor

Scope 2 (market-based)

Base year start

January 1 2010

Base year end

December 31 2010

Base year emissions (metric tons CO2e)

1313469

Comment

Purchased low-carbon electricity and steam use supplier-specific emission factors

C5.2

(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.

American Petroleum Institute Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry, 2009

IPCC Guidelines for National Greenhouse Gas Inventories, 2006

The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

US EPA Center for Corporate Climate Leadership: Indirect Emissions From Purchased Electricity

US EPA Center for Corporate Climate Leadership: Direct Emissions from Stationary Combustion Sources

US EPA Center for Corporate Climate Leadership: Direct Emissions from Mobile Combustion Sources

US EPA Mandatory Greenhouse Gas Reporting Rule

Other, please specify (Canada's National Inventory Report (NIR), 2019; WBCSD/WRI GHG Gas Protocol A Corporate Accounting and Reporting Standard 2004; Canadian federal and provincial regulation, WCI Final Essential Requirements, and others)

C5.2a

(C5.2a) Provide details of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.

- For Quebec facilities: Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere 2019;
- For British Columbia facilities: Western Climate Initiative (WCI) Final Essential Requirements of Mandatory Reporting: Amended for Canadian Harmonization, 2010;
- For Ontario facilities: Canadian's Greenhouse Gas Quantification Requirements (Greenhouse Gas Reporting Program), 2019;
- For Alberta facilities: Alberta Quantification Methodologies for the Carbon Competitiveness Incentive Regulation and the Specified Gas Reporting Regulation (Version 1.4);
- For other Canadian facilities: Canadian's Greenhouse Gas Quantification Requirements (Greenhouse Gas Reporting Program), 2019;
- For US facilities: US EPA Mandatory Greenhouse Gas Reporting Rule

C6. Emissions data

C6.1

(C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO₂e?

Reporting year

Gross global Scope 1 emissions (metric tons CO₂e)

21432133

Start date

January 1 2019

End date

December 31 2019

Comment

Scope 1 (Direct Emission) are emissions from sources that are owned and controlled by Suncor. In 2019, Suncor's gross global Scope 1 emissions are calculated as per Environment Canada Facility Greenhouse Gas Reporting Program guidance, including reporting boundary, emission category, calculation methodology and global warming potentials.

Past year 1

Gross global Scope 1 emissions (metric tons CO₂e)

20576955

Start date

January 1 2018

End date

December 31 2018

Comment

Scope 1 (Direct Emission) are emissions from sources that are owned and controlled by Suncor. In 2018, Suncor's gross global Scope 1 emissions are calculated as per Environment Canada Facility Greenhouse Gas Reporting Program guidance, including reporting boundary, emission category, calculation methodology and global warming potentials.

C6.2

(C6.2) Describe your organization's approach to reporting Scope 2 emissions.

Row 1

Scope 2, location-based

We are reporting a Scope 2, location-based figure

Scope 2, market-based

We are reporting a Scope 2, market-based figure

Comment

Scope 2 includes emissions from energy purchased or acquired and consumed by the reporting company. It includes the emissions from purchase electricity, steam, heat and cooling. Scope 2 emission are considered an indirect emissions source (along with Scope 3), because the emissions are a consequence of activities of the reporting organization but actually occur at sources owned or controlled by another organization (i.e. an electricity generator or utility). In 2019, Suncor location-based Scope 2 emissions are calculated based on generic emission factors (i.e. grid electricity emission factor, natural gas boiler steam generation emission factor, and chilled water emission factor). Suncor market-based Scope 2 emissions are calculated by using supplier-specific emission factors for purchased commodity, or determined by developing facility-specific methodology.

C6.3

(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO2e?

Reporting year

Scope 2, location-based

1422340

Scope 2, market-based (if applicable)

1339909

Start date

January 1 2019

End date

December 31 2019

Comment

Indirect (Scope 2) includes emissions from energy purchased or acquired and consumed by the reporting company. It includes the emissions from purchase electricity, steam, heat and cooling. For Suncor facilities, the difference between location-based and market-based emissions are from electricity and steam purchased from Cogen plants (MacKay River In-situ and Sarnia Refinery), and steam purchased from Hydrogen plant (Edmonton Refinery), and cooling water purchased from waste water treatment plant (Edmonton Refinery).

Past year 1

Scope 2, location-based

1553252

Scope 2, market-based (if applicable)

1412983

Start date

January 1 2018

End date

December 31 2018

Comment

Indirect (Scope 2) includes emissions from energy purchased or acquired and consumed by the reporting company. It includes the emissions from purchase electricity, steam, heat and cooling. For Suncor facilities, the difference between location-based and market-based emissions are from electricity and steam purchased from Cogen plants (MacKay River In-situ and Sarnia Refinery), and steam purchased from Hydrogen plant (Edmonton Refinery), and cooling water purchased from waste water treatment plant (Edmonton Refinery).

C6.4

(C6.4) 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?

No

C6.5

(C6.5) Account for your organization's gross global Scope 3 emissions, disclosing and explaining any exclusions.

Purchased goods and services

Evaluation status

Relevant, calculated

Metric tonnes CO2e

1356520

Emissions calculation methodology

Invoiced purchased hydrogen volumes from supplier multiplied by life-cycle emissions intensity (tonnes CO2e/tonne H2 imported).

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Please explain

Purchased hydrogen (using Supplier-specific method).

Capital goods

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

The emissions generated from bought equipment, machinery, and vehicles have been covered in Scope 1.

Fuel-and-energy-related activities (not included in Scope 1 or 2)

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

All the fuel and energy activities are covered by Scope 1 and 2.

Upstream transportation and distribution

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

All the emissions associated with activities are covered by Scope 1 and 2.

Waste generated in operations

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

Emissions from waste generated in operations (e.g. wastewater treatment and landfills) have been included in Scope 1 and 2.

Business travel

Evaluation status

Relevant, calculated

Metric tonnes CO2e

24927

Emissions calculation methodology

Invoiced jet fuel volumes multiplied by standard fuel emission factors

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Please explain

This includes emissions from business travel through commercial flight for both upstream and downstream facilities. Data are from third party flight booking company and Suncor internal aviation system. This also includes the fuel consumption in fleet.

Employee commuting

Evaluation status

Relevant, calculated

Metric tonnes CO2e

42450

Emissions calculation methodology

Bus diesel fuel consumption, Canadian fleet vehicle gasoline and diesel fuel consumption multiplied by standard fuel emission factors.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Please explain

This is non-operation related activities. Operation-related activities are covered by Scope 1 and 2.

Upstream leased assets

Evaluation status

Relevant, calculated

Metric tonnes CO2e

20478

Emissions calculation methodology

Primary office buildings metered electrical use multiplied by provincial electricity grid factors. Upstream camps natural gas consumption multiplied by natural gas combustion emission factor.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Please explain

The other source of emissions generated from leased assets are included in Scope 1 and 2.

Downstream transportation and distribution

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

All the emissions associated with activities are covered by Scope 1 and 2.

