

# Nutrien's 2020 CDP Climate Change Response



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## Forward-Looking Statements

Certain statements and other information included in this document constitute "forward-looking information" or "forward-looking statements" (collectively, "forward-looking statements") under applicable securities laws. All statements in this document, other than those relating to historical information or current conditions, are forward-looking statements, including, but not limited to: expectations regarding Nutrien's business and operations; expectations regarding Nutrien's climate strategy, including our greenhouse gas (GHG) emissions reduction targets, and the anticipated timing of the implementation and announcement thereof; expectations regarding our environmental performance and GHG emissions reductions from our facilities; and expectations regarding our climate change opportunities and the capital investment expectations in connection therewith; expectations regarding certain regulatory requirements and our compliance costs associated therewith. These forward-looking statements are subject to a number of assumptions, risks and uncertainties, many of which are beyond our control, which could cause actual results to differ materially from such forward-looking statements. As such, undue reliance should not be placed on these forward-looking statements.

All of the forward-looking statements are qualified by the assumptions that are stated or inherent in such forward-looking statements, including the assumptions referred to below and elsewhere in this document. Although we believe that these assumptions are reasonable, having regard to our experience and our perception of historical trends, this list is not exhaustive of the factors that may affect any of the forward-looking statements and the reader should not place an undue reliance on these assumptions and such forward-looking statements. Current conditions, economic and otherwise, render assumptions, although reasonable when made, subject to greater uncertainty. The additional key assumptions that have been made include, among other things, assumptions with respect to our ability to successfully complete, integrate and realize the anticipated benefits of our completed and future acquisitions and divestitures, and that we will be able to implement our standards, controls, procedures and policies at any acquired businesses to realize the expected synergies; that future business, regulatory and industry conditions will be within the parameters expected by us, including with respect to prices, margins, demand, supply, product availability, supplier agreements, availability and cost of labor and interest, exchange and effective tax rates; the completion of our expansion projects on schedule, as planned and on budget; assumptions with respect to global economic conditions and the accuracy of our market outlook expectations; our expectations regarding the impacts, direct and indirect, of the COVID-19 pandemic on our business, customers, business partners, employees, supply chain, other stakeholders and the overall economy; the adequacy of our cash generated from operations and our ability to access our credit facilities or capital markets for additional sources of financing; our ability to identify suitable candidates for acquisitions and divestitures and negotiate acceptable terms; our ability to maintain investment grade ratings and achieve our performance targets; and the receipt, on time, of all necessary permits, utilities and project approvals with respect to our expansion projects and that we will have the resources necessary to meet the projects' approach.

Events or circumstances that could cause actual results to differ materially from those in the forward-looking statements include, but are not limited to: general global economic, market and business conditions; failure to complete announced and future acquisitions or divestitures at all or on the expected terms and within the expected timeline; the failure to successfully integrate and realize the expected synergies of future acquisitions, including within the expected timeframe; climate change and weather conditions, including impacts from regional flooding and/or drought conditions; crop planted acreage, yield and prices; the supply and demand and price levels for our products, services and programs; governmental and regulatory requirements and actions by governmental authorities, including changes in government policy (including tariffs, trade restrictions and climate change initiatives), government ownership requirements, changes in environmental, tax and other laws or regulations and the interpretation thereof; political risks, including civil unrest, actions by armed groups or conflict and malicious acts including terrorism; the occurrence of a major environmental or safety incident; innovation and cybersecurity risks related to our systems, including our costs of addressing or mitigating such risks; regional natural gas supply restrictions; counterparty and sovereign risk; delays in completion of turnarounds at our major facilities; gas supply interruptions; any significant impairment of the carrying value of certain assets; risks related to reputational loss; certain complications that may arise in our mining processes; the ability to attract, engage and retain skilled employees and strikes or other forms of work stoppages; the COVID-19 pandemic and its resulting effects on business and economic conditions; and other risk factors detailed in Nutrien's Management's Discussion & Analysis and Annual Information Form and other documents it files from time to time with the Canadian securities regulators and the Securities and Exchange Commission (SEC) in the United States and such factors are incorporated herein by reference.

The forward-looking statements in this document are made as of the date hereof and Nutrien disclaims any intention or obligation to update or revise any forward-looking statements in this document as a result of new information or future events, except as may be required under applicable Canadian securities legislation or applicable US federal securities laws.

## Welcome to your CDP Climate Change Questionnaire 2020

### C0. Introduction

#### C0.1

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

Nutrien is the world's largest provider of crop inputs and services, playing a critical role in helping growers increase food production in a sustainable manner. We produce and distribute 25 million tonnes of potash, nitrogen and phosphate products world-wide annually. With over 22,000 employees – and operations and investments in 14 countries – Nutrien's crop inputs and services reach every major growing region of the world. Our Retail business provides a complete set of crop input products and solutions, including seed, crop protection, fertilizers and other crop inputs, as well as associated services, agronomic advice, financing and leading-edge digital capabilities. As the world's largest retail distributor of crop inputs, we operate more than 2,000 retail locations across the US, Canada, Australia and key areas of South America. Our operations service more than 500,000 grower accounts globally and over 100 crops, with corn, soybeans, wheat and canola accounting for the majority of our business.

Nutrien's NPK business includes nitrogen, phosphate and potash fertilizer manufacturing. Nutrien is the world's largest producer of potash with approximately 21 percent of global potash capacity. We have access to decades of low-cost reserves from our six potash mines in Saskatchewan, Canada. Nutrien has a total of 7.1 million metric tonnes (mt) of annual ammonia capacity from nine major facilities in North America and Trinidad with the ability to produce and sell more than 11 million annual metric tonnes of total finished nitrogen products. Nutrien has two integrated phosphate facilities in the US, both located near key fertilizer consuming markets and industrial customers. We are the second largest phosphate producer in North America and sell annually approximately 3 million tonnes of finished product. Our Specialty Products business includes feed plants, Loveland Products Inc. operations, and Rainbow facilities. We also have an extensive transportation, storage and distribution network, including our own Retail operations, warehouse and transportation assets.

Fertilizer production and use have complex and conflicting impacts on GHG emissions along our value chain. Fertilizer, especially nitrogen, generates GHG emissions. However, nitrogen is critical for healthy crops, soil organic carbon and increasing yields. Our approach spans Nutrien's integrated business and utilizes our strong connections with growers to create meaningful reductions in GHG emissions through effective nutrient management and carbon sequestration at the field and farm level. We intend to reduce the direct GHG emissions from our manufacturing facilities and the indirect emissions from purchased energy, such as steam and electricity, through GHG reduction and efficiency projects. We expect to disclose our climate strategy and targeted reductions in 2021.

The manufacturing of fertilizer accounts for more than 95 percent of our total direct (Scope 1) and indirect (Scope 2) emissions. Direct emissions are generated on site, from burning natural gas and other fuels, or from processes at our operations. Indirect emissions are from the off-site generation of purchased electricity, steam and heat. GHG emissions related to the three types of fertilizers we produce come from the following sources:

- Nitrogen: Nitrogen fertilizer is produced by reacting hydrogen from natural gas with nitrogen from the air to produce ammonia (NH<sub>3</sub>), the basic building block of all nitrogen fertilizer. Approximately 95 percent of the natural gas we consume is in the production of ammonia, with two-thirds of this natural gas used as hydrogen feedstock. The main GHG emission sources are CO<sub>2</sub> from fuel combustion, industrial process CO<sub>2</sub> as a byproduct of hydrogen generation, and nitrous oxide (N<sub>2</sub>O) emissions generated as a byproduct of nitric acid production.
- Potash: Potash is mined underground, hoisted to the surface, then crushed and purified with electric-powered equipment to remove rock particles and salt before being dried. Scope 1 emissions are generated



from gas-fired equipment, such as dryers and boilers, and Scope 2 emissions from the electricity required for processing.

- Phosphate: Phosphate fertilizer is produced by reacting sulfuric acid with phosphate rock to produce phosphoric acid, which can be reacted with ammonia to produce ammonium phosphate fertilizer or other products. The production process can generate GHG emissions in two ways. Entrained carbonates (dissolved CO2 in the phosphate rock) are released into the air as CO2 through the chemical reaction, and GHGs can also be released through the use of fossil fuels to calcine phosphate rock feedstock or dry fertilizer products.

On January 1, 2018, Nutrien Ltd. announced the successful completion of the merger of equals between Agrium Inc. and Potash Corporation of Saskatchewan Inc. For further information, visit us at <https://www.nutrien.com/what-we-do>

## 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.**

- Argentina
- Australia
- Brazil
- Canada
- Chile
- Trinidad and Tobago
- United States of America
- Uruguay

## C0.4

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

- USD

## 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-CH0.7

**(C-CH0.7) Which part of the chemicals value chain does your organization operate in?**

Row 1

Bulk organic chemicals



**Bulk inorganic chemicals**

- Ammonia
- Fertilizers
- Nitric acid

**Other chemicals**

## 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
<b>Board-level committee</b>	<p>(1) Description of the committee in the corporate structure and the level of responsibility they have towards climate-related issues:                      Risk management is governed by our Board and Board committees, who oversee our ELT in understanding the principal risks to our business, including ESG and climate-related risks. The Board Safety &amp; Sustainability (S&amp;S) Committee has the highest level of direct responsibility for climate change at Nutrien. The S&amp;S Committee has responsibility for the oversight of the Corporation’s activities with respect to safety, health, the environment, security and sustainability. This includes overseeing the Corporation’s general strategy and policies relating to sustainability matters such as climate change related risks and opportunities, as well as oversight on external disclosure of this strategy and mitigation. It directly reports to and advises the Board on these matters.</p> <p>(2) Explanation of how the responsibilities of the committee are related to climate issues, including at least one example of a climate-related decision made by the committee:                      As ESG risks and opportunities are generally longer term in nature, incorporating them into our strategic and business planning activities helps enhance our planning, decision making and resilience. Understanding emerging trends, regulations and societal expectations allows us to capitalize on opportunities for growth and mitigate potential risk.                      In 2019/2020, the S&amp;S Committee was responsible for approving the use of external auditors to provide limited assurance of Nutrien’s 2018 GHG emission footprint for Scope 1 and 2 emissions, as well as reviewing and approving Nutrien’s first ESG report in 2020 that described our strategy, mitigation and performance on climate matters related to our operations.</p>

#### 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	Please explain
<b>Scheduled – all meetings</b>	Reviewing and guiding strategy Reviewing and guiding major plans of action	The Board S&S committee meets on a recurring basis. Scheduled agenda items include: overview of Nutrien’s ESG rating profile; overview of Climate Steering Committee Climate Development; update on Climate Steering Committee Scope 1 & 2 GHG emission reduction opportunities; and, update on ESG, TCFD and external disclosures. In 2019, the S&S Committee



<p>Reviewing and guiding risk management policies</p> <p>Setting performance objectives</p> <p>Monitoring implementation and performance of objectives</p> <p>Overseeing major capital expenditures, acquisitions and divestitures</p> <p>Monitoring and overseeing progress against goals and targets for addressing climate-related issues</p>	<p>was involved with:</p> <p>(1) Reviewing and guiding strategy:</p> <ul style="list-style-type: none"> <li>• The S&amp;S Committee oversaw the S&amp;S vision and strategy, reviewed the 5-year strategy and annual objectives, and oversaw Nutrien’s climate risk and GHG emissions strategy and process. The S&amp;S Committee reviewed, provided comment, and approved Nutrien’s first ESG report.</li> <li>• The Board was briefed by: the CSO and VP of Sustainability regarding overall climate strategy and key considerations; the Climate Steering Committee regarding development and phasing of the climate strategy, next steps and risk and mitigation opportunities; and, the Senior Director, Strategy, and Director, Sustainability and ESG, regarding updates on key action items related to climate strategy.</li> </ul> <p>(2) Reviewing and guiding major plans of action:</p> <ul style="list-style-type: none"> <li>• The S&amp;S Committee reviewed and approved our significant climate-related legal and regulatory developments.</li> <li>• The Board was briefed by: the Climate Steering Committee regarding development and phasing of the climate strategy, next steps and risk and mitigation opportunities; and, the Senior Director, Strategy, and Director, Sustainability and ESG provided updates on key action items related to climate strategy.</li> <li>• 2019 example: Approval to use an external auditor for limited assurance work done on Scope 1 &amp; 2 GHG emission footprint for baseline 2018 data.</li> </ul> <p>(3) Reviewing and guiding risk management policies:</p> <ul style="list-style-type: none"> <li>• The S&amp;S Committee reviewed and approved policies relating to sustainability and reviewed risks (including insurance risks) related to safety, health, environment (including climate-related, physical, technological, regulatory and social risks) and security. They also reviewed significant legal and regulatory developments.</li> <li>• The Board was briefed by: The Climate Steering Committee will brief S&amp;S on key operational climate risks and mitigation actions. The Enterprise Risk Management team (ERM) updates on overall corporate level climate risk and mitigation.</li> <li>• 2019 example: ERM provided annual update on Corporate level risks and climate in February 2020.</li> </ul> <p>(4) Setting performance objectives:</p> <ul style="list-style-type: none"> <li>• The S&amp;S Committee will review and approve the overall climate related targets on an annual basis. We look to have climate targets set in 2021.</li> </ul> <p>(5) Monitoring implementation and performance of objectives, and (6) monitoring and overseeing progress against goals and targets for addressing climate-related issues:</p> <ul style="list-style-type: none"> <li>• The S&amp;S Committee reviewed safety, health, environmental &amp; security performance summaries to identify any performance issues.</li> <li>• The Board was briefed by: The CSO and VP of SSR, along with the Climate Steering Committee</li> </ul>
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## 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)	Responsibility	Frequency of reporting to the board on climate-related issues
Chief Executive Officer (CEO)	Other, please specify ensures climate-related risks are being properly managed and potential opportunities evaluated, approves the overall ESG and climate-related strategy.	Quarterly