Processing of sold products

Evaluation status

Relevant, calculated

Metric tonnes CO2e

195620

Emissions calculation methodology

CO2 directly metered and sold from our facilities to third parties.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Please explain

CO2 from refinery's hydrogen production and ethanol plant's biofermentation process are sold to third party companies.

Use of sold products

Evaluation status

Relevant, calculated

Metric tonnes CO2e

195620

Emissions calculation methodology

195,620

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Please explain

CO2 sold to third party companies are used in other industry.

End of life treatment of sold products

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

Waste disposal emissions (e.g. waste water and Mining overburden) have been included in Scope 1.

Downstream leased assets

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

Suncor does not have assets owned and leased to other entities.

Franchises

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

The emissions generated from franchises assets are included in Scope 1 and 2.

Investments

Evaluation status

Not evaluated

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

Other (upstream)

Evaluation status

Please select

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

Other (downstream)

Evaluation status

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

C6.7

(C6.7) Are carbon dioxide emissions from biogenic carbon relevant to your organization?

No

C6.10

(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO2e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.

Intensity figure

0.000573282

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)

22854473

Metric denominator

unit total revenue

Metric denominator: Unit total

39866000000

Scope 2 figure used

Location-based

% change from previous year

2.8

Direction of change

Increased

Reason for change

Increase absolute emissions (3.5%) outpaced annual revenue increase (0.7%). Government mandated production curtailments impacted revenue generation potential.

Intensity figure

0.065028554

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)

22854473

Metric denominator

barrel of oil equivalent (BOE)

Metric denominator: Unit total

351452880

Scope 2 figure used

Location-based

% change from previous year

0.03

Direction of change

Decreased

Reason for change

Production increased by slightly more than emissions as supported by ongoing emissions reductions activities.

C-OG6.12

(C-OG6.12) Provide the intensity figures for Scope 1 emissions (metric tons CO2e) per unit of hydrocarbon category.

Unit of hydrocarbon category (denominator)

Thousand barrels of crude oil/ condensate

Metric tons CO2e from hydrocarbon category per unit specified

46.14

% change from previous year

15

Direction of change

Decreased

Reason for change

In 2019, there was significantly lower off shore emission intensity is due to reduced flaring emissions and higher energy efficiency.

Comment

The denominator is Suncor E&P Terra Nova crude oil production.

Unit of hydrocarbon category (denominator)

Thousand barrels of oil sands (includes bitumen and synthetic crude)

Metric tons CO2e from hydrocarbon category per unit specified

72.76

% change from previous year

2

Direction of change

Decreased

Reason for change

In 2019, Suncor's Oil Sands Base Plant Upgrader had increased production compared from 2018 (major turnaround year).

Comment

The denominator is Suncor upstream SCO production.

Unit of hydrocarbon category (denominator)

Thousand barrels of oil sands (includes bitumen and synthetic crude)

Metric tons CO2e from hydrocarbon category per unit specified

56.69

% change from previous year

3

Direction of change

Decreased

Reason for change

The absolute emissions at our steam assisted gravity drainage (SAGD) operations decreased compared to 2018, due to the Government of Alberta mandated cap in oil production curtailment, a higher steam-oil-ratio at Firebag, and an extended outage at the MacKay River facility. 2019 represented the first full-year of steady operations at capacity in Fort Hills, which resulted in significantly higher production and higher energy efficiency compared to 2018.

Comment

The denominator is Suncor upstream In-situ bitumen and Fort Hills bitumen productions.

Unit of hydrocarbon category (denominator)

Thousand barrels of refinery net production

Metric tons CO2e from hydrocarbon category per unit specified

24.23

% change from previous year

2

Direction of change

Increased

Reason for change

In 2019 the emissions intensity of our downstream refining and supply facilities remained relatively flat, driven by maintained energy efficiency improvement initiatives and optimized refinery utilization rates.

Comment

The denominator is Suncor total downstream product to market.

C-OG6.13

(C-OG6.13) Report your methane emissions as percentages of natural gas and hydrocarbon production or throughput.

Oil and gas business division

Upstream

Estimated total methane emitted expressed as % of natural gas production or throughput at given division

Estimated total methane emitted expressed as % of total hydrocarbon production or throughput at given division

0.02

Comment

The unit is tonnes CH₄ / m³ total upstream hydrocarbon production. The methane emissions are the total combined gross Scope 1 methane emissions from Suncor upstream facilities (including vents, leaks, etc.).

Oil and gas business division

Downstream

Estimated total methane emitted expressed as % of natural gas production or throughput at given division

Estimated total methane emitted expressed as % of total hydrocarbon production or throughput at given division

0.003

Comment

The unit is tonne CH₄ / m³ total downstream hydrocarbon production. The methane emissions are the total combined gross Scope 1 methane emissions from Suncor upstream facilities (including vents, leaks, etc.).

C7. Emissions breakdowns

C7.1

(C7.1) Does your organization break down its Scope 1 emissions by greenhouse gas type?

Yes

C7.1a

(C7.1a) Break down your total gross global Scope 1 emissions by greenhouse gas type and provide the source of each used greenhouse warming potential (GWP).

CO ₂	21046884	IPCC Fourth Assessment Report (AR4 - 100 year)
CH ₄	264054	IPCC Fourth Assessment Report (AR4 - 100 year)
N ₂ O	118140	IPCC Fourth Assessment Report (AR4 - 100 year)
HFCs	403	IPCC Fourth Assessment Report (AR4 - 100 year)
PFCs	120	IPCC Fourth Assessment Report (AR4 - 100 year)
SF ₆	2532	IPCC Fourth Assessment Report (AR4 - 100 year)

C-OG7.1b

(C-OG7.1b) Break down your total gross global Scope 1 emissions from oil and gas value chain production activities by greenhouse gas type.

Emissions category

Fugitives

Value chain

Upstream

Product

Oil

Gross Scope 1 CO₂ emissions (metric tons CO₂)

85762

Gross Scope 1 methane emissions (metric tons CH₄)

8202

Total gross Scope 1 emissions (metric tons CO₂e)

209812

Comment

Upstream facilities include bitumen and crude oil producers

Emissions category

Fugitives

Value chain

Downstream

Product

Oil

Gross Scope 1 CO2 emissions (metric tons CO2)

0

Gross Scope 1 methane emissions (metric tons CH4)

113

Total gross Scope 1 emissions (metric tons CO2e)

2819

Comment

Downstream facilities include refineries and renewable fuel producers

Emissions category

Venting

Value chain

Upstream

Product

Oil

Gross Scope 1 CO2 emissions (metric tons CO2)

37

Gross Scope 1 methane emissions (metric tons CH4)

318

Total gross Scope 1 emissions (metric tons CO2e)

7979

Comment

Suncor does not have gas production

Emissions category

Venting

Value chain

Downstream

Product

Oil

Gross Scope 1 CO2 emissions (metric tons CO2)

5307

Gross Scope 1 methane emissions (metric tons CH4)