<b>Chief Sustainability Officer (CSO)</b>	Both assessing and managing climate-related risks and opportunities	Quarterly
<b>Sustainability committee</b> D <sup>1</sup>	Both assessing and managing climate-related risks and opportunities	Quarterly

D<sup>1</sup>Nutrien's Climate Steering Committee

## 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).**

Under the oversight of the Board S&S Committee, management of our organization has the responsibility of ensuring the company's key risks are being appropriately addressed. Key groups that play an important role in the management of ESG-related risks (including climate) include:

- The CEO is responsible for ensuring climate-related risks are being properly managed and potential opportunities evaluated. The CEO is a member of the Board, and reports to the Board and Board committees regarding the principal risks to our business, including ESG and climate-related risks. The CEO approves the overall ESG and climate strategy and activities. In 2019, notable efforts by the Corporation's management, led by our CEO, included undertaking climate change related risk and opportunity assessments. As part of this process, Nutrien engaged an external climate-risk consulting firm to assess Nutrien's GHG emissions inventory. Through this process, we explored our Scope 3 GHG emissions to better understand our greatest impacts and opportunities and evaluated reduction opportunities and mitigation strategies along our entire value chain. We also engaged KPMG to provide limited assurance on Nutrien's 2018 Scope 1 and Scope 2 baseline emissions, which improved information-gathering processes in order to support reduction initiatives and future target setting. As the leader of the organization, we feel it is important that the CEO provide a clear tone from the top in regards to all climate-related initiatives and drives this down through his direct reports and the organization. It is critical that the CEO believes in the strategy and provides clear support and direction to the rest of the organization's efforts to reduce our GHG emission footprint.
- CSO: We announced the appointment of Nutrien's Executive Vice President and Chief Sustainability Officer at Nutrien effective May 1, 2020, reporting directly to the CEO, further demonstrating the Corporation's commitment to sustainability. This individual is a member of the Executive Leadership Team (ELT) and provides strategic vision and leadership on sustainability related issues at the executive level. This role is critical to the organization in ensuring our climate-related initiatives are developed and resourced properly by the ELT and the CEO. Nutrien's CSO will also provide direction on action being taken by the Climate Steering Committee and help develop and monitor the climate performance objectives for the company.
- The Climate Steering Committee is responsible for oversight of the strategic development of the risk mitigation and opportunities related to the reduction of Nutrien's GHGs and aligning appropriate reduction targets and performance metrics. This committee is assessing how climate-related scenarios can impact our company and evaluating strategic GHG reduction projects as recommended by Scope 1, Scope 2 and Scope 3 Working Groups. This committee is comprised of individuals representing the CEO and various key departments including Strategy & Corporate Development, Sustainability & Stakeholder Relations, Government & Industry Affairs, and Operations. The Committee reports to the CSO and ELT. With representation from the entire organization, this Committee is focused on making sure that the risks and opportunities with the fertilizer production and agriculture retail operations are managed at the operational level and driven into day-to-day processes, along with proper performance measurement processes and internal and external disclosure of the strategy, risk mitigation and performance measurement.

In 2019, notable sustainability efforts by the Corporation's management included undertaking climate change related risk and opportunity assessments. As part of this process, Corporation management engaged an external climate-risk consulting firm to assess Nutrien's greenhouse gas emissions inventory and also engaged KPMG to provide limited assurance on Nutrien's 2018 Scope 1 and Scope 2 baseline emissions. The Corporation is also assessing climate-related mitigation opportunities for potential targeted greenhouse gas emission reduction.

Management anticipates reporting the results of this assessment and its recommendations to the S&S Committee in 2020.

## 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	

## 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
Energy manager	Non-monetary reward	Energy reduction project	The Potash and Phosphate & Nitrogen Business Units manufacture and distribute nitrogen, phosphate and potash feed stocks and/or upgrade products, and account for the majority of Nutrien's GHG emissions. Our annual energy costs amount to approximately \$570 million. Energy conservation, and in particular reductions in fuel consumption, across the company have a significant cost-saving potential.
Chief Sustainability Officer (CSO)	Monetary reward	Behavior change related indicator	Incentives for Nutrien's CSO are in the form of compensation as part of bonus structure through achieving KPIs. Additionally, recognition as part of a career progression scheme for managing climate-related risks and opportunities for the company provides incentives.
Corporate executive team	Monetary reward	Company performance against a climate-related sustainability index	Incentives for Nutrien's ELT are in the form of compensation as part of bonus structure through achieving KPIs. Annual incentive targets are set as a percentage of salary, with actual payouts based on a performance multiplier dependent on the achievement of predetermined annual goals. In addition, for 2020, the metrics within the annual incentive have been broadened to tie a component of leadership compensation to Nutrien's ESG performance, demonstrating our focus on key ESG risks (including climate) and progress across our sustainability strategic pillars. Note this is applicable to Named Executive Officers (NEOs) only. See page 48 of Nutrien's 2020 Proxy Circular.
Environment/Sustainability manager	Monetary reward	Behavior change related indicator	Incentives for Nutrien's Director of ESG & Sustainability are in the form of compensation as part of bonus structure through achieving KPIs. Additionally, recognition as part of a career progression scheme for managing climate-related risks and opportunities for the company provides incentives.
Chief Executive Officer (CEO)	Monetary reward	Company performance	Incentives for Nutrien's CEO are in the form of compensation as part of bonus structure

		against a climate-related sustainability index	through achieving KPIs. Annual incentive targets are set as a percentage of salary, with actual payouts based on a performance multiplier dependent on the achievement of predetermined annual goals. In addition, for 2020, the metrics within the annual incentive have been broadened to tie a component of leadership compensation to Nutrien’s ESG performance, demonstrating our focus on key ESG risks (including climate) and progress across our sustainability strategic pillars.
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## 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	3	
Medium-term	3	10	
Long-term	10	30	

#### C2.1b

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

When identifying or assessing climate-related risks, a substantive financial or strategic impact is defined as a significant negative impact or effect on the company’s financial results, reputation, or safety, health and environment. For financial impacts, Earnings Before Interest, Tax, and Depreciation and Amortization (EBITDA) is used as the key quantifiable indicator. Financial impact may be assessed at the corporate level and/or at the individual business unit level, depending on the nature of the climate-related risk. Reputation impacts are based on a number of factors with the key drivers being stakeholder attention/concern, effect on corporate value and credit ratings. SH&E impacts are based on the safety and health of our people and communities, and the level of environmental impacts.

### 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
- Upstream
- Downstream

**Risk management process**

Integrated into multi-disciplinary company-wide risk management process

### Frequency of assessment

Annually

### Time horizon(s) covered

Short-term

Medium-term

Long-term

### Description of process

Nutrien identifies and assesses climate-related risks and opportunities as part of its enterprise risk management process and through our ESG material topic analysis.

Our approach to risk management is guided by the COSO Enterprise Risk Management Framework (2017) and ISO 31000 Risk Management Guidelines. When considering ESG and climate-related risks, we also look to COSO's guidance on Applying Enterprise Risk Management to ESG-Related Risks and cross-reference our identified risks with SASB Chemicals and Metals and Mining Sustainability Accounting Standards along with TCFD recommendations. Risk management is governed by our Board and Board committees, who oversee our Executive Leadership Team in understanding the principal risks to our business, including ESG and climate-related risks. The Safety & Sustainability (S&S) Committee has responsibility for overseeing our general strategy and policies relating to sustainability matters such as climate change-related risks and opportunities. The S&S Committee met four times in 2019.

We characterize a substantive impact as a significant negative impact on the company's financial results, reputation, or safety, health and environment. The combination of impact and likelihood assist in determining the level of acceptable risk and how that risk or opportunity is managed or retained. Our 2019 ESG material topic analysis involved identifying material ESG topics through engagement with stakeholders, sourcing topics from reporting frameworks and in-depth research on risk, reputation management, and mega-trends. We cross-referenced these topics with our internal risk registry, developed through our enterprise risk management process, to ensure that Nutrien's principal ESG risks have been considered and that our risk management process is informed by this materiality assessment. Prioritization of our material ESG topics are based on three classification levels to reflect the degree of associated risk and the amount of coverage in our external reporting. Level 1 topics represent our most significant ESG-related risks and opportunities. Level one topics are based on risks that can have broad impact on financial performance, operations, reputation or have legal implications and/or are of significant interest to stakeholders and opportunities for Nutrien for which we expect to set targets. Level 2 topics have significant environmental or social impact resulting from our operations and/or of high interest to stakeholders, lenders and potential investors. Level 3 topics are additional or emerging topics where interest or impact are increasing and/or requested by frameworks or rating agencies but may not represent significant risks or opportunities.

Case studies in how our process is applied to (1) physical and (2) transition risks:

(1) Our customers are impacted by changing weather patterns and more challenging growing conditions. These adverse conditions can delay or intermittently disrupt fieldwork during the planting and growing seasons, which may shift or reduce demand for the crop nutrients and crop protection products that we sell. In extreme cases, adverse or unexpected weather may impede farmers from applying crop nutrients and crop protection products until the following growing season or, in some cases, altogether, resulting in lower demand for our products and reduced revenues, as well as costs related to excess inventory. Changing weather patterns can also have an adverse effect on growing conditions (for example, water scarcity) and crop yields, which could lower the income of growers and impair their ability to purchase our crop nutrients, crop protection, seed products and services. Selecting suitable products and seed is becoming more



complicated with changing weather conditions and the proliferation of highly specialized products for each condition. To help mitigate this risk we use forecast weather and agronomic information (crop physiology, soil characteristics, pest and disease impact) to provide growers with advice on which products to apply, based on current and predicted conditions.

(2) We monitor policy and regulatory changes, technology costs, and potential changes in consumer behavior as potential risks during the transition toward a low carbon economy. We are considering, and working to mitigate, the following transitional risks:

Canada’s federal Greenhouse Gas Pollution Pricing Act has two parts: a federal fuel charge per tonne of CO<sub>2</sub>e, and a trading system for large industrial emitters, known as the output-based pricing system (OBPS). The federal fuel charge does not impact our Alberta nitrogen facilities or Saskatchewan potash operations as they are regulated under the provincial programs accepted as equivalent by the federal government large emitter program. The program for large emitters is different in each province:

Alberta: Three of our nitrogen production facilities (Carseland, Fort Saskatchewan and Redwater) have been subject to compliance reporting and carbon pricing since 2007 under different provincial programs applying to industrial facilities that emit more than 100,000 tonnes of CO<sub>2</sub>e per year. Industrial emitter programs set emission intensity benchmarks that facilities must meet in one of three ways: emissions reductions; obtaining tradeable emissions performance or offset credits for emissions over the benchmark; or payment into a compliance fund. The Alberta carbon price for compliance fund credits for large emitters in 2019 was CAD\$30 per tonne CO<sub>2</sub>e. The carbon price will remain at CAD\$30 per tonne in 2020, and is expected to rise to CAD\$40 in 2021 and CAD\$50 in 2022 in accordance with the federal benchmark.

Saskatchewan: Saskatchewan released its Prairie Resilience climate strategy in December 2017. As part of this strategy, the province established an output-based performance standard program applicable to facilities emitting more than 25,000 tonnes of CO<sub>2</sub>e annually. All six of Nutrien’s Saskatchewan potash mines fall into this category. The provincial performance standard for the potash industry is based on achieving a 5 percent emissions intensity reduction by 2030 from a facility-specific three year average baseline. 2019 was the first compliance year under the program, with the first compliance report due to be submitted, along with a third-party verification statement, by October 31, 2020. Facilities whose emissions exceed their facility-specific performance standard can meet compliance through obtaining approved, tradeable performance or offset credits, or by payment into a provincial technology fund at a carbon price that will follow the federal benchmark, which was CAD\$20 per tonne in 2019.

## C2.2a

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

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	<p>Current regulation transition risk is relevant to our assessment as we are subject to numerous federal, state, provincial and local environmental, health and safety laws and regulations, including laws and regulations relating to land, water and raw material use and management; the emission of contaminants to the air or water; land reclamation; the generation, treatment, storage, transportation, disposal and handling of hazardous substances and wastes; the clean-up of hazardous substance releases; and the demolition of existing plant sites upon permanent closure.</p> <p>We incur significant costs and associated liabilities in connection with these laws and regulations. There are substantial uncertainties as to the nature and timing of any future regulations with many of the laws and regulations continuing to become increasingly stringent, and the cost of compliance can be expected to increase over time. New or revised laws or regulations may result from pressure on law makers and regulators to address climate change, transition to a low-carbon</p>

		<p>economy or to address concerns related to fertilizer and food prices, accidents, terrorism or transportation of potentially hazardous substances. Increased or more stringent regulations, if enacted, could impact our ability to produce or transport certain products, increase our raw material, energy, transportation, and compliance costs, reduce our efficiency, require us to make capital improvements to our facilities and have a negative effect on our customer satisfaction, reputation and financial performance. To the extent that such regulations, including GHG restrictions, are not imposed in the countries where our competitors operate or are less stringent than regulations that may be imposed in the US, Canada or the other jurisdictions in which we operate, our competitors may have a cost or other competitive advantages over us.</p> <p>For example the Canadian federal government is currently conducting consultations with stakeholders to implement a federal Clean Fuel Standard that will apply to liquid fuels beginning in 2022 and gaseous fuels beginning in 2023. This standard will be designed to incent the development and use of lower carbon fuels. Nutrien is tracking development of the standard and will remain engaged through the consultation process.</p>
<p><b>Emerging regulation</b></p>	<p>Relevant, always included</p>	<p>Emerging regulation transition risk is relevant to our assessment as Nutrien generates GHG emissions directly and indirectly through the production, distribution and use of its products. These emissions may be subject to climate change policies and regulations, all of which are developing in unique ways within various federal, provincial and state jurisdictions. Increasing regulation of GHGs may impact our operations by requiring changes to our production processes or increasing raw material, energy, production or transportation costs in order to ensure compliance. There are also significant differences in the climate change policies of countries where Nutrien operates as some are parties to the Paris Agreement, negotiated in December 2015, under the United Nations Framework Convention on Climate Change, and some are not.</p> <p>For example , in the US, the EPA has issued GHG emissions regulations that establish a reporting program for emissions of CO<sub>2</sub>, methane and other GHGs, as well as a permitting program for certain large GHG emissions sources. Beyond that, there is significant uncertainty regarding the likelihood of new or amended federal GHG regulations in the US under the current presidential administration, and the potential impact on the Company cannot be determined at this time. Apart from federal regulation of GHGs, some US states have also enacted laws concerning GHG emissions that we are monitoring for impacts on our operations.</p> <p>The impacts of climate change and future restrictions on emissions of GHGs on the Company's operations could be material but cannot be determined with any certainty at this time.</p>
<p><b>Technology</b></p>	<p>Relevant, always included</p>	<p>Technology transition risk is relevant as the agriculture and food systems are undergoing rapid, complex, and disruptive technological changes. Individuals and businesses have access to unprecedented amounts of data and information. The advancement and adoption of technology and digital innovations in agriculture and across the value chain has increased and is expected to further accelerate as grower demographics shift and pressures from consumer preferences, governments and climate change initiatives evolve.</p> <p>For example, the development of seeds that require less crop nutrients, development of full or partial substitutes for our products or developments in the application of crop nutrients such as improved nutrient use or efficiency through use of precision agriculture could also emerge, all of which have the potential to adversely affect the demand for our products and results of operations.</p> <p>Further risks include new digital services being offered by Nutrien Ag Solutions for growers online necessitate more digital interactions. The increasing need for improved data and supportive technological infrastructure requires rapid development, implementation and end-user uptake.</p>
<p><b>Legal</b></p>	<p>Relevant, always included</p>	<p>Legal transition risk is relevant as many of our operations and facilities are subject to a variety of regulatory requirements, permits and approvals, all of which vary depending on the operation in question. Licenses, permits and approvals at</p>

		<p>operating sites are obtained in accordance with applicable laws and regulations, which may limit or regulate: operating conditions, rates and efficiency; land, water and raw material use and management; product storage, quality and transportation; waste storage and disposal; and emissions and other discharges.</p> <p>For example with respect to air emissions, we anticipate that additional actions and expenditures may be required to meet increasingly stringent federal, provincial and state regulatory and permit requirements in the areas in which we operate, including existing and anticipated regulations under the US federal Clean Air Act. The US Environmental Protection Agency ("EPA") has issued a number of regulations establishing requirements to reduce air pollutant emissions. We continue to monitor developments in these various programs and assess their potential impact on our operations. The calciners at our Aurora, North Carolina phosphoric acid plant are subject to mercury emission limits adopted by the EPA in 2015, which do not reflect actual emissions during normal operations. The EPA has announced that it intends to issue a revised rule to address the issue and remove the need for the state consent order under which the calciners have been operating while the EPA addresses the issue. In 2015, we entered a consent decree that requires reductions in sulfur dioxide emissions at specified sulfuric acid plants with the final compliance dates occurring at the beginning of 2020.</p>
<b>Market</b>	Relevant, always included	<p>Market risk is relevant as changing market fundamentals and global macroeconomic conditions could lead to a low crop price environment and reduced demand for our products or increased prices or decreased availability of raw materials used in making our products. We are exposed to various market factors that may impact our operating results including: changes in the price of, or ability to source, raw materials and energy, which could, among other things, impact our gross margins and profitability; commodity price volatility, including the possibility of asset impairment as a result thereof; currency volatility and risk, including as a result of the translation of foreign subsidiaries' financial statements to US dollars for consolidation at the Nutrien level; and fluctuations in interest rates which could negatively impact our financial results given our use of floating rate debt, floating rate credit facilities and commercial paper, as well as the refinancing of long-term debt and anticipated future financing needs. We seek to manage a portion of the risks relating to changes in commodity prices and foreign currency exchange rates by using derivative instruments; however, such instruments may be ineffective in fully mitigating such risks.</p> <p>For example changes in the price of raw materials and energy required to produce our products, including natural gas, which is the principal raw material used to manufacture our nitrogen products and a significant energy source in the potash milling and mining process, could have a material impact on our business. The price of raw materials and energy can fluctuate widely for a variety of reasons, including changes in availability because of additional capacity or limited availability due to curtailments, regulatory changes, including changes related to production of certain raw materials or energy sources, or other operating problems.</p>
<b>Reputation</b>	Relevant, always included	<p>Reputation is relevant as its one of the key criteria we use to assess our climate-related and ESG-related risks. Further our stakeholders, which consist of shareholders, customers, employees, suppliers, global and indigenous communities and governments, among others, may place an increasing importance on the structure of our business, our ability to execute on our strategy and our core sustainability and social responsibilities. Under performance due to weak market fundamentals or business issues, inadequate communication, engagement and/or collaboration with our stakeholders, inadequate management of climate change issues, or dissatisfaction with our practices or strategic direction may lead to a lack of support for our business plans.</p> <p>For example, loss of stakeholder confidence could impair our ability to execute on our business plans, negatively impacts our ability to produce or sell our products and may also lead to reputational and financial losses, or shareholder action.</p>
<b>Acute physical</b>	Relevant, always included	<p>Acute physical risks are relevant as they can have significant impacts on our customers and our operations/facilities.</p> <p>Our customers are impacted by changing weather patterns and more challenging</p>

		<p>growing conditions. These adverse conditions can delay or intermittently disrupt fieldwork during the planting and growing seasons, which may shift or reduce demand for the crop nutrients and crop protection products that we sell. In extreme cases, adverse or unexpected weather may impede farmers from applying crop nutrients and crop protection products until the following growing season or, in some cases, altogether, resulting in lower demand for our products and reduced revenues, as well as costs related to excess inventory. Changing weather patterns can also have an adverse effect on growing conditions (for example, water scarcity) and crop yields, which could lower the income of growers and impair their ability to purchase our crop nutrients, crop protection, seed products and services.</p> <p>Nutrien's sites and facilities can be impacted by weather-related risks, including hurricanes and floods, tornadoes and cyclones, wildfires and increased precipitation or snow melt. For example, Nutrien's phosphate operations in Aurora, NC and White Springs, FL are in hurricane zones and they have hurricane preparedness plans. A large portion of the Gulf of Mexico and the US east coast, where we have Retail facilities, are also in hurricane zones. In 2019, we implemented new hurricane preparedness plans for all Retail locations in these areas. The plans cover procedures for securing the facility and ordering supplies prior to, during, and after the storm event.</p> <p>Due to the broad geographic distribution of our assets, physical risks pose minimal risk to our overall business.</p>
<p><b>Chronic physical</b></p>	<p>Relevant, always included</p>	<p>Chronic physical risks are relevant as they can impact the agriculture sector and our operations/facilities. The prospective impact of potential climate change on our operations and those of our customers and farmers remains uncertain. Some scientists have suggested that the impacts of climate change could include changing rainfall patterns, water shortages, changing sea levels, changing storm patterns and intensities, and changing temperature levels, and that these changes could be severe. These impacts could vary by geographic location and the risk relating to the impact of climate change could include chronic risks resulting from longer-term changes in climate patterns.</p> <p>For example, water stress and water scarcity is a risk to our facilities and our customers. Climate change is linked to persistent drought conditions in many regions of the world. The resulting water scarcity and related challenges of managing and sharing existing water resources makes efficient industrial water management especially critical in these areas.</p>

**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

### Primary potential financial impact

Increased direct costs

### Company-specific description

Current and increasing regulation of GHGs may impact our operations by requiring changes to our production processes or increasing raw material, energy, production or transportation costs in order to ensure compliance. Sources of GHGs from our production operations include emissions from the reforming of natural gas to produce hydrogen, which is used to synthesize ammonia, as well as process emissions from some of our nitric acid plants. Given current economically viable technologies, the CO<sub>2</sub> emissions related to this process are fixed by the laws of chemistry and cannot be reduced. We have developed strategies to attempt to improve energy efficiency in our production operations, to capture and store carbon, and to reduce the amount of nitrous oxide ("N<sub>2</sub>O") emissions from our nitric acid facilities.

Our Canadian manufacturing facilities are primarily located in the provinces of Alberta and Saskatchewan and are subject to a variety of current provincial and federal requirements to reduce GHG emissions ranging from carbon taxes to emissions intensity reduction requirements. Canada's federal Greenhouse Gas Pollution Pricing Act has two parts: a federal fuel charge per tonne of CO<sub>2</sub>e, and a trading system for large industrial emitters, known as the output-based pricing system. The federal fuel charge does not impact our Alberta nitrogen facilities or Saskatchewan potash operations as they are regulated under the provincial programs accepted as equivalent by the federal government large emitter program. The program for large emitters is different in each province:

### 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)

#### Potential financial impact figure – minimum (currency)

3,000,000

#### Potential financial impact figure – maximum (currency)

6,000,000

### Explanation of financial impact figure

The aggregated compliance costs for Nutrien's Alberta nitrogen facilities regulated under the Carbon Competitiveness Incentive Regulation (CCIR) for 2019 were approximately CAD\$3 million. The Technology Innovation and Emissions Regulation (TIER) will replace the CCIR in 2020. Under TIER, Nutrien's projected 2020 compliance costs are estimated to be between CAD\$2 million to CAD\$3 million. Current impact based on CAD\$30 per tonne of CO<sub>2</sub>e from 2020 to 2022. The carbon price will remain at CAD\$30 per tonne in 2020, and is expected to rise to CAD\$40 in 2021 and CAD\$50 in 2022 in accordance with the federal benchmark. The impact will increase in relation to the increase in carbon price to 2022 in accordance with the federal benchmark. Estimates are based on production forecasts and can vary depending on ammonia plant reliability and turnaround schedules because starting up and shutting down

ammonia plants results in additional greenhouse gas venting over normal operations.

For Saskatchewan, 2019 was the first compliance year under the Prairie Resilience Climate Change Strategy program, with the first compliance report due to be submitted, along with a third-party verification statement, by October 31, 2020. Similar to Alberta, facilities whose emissions exceed their facility-specific performance standard can meet compliance through obtaining approved, tradeable performance or offset credits, or by payment into a provincial technology fund at a carbon price that will follow the federal benchmark, which was CAD\$20 per tonne in 2019. The first compliance payment for the combined 2019 and 2020 compliance years is due September 2021.

### Cost of response to risk

0

### Description of response and explanation of cost calculation

While we currently accept/retain this risk, we minimize our Canadian compliance costs and future/emerging risk through the implementation of various efficiency and emissions reduction projects. At our Carseland, AB facility, we partner with TC Energy to generate steam for our operations from waste heat from their natural gas-fired power plant. This efficient process offsets the requirement for a natural gas boiler to be fired at our site. We use more than 80 percent of the electricity generated, which has a significantly lower emissions intensity than grid electricity. Carbon capture and storage (CCS) provides another technical option for reducing GHG emissions. Our Redwater, AB facility started capturing previously vented CO<sub>2</sub> in December 2019. The CO<sub>2</sub> is now compressed into a near-liquid state and injected into a pipeline and transported to an oilfield near Clive, AB for use in EOR. This is used for carbon injection, which is a technique that helps maximize recovery and extend the life of oil reservoirs. The post-EOR CO<sub>2</sub> remains in permanent storage in an underground geological formation. GHG reductions from the Redwater CCS project will be realized starting in 2020 with approximately 700 tonnes of CO<sub>2</sub> per day being sequestered.

### Comment

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#### Identifier

Risk 2

#### Where in the value chain does the risk driver occur?

Direct operations

#### Risk type & Primary climate-related risk driver

Emerging regulation

Mandates on and regulation of existing products and services

#### Primary potential financial impact

Decreased revenues due to reduced production capacity

#### Company-specific description

We hold numerous environmental, mining and other governmental permits and approvals authorizing operations at each of our facilities. Licenses, permits and approvals at operating sites are obtained in accordance with applicable laws and regulations, which may limit or regulate: operating conditions, rates and efficiency; land, water and raw material use and management; product storage, quality and transportation; waste storage and disposal; and emissions and other discharges.