0

Total gross Scope 1 emissions (metric tons CO2e)

5307

Comment

Emissions category

Flaring

Value chain

Upstream

Product

Oil

Gross Scope 1 CO2 emissions (metric tons CO2)

391708

Gross Scope 1 methane emissions (metric tons CH4)

587

Total gross Scope 1 emissions (metric tons CO2e)

407466

Comment

Emissions category

Flaring

Value chain

Downstream

Product

Oil

Gross Scope 1 CO2 emissions (metric tons CO2)

178834

Gross Scope 1 methane emissions (metric tons CH4)

296

Total gross Scope 1 emissions (metric tons CO2e)

187215

Comment

Emissions category

Combustion (excluding flaring)

Value chain

Upstream

Product

Oil

Gross Scope 1 CO2 emissions (metric tons CO2)

13847122

Gross Scope 1 methane emissions (metric tons CH4)

507

Total gross Scope 1 emissions (metric tons CO2e)

13935181

Comment

Emissions category

Combustion (excluding flaring)

Value chain

Downstream

Product

Oil

Gross Scope 1 CO2 emissions (metric tons CO2)

4375846

Gross Scope 1 methane emissions (metric tons CH4)

836

Total gross Scope 1 emissions (metric tons CO2e)

4411464

Comment

C7.2

(C7.2) Break down your total gross global Scope 1 emissions by country/region.

Canada	20481982
United States of America	950151

C7.3

(C7.3) Indicate which gross global Scope 1 emissions breakdowns you are able to provide.

By facility

C7.3b

(C7.3b) Break down your total gross global Scope 1 emissions by business facility.

Oil Sands Base Plant	8638622	57.0033	-111.4661
In Situ Firebag	5156395	57.2297	-110.8325
In Situ MacKay River	390495	57.03347	-111.88712
Terra Nova FPSO	519529	46.2831	-48.2851
Edmonton Refinery	1338094	53.55558	-113.33275
Montreal Refinery	1140365	45.50806	-73.57111
Sarnia Refinery	773045	42.9306	-82.4433
Commerce City Refinery	950151	39.80168	-104.94698
Montreal Sulphur Plant	21882	45.639381	-73.515457
Burrard Terminal	11056	49.283	-122.85
Pipelines	10237	57.1165	-111.1493
Renewables - St. Clair Ethanol Plant	166626	42.9294	-82.4381
Renewables - Wind	7	49.71306	-112.78745
Fort Hills	2315627	57.39207	-111.56791

C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4

(C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4) Break down your organization's total gross global Scope 1 emissions by sector production activity in metric tons CO2e.

Cement production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Chemicals production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Electric utility activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Metals and mining production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (upstream)	17020669	<Not Applicable>	<Not Applicable>
Oil and gas production activities (midstream)		<Not Applicable>	<Not Applicable>
Oil and gas production activities (downstream)	4411464	<Not Applicable>	<Not Applicable>
Steel production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport OEM activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport services activities	<Not Applicable>	<Not Applicable>	<Not Applicable>

C7.5

(C7.5) Break down your total gross global Scope 2 emissions by country/region.

Canada	1238717	1156287	5067260	3016940
United States of America	183623	183623	295213	0

C7.6

(C7.6) Indicate which gross global Scope 2 emissions breakdowns you are able to provide.

By facility

C7.6b

(C7.6b) Break down your total gross global Scope 2 emissions by business facility.

Oil Sands Base Plant	0	0
In Situ Firebag	0	0
In Situ MacKay River	554703	432141
Terra Nova FPSO	0	0
Fort Hills	2778	2778
Edmonton Refinery	475559	434661
Montreal Refinery	623	623
Sarnia Refinery	158109	239139
Commerce City Refinery	183623	183623
Montreal Sulphur Plant	13	13
Burrard Terminal	130	130
Pipelines	44363	44363
Renewables - St Clair Ethanol Plant	2429	2429
Renewables - Wind	10	10

C-CE7.7IC-CH7.7IC-CO7.7IC-MM7.7IC-OG7.7IC-ST7.7IC-TO7.7IC-TS7.7

(C-CE7.7IC-CH7.7IC-CO7.7IC-MM7.7IC-OG7.7IC-ST7.7IC-TO7.7IC-TS7.7) Break down your organization's total gross global Scope 2 emissions by sector production activity in metric tons CO2e.

Cement production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Chemicals production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Metals and mining production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (upstream)	557481	434919	
Oil and gas production activities (midstream)			
Oil and gas production activities (downstream)	864859	904990	
Steel production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport OEM activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport services activities	<Not Applicable>	<Not Applicable>	<Not Applicable>

C7.9

(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?

Remained the same overall

C7.9a

(C7.9a) 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.

Change in renewable energy consumption	2010	Increased	0.26	2019 emissions from two sources are quantified and compared to 2018: Biodiesel is consumed in Oil Sand Base Plant and Fort Hills for various combustion equipment and heavy hauler/trucks for Mining site. Biogas which is generated from fermentation is consumed in Ethanol Plant in equipment and biomethanator flare.
Other emissions reduction activities	26726	Decreased	3.46	Projects were conducted in 2019 to improve energy efficiency and therefore decrease the Scope 1 emissions. These projects include process optimization to improve heat transfer and reliability.
Divestment		<Not Applicable	>	
Acquisitions		<Not Applicable	>	
Mergers		<Not Applicable	>	
Change in output		<Not Applicable	>	
Change in methodology		<Not Applicable	>	
Change in boundary		<Not Applicable	>	
Change in physical operating conditions		<Not Applicable	>	
Unidentified		<Not Applicable	>	
Other	796217	Increased	3.2	In 2019, our total absolute GHG Scope 1 + 2 emissions rose compared to 2018 primarily due to Fort Hills operating at full capacity. The GHG emissions in our other upstream oil sands operations were slightly higher than 2018. These variations are also attributed to a combination of factors such as government mandated production curtailment, a longer than usual outage event at MacKay River which disproportionately affected production in 2019, and higher steam-to-oil ratio (SOR) at the Firebag facility.

C7.9b

(C7.9b) Are your emissions performance calculations in C7.9 and C7.9a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Location-based

C8. Energy

C8.1

(C8.1) What percentage of your total operational spend in the reporting year was on energy?

More than 10% but less than or equal to 15%

C8.2

(C8.2) Select which energy-related activities your organization has undertaken.

Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	No
Consumption of purchased or acquired steam	Yes
Consumption of purchased or acquired cooling	Yes
Generation of electricity, heat, steam, or cooling	Yes

C8.2a

(C8.2a) Report your organization's energy consumption totals (excluding feedstocks) in MWh.

Consumption of fuel (excluding feedstock)	LHV (lower heating value)	10404	94529698	94540102
Consumption of purchased or acquired electricity	<Not Applicable>	0	1884193	1884193
Consumption of purchased or acquired heat	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired steam	<Not Applicable>	0	3465297	3465297
Consumption of purchased or acquired cooling	<Not Applicable>	0	12984	12984
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	0	<Not Applicable>	0
Total energy consumption	<Not Applicable>	10404	99892171	99902575

C8.2b

(C8.2b) Select the applications of your organization's consumption of fuel.