Continuation and/or expansion of our operations is dependent upon renewing or securing the necessary environmental or other permits or approvals. A decision by a government agency to deny or delay issuing a

new or renewed material permit or approval, or to revoke or substantially modify an existing permit or approval, could materially adversely affect our ability to continue operations at the affected facility. New or revised laws or regulations may result from pressure on law makers and regulators to address climate change, transition to a low-carbon economy or to address concerns related to fertilizer and food prices.

**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, a single figure estimate

**Potential financial impact figure (currency)**

1,254,000,000

**Potential financial impact figure – minimum (currency)**

**Potential financial impact figure – maximum (currency)**

**Explanation of financial impact figure**

Potential financial impact scoped to include only asset retirement obligations at this time. Estimate is based on provisions that are recognized when: (i) the Company has a present legal or constructive obligation as a result of past events; (ii) it is probable that an outflow of resources will be required to settle the obligation; and (iii) the amount can be reliably estimated.

The major categories of asset retirement obligations include reclamation and restoration costs at our potash and phosphate mining operations (phosphate mining, in particular), including the management of materials generated by mining and mineral processing, such as: various mine tailings and gypsum; land reclamation and revegetation programs; decommissioning of underground and surface operating facilities; general clean-up activities aimed at returning the areas to an environmentally acceptable condition; and post-closure care and maintenance.

The estimation of the costs of asset retirement obligations depends on the development of environmentally acceptable closure and post-closure plans. In some cases, this may require significant research and development to identify preferred methods for such plans that are economically sound and that, in most cases, may not be implemented for several decades. We have continued to use appropriate technical resources, including outside consultants, to develop specific site closure and post-closure plans in accordance with the requirements of the various jurisdictions in which we operate. The asset retirement obligations are generally incurred over an extended period. As at December 31, 2019, we had accrued a total of \$1,254 million for asset retirement obligations, the current portion of which totaled \$123 million. For additional information, see Note 24 of Nutrien's 2019 Consolidated Financial Statements.

**Cost of response to risk**

103,000,000

**Description of response and explanation of cost calculation**

We mitigate this risk by ensuring we are in compliance with all climate and environmental-related laws, regulations and permits. 2019 response costs incurred related to reclamation and restoration costs at our

potash and phosphate mining operations.

## Comment

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### 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

### Primary potential financial impact

Decreased revenues due to reduced demand for products and services

### Company-specific description

Plant-based diets are increasingly popular due to the perception they are healthier and the connection of animal-based proteins to GHG emissions and land use. The demand for plant-based proteins has the potential to supplement the demand for protein and increase the pea and lentil acres. These nitrogen fixing crops require adequate phosphorus, potassium and sulfur as well as micronutrients and inoculants for optimal nitrogen fixation.

Further, our business and our customers are impacted by weather patterns and conditions. Adverse conditions that can delay or intermittently disrupt fieldwork during the planting and growing seasons may cause agricultural customers to use different forms of crop nutrients and crop protection products, which may adversely affect demand for the forms that we sell or may impede farmers from applying our crop nutrients and crop protection products until the following growing season, or in some cases not at all, resulting in lower demand for our products and reduced revenues. Weather can also have an adverse effect on crop yields, which could lower the income of growers and impair their ability to purchase our crop nutrients, crop protection and seed products and services.

### Time horizon

Medium-term

### Likelihood

About as likely as not

### Magnitude of impact

Medium-low

### Are you able to provide a potential financial impact figure?

No, we do not have this figure

### Potential financial impact figure (currency)

### Potential financial impact figure – minimum (currency)

### Potential financial impact figure – maximum (currency)

#### Explanation of financial impact figure

A potential financial impact figure is not available

#### Cost of response to risk

0

#### Description of response and explanation of cost calculation

No specific response costs at this time as our diverse range of products and services ensure we can adapt to shifting market demands. Further, we have developed enhanced efficiency fertilizer products such as Environmentally Smart Nitrogen or ESN® and nitrogen stabilizers to widen the range of conditions where fertilizer can be applied effectively. We use forecast weather and agronomic information (crop physiology, soil characteristics, pest and disease impact) to provide growers with advice on which products to apply, based on current and predicted conditions. Our current digital offerings include fieldwork logistics, forecast production, nutrient requirements, sustainability metrics, and weather forecast analytics.

#### Comment

#### Identifier

Risk 4

#### 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

#### Primary potential financial impact

Decreased access to capital

#### Company-specific description

Our stakeholders, which consist of shareholders, customers, employees, suppliers, global and indigenous communities and governments, among others, may place an increasing importance on the structure of our business, our ability to execute on our strategy and our core sustainability and social responsibilities. Inadequate management of climate change issues, or dissatisfaction with our practices or strategic direction may lead to a lack of support for our business plans. Loss of stakeholder confidence impairs our ability to execute on our business plans, negatively impacts our ability to produce or sell our products and may also lead to reputational and financial losses, or shareholder action.

#### Time horizon

Medium-term

#### Likelihood

About as likely as not

#### Magnitude of impact

Medium

**Are you able to provide a potential financial impact figure?**

No, we do not have this figure

**Potential financial impact figure (currency)**

**Potential financial impact figure – minimum (currency)**

**Potential financial impact figure – maximum (currency)**

**Explanation of financial impact figure**

We are not able to provide a potential financial impact figure.

**Cost of response to risk**

17,000,000

**Description of response and explanation of cost calculation**

(1) We invest in community initiatives and partnerships that enhance the quality of life in regions where we operate and reflect the goals and values of our company. This support comes partly in the traditional form of financial support, but also in community outreach and many hours of employee volunteer time and talent. In 2019, we invested \$17 million where we live and work through our global initiatives, employee donations, emergency funding and local contributions.

(2) Our response to this risk also relates to advancing our climate strategy, which will include long-term reduction targets. Key steps include: completion of a rigorous inventory of Nutrien’s 2018 Scope 1 and 2 GHG emissions baseline, exploring Scope 3 GHG emissions to better understand our greatest impacts and opportunities, evaluating reduction opportunities and mitigation strategies along our entire value chain, assessing how climate-related scenarios can impact our company, and developing GHG reduction projects and targets.

**Comment**

**Identifier**

Risk 5

**Where in the value chain does the risk driver occur?**

Direct operations

**Risk type & Primary climate-related risk driver**

Emerging regulation  
Carbon pricing mechanisms

**Primary potential financial impact**

Increased direct costs

**Company-specific description**

Emerging regulation related to GHGs may impact our operations by requiring changes to our production processes or increasing raw material, energy, production or transportation costs in order to ensure compliance. Sources of GHGs from our production operations include emissions from the reforming of natural gas to produce hydrogen, which is used to synthesize ammonia, as well as process emissions from

some of our nitric acid plants. Given current economically viable technologies, the CO<sub>2</sub> emissions related to this process are fixed by the laws of chemistry and cannot be reduced.

In the US, the EPA has issued GHG emissions regulations that establish a reporting program for emissions of CO<sub>2</sub>, methane and other GHGs, as well as a permitting program for certain large GHG emissions sources. Beyond that, there is significant uncertainty regarding the likelihood of new or amended federal GHG regulations in the US under the current presidential administration, and the potential impact on the Company cannot be determined at this time. Apart from federal regulation of GHGs, some US states have also enacted laws concerning GHG emissions that we are monitoring for impacts on our operations.

The Canadian federal government is currently conducting consultations with stakeholders to implement a federal Clean Fuel Standard that will apply to liquid fuels beginning in 2022 and gaseous fuels beginning in 2023. This standard will be designed to incent the development and use of lower carbon fuels.

**Time horizon**

Medium-term

**Likelihood**

More likely than not

**Magnitude of impact**

Medium

**Are you able to provide a potential financial impact figure?**

No, we do not have this figure

**Potential financial impact figure (currency)**

**Potential financial impact figure – minimum (currency)**

**Potential financial impact figure – maximum (currency)**

**Explanation of financial impact figure**

There are substantial uncertainties as to the nature and timing of any future regulations with many of the laws and regulations continuing to become increasingly stringent, and the cost of compliance can be expected to increase over time. The impacts of climate change and future restrictions on emissions of GHGs on the Company's operations could be material but cannot be determined with any certainty at this time.

**Cost of response to risk**

0

**Description of response and explanation of cost calculation**

There are no current response costs to this risk. We expect the following opportunities to play a role in Nutrien's GHG reduction strategy, which we will continue to refine as new technologies become technically or financially feasible and will have response costs associated with them: Energy purchases and energy efficiency initiatives, Process improvements to reduce emissions, Carbon capture and storage.

**Comment**

## 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.**

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**Identifier**

Opp1

**Where in the value chain does the opportunity occur?**

Direct operations

**Opportunity type**

Energy source

**Primary climate-related opportunity driver**

Use of lower-emission sources of energy

**Primary potential financial impact**

Reduced direct costs

**Company-specific description**

Self / Co-generation of electricity and steam within our nitrogen and potash production operations:

Purchasing or generating lower carbon energy is one of the ways we can reduce our energy-related emissions. We have two cogeneration projects that efficiently combine heat and power generation. These facilities use natural gas to generate electricity using an efficient gas turbine, and waste heat from the exhaust is recovered to make valuable steam. In both cases, the energy efficiency does not change but the emissions impact is significant.

At our Carseland, AB facility, we partner with TC Energy to generate steam for our operations from waste heat from their natural gas-fired power plant. This efficient process offsets the requirement for a natural gas boiler to be fired at our site. We use more than 80 percent of the electricity generated, which has a significantly lower emissions intensity than grid electricity. At our Cory Potash mine in Saskatchewan, we consume steam from a SaskPower cogeneration facility, reducing some of our natural gas requirements. Nutrien is evaluating opportunities for similar projects to continue to reduce its GHG emissions.

**Time horizon**

Medium-term

**Likelihood**

Likely

**Magnitude of impact**

Medium

**Are you able to provide a potential financial impact figure?**

No, we do not have this figure

**Potential financial impact figure (currency)**

**Potential financial impact figure – minimum (currency)**

**Potential financial impact figure – maximum (currency)**

**Explanation of financial impact figure**

Financial impact not known at this time as we are currently working through several opportunities for self/ co-generation projects.

**Cost to realize opportunity**

**Strategy to realize opportunity and explanation of cost calculation**

The are several opportunities for Nutrien to partner with other industry peers to provide supportive byproducts in manufacturing processes, as well as internal projects that enhance cost effective electricity supply that is lower than grid supply while also reducing natural gas fired boiler operations. Prime example of this is our cogeneration facility at Carseland, Alberta. The cogeneration plant, owned by TC Energy, recovers waste heat from their power generation process to produce steam for our facility. This enables us to reduce the amount of steam we need to generate in natural gas boilers, thus lowering GHG emissions. Nutrien is currently working through our self/ co-generation opportunities and their financial impacts. Nutrien is currently reviewing projects at our Rocanville, Lanigan and Allan, SK, potash mines and our Redwater, AB, nitrogen facility. We look to provide clarity in 2021 on our climate strategy, opportunities and their impact on emissions and finances.

**Comment**

The overall impact of this opportunity reduces the use of energy intensive processes within our operations, thereby reducing operating costs. At the same time, these opportunities reduce emissions from facilities and attributed carbon taxes in Alberta, Canada at approximately CDN\$50/mt by 2022.

**Identifier**

Opp2

**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**

Energy efficiency projects through brownfield facility expansions and technological investment:

Energy conservation, especially reductions in fuel consumption, have significant cost-saving and GHG-reduction potential. Our approaches to energy efficiency vary for different operations:

**Nitrogen:** The majority (more than two-thirds) of our natural gas consumption is as hydrogen feedstock. The remaining one-third is used as fuel to provide heat for the ammonia production process. We continue to seek opportunities to improve our energy efficiency, which also helps to reduce our emissions and operating costs. For example, in 2019, we made process improvements at our Trinidad plant that will allow us to produce ammonia using 5 percent less natural gas per tonne of ammonia once the project is completed in 2021.

**Potash:** Electricity to power equipment for potash processing represents approximately 15 percent of Nutrien’s potash production costs. This is a significant cost and source of energy consumption, and we are evaluating options to source lower carbon electricity.

Reliability and plant turnaround schedules are important to our GHG emissions profile because plant start-ups and shutdowns result in higher GHG emissions compared with normal, continuous operations. This is particularly relevant in the case of our nitrogen facilities since production interruptions result in non-routine process gas venting.

**Time horizon**

Medium-term

**Likelihood**

Very likely

**Magnitude of impact**

Medium

**Are you able to provide a potential financial impact figure?**

No, we do not have this figure

**Potential financial impact figure (currency)**

**Potential financial impact figure – minimum (currency)**

**Potential financial impact figure – maximum (currency)**

**Explanation of financial impact figure**

Financial impact not known at this time as we are currently working through several opportunities for energy efficiency projects.

**Cost to realize opportunity**

**Strategy to realize opportunity and explanation of cost calculation**

There are opportunities through nitrogen plant brownfield expansions and technological improvements that result in better energy efficiency, lower natural gas coefficients and lower GHG intensity per tonne of ammonia production. One such recent project was completed at Geismar, Louisiana in 2019, resulting in 0.9% lower GHG intensity per tonne of ammonia produced. At this time, we are considering similar projects

of varying degrees of size and within our nitrogen, potash and phosphate production assets. We look to provide clarity in 2021 on our climate strategy, opportunities and their impact on emissions and finances.

### **Comment**

Energy efficiency projects focus on improving the amount of energy consumed per tonne of product produce, thereby reducing not only overall total GHG emissions but the GHG intensity per tonne as well - effectively reducing carbon tax expense and input energy costs.

### **Identifier**

Opp3

### **Where in the value chain does the opportunity occur?**

Direct operations

### **Opportunity type**

Products and services

### **Primary climate-related opportunity driver**

Development of new products or services through R&D and innovation

### **Primary potential financial impact**

Increased revenues resulting from increased demand for products and services

### **Company-specific description**

Carbon capture and storage (CCS) provides another technical option for reducing GHG emissions:

Our Geismar, LA facility has captured CO<sub>2</sub> since 2013 and sells it for enhanced oil recovery (EOR), diverting more than 248,000 tonnes of CO<sub>2</sub> from the atmosphere in 2019. Our Redwater, AB facility started capturing previously vented CO<sub>2</sub> in December 2019. The CO<sub>2</sub> is now compressed into a near-liquid state and injected into a pipeline to be transported to an oilfield near Clive, AB for use in EOR. This is used for carbon injection, which is a technique that helps maximize recovery and extend the life of oil reservoirs. The post-EOR CO<sub>2</sub> remains in permanent storage in an underground geological formation. GHG reductions from the Redwater CCS project will be realized starting in 2020 with approximately 400 tonnes of CO<sub>2</sub> per day being sequestered.

### **Time horizon**

Short-term

### **Likelihood**

Virtually certain

### **Magnitude of impact**

Medium-high

### **Are you able to provide a potential financial impact figure?**

No, we do not have this figure

### **Potential financial impact figure (currency)**

### **Potential financial impact figure – minimum (currency)**

### **Potential financial impact figure – maximum (currency)**

### Explanation of financial impact figure

Financial impact not known at this time as we are currently working through several opportunities for further carbon capture and resale projects.

### Cost to realize opportunity

### Strategy to realize opportunity and explanation of cost calculation

Capture CO<sub>2</sub> for resale opportunities exist at our Augusta, GA, Borger, TX, Geismar, LA, Lima, OH & Trinidad and Redwater, AB facilities. Our nitrogen fertilizer facilities produce pure CO<sub>2</sub> that can be reused in many applications. We capture and sell a portion of this CO<sub>2</sub> for industrial applications, turning a waste stream into a useful product. Another portion of the CO<sub>2</sub> is sold for enhanced oil recovery. At our Redwater, AB facility we are currently capturing 146,000 tonnes of CO<sub>2</sub>. We look to capture 750,000 tonnes annually and in the near future 1.25 million tonnes. We look to provide clarity in 2021 on our climate strategy, opportunities and their impact on emissions and finances. This opportunity is one of our largest and most promising opportunities for strategic emission reduction.

### Comment

Carbon capture projects are focused on sending process and post-combustion CO<sub>2</sub> to other organizations for use in other manufacturing processes without releasing the emissions into the atmosphere, generating resale revenue and credits for Nutrien.

### Identifier

Opp4

### Where in the value chain does the opportunity occur?

Direct operations

### Opportunity type

Resource efficiency

### Primary climate-related opportunity driver

Other, please specify

Use of N<sub>2</sub>O catalyst technologies in the manufacturing process

### Primary potential financial impact

Reduced direct costs

### Company-specific description

Nitric acid production N<sub>2</sub>O emissions abatement projects:

The N<sub>2</sub>O abatement opportunity for Nutrien can be quite impactful as it the production of nitric acid releases high levels of N<sub>2</sub>O as a byproduct. N<sub>2</sub>O is a byproduct of nitric acid production. Because one tonne of N<sub>2</sub>O is equivalent to 298 tonnes of CO<sub>2</sub>, reductions in N<sub>2</sub>O have the potential to reduce GHG emissions by approximately 700,000 to one million tonnes of CO<sub>2</sub> equivalent at Nutrien. We are evaluating N<sub>2</sub>O catalyst project capital, permitting and feasibility at this time that could remove up to 90 percent of N<sub>2</sub>O emissions from nitric acid production.

### Time horizon

Medium-term

**Likelihood**

Likely

**Magnitude of impact**

Medium-high

**Are you able to provide a potential financial impact figure?**

No, we do not have this figure

**Potential financial impact figure (currency)**

**Potential financial impact figure – minimum (currency)**

**Potential financial impact figure – maximum (currency)**

**Explanation of financial impact figure**

Financial impact not known at this time as we are currently working through several opportunities for further N<sub>2</sub>O abatement projects.

**Cost to realize opportunity**

**Strategy to realize opportunity and explanation of cost calculation**

We are evaluating N<sub>2</sub>O catalyst technologies that could remove up to 90 percent of N<sub>2</sub>O emissions from our nitric acid production. We are currently evaluating projects at our Kennewick, WA, Augusta, GA, Lima, OH and Geismar, LA, nitrogen facilities. Investment in these projects is minimal with expected meaningful emissions reductions. We look to provide clarity in 2021 on our climate strategy, opportunities and their impact on emissions and finances.

**Comment**

N<sub>2</sub>O abatement projects focus on investments to reduce emissions, thereby reducing existing and future potential carbon taxes.

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**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 resulting from increased demand for products and services

**Company-specific description**

The sale of environmentally smart products and services:

Reducing the environmental impacts from the agricultural products we manufacture and sell is one way we can help our customers manage the increasing environmental and societal pressures they face. To lead the next wave of sustainability in agriculture, we are offering growers products and technologies with a lower environmental impact and facilitating the adoption of agronomic best practices.

The global need to feed a growing population while minimizing the environmental impacts of agriculture is an opportunity for Nutrien to provide the right technological solutions for growers' most pressing challenges: maximizing nutrient use efficiency, minimizing nutrient loss, and increasing crop quality and yields.

The main source of emissions to air related to the application of fertilizers at the farm level is volatilization. Volatilization is the loss of nitrogen to the atmosphere as ammonia gas. In certain conditions (warm temperatures, moist soil, surface application) up to 40 percent of nitrogen can be lost to volatilization within hours of application. Additionally, nitrogen is subject to natural microbial conversion in the soil, which converts it to N<sub>2</sub>O, a potent GHG (one tonne of N<sub>2</sub>O is equivalent to 298 tonnes of CO<sub>2</sub>). In both cases, reducing nitrogen loss is critical to reducing emissions from agriculture.

**Time horizon**

Short-term

**Likelihood**

Virtually certain

**Magnitude of impact**

Medium

**Are you able to provide a potential financial impact figure?**

No, we do not have this figure

**Potential financial impact figure (currency)**

**Potential financial impact figure – minimum (currency)**

**Potential financial impact figure – maximum (currency)**

**Explanation of financial impact figure**

Financial impact not known at this time as we are currently working through several opportunities for further environmentally favourable products and services.

**Cost to realize opportunity**

**Strategy to realize opportunity and explanation of cost calculation**

As climate conditions change, the ideal window to plant and apply fertilizer may become more restricted. We have developed enhanced efficiency fertilizer products such as Environmentally Smart Nitrogen or ESN® and nitrogen stabilizers to widen the range of conditions where fertilizer can be applied effectively. We have the ability to increase production of these products as demand increases. We also produce diesel exhaust fluid (DEF) grade urea (a dry product shipped to industrial customers to formulate liquid DEF) and liquid DEF (aqueous urea solution). When liquid DEF is injected into the exhaust pipeline of larger vehicles and machinery using diesel fuel, it can improve fuel efficiency and reduce emissions by converting NO<sub>x</sub> to N<sub>2</sub> and H<sub>2</sub>O. Nutrien has the capacity to produce 725,000 tonnes of DEF annually and the ability to develop

further capacity.

Nutrien is also able to provide our grower customers with precision application of nitrogen products on their fields based on their soil data within our digital tool in our Retail business unit. This places the nitrogen in the most efficient and sustainable manner with the potential to reduce emissions once the nitrogen has volatilized.

As the world's largest retailer of crop input products, we have access to the latest in technological advancements related to the environment. We invest more than \$13 million per year in research and development of new and improved products.

We look to provide clarity in 2021 on our climate strategy, opportunities and their impact on emissions and finances.

**Comment**

The ability to sell the latest in advanced products and services that improve the efficiency of nitrogen application is an opportunity to generate further revenues while strategically helping our grower customer increase yields while reducing their climate footprint.

**Identifier**

Opp6

**Where in the value chain does the opportunity occur?**

Downstream

**Opportunity type**

Products and services

**Primary climate-related opportunity driver**

Development of new products or services through R&D and innovation

**Primary potential financial impact**

Increased revenues resulting from increased demand for products and services

**Company-specific description**

Digital tools/data to support sustainable grower decisions and reporting:

Digital agronomy combines location, agronomic information (crop physiology, soil characteristics, pest/disease impact), environmental data (for example, precipitation, temperature) and data science to support grower decisions. Our crop advisors use our digital tools combined with a grower's yield goals and evaluation of their field's capability to recommend supplementary crop input when and where needed. These crop management solutions help growers maximize product efficiency and minimize environmental impact.

Nutrien offers digital agronomy solutions through Echelon, Waypoint Analytical, Nutri-Crop Solution, Precision Agri Lab and Nutrient Advisor.

**Time horizon**

Long-term

**Likelihood**

Virtually certain

**Magnitude of impact**

High

**Are you able to provide a potential financial impact figure?**

No, we do not have this figure

**Potential financial impact figure (currency)****Potential financial impact figure – minimum (currency)****Potential financial impact figure – maximum (currency)****Explanation of financial impact figure**

Financial impact not known at this time as we are currently working through several opportunities for further advancement of our digital platform within our Retail business unit. There are also competitive reasons for not disclosing these figures.

**Cost to realize opportunity**

60,000,000

**Strategy to realize opportunity and explanation of cost calculation**

Digital tools to support sustainable decisions - Selecting suitable crop products, planting practices and precision agriculture is becoming more complicated with changing climate challenges and global emission reduction targets. We provide our grower customers and our agronomists with a digital platform that captures growers soil data, analyzes this data and provides recommendations on products, timing of applications and in the most precise way possible in order to reduce the impact on the environment. Our current digital offerings include fieldwork logistics, forecast production, nutrient requirements, sustainability metrics, and weather forecast analytics. All of these technologies are currently being integrated into our new digital platform and will help our grower customers trap more CO<sub>2</sub> in their soils while reducing their own emissions footprint. The tool will also allow our grower customers to provide their sustainable data to end consumers in the supply chain, as well as for potential CO<sub>2</sub> credit market engagement.

We are investing over \$60 million per year to deliver the leading digital platform in the Ag retail sector.

**Comment**

Overall, the strategic opportunity here is to be able to offset our Scope 3 emissions by helping the growers farm more sustainably through our services and products.

**Identifier**

Opp7

**Where in the value chain does the opportunity occur?**

Upstream

**Opportunity type**

Energy source

**Primary climate-related opportunity driver**

Use of lower-emission sources of energy

**Primary potential financial impact**

Reduced direct costs

**Company-specific description**

Renewable energy opportunities within our Scope 2 emissions

**Time horizon**

Short-term

**Likelihood**

Very likely

**Magnitude of impact**

Medium

**Are you able to provide a potential financial impact figure?**

No, we do not have this figure

**Potential financial impact figure (currency)**

**Potential financial impact figure – minimum (currency)**

**Potential financial impact figure – maximum (currency)**

**Explanation of financial impact figure**

Financial impact not known at this time as we are currently working through several opportunities for renewable energy projects/agreements.

**Cost to realize opportunity**

**Strategy to realize opportunity and explanation of cost calculation**

Nutrien is in the process of reviewing several opportunities in both Canada and the United States for our nitrogen and potash facilities that involve the purchase of renewable energy credits (RECs) to offset Scope 2 emissions, power purchase agreements (PPAs) and behind the fence (BTFs) generator opportunities. Related to this, we are in the process of reviewing long-term electricity contracts with both regulated and non-regulated providers. At the same time, we are exploring both solar and wind power options for our potash operations in Canada, and opportunities at our Borger, TX, nitrogen facility with a focus on leveraging from best-in-class mature project programs that can reduce our Scope 2 emissions in these operations. The renewable energy opportunity will also be critical to the consideration of developing "green" ammonia as well, which uses hydrogen and more electricity in its manufacturing process while emitting fewer emissions than natural gas based ammonia production. Without robust renewable energy supply in North America, "green ammonia" production is not economical.

**Comment**

The strategic opportunity here is to be able to reduce our electrical footprint through external partnerships and new technology which will reduce operating costs and regulatory carbon taxes.