Consumption of fuel for the generation of electricity	Yes
Consumption of fuel for the generation of heat	Yes
Consumption of fuel for the generation of steam	Yes
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	Yes

C8.2c

(C8.2c) State how much fuel in MWh your organization has consumed (excluding feedstocks) by fuel type.

Fuels (excluding feedstocks)

Natural Gas

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

56200887

MWh fuel consumed for self-generation of electricity

19684873

MWh fuel consumed for self-generation of heat

14178278

MWh fuel consumed for self-generation of steam

22337736

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

24935437

Emission factor

0.00209

Unit

metric tons CO2e per m3

Emissions factor source

NG composition; Environment Canada Facility Greenhouse Gas Reporting Program: Canada's Greenhouse Gas Quantification Requirements 2019

Comment

NG compositions are provided by NG producers (weighted average of upstream and downstream facilities)

Fuels (excluding feedstocks)

Fuel Gas

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

20339133

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

13438073

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

0.00188

Unit

metric tons CO2e per m3

Emissions factor source

Gas composition; Environment Canada Facility Greenhouse Gas Reporting Program: Canada's Greenhouse Gas Quantification Requirements 2019

Comment

Fuel gas compositions are obtained from lab analysis (weighted average of upstream and downstream facilities)

Fuels (excluding feedstocks)

Diesel

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

6537080

MWh fuel consumed for self-generation of electricity

61088

MWh fuel consumed for self-generation of heat

6475992

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

942.4

Unit

lb CO2e per barrel

Emissions factor source

Environment Canada Facility Greenhouse Gas Reporting Program: Canada's Greenhouse Gas Quantification Requirements 2019

Comment

Default emission factors are applied

Fuels (excluding feedstocks)

Heavy Gas Oil

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

241413

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

74746

MWh fuel consumed for self-generation of steam

166667

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

1102.3

Unit

lb CO2e per barrel

Emissions factor source

Comment

Default emission factor are applied

Fuels (excluding feedstocks)

Propane Liquid

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

35472

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

34815

MWh fuel consumed for self-generation of steam

657

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

542.5

Unit

lb CO2e per barrel

Emissions factor source

Environment Canada Facility Greenhouse Gas Reporting Program: Canada's Greenhouse Gas Quantification Requirements 2019

Comment

Default emission factor are applied

Fuels (excluding feedstocks)

Petroleum Coke

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

7749385

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

2766052

MWh fuel consumed for self-generation of steam

4983333

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

3.103

Unit

metric tons CO2e per metric ton

Emissions factor source

Coke composition; Alberta Quantification Methodologies for the Carbon Competitiveness Incentive Regulation and the Specified Gas Reporting Regulation 2019 (Version 1.4)

Comment

Coke compositions are obtained from lab analysis

Fuels (excluding feedstocks)

Biodiesel

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

300693

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

300693

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

869.2

Unit

lb CO2e per barrel

Emissions factor source

Alberta Quantification Methodologies for the Carbon Competitiveness Incentive Regulation and the Specified Gas Reporting Regulation 2019 (Version 1.4)

Comment

Default emission factors are applied

Fuels (excluding feedstocks)

Biogas

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

1

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

1

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

0.04954

Unit

metric tons CO2e per GJ

Emissions factor source

Environment Canada Facility Greenhouse Gas Reporting Program: Canada's Greenhouse Gas Quantification Requirements 2019

Comment

Default emission factors are applied

C8.2d

(C8.2d) Provide details on the electricity, heat, steam, and cooling your organization has generated and consumed in the reporting year.

Electricity	8121773	6562416	98419	0
Heat	29814919	29814919	29961	29961
Steam	24508450	24508450	0	0
Cooling	0	0	0	0

C8.2e

(C8.2e) Provide details on the electricity, heat, steam, and/or cooling amounts that were accounted for at a zero emission factor in the market-based Scope 2 figure reported in C6.3.

Sourcing method

Heat/steam/cooling supply agreement

Low-carbon technology type

Low-carbon energy mix

Country/region of consumption of low-carbon electricity, heat, steam or cooling

North America

MWh consumed accounted for at a zero emission factor

3016940

Comment

Cogeneration Power Emission factor: 0.2445 metric tons CO2e per MWh Cogeneration Steam Emission factor: 0.2001 metric tons CO2e per MWh

C9. Additional metrics

C9.1

(C9.1) Provide any additional climate-related metrics relevant to your business.

C-OG9.2a

(C-OG9.2a) Disclose your net liquid and gas hydrocarbon production (total of subsidiaries and equity-accounted entities).

Crude oil and condensate, million barrels	11.3	Crude oil produced from Terra Nova FPSO
Natural gas liquids, million barrels	0	No NG liquids produced from Suncor Facilities
Oil sands, million barrels (includes bitumen and synthetic crude)	215.1	Bitumen and synthetic crude oil produced from Oil Sands facilities
Natural gas, billion cubic feet	0	No NG produced from Suncor Facilities

C-OG9.2b

(C-OG9.2b) Explain which listing requirements or other methodologies you use to report reserves data. If your organization cannot provide data due to legal restrictions on reporting reserves figures in certain countries, please explain this.

Suncor reports reserves in accordance with Canadian Securities Administrators' National Instrument 51-101 "Standards of Disclosure for Oil and Gas Activities" (NI 51-101). Suncor's reserves were evaluated by independent qualified reserves evaluators, GLJ and Sproule, in accordance with NI 51-101 and the Canadian Oil and Gas Evaluation (COGE) Handbook. Suncor reports 1P reserves in accordance with the Securities and Exchange Commission (SEC).

C-OG9.2c

(C-OG9.2c) Disclose your estimated total net reserves and resource base (million boe), including the total associated with subsidiaries and equity-accounted entities.

Row 6419
1

Volumes and percentages based on NI 51-101.

C-OG9.2d

(C-OG9.2d) Provide an indicative percentage split for 2P, 3P reserves, and total resource base by hydrocarbon categories.

Crude oil/ condensate/ natural gas liquids	5
Natural gas	0
Oil sands (includes bitumen and synthetic crude)	95

Volumes and percentages based on NI 51-101.

Volumes and percentages based on NI 51-101.

C-OG9.2e

(C-OG9.2e) Provide an indicative percentage split for production, 1P, 2P, 3P reserves, and total resource base by development types.

Development type

Onshore

In-year net production (%)

2

Net proved reserves (1P) (%)

0

Net proved + probable reserves (2P) (%)

0

Net proved + probable + possible reserves (3P) (%)

Net total resource base (%)

Comment

Assets onshore In-year net production: 1.9% In year net production numbers are as per the NI 51-101 methodology but are gross (before royalty) rather than net (after royalty).