## 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
<p><b>IEA Sustainable development scenario</b></p>	<p>As part of Nutrien’s advancement of its Climate Strategy, which we plan to disclose within the next year, in late 2019 we commenced a multi-year analysis assessing how climate-related scenarios can impact our company. The initial scenarios relate to transition risk and were identified based on Nutrien’s principal ESG risks and on our material ESG topics through engagement with stakeholders, sourcing topics from reporting frameworks and in-depth research on risk, reputation management, and megatrends.</p> <p>While the analysis is still in progress, the financial impact model will cover the time horizon over the next 20 years until 2040 in-line with IEA’s Sustainable Development Scenario and Stated Policies Scenario. Key inputs will be internal production estimates and external inputs will be based on assumptions in IEA’s 2019 World Energy Outlook, specifically around CO2 emissions and carbon pricing. The key area of our organization considered in the initial analysis is our Nitrogen business segment due to its emission profile.</p> <p>As this analysis is in progress, results are not yet available, nonetheless the results from this analysis could help inform our business objectives and strategy in relation to improvements to reduce GHG emissions at our nitrogen facilities through:</p> <p>(1) N2O abatement: N2O is a byproduct of nitric acid production. Because one tonne of N2O is equivalent to 298 tonnes of CO2, reductions in N2O have the potential to significantly reduce GHG emissions. We are evaluating N2O project capital, permitting and feasibility that could remove up to 90 percent of N2O emissions from nitric acid production.</p> <p>(2) Reliability improvements: Reliability and plant turnaround schedules are important to our GHG emissions profile because plant start-ups and shutdowns result in higher GHG emissions compared with normal, continuous operations. This is particularly relevant in the case of our nitrogen facilities since production interruptions result in non-routine process gas venting.</p>
<p><b>IEA NPS</b></p>	<p>As part of Nutrien’s advancement of its Climate Strategy, which we plan to disclose within the next year, in late 2019 we commenced a multi-year analysis assessing how climate-related scenarios can impact our company. The initial scenarios relate to transition risk and were identified based on Nutrien’s principal ESG risks and on our material ESG topics through engagement with stakeholders, sourcing topics from reporting frameworks and in-depth research on risk, reputation management, and megatrends.</p> <p>While the analysis is still in progress, the financial impact model will cover the time horizon over the next 20 years until 2040 in-line with IEA’s Sustainable Development Scenario and Stated Policies Scenario. Key inputs will be internal production estimates and external inputs will be based on assumptions in IEA’s 2019 World Energy Outlook, specifically around CO2</p>

	<p>emissions and carbon pricing. The key area of our organization considered in the initial analysis is our Nitrogen business segment due to its emission profile.</p> <p>As this analysis is in progress, results are not yet available, nonetheless the results from this analysis could help inform our business objectives and strategy in relation to improvements to reduce GHG emissions at our nitrogen facilities through:</p> <p>(1) N2O abatement: N2O is a byproduct of nitric acid production. Because one tonne of N2O is equivalent to 298 tonnes of CO2, reductions in N2O have the potential to significantly reduce GHG emissions. We are evaluating N2O project capital, permitting and feasibility that could remove up to 90 percent of N2O emissions from nitric acid production.</p> <p>(2) Reliability improvements: Reliability and plant turnaround schedules are important to our GHG emissions profile because plant start-ups and shutdowns result in higher GHG emissions compared with normal, continuous operations. This is particularly relevant in the case of our nitrogen facilities since production interruptions result in non-routine process gas venting.</p>
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### 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
<b>Products and services</b>	Yes	<p>Climate-related risks and opportunities related to increasing environmental and societal pressures that our customers face have influenced our strategic decisions towards our portfolio of products and services. The main sources of environmental impacts related to the application of fertilizers at the farm level are: (1) volatilization of nitrogen to the atmosphere as ammonia gas; (2) when fertilizers containing nitrogen and phosphorus are improperly applied to crops, some nutrients may leach into groundwater or reach surface water by runoff; and (3) water use, as water is required for crop irrigation in many arid growing environments.</p> <p>Reducing the environmental impacts from the agricultural products we manufacture and sell is one way we can help our customers manage these pressures. A key pillar of our sustainability strategy, introduced in 2018, is to lead the next wave of sustainability in agriculture by offering growers products and technologies with a lower environmental impact and facilitating the adoption of agronomic best practices.</p> <p>For example, we acquired Actagro LLC in 2019, which is a developer, manufacturer and marketer of environmentally sustainable soil and plant health products and technologies. Actagro’s commercial portfolio includes approximately 30 specialty products. This gives our customers a broad array of products and services to choose from, promoting biodiversity, and improving soil and plant health.</p> <p>Another example of a key strategic decision related to our products and services portfolio is the introduction of Smart Nutrition MAP. In 2019, we introduced a patented product that integrates micronized sulfur into the ammonium-phosphate fertilizer (MAP) granules. This product speeds sulfur delivery to the plant and reduces the potential for sulfur loss.</p>
<b>Supply chain and/or value chain</b>	Evaluation in progress	<p>Since some food retailers are demanding their final products have a lower carbon footprint throughout the value chain, we have started to look at options to reduce the carbon footprint of our products. If we can do this to the extent expected by food retailers, they may show preference to purchasing our products.</p>



		<p>In 2019, we developed an evaluation plan in which we intend to reduce the direct GHG emissions from our manufacturing facilities and the indirect emissions from purchased energy, such as steam and electricity, through GHG reduction and efficiency projects. Key steps include exploring Scope 3 GHG emissions to better understand our greatest impacts and opportunities; evaluating reduction opportunities and mitigation strategies along our entire value chain; continuing to assess how climate-related scenarios can impact our company; and developing GHG reduction projects and targets.</p> <p>We expect to disclose our strategy for this and targeted reductions in 2021.</p> <p>In 2019 we acquired Actagro, a manufacturer of environmentally sustainable soil and plant health products and technologies. Also as noted last year, we acquired Agrible in 2018, which enhances connectivity, enabling food companies and other value chain partners to benchmark growers and meet their own sustainability goals. It can aggregate and quantify sustainability attributes for the supply chain and support GHG offset protocols or other performance indicators.</p>
<p><b>Investment in R&amp;D</b></p>	<p>Yes</p>	<p>Climate-related risks and opportunities related to sustainable agriculture (which will shape the strategy and direction of our company) and reducing environmental footprints has influenced our R&amp;D investment strategy. We have clear sustainable priorities which include leading innovation in sustainable agriculture and reducing our environmental footprint. These priorities allow us to capitalize on opportunities for growth and mitigate potential risk. Our R&amp;D priorities assist us in offering growers' products and technologies with a lower environmental impact and facilitating the adoption of agronomic best practices. We continue to develop products that improve crop yields and farming economics while at the same time reduce environmental impacts, including:</p> <p>(1) ESN® Smart Nitrogen: ESN is a urea granule contained within a flexible polymer coating. The coating protects the nitrogen from loss into air or water and releases nitrogen at a rate that is controlled by soil temperature and matches the nitrogen demand of the growing crop.</p> <p>(2) Nitrogen stabilizers: These are synthetic or biofertility products, such as Nitrain® and Accomplish®, that are combined with nitrogen-based fertilizers to minimize nitrogen loss and maximize utilization.</p> <p>(3) Smart Nutrition MAP: In 2019, we introduced a patented product that integrates micronized sulfur into the ammonium-phosphate fertilizer (MAP) granules. This product speeds sulfur delivery to the plant and reduces the potential for sulfur loss.</p> <p>(4) Products that improve soil health: Our C2 Technology products consist of extracted carbon and carbohydrate reacted with nutrients for improved soil health and plant performance by increasing nutrient uptake and availability.</p> <p>(5) Seed breeding innovation: Seed breeding is the process of combining the traits of different seeds to produce improved characteristics for specific environments or conditions</p> <p>In 2019 we spent \$29 million on R&amp;D related to proprietary products and seed breeding programs that are intended to reduce air emissions, reduce nutrient loss to ground/surface water, improve soil health and increase efficient use of water.</p> <p>Another example of a recent strategic decision made is in 2018 we made acquisitions of Agrible and Waypoint to enhance our ability to</p>



		provide real-time sustainable solutions and agronomic advice to our customers.
<b>Operations</b>	Evaluation in progress	<p>As we generate significant amounts of GHG emissions (through the production, distribution and use of our products) and climate-change policies and emissions regulations are evolving and/or increasing, we developed a plan in 2019, in which we intend to reduce the direct GHG emissions from our manufacturing facilities and the indirect emissions from purchased energy, such as steam and electricity, through GHG reduction and efficiency projects. This mitigation will help us reduce our carbon footprint.</p> <p>As part of this process, in 2019, we made the decision to receive limited external assurance on our 2018 Scope 1 and 2 emissions to establish an emissions baseline. We expect to disclose our strategy for this and targeted reductions in 2021. Key steps remaining to this process include: exploring Scope 3 GHG emissions to better understand our greatest impacts and opportunities; evaluating reduction opportunities and mitigation strategies along our entire value chain; continuing to assess how climate-related scenarios can impact our company; and developing GHG reduction projects and targets.</p>

### 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
<b>Row 1</b>	Capital allocation Acquisitions and divestments	<p>Climate-related risks and opportunities have influenced our financial planning in relation to how we allocate capital and potential business acquisitions. We have three clear sustainability priorities: lead innovation in sustainable agriculture, reduce our environmental footprint, and champion D&amp;I in the Ag industry. Minimizing the environmental impacts of agriculture is an opportunity for Nutrien to provide the right technological solutions for growers’ most pressing challenges: maximizing nutrient use efficiency, minimizing nutrient loss, and increasing crop quality and yields. This in turn helps us reduce our climate-related transition risks. This includes products such as our Environmentally Smart Nitrogen (ESN), new ag-biological products and our investment in digital tools that help growers make more informed decisions. Our recent acquisitions of Agrible and Waypoint enhance our ability to provide real-time sustainable solutions and agronomic advice to our customers.</p> <p>In 2019, we made important investments at our production facilities including emission controls at our nitrogen facilities, investments in mining automation, and expanding our capacity of diesel exhaust fluid that lower vehicle emissions.</p> <p>Another example of capital being allocated in-line with our climate-related opportunities is our acquisition of Actagro LLC (Actagro) in 2019, a developer, manufacturer and marketer of environmentally sustainable soil and plant health products and technologies. Actagro’s commercial portfolio includes approximately 30 specialty products.</p> <p>We will leverage these investments across the value chain as we build a climate-smart agriculture strategy that is integrated into the long-term plans for each of our business units.</p> <p>Our financial planning related to capital allocation generally ranges over a 1 to 5-year period or to meet regulatory requirements . Next year, we expect to provide more detail on our Environmental, Social and Governance (ESG) strategy and targets for reducing emissions across our value chain.</p>



### C3.1f

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

## C4. Targets and performance

### C4.1

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

No target

### C4.1c

**(C4.1c) Explain why you did not have an emissions target, and forecast how your emissions will change over the next five years.**

	Primary reason	Five-year forecast	Please explain
Row 1	We are planning to introduce a target in the next two years	Absolute emissions are forecast to increase by approximately 7% over the next 5 years as a result of increases in production, however emission reduction and efficiency projects are expected to improve the manufacturing emission intensity by 8% (equivalent to ~900 kT CO <sub>2</sub> e) compared to 2019.	<p>Climate change is a key focus for Nutrien. We do not currently have a target because our climate strategy is under development but not completed. Through our current climate strategy development (as part of our new sustainability strategy), Nutrien is examining the emissions and reduction opportunities along our value chain. We are committed to reducing our carbon footprint and are in the process of setting emission reduction goals. Including components of our value chain where impacts are greatest and collaborating with stakeholders continue to shape Nutrien's climate strategy.</p> <p>We intend to reduce the direct GHG emissions from our manufacturing facilities and the indirect emissions from purchased energy, such as steam and electricity, through GHG reduction and efficiency projects. We expect to disclose our climate strategy and targeted reductions in 2021.</p> <p>We continue to advance our climate strategy, which will include long-term reduction targets. Key steps taken in 2019, and continuing in 2020, include:</p> <ul style="list-style-type: none"> <li>• completion of a rigorous inventory of Nutrien's 2018 Scope 1 and 2 GHG emissions baseline,</li> <li>• exploring Scope 3 GHG emissions to better understand our greatest impacts and opportunities,</li> <li>• evaluating reduction opportunities and mitigation strategies along our entire value chain,</li> <li>• assessing how climate-related scenarios can impact our company, and</li> <li>• developing GHG reduction projects and targets.</li> </ul> <p>Additionally, in 2019 we engaged KPMG to provide limited assurance of our 2018 baseline Scope 1 and 2 GHG emissions. This improved</p>

			information-gathering processes in order to support reduction initiatives and future target setting.
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## C4.2

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

No other climate-related targets

## 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	4	0
To be implemented*	0	0
Implementation commenced*	1	60,000
Implemented*	3	361,000
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**

Non-energy industrial process emissions reductions  
Carbon capture and storage/utilization (CCS/U)

**Estimated annual CO2e savings (metric tonnes CO2e)**

250,000

**Scope(s)**

Scope 1

**Voluntary/Mandatory**

Voluntary

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

480,000

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

0

**Payback period**

&lt;1 year

**Estimated lifetime of the initiative**

Ongoing

**Comment**

Our Redwater, AB facility started capturing previously vented CO<sub>2</sub> in December 2019. The CO<sub>2</sub> is now compressed into a near-liquid state, injected into a pipeline, transported to an oilfield near Clive, AB and used for Enhanced Oil Recovery (EOR), which is a technique that helps maximize recovery and extend the life of oil reservoirs. The post-EOR CO<sub>2</sub> remains in permanent storage in an underground geological formation. GHG reductions from the Redwater CCS project are being realized starting in 2020. Read more at <https://actl.ca/>

**Initiative category & Initiative type**

Energy efficiency in production processes  
Machine/equipment replacement

**Estimated annual CO<sub>2</sub>e savings (metric tonnes CO<sub>2</sub>e)**

20,000

**Scope(s)**

Scope 1

**Voluntary/Mandatory**

Voluntary

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

986,000

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

0

**Payback period**

&lt;1 year

**Estimated lifetime of the initiative**

21-30 years

**Comment**

Redwater Ammonia Plant 9 F-901 Convection Section Replacement: Resulted in reduced stack temperatures and increased 600# steam export from Plant 09 to the site header which reduces the firing in the utilities boilers. The main driver for this project was mechanical integrity and the opportunity was taken to improve the design (which is what led to emissions reductions), thus no investment dollars are listed above and a payback period of < 1 year.

**Initiative category & Initiative type**

Other, please specify  
Other, please specify

Process emission reduction by change in production process (Redwater conversion of monoammonium phosphate fertilizer, or MAP, to ammonium sulfate)

**Estimated annual CO<sub>2</sub>e savings (metric tonnes CO<sub>2</sub>e)**



91,000

**Scope(s)**

- Scope 1
- Scope 2 (location-based)

**Voluntary/Mandatory**

Voluntary

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

7,600,000

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

0

**Payback period**

<1 year

**Estimated lifetime of the initiative**

Ongoing

**Comment**

In 2019, Nutrien closed its phosphate facility in Redwater, Alberta, which previously relied on imported phosphate rock from OCP (Western Sahara), and converted the facility to produce ammonium sulfate instead. In a move made to simplify our phosphate operations and make them more cost-effective, Nutrien will now be able to use available capacity at our two remaining phosphate plants in Aurora, North Carolina and White Springs, Florida. With both plants located near key markets, and due to the high quality of our rock, those plants produce a diverse mix of phosphate products, including solid and liquid fertilizers, feed and industrial acids.

A long time in the works, this strategic move allowed us to eliminate the purchase of imported phosphate rock, while driving down per-tonne costs significantly. The increase in production at the two remaining plants is expected to offset the reduction in supply from our Redwater facility, and ensure a continued supply of phosphate products to our customers in Western Canada. Emissions reductions are an additional benefit of this operational change, thus no investment dollars are listed above and a payback period of < 1 year.

**C4.3c**

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

Method	Comment
<b>Dedicated budget for other emissions reduction activities</b>	Nutrien invests in the development of mechanisms to reduce GHG emissions at the farm level, such as the 4R Nutrient Stewardship Framework and the Nitrous Oxide Reduction Protocol (NERP), by making donations to our industry association partners, including Fertilizer Canada, the Fertilizer Institute and the International Plant Nutrition Institute. A dedicated budget exists to provide this support through the annual donation budgeting process.
<b>Internal price on carbon</b>	We have completed climate scenario analysis and are including carbon pricing analysis in the development of mitigation pathways for emissions reductions. We are working to understand our abatement options and how they compare on a relative basis (i.e. capital investment, GHG reduction potential). Simplistically, we are looking at a break-even NPV carbon cost curve that allows use to understand what price on carbon would be required to meet minimum return thresholds for each of our abatement options/levers identified across Scope 1 & 2. Using this method we can prioritize most to least economic options and overlay our Nutrien POV on the price of carbon (still pending) to allow us to triangulate on the total emissions reduction potential and the capital required to execute. This methodology likely will be one of the primary tools to

	help us align on our emission reduction targets.
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## 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

Company-wide

#### Description of product/Group of products

The following describes best practices in fertilizer application rather than specific products. Nutrien and the fertilizer industry are promoting efforts to reduce GHG emissions at the field level where Nutrien product is used by growers. Effective fertilizer application practices can dramatically reduce the loss of nutrients and associated GHG emissions. We are committed to minimizing these effects by following best practices when we provide fertilizer application services, and by working with industry associations and peers to expand the use of best practices. We provide advice to growers that is aligned with the 4R Nutrient Stewardship System (use of the right fertilizer source at the right time in the right rate and in the right place) in North America and Fertcare in Australia. Both organizations promote the adoption of best practices in fertilizer application. Through this stewardship system, farmers are reducing field emissions of GHGs. Careful placement, timing, attention to rate and product selection (all tenets of the 4R system) can significantly reduce these common agricultural emissions.

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

Avoided emissions

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

Other, please specify

Scientific development and consensus of the 4R reduction modifiers can be found in: Climate Check, 2009, Decision Paper for Nitrous Oxide Emission Reduction Protocol, prepared for Climate Change Central and Canadian Fertilizer Institute

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

#### Comment

4R Nutrient Stewardship practices are shown to reduce GHG emissions based on research and substantiated in the Nitrous Oxide Emission Reduction Protocol. Growers select from a suite of nitrogen management practices that are demonstrated to reduce GHG emissions. Nitrogen management plans are developed with the assistance of an accredited professional agronomist and implemented at the farm level. GHG emission reductions occur in the range of 15% to 25% as management practices are increased from the basis to the advanced levels of management.

The United Nations Global Compact 2017 "SDG Industry Matrix for Energy, Natural Resources and Chemicals" describes how Nutrien's (legacy Agrium's) promotion of 4R helps to achieve socio-economic

benefits for large and small scale farmers (SDG#2, Zero Hunger) by increasing crop yields and at the same time, reduce environmental impacts from the less than optimal use of fertilizer. See page 21 of the Matrix at <https://home.kpmg.com/content/dam/kpmg/xx/pdf/2017/05/sdg-energy.pdf>

### Level of aggregation

Company-wide

### Description of product/Group of products

In waterlogged soil, nitrogen fertilizer can be converted to nitrous oxide, which has a global warming potential higher than carbon dioxide. When farmers adopt specific practices they can reduce nitrous oxide emissions resulting from nitrogen applications at the farm level. Nutrien has been a leader in developing the 4R-based Nitrous Oxide Emission Reduction Protocol (NERP). The protocol is globally scalable and it is currently being customized to consider each region's unique climate, soil, farming practices and culture. While the potential of this solution is still being quantified, early estimates of carbon dioxide equivalent emissions reduction from fully implemented nutrient stewardship practices exceed 7 million tonnes annually in North America alone. The protocol quantifies these nitrous oxide reductions, which can be traded where carbon offset markets exist (e.g., Alberta). Growers who adopt the protocol can increase their income and often reduce their operating costs. Some companies in the U.S. use the reductions in voluntary value chain programs (e.g., Field to Market), to deliver on stakeholder commitments to improve sustainability performance.

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

Avoided emissions

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

Other, please specify

N2O emission reductions are based on estimates from COMET-Planner (<http://www.comet-planner.com/>)

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

### Comment

Methodology: N2O emission reductions are based on estimates from COMET-Planner (<http://www.comet-planner.com/>). Includes examples from the American Carbon Registry and Electric Power Research Institute project to quantify reductions in N2O emissions (<http://americancarbonregistry.org/resources/reduced-use-of-nitrogen-fertilizer>) and the Adapt-N modelling tool (<http://www.adapt-n.com/>).

Comment: Nutrien (legacy Agrium) has also been acknowledged by United Nations Global Compact in the 2017 "SDG Industry Matrix for Energy, Natural Resources and Chemicals" as a leader in SDG#13, Climate Action, for the 4R-based Nitrous Oxide Emission Reduction Protocol, or NERP, which works by reducing greenhouse gas emissions resulting from nitrogen applications at the farm level. NERP is also included in the United Nations Global Compact SDG Industry Matrix as a contributing solution to the SDGs. See pages 46-47 of the Matrix at <https://home.kpmg.com/content/dam/kpmg/xx/pdf/2017/05/sdg-energy.pdf>.

### Level of aggregation

Group of products

### Description of product/Group of products

Nutrien is committed to protecting and preserving the environment by offering customers a wide array of products with advanced-generation coatings and other technologies that significantly reduce the potential for nutrient loss to the environment, and associated field-level GHG emissions. As climate conditions change, the ideal window to plant and apply fertilizer may become more restricted. Nitrogen that is lost to water or the atmosphere can have negative impacts for the environment and is an economic loss for the farmer. Volatilization is the loss of nitrogen to the atmosphere as ammonia gas. In certain conditions (warm temperatures, moist soil, surface application) up to 40 percent of nitrogen can be lost to volatilization within hours of application. Additionally, nitrogen is subject to natural microbial conversion in the soil, which converts it to N<sub>2</sub>O, a potent GHG (one tonne of N<sub>2</sub>O is equivalent to 298 tonnes of CO<sub>2</sub>). In both cases, reducing nitrogen loss is critical to reducing emissions from agriculture.

Climate-smart products: We have developed enhanced efficiency fertilizer products and nitrogen stabilizers to widen the range of conditions where fertilizer can be applied effectively. ESN® Smart Nitrogen is a urea granule contained within a flexible polymer coating. The coating protects the nitrogen from loss into air or water and releases nitrogen at a rate that is controlled by soil temperature and matches the nitrogen demand of the growing crop. Nitrogen stabilizers are synthetic or biofertility products, such as Nitrain® and Accomplish®, that are combined with nitrogen-based fertilizers to minimize nitrogen loss and maximize utilization. For more information, see Comments.

Digital tools to support better decisions: Selecting suitable products and seed is becoming more complicated with changing weather conditions and the proliferation of highly specialized products for each condition. We use forecast weather and agronomic information (crop physiology, soil characteristics, pest and disease impact) to provide grower with advice on which products to apply, based on current and predicted conditions. Our current digital offerings include fieldwork logistics, forecast production, nutrient requirements, sustainability metrics, and weather forecast analytics. All of these technologies are currently being integrated into our new digital platform.

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

Avoided emissions

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

Other, please specify

Nutrien uses the Agrible platform for tracking management practices and GHG emission reduction estimates based on the Field to Market methodology. (<https://fieldtomarket.org/our-programs/leading-with-science/fieldprint-platform/>)

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

#### **Comment**

A combination of soil and plant tissue testing, and a variety of nitrogen efficiency products and split application methods are implemented as appropriate for the local environmental conditions and crops. The yield impacts are measured in the field in comparison to the growers standard practice. Nutrien uses the Agrible platform for tracking management practices and GHG emission reduction estimates based on the Field to Market methodology. Products are selected for the local conditions and include Maximum N Pact, Radiate, Awaken, Black Label and CarbN. Yields and estimated GHG emission reductions are determined and an adaptive management approach is used to revise practices based on yearly results.

ESN® is a leading controlled-release nitrogen fertilizer product providing growers with significant economic and environmental benefits. This patented coated-fertilizer product allows for more efficient delivery of the nitrogen to the plant while it grows based on soil moisture and temperature characteristics. By delivering nitrogen when the plant needs it most, this advanced product can significantly reduce the risk of nitrogen loss to the air and water. See <https://www.smartnitrogen.com/>

NITRAIN nitrogen stabilizer is "engineered to reduce nitrogen volatilization". NITRAIN reduces volatility by inhibiting the activity of the urease enzyme. Urease is a naturally occurring enzyme in the soil responsible for breaking down urea when moisture and organic matter are present. Up to 40% of nitrogen can be lost to volatilization within hours of application. Nitrain prevents the volatilization of both Urea and UAN fertilizer applications, increases the efficiency and utilization of nitrogen, and may enhance yield in many different crops. See <https://www.lovelandproducts.com/product/nitrain>

N-PACT is a patented triazone Slow Release Nitrogen, with a nitrogen stabilizer which provides increased foliar nitrogen uptake and translocation, reduced volatility and excellent crop safety. N-Pact offers improved formulation with nitrogen stabilizer, excellent source of foliar nitrogen, 31% more efficient in uptake versus other nitrogen sources, foliar safety, and patented triazone nitrogen that allows for increased nitrogen absorption, increased translocation, and increased remobilization. See <https://www.lovelandproducts.com/product/n-pact>

## 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, 2018

**Base year end**

December 31, 2018

**Base year emissions (metric tons CO<sub>2</sub>e)**

11,192,409

**Comment**

The 2018 base year Scope 1 and Scope 2 emissions were third-party verified to a Limited Level of Assurance in Q1 2020.

#### Scope 2 (location-based)

---

**Base year start**

January 1, 2018

**Base year end**

December 31, 2018

**Base year emissions (metric tons CO<sub>2</sub>e)**

3,046,260

**Comment**

The 2018 base year Scope 1 and Scope 2 emissions were third-party verified to a Limited Level of Assurance in Q1 2020.

#### Scope 2 (market-based)

---

**Base year start**

January 1, 2018

**Base year end**

December 31, 2018

**Base year emissions (metric tons CO<sub>2</sub>e)**

3,049,057

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

IPCC Guidelines for National Greenhouse Gas Inventories, 2006

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

US EPA Mandatory Greenhouse Gas Reporting Rule

US EPA Emissions &amp; Generation Resource Integrated Database (eGRID)

Other, please specify

Canadian regulatory reporting requirements mandate the emission factors and quantification methodologies that must be used for large emitting facilities. These methodologies are listed in C5.2a.