Development type

Please select

In-year net production (%)

13

Net proved reserves (1P) (%)

4

Net proved + probable reserves (2P) (%)

5

Net proved + probable + possible reserves (3P) (%)

Net total resource base (%)

Comment

Assets in water depth < 150m In-year net production: 13.3% Net proved reserves: 1P = 3.7% Net proved + probable reserves: 2P = 4.9% In year net production numbers are as per the NI 51-101 methodology but are gross (before royalty) rather than net (after royalty).

Development type

Deepwater

In-year net production (%)

0

Net proved reserves (1P) (%)

0

Net proved + probable reserves (2P) (%)

0

Net proved + probable + possible reserves (3P) (%)

Net total resource base (%)

Comment

Assets in water depth 150m – 1,500m In-year net production: 0% Net proved reserves: 1P = 0.2% Net proved + probable reserves: 2P = 0.2% In year net production numbers are as per the NI 51-101 methodology but are gross (before royalty) rather than net (after royalty).

Development type

Oil sand/extra heavy oil

In-year net production (%)

85

Net proved reserves (1P) (%)

96

Net proved + probable reserves (2P) (%)

95

Net proved + probable + possible reserves (3P) (%)

Net total resource base (%)

Comment

Oil sand/extra heavy oil: Oil sands extraction by mining and in-situ methods and other assets that produce oil with an API gravity of less than 10°. In-year net production: 84.8% Net proved reserves: 1P = 96.1% Net proved + probable reserves: 2P = 94.9% In year net production numbers are as per the NI 51-101 methodology but are gross (before royalty) rather than net (after royalty).

C-OG9.3a

(C-OG9.3a) Disclose your total refinery throughput capacity in the reporting year in thousand barrels per day.

Capacity	485.96
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C-OG9.3b

(C-OG9.3b) Disclose feedstocks processed in the reporting year in million barrels per year.

Oil	160.28
Other feedstocks	13.5
Total	173.79

C-OG9.3c

(C-OG9.3c) Are you able to break down your refinery products and net production?

Yes

C-OG9.3d

(C-OG9.3d) Disclose your refinery products and net production in the reporting year in million barrels per year.

Gasolines	78.36
Diesel fuels	60.18
Fuel oils	22.44
Other, please specify (Distillates)	12.44

C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6

(C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6) Does your organization invest in research and development (R&D) of low-carbon products or services related to your sector activities?

Row	Yes	Suncor invested \$830 million in technology development and deployment and digital technologies in 2019 as part of a robust strategy to optimize current assets and develop next-generation facilities. Emissions-related technology development was approximately 50% of the technology development spend including solvents, upgrading technologies and biofuels. Out of the \$830 million invested, this reflects: - \$224M technology development spend (includes COSIA, Syncrude R&D and direct strategic investments such as Evok, Emerald, ArcTern Ventures, Enerkem, LanzaTech) - \$250M on technology deployment spend on permanent aquatic storage structure (PASS), our demonstration pit lake called Lake Miwasin, autonomous haul systems (AHS) and other smaller deployments - \$356M digital transformation
1		

C-CO9.6a/C-EU9.6a/C-OG9.6a

(C-CO9.6a/C-EU9.6a/C-OG9.6a) Provide details of your organization's investments in low-carbon R&D for your sector activities over the last three years.

Enhanced Oil Recovery (EOR) techniques	Full/commercial-scale demonstration	Please select	Suncor is focused on solvents as an alternative to steam in recovering bitumen from in situ reservoirs. Our current focus in solvent recovery processes builds on our experience and background knowledge, gained from participation in experiments going back more than 20 years. In the solvent-based processes that Suncor is pursuing, a light hydrocarbon solvent such as propane or butane is used as the primary means to mobilize bitumen. The effectiveness of solvent-based recovery processes is significantly enhanced as the temperature of the reservoir is raised. The increased temperature promotes in situ solvent reflux which maximizes recovery efficiency by limiting the volume of solvent recycled back to surface facilities. Currently, Suncor is advancing, to the pilot phase, a suite of solvent technologies referred to as Solvent+, where the "+" refers to a range of heating technologies that can be coupled with solvent injection. These include: • wellbore heating • superheated solvent injection • electromagnetic heating If successful, Solvent+ offers the potential for significant environmental improvements over SAGD including: • reduction in GHG emissions intensity by 50 to 70% • elimination of process water • reduction in the surface footprint • reduction in transport diluent requirements • reduction in carbon content of produced oil • potential to unlock additional resources
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C-OG9.7

(C-OG9.7) Disclose the breakeven price (US\$/BOE) required for cash neutrality during the reporting year, i.e. where cash flow from operations covers CAPEX and dividends paid/ share buybacks.

35

Based on company's current business plans and the current business environment, which are subject to change. Actual results may differ materially. Includes possible future opportunities currently being evaluated and which may be subject to Board of Directors, counterparty and regulatory approval. There can be no assurances these initiatives will be pursued or if pursued that they will result in the expected benefits.

C10. Verification

C10.1

(C10.1) Indicate the verification/assurance status that applies to your reported emissions.

Scope 1	Third-party verification or assurance process in place
Scope 2 (location-based or market-based)	Third-party verification or assurance process in place
Scope 3	No third-party verification or assurance

C10.1a

(C10.1a) Provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements.

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

2020-suncor-assurance-statement-en.pdf

Page/ section reference

Ernst & Young LLP Independent Assurance Statement

Relevant standard

ISAE3000

Proportion of reported emissions verified (%)

99

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

CCIR Verification Reports Summary.pdf

Page/ section reference

Brightspot Verification Report - not publicly available

Relevant standard

Alberta Carbon Competitiveness Incentive Regulation (CCIR)

Proportion of reported emissions verified (%)

100

C10.1b

(C10.1b) Provide further details of the verification/assurance undertaken for your Scope 2 emissions and attach the relevant statements.

Scope 2 approach

Scope 2 market-based

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

2020-suncor-assurance-statement-en.pdf

Page/ section reference

Ernst & Young LLP Independent Assurance Statement

Relevant standard

ISAE3000

Proportion of reported emissions verified (%)

97

C10.2

(C10.2) Do you verify any climate-related information reported in your CDP disclosure other than the emissions figures reported in C6.1, C6.3, and C6.5?

Yes

C10.2a

(C10.2a) Which data points within your CDP disclosure have been verified, and which verification standards were used?

C4. Targets and performance	Year on year change in emissions (Scope 1 and 2)	EY provided limited assurance in accordance with ISAE3000
C4. Targets and performance	Year on year emissions intensity figure	EY provided limited assurance in accordance with ISAE3000

C11. Carbon pricing

C11.1

(C11.1) Are any of your operations or activities regulated by a carbon pricing system (i.e. ETS, Cap & Trade or Carbon Tax)?

Yes

C11.1a

(C11.1a) Select the carbon pricing regulation(s) which impacts your operations.

Alberta Carbon Competitive Incentive Regulation (CCIR) – ETS

BC carbon tax

Canada federal fuel charge

Prince Edward Island carbon tax

Québec CaT - ETS

Other carbon tax, please specify (Northwest Territories provincial carbon taxes)

Other carbon tax, please specify (Alberta Carbon Tax (2019))

Alberta SGER is now Alberta CCIR

C11.1b

(C11.1b) Complete the following table for each of the emissions trading schemes you are regulated by.

Alberta Carbon Competitive Incentive Regulation (CCIR) – ETS

% of Scope 1 emissions covered by the ETS

100

% of Scope 2 emissions covered by the ETS

100

Period start date

January 1 2020

Period end date

December 31 2020

Allowances allocated

12821172

Allowances purchased

2706539

Verified Scope 1 emissions in metric tons CO₂e

15527711

Verified Scope 2 emissions in metric tons CO₂e

835785

Details of ownership

Facilities we own and operate

Comment

Scope 2 emissions included in this table are reflective of "indirect" emissions as captured under the Alberta Carbon Competitiveness Incentive Regulation. This includes emissions associated with imported heat and electricity for the Mackay River In Situ Project and the Edmonton Refinery.

Québec CaT

% of Scope 1 emissions covered by the ETS

100

% of Scope 2 emissions covered by the ETS

0

Period start date

January 1 2020

Period end date

December 31 2020

Allowances allocated

1069727

Allowances purchased

71261

Verified Scope 1 emissions in metric tons CO₂e

1140988

Verified Scope 2 emissions in metric tons CO₂e

0

Details of ownership

Facilities we own and operate

Comment

C11.1c

(C11.1c) Complete the following table for each of the tax systems you are regulated by.

BC carbon tax

Period start date

January 1 2019

Period end date

December 31 2019

% of total Scope 1 emissions covered by tax

98

Total cost of tax paid

207045326

Comment

Total carbon levy collected and paid to the government in 2019

Canada federal fuel charge

Period start date

January 1 2019

Period end date

December 31 2019

% of total Scope 1 emissions covered by tax

77.44

Total cost of tax paid

267768960

Comment

Total carbon levy collected and paid to the government in 2019 in Manitoba, New Brunswick, Ontario, Saskatchewan and Yukon

Prince Edward Island carbon tax

Period start date

January 1 2019

Period end date

December 31 2019

% of total Scope 1 emissions covered by tax

0

Total cost of tax paid

1857368

Comment

Total carbon levy collected and paid to the government in 2019

Other carbon tax, please specify

Period start date

January 1 2019

Period end date

May 30 2019

% of total Scope 1 emissions covered by tax

0

Total cost of tax paid

165385

Comment

Total carbon levy collected and paid to the government in 2019

Other carbon tax, please specify

Period start date

January 1 2019

Period end date

% of total Scope 1 emissions covered by tax

82.9

Total cost of tax paid

86584550

Comment

Total carbon levy collected and paid to the government in 2019

C11.1d

(C11.1d) What is your strategy for complying with the systems you are regulated by or anticipate being regulated by?

Suncor follows a low-cost compliance strategy where cost-effective facility emissions reductions are pursued first, followed by retiring offset credits generated from either our wind facilities or cogeneration facilities, followed by offset purchases and secondary market purchases of allowances. Suncor also has refineries in Ontario and Quebec, both of which were covered by a Cap and Trade system in 2018. Ontario ended its Cap and Trade system in late 2018. Suncor has joint ownership in UK North Sea assets but these assets are operated by another company whose responsibility includes compliance with the European Union Emissions Trading Scheme.

C11.2

(C11.2) Has your organization originated or purchased any project-based carbon credits within the reporting period?

Yes

C11.2a

(C11.2a) Provide details of the project-based carbon credits originated or purchased by your organization in the reporting period.

Credit origination or credit purchase

Credit origination

Project type

Wind

Project identification

Magrath Wind Project

Verified to which standard

Other, please specify (Offset Protocol)

Number of credits (metric tonnes CO2e)

47856

Number of credits (metric tonnes CO2e): Risk adjusted volume

47856

Credits cancelled

Not relevant

Purpose, e.g. compliance

Compliance

Credit origination or credit purchase

Credit origination

Project type

Wind

Project identification

Chin Chute Wind Project

Verified to which standard

Other, please specify (CCIR)

Number of credits (metric tonnes CO2e)

30567

Number of credits (metric tonnes CO2e): Risk adjusted volume

30567

Credits cancelled

Not relevant

Purpose, e.g. compliance

Compliance

C11.3

(C11.3) Does your organization use an internal price on carbon?

Yes

C11.3a

(C11.3a) Provide details of how your organization uses an internal price on carbon.

Objective for implementing an internal carbon price

Stress test investments

Other, please specify (Change Internal Behaviour)

GHG Scope

Scope 1

Application

All business units

Actual price(s) used (Currency /metric ton)

30

Variance of price(s) used

\$30/tonne CO2e to \$100/tonne CO2e

Type of internal carbon price

Shadow price

Impact & implication

As part of its ongoing business planning, Suncor assesses future costs associated with CO2 emissions in its operations and the evaluation of future projects, based on the company's outlook for the carbon price under current and pending GHG regulations, using a price range of \$30 to \$100/tonne of CO2e as a base case, applied against a range of policy design options.

C12. Engagement

C12.1

(C12.1) Do you engage with your value chain on climate-related issues?

Yes, our suppliers

Yes, our customers

C12.1a

(C12.1a) Provide details of your climate-related supplier engagement strategy.

Type of engagement

Information collection (understanding supplier behavior)

Details of engagement

Collect climate change and carbon information at least annually from suppliers

% of suppliers by number

28

% total procurement spend (direct and indirect)

50

% of supplier-related Scope 3 emissions as reported in C6.5

Rationale for the coverage of your engagement

Suncor's supplier risk identification process begins with a pre-screen process through our prequalification tool, Avetta. This process ensures current and potential Contractors meet Suncor's minimum requirements in EH&S and regulatory, legal, quality and finance. In 2019, SCM implemented a series of Sustainability questions that must be answered by all Suppliers when prequalifying with Suncor. The Sustainability questions are focused on Indigenous relations/participation, climate change, human rights, inclusion and diversity, community investment and social innovation and sustainability embedding.

Impact of engagement, including measures of success

As of April 30, 2019, 1,714 suppliers and 1,954 potential suppliers had provided responses to the sustainability prequalification questions through Avetta. The 1,714 active suppliers that responded represent 49% of our 2018 supply chain spend and 26% of our suppliers.

Comment

In 2018, SCM Sustainability formalized a Supply Chain Management Sustainability Strategy. The strategy was developed based on Suncor's reported materiality assessment for our Report on Sustainability, Suncor's priority issues, our Corporate Goals, expectations of stakeholders and other thought leadership. The process considered internal and external inputs and material issues. This assessment identified six priority areas for Suncor Supply Chain Management and provided us with the systematic approach to gathering information based on risk at every step of our supply chain. These areas of focus are designed to progress our sustainability strategy and are aligned with our Corporate goals including Suncor's Social Goal and our GHG Goal. The six areas are: 1. Indigenous Business Development 2. GHG Emissions 3. Inclusion and Diversity 4. Human Rights & Ethics 5. Community Investment 6. Water Stewardship

Type of engagement

Innovation & collaboration (changing markets)

Details of engagement

Run a campaign to encourage innovation to reduce climate impacts on products and services

% of suppliers by number

1

% total procurement spend (direct and indirect)

25

% of supplier-related Scope 3 emissions as reported in C6.5

Rationale for the coverage of your engagement

Maturing relationships with a diverse range of suppliers is important as we look to move our company and industry from supply arrangements that are transactional in nature to partnerships that are more strategic. Working together with our vast supply chain network, we are attempting to leverage our collective strengths to amplify innovation and drive sustainability performance.

Impact of engagement, including measures of success

To help facilitate the sharing of innovative practices, we brought together over 200 leaders from across Suncor's supply chain to participate in an interactive forum, called FORGE. The goal in organizing this event was to signal our intention to listen, learn, transform, co-create, innovate and accelerate sustainability and innovation together.

Comment

In 2018, SCM Sustainability formalized a Supply Chain Management Sustainability Strategy. The strategy was developed based on Suncor's reported materiality assessment for our Report on Sustainability, Suncor's priority issues, our Corporate Goals, expectations of stakeholders and other thought leadership. The process took into account internal and external inputs and material issues. This assessment identified six priority areas for Suncor Supply Chain Management and provided us with the systematic approach to gathering information based on risk at every step of our supply chain. These areas of focus are designed to progress our sustainability strategy and are aligned with our Corporate goals including Suncor's Social Goal and our GHG Goal. The six areas are: 1. Indigenous Business Development 2. GHG Emissions 3. Inclusion and Diversity 4. Human Rights & Ethics 5. Community Investment 6. Water Stewardship

C12.1b

(C12.1b) Give details of your climate-related engagement strategy with your customers.

Type of engagement

Education/information sharing

Details of engagement

Share information about your products and relevant certification schemes (i.e. Energy STAR)

% of customers by number

% of customer - related Scope 3 emissions as reported in C6.5

Portfolio coverage (total or outstanding)

<Not Applicable>

Please explain the rationale for selecting this group of customers and scope of engagement

Suncor remains committed to providing our customers with multiple low-carbon fueling choices. In addition to providing fast-charging EV infrastructure, we continue to reduce the emissions intensity of our liquid fuels in several other ways. One way is through biofuel blending. Suncor owns and operates the largest ethanol plant in Canada, which provides the ethanol we blend into our gasoline. Commercial customers occasionally inquire about Suncor's climate change position and actions; questionnaires are completed as required for commercial contracts and bids. PumpTalk is a blog created by Petro-Canada, a Suncor business, to share information and engage in discussion about a number of topics, such as fuel efficiency and product responsibility. In our weekly posts, we discuss subjects that we believe are important and are of interest to drivers everywhere. Here you'll find posts on gas prices, reducing fuel costs, sustainability, auto industry innovation, electric vehicle charging stations and vehicle safety and maintenance, as well as posts on climate change as it relates to the energy industry and our shared responsibility. Suncor's Report on Sustainability and its Climate Report are published to encourage further engagement with Suncor on its climate change position and actions

Impact of engagement, including measures of success

While we continue to reduce the emissions intensity of our liquid fuels, we are evolving and expanding our current product offering to meet growing customer demand. Through our Petro-Canada™ brand, we completed construction in 2019 of Canada's Electric Highway™, a coast-to-coast electric vehicle (EV) fast-charging network spanning more than 50 Petro-Canada™ stations. These sites are positioned no further than 250 kilometres apart and provide universal charging options to a variety of electric vehicles. We invested in level three direct-current fast chargers, a step-change technology that is built beyond the needs of today's EV technology and positioned for the future of EV charging in Canada. This exciting initiative supports customers wanting to reduce their carbon footprint with choices for their energy needs and enables us to learn more about this emerging market as we continue to evaluate options and respond to evolving customer needs.

C12.3

(C12.3) Do you engage in activities that could either directly or indirectly influence public policy on climate-related issues through any of the following?

- Direct engagement with policy makers
- Trade associations
- Funding research organizations

C12.3a

(C12.3a) On what issues have you been engaging directly with policy makers?

Carbon tax	Support with minor exceptions	Sitting on a technical working group for the proposed Clean Fuel Standard, as well as providing written submissions to requests for feedback.	Set performance standards for carbon intensity of various fuels (gaseous, liquid, and solid) used in transportation, industrial uses, and buildings; achieve compliance by fuel switching (such as switching from bunker fuel to diesel or natural gas) and using biofuels, then purchasing credits from others who have achieved a carbon intensity better than the standard.
Clean energy generation	Support with minor exceptions	Sitting on a technical working group for the proposed Clean Fuel Standard, as well as providing written submissions to requests for feedback.	British Columbia's Renewable and Low Carbon Fuel Requirement Regulation requires fuel suppliers to meet a provincial fuel pool carbon intensity target through blending incremental renewable fuel or investing in alternative fuels infrastructure. Federal and provincial renewable fuel standards mandate blending of ethanol into gasoline, and blending biodiesel into diesel. In addition, the federal government has recently proposed implementing a national Clean Fuels Standard, which remains under development.

C12.3b

(C12.3b) Are you on the board of any trade associations or do you provide funding beyond membership?

Yes

C12.3c

(C12.3c) Enter the details of those trade associations that are likely to take a position on climate change legislation.

Trade association

Canadian Alliance of Petroleum Producers

Is your position on climate change consistent with theirs?

Inconsistent

Please explain the trade association's position

CAPP does not consistently and transparently support carbon pricing or an emissions limit in a manner that is consistent with Suncor's approach.

How have you influenced, or are you attempting to influence their position?

Suncor remains an active member of CAPP, working to communicate our position of supporting carbon pricing, with considerations for trade exposed industries, and the Alberta provincial emissions limit on oil sands operations.

C12.3d

(C12.3d) Do you publicly disclose a list of all research organizations that you fund?

No

C12.3f

(C12.3f) 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?

Suncor's Vice-President, Sustainability has accountability for energy and climate change policy and the processes to ensure that all Suncor engagement is consistent with overall corporate position. This team coordinates all policy related activities, whether direct engagement, or engagement through trade associations. The team has clear principles for climate change policy engagement, and also documents and provides guidance and key messages across organizations. This team supports reaching an aligned policy position among business units. In addition to cross-functional team collaboration, the team also uses the following Suncor tools: stakeholder information management system (SIMS); risk management process, strategic issues management process (SIMP); and internal lobbying policy and guidelines. While Suncor actively influences the policy positions and statements of those associations of which it is a member or participant, those organizations exist as separate entities and may, from time to time, have positions that are not fully aligned with Suncor's. Our membership does not indicate that they speak on our behalf and, for further clarity; we outline our corporate positions on issues such as climate change on our own Sustainability site on sustainability.suncor.com/en/.

Government Relations is accountable for all relationships with governments, and ensuring communications to government go through the Government Relations department helps ensure consistency of the message.

C12.4

(C12.4) 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

In mainstream reports

Status

Complete

Attach the document

2019-annual-report-en.pdf

Page/Section reference

Pages: 4 – 12, 24, 30, 35, 41, 42, 48, 49, 61-63,

Content elements

Governance
Strategy
Risks & opportunities

Comment

2019 Annual Report

Publication

In mainstream reports

Status

Complete

Attach the document

2019-aif-en.pdf

Page/Section reference

Pages: 9, 27,52-56, 61, 62, 67

Content elements

Strategy
Risks & opportunities

Comment

2019 Annual Information Form

Publication

In mainstream reports

Status

Complete

Attach the document

2020-management-proxy-circular-en.pdf

Page/Section reference

Pages: 20, 40, 59, B-9

Content elements

Governance

Strategy

Comment

2020 Management Proxy Circular

Publication

In voluntary sustainability report

Status

Complete

Attach the document

2020-report-on-sustainability-en.pdf

Page/Section reference

Throughout but focused on Pages 39-68

Content elements

Governance

Strategy

Risks & opportunities

Emissions figures

Emission targets

Comment

2020 Report on Sustainability

Publication

In voluntary sustainability report

Status

Complete

Attach the document

2020-climate-risk-and-resilience-report-en.pdf

Page/Section reference

Throughout entire document

Content elements

Governance

Strategy

Risks & opportunities

Emissions figures

Emission targets

Comment

2020 Climate Risk and Resilience Report - Structured in line with the TCFD recommendations

C15. Signoff

C-FI

(C-F) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.

Forward-Looking Statements: These responses contain certain forward-looking statements and forward-looking information (collectively, forward-looking statements) based on Suncor's current expectations, estimates, projections and assumptions that were made by Suncor in light of information available at the time these responses were prepared. Some of the forward-looking statements may be identified by words like "expected", "will", "estimates", "could", "anticipates", "intends", "may", "forecasts", "potential", "strategy", "goal", "objective", "outlook", "target" and similar expressions. Forward-looking statements in these responses include references to: Suncor's strategies; expected regulatory changes, the impact thereof, including compliance costs, and resulting opportunities for Suncor; the expectation that Suncor will continue to expand on its climate-related financial incentive system for implementation in 2021; the belief that concerns over climate change and fossil fuel extraction could lead governments to enact additional or more stringent laws and regulations; estimated impacts of risks, opportunities and Suncor's responses thereto as well as the intended impact of mitigation efforts; Suncor's belief's relating to the time horizon, types of impact, the potential financial impact, likelihood, magnitude of impact of the disclosed risks, including escalating climate related regulatory costs and constraints, changing consumer behaviour, extreme weather events and increasing stakeholder expectations; Suncor's estimate of the production weighted average after-tax cost per barrel of global production over the prior 2020 to 2029; statements and expectations about Suncor's goal to reduce total GHG emissions intensity from the production of our oil and petroleum products by 30% by 2030; expectations for demand for oil and refined petroleum products and for refining capacity, and the assumptions for such expectations and expectations around the sources of such products; the expected type of financial impact, time horizon, likelihood, potential financial impact and magnitude of impact of the disclosed opportunities, including increasing renewable energy demand, increasing biofuels demand, carbon credit offset generation, exchanging low carbon technology with adjacent industries and development of new technology and the emerging demand for electric vehicle charging; statements about Suncor's electric vehicle charging network; initiatives to gain access to new markets for Suncor's crude oil and refined products; the belief that technology and energy innovation has the potential to move emissions reduction from incremental to step change improvement and that the solution to lowering the carbon intensity of producing bitumen will be a hybrid of the technologies being progressed; plans and expectations, including potential benefits, around technologies and technology development; Suncor's belief regarding the benefits of sustainability reporting; Suncor's growth plans; Suncor's strategy for energy efficiency and advancing carbon reduction technology; Suncor's carbon price outlook (including the anticipated benefits from using the outlook to assess investments and projects) as well as the expecting impact from carbon pricing; Suncor's position with respect to low carbon transportation fuels; potential opportunities with respect to renewable energy; plans, expectations (including as to cost and timing) and results (including CO2e savings and monetary savings) for projects, initiatives and activities undertaken by Suncor or in which Suncor is involved; the expectation that potential changes in public perception of integrated oil and gas companies and their operations may pose issues related to development and operating approvals or market access risk for products, which may have a material adverse effect on Suncor's business; the belief that RFS will be amended to increase the required level of biofuel, creating a stable and increasing market for biofuels; the expectation that a fuel efficiency improvement of 10% to 20% will reduce natural gas costs in Suncor's production of bitumen (mining and in situ) by \$31M to \$62M per year; the expectation that the new 2°C scenario will continue informing Suncor's long-term business planning and corporate strategy and allows us to understand what a pathway could entail to keep global temperatures from rising 2°C, or less, by 2100 compared with pre-industrial levels; the belief that technology and energy innovation has the potential to move emissions reduction from incremental to step change improvement; the expectation that the greatest impact on revenue will arise from oil price and oil demand; the expectation that future development of methane-related technologies will help Suncor to better understand where and when methane emissions come from areal sources, helping allow for improved reduction efforts; the expectation to continue to reduce the emissions intensity of our liquid fuels, we are evolving and expanding our current product offering to meet growing customers; the total estimated annual CO2e savings relating to Suncor's various initiatives as well as the estimated annual monetary savings, CO2e savings, payback period and estimated lifetime of the initiatives that were implemented in 2019; trends related to Suncor's base case energy outlook; potential incremental cogeneration capacity and fuel switching opportunities; the objective of making oil sands crude both cost and carbon competitive; the expected oil price required to cover Suncor's sustaining capital and dividend; estimated emissions intensities and absolute emissions levels; and reserves estimates.

Forward-looking statements are not guarantees of future performance and involve a number of risks and uncertainties, some that are similar to other oil and gas companies and some that are unique to our company. Suncor's actual results may differ materially from those expressed or implied by our forward-looking statements and you are cautioned not to place undue reliance on them. Suncor's Management's Discussion & Analysis for the second quarter of 2020 and its most recently filed Annual Information Form/Form 40-F, Annual Report to Shareholders and other documents it files from time to time with securities regulatory authorities describe the risks, uncertainties, material assumptions and other factors that could influence actual results and such factors are incorporated herein by reference. Copies of these documents are available without charge from Suncor or by referring to the company's profile on SEDAR at sedar.com or EDGAR at sec.gov. Except as required by applicable securities laws, Suncor disclaims any intention or obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise.

C15.1

(C15.1) Provide details for the person that has signed off (approved) your CDP climate change response.

Row 1 Jon Mitchell, Vice-President, Sustainability

Other, please specify (Vice-President, Sustainability)

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

I am submitting my response

Investors

Public

Please confirm below

I have read and accept the applicable Terms