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

*Quantitative Methodologies for the Carbon Competitiveness Incentive Regulation and the Specified Gas Reporting Regulation, Alberta Climate Change Office, as updated (Alberta); Canada's Greenhouse Gas Quantification Requirements, Greenhouse Gas Reporting Program, as updated (Canada).* These documents include emission factors and calculation methods that must be used for regulatory reporting, both provincially and federally, for large emitting facilities.

**C6. Emissions data****C6.1****(C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO<sub>2</sub>e?****Reporting year****Gross global Scope 1 emissions (metric tons CO<sub>2</sub>e)**

10,527,029

**Start date**

January 1, 2019

**End date**

December 31, 2019

**Comment****Past year 1**

**Gross global Scope 1 emissions (metric tons CO2e)**

11,192,409

**Start date**

January 1, 2018

**End date**

December 31, 2018

**Comment**

2018 is the base year, as reported in Section 5.1. This data is restated from the previous submission following a limited assurance engagement of 2018 Scope 1 and 2 emissions that was undertaken by KPMG in late 2019 / early 2020.

**C6.2**

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

**Row 1**

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**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**

**C6.3**

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

**Reporting year**

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**Scope 2, location-based**

2,848,214

**Scope 2, market-based (if applicable)**

2,851,059

**Start date**

January 1, 2019

**End date**

December 31, 2019

**Comment**

Residual mix market-based emission factors were used for U.S. based manufacturing, distribution terminals and Retail operations. Canadian manufacturing, distribution and retail facilities, and the Trinidad manufacturing site used grid averaged factors.

**Past year 1**

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**Scope 2, location-based**

3,046,260

**Scope 2, market-based (if applicable)**

3,049,057

**Start date**

January 1, 2018

**End date**

December 31, 2018

**Comment**

Residual mix market-based emission factors were used for U.S. based manufacturing, distribution terminals and Retail operations. Canadian manufacturing, distribution and retail facilities, and the Trinidad manufacturing site used grid averaged factors.  
 The location-based emissions are restated from the previous submission following a limited assurance engagement of 2018 Scope 1 and 2 emissions that was undertaken by KPMG in late 2019 / early 2020. Market-based emissions were not reported previously.

**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?**

Yes

**C6.4a**

**(C6.4a) Provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure.**

---

**Source**

New Brunswick potash facility

**Relevance of Scope 1 emissions from this source**

Emissions are not relevant

**Relevance of location-based Scope 2 emissions from this source**

Emissions are not relevant

**Relevance of market-based Scope 2 emissions from this source (if applicable)**

Emissions are not relevant

**Explain why this source is excluded**

The Nutrien New Brunswick Potash Facility was permanently closed in 2018. The facility has been in care and maintenance since 2016. There are no manufacturing operations or material emissions at this facility.

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**Source**

Ruralco Holdings Limited retail operations and Actagro operations.

**Relevance of Scope 1 emissions from this source**

Emissions excluded due to recent acquisition

**Relevance of location-based Scope 2 emissions from this source**

Emissions excluded due to recent acquisition

**Relevance of market-based Scope 2 emissions from this source (if applicable)**

Emissions excluded due to recent acquisition

**Explain why this source is excluded**

The Australian Ruralco Ag Retailer operations were acquired in Q3 2019 and Actagro was acquired in Q1 2019. Both of these Retail business unit organizations were acquired in 2019 and are not material sources of emissions.

**Source**

European Wholesale Distribution network

**Relevance of Scope 1 emissions from this source**

Emissions are not relevant

**Relevance of location-based Scope 2 emissions from this source**

Emissions are not relevant

**Relevance of market-based Scope 2 emissions from this source (if applicable)**

Emissions are not relevant

**Explain why this source is excluded**

Emissions associated with the European distribution network are not included. Nutrien operates a small number of storage and sales offices in five European countries. Emissions from these activities are negligible.

**Source**

Scope 1 emissions from Australian Retail operations

**Relevance of Scope 1 emissions from this source**

Emissions are not relevant

**Relevance of location-based Scope 2 emissions from this source**

No emissions excluded

**Relevance of market-based Scope 2 emissions from this source (if applicable)**

No emissions excluded

**Explain why this source is excluded**

Scope 1 emissions from Australian Retail operations are not tracked and are expected to be negligible (<1% of Scope 1) based on the relatively small number of Australian locations and emission estimates from North American Retail operations.

**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**

11,000,000

**Emissions calculation methodology**

An Economic Input Output (EIO) calculator was used to estimate emissions from purchased goods and services. The data was sorted into type of spend based on EIO model categories. Spend data applicable to other Scope 3 categories was removed. EIO categories by spend were totaled and converted into GHG emissions using factors from Carnegie Mellon University's EIO LCA. Emissions associated with purchased hydrogen and natural gas feedstocks are included and were estimated using the Alberta Carbon Competitiveness Incentive Regulation benchmark for imported hydrogen and upstream DEFRA emission factors for natural gas.

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

0

**Please explain**

We continue to advance our climate strategy, which includes exploring Scope 3 GHG emissions to better understand our greatest impacts and opportunities, and evaluating reduction opportunities and mitigation strategies along our entire value chain. We completed a preliminary assessment of our Scope 3 emissions inventory and found that emissions from purchased goods and services (categories 1 and 2 combined) are the second largest source of emissions in our Scope 3 inventory. Therefore, these emissions are considered relevant. Our calculation methodologies are currently being refined.

**Capital goods**

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**Evaluation status**

Relevant, not yet calculated

**Please explain**

We continue to advance our climate strategy, which includes exploring Scope 3 GHG emissions to better understand our greatest impacts and opportunities, and evaluating reduction opportunities and mitigation strategies along our entire value chain. We completed a preliminary assessment of our Scope 3 emissions inventory and found that emissions from purchased goods and services (categories 1 and 2 combined) are the second largest source of emissions in our Scope 3 inventory. Therefore, these emissions are considered relevant. Our calculation methodologies are currently being refined.

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

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**Evaluation status**

Relevant, not yet calculated

**Please explain**

We continue to advance our climate strategy, which includes exploring Scope 3 GHG emissions to better understand our greatest impacts and opportunities, and evaluating reduction opportunities and mitigation strategies along our entire value chain. We completed a preliminary assessment of our Scope 3 emissions inventory and found that emissions from fuel and energy related activities account for a small percentage (more than 1%) of total emissions, therefore are considered to be relevant. Our calculation methodologies are currently being refined.

**Upstream transportation and distribution**

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### Evaluation status

Relevant, not yet calculated

### Please explain

We continue to advance our climate strategy, which includes exploring Scope 3 GHG emissions to better understand our greatest impacts and opportunities, and evaluating reduction opportunities and mitigation strategies along our entire value chain. We completed a preliminary assessment of our Scope 3 emissions inventory and found that emissions from upstream transportation of materials to Nutrien's facilities account for a small percentage (more than 1%) of total emissions, therefore are considered to be relevant. Our calculation methodologies are currently being refined.

## Waste generated in operations

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### Evaluation status

Not relevant, explanation provided

### Please explain

We completed a preliminary assessment of our Scope 3 emissions inventory and found that GHG emissions from waste generated in Nutrien's operations are not material as they represent less than 1% of total Scope 3 emissions. These emissions are considered not relevant.

Methodology: Data on volume of waste generated in Nutrien's facilities annually is tracked in SAP. This data is tracked by waste type (hazardous and non-hazardous) and by end-of-life treatment (disposed and recycled) and converted to GHG emissions using factors from the EPA WARM v15 tool.

In this tool, the total waste by disposal method is converted to GHG emissions using average waste treatment specific emissions factors. Only emission factors from waste transportation, combustion, and/or fugitive methane were included in emissions estimations. Avoided emissions such as stored carbon or other negative emissions were not included per the Scope 3 Guidance. Since all emission factors for recycling are negative, emissions from recycling were conservatively assumed to be zero as these emissions should only be reported as avoided emissions if a company is able to provide data to support that the emissions were avoided (i.e. that their materials were collected, recycled, and used to create new products).

This estimation includes emissions from waste that is landfilled, incinerated or composted. All hazardous waste that is not recycled is assumed to be combusted. All other disposed Municipal Solid Waste (MSW) was categorized into final disposal based on EPA's Advancing Sustainable Materials Management: 2015 Fact Sheet.

## Business travel

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### Evaluation status

Not relevant, explanation provided

### Please explain

We completed a preliminary assessment of our Scope 3 emissions inventory and found that GHG emissions associated with business travel are less than 1% of Nutrien's Scope 3 inventory, therefore these emissions are considered not relevant.

Methodology: Nutrien collects data from employee business travel by air through the Carlson Wagonlit Travel (CWT) system. This system tracks distance traveled, therefore the distance-based method was used to calculate approximate emissions. Flights were categorized by distance, including short-haul (under 785 km), medium (between 785 to 3,700 km) and long haul (greater than 3,700 km). Medium and long haul flight distances were also divided by economy, business, and first class. Passenger emission factors by flight distance and class from DEFRA were used to calculate GHG emissions.

Nutrien collects data on employee car rentals from Avis and Budget. Avis and Budget track the miles traveled and gallons used by car type and also provide emissions calculations for all car rentals.

Nutrien collects data on employee travel via rail through the CWT system. The system tracks the total rail

distance traveled by employees. Passenger emission factors for rail from EPA were used to calculate GHG emissions.

## Employee commuting

---

### Evaluation status

Not relevant, explanation provided

### Please explain

We completed a preliminary assessment of our Scope 3 emissions inventory and found that GHG emissions associated with employee commuting are not material and are less than 1% of the Scope 3 inventory, therefore they are considered not relevant.

Methodology: Employee commuting emissions were estimated using average commuting time and distance statistics from census data in the US, UK, Australia and Canada. Nutrien tracks the number of employees by facility. This assessment was completed using 2018 data, and in 2018, Nutrien had 22,060 total employees globally.

Based on this data, an average miles by type of transportation (passenger car, public transit, and carpooling) was estimated using average commute distance and time by county for US and Canada, state/province for Australia, and UK for European countries, utilizing data from US, UK, Australia, and Canada Census data. This information was converted into GHG emissions using emission factors from US EPA Climate Leadership and UK DEFRA.

## Upstream leased assets

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### Evaluation status

Not relevant, explanation provided

### Please explain

We completed a preliminary assessment of our Scope 3 emissions inventory. Nutrien directly manages assets and these are included in the Scope 1 and 2 GHG emissions. Nutrien does not have any upstream leased assets, therefore GHG emissions from this source are zero.

## Downstream transportation and distribution

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### Evaluation status

Relevant, not yet calculated

### Please explain

We continue to advance our climate strategy, which includes exploring Scope 3 GHG emissions to better understand our greatest impacts and opportunities, and evaluating reduction opportunities and mitigation strategies along our entire value chain. We completed a preliminary assessment of our Scope 3 emissions inventory and found that emissions from downstream transportation of materials to Nutrien's facilities account for a small percentage (more than 1%) of total emissions, therefore are considered to be relevant. Our calculation methodologies are currently being refined.

## Processing of sold products

---

### Evaluation status

Relevant, not yet calculated

### Please explain

We continue to advance our climate strategy, which includes exploring Scope 3 GHG emissions to better understand our greatest impacts and opportunities, and evaluating reduction opportunities and mitigation strategies along our entire value chain. We completed a preliminary assessment of our Scope 3 emissions inventory and found that emissions from processing of sold products account for a small percentage (more

than 1%) of total emissions, therefore are considered to be relevant. Our calculation methodologies are currently being refined.

## Use of sold products

---

### Evaluation status

Relevant, not yet calculated

### Please explain

We continue to advance our climate strategy, which includes exploring Scope 3 GHG emissions to better understand our greatest impacts and opportunities, and evaluating reduction opportunities and mitigation strategies along our entire value chain. We completed a preliminary assessment of our Scope 3 emissions inventory and found that emissions from use of sold products are the most significant source of Scope 3 emissions as Nutrien's primary products are fertilizers. Our calculation methodologies are currently being refined.

Fertilizer production and use have complex and conflicting impacts on GHG emissions along our value chain. Fertilizer, especially nitrogen, generates GHG emissions. However, nitrogen is critical for healthy crops, soil organic carbon and increasing yields. Our approach will span Nutrien's integrated business and utilize our strong connections with growers to create meaningful reductions in GHG emissions through effective nutrient management and carbon sequestration at the field and farm level.

## End of life treatment of sold products

---

### Evaluation status

Not relevant, explanation provided

### Please explain

We completed a preliminary assessment of our Scope 3 emissions inventory. Nutrien's products are primarily used in agriculture, therefore do not require end of life treatment. Emissions associated with end of life treatment are zero (0).

## Downstream leased assets

---

### Evaluation status

Not relevant, explanation provided

### Please explain

We completed a preliminary assessment of our Scope 3 emissions inventory. Nutrien assets are directly managed by Nutrien and are included in Scope 1 and 2 GHG emissions. Nutrien does not have any downstream leased assets, therefore, GHG emissions from this source are zero (0).

## Franchises

---

### Evaluation status

Not relevant, explanation provided

### Please explain

We continue to advance our climate strategy, which includes exploring Scope 3 GHG emissions to better understand our greatest impacts and opportunities, and evaluating reduction opportunities and mitigation strategies along our entire value chain. We completed a preliminary assessment of our Scope 3 emissions inventory and found that GHG emissions from franchises account for less than 1% of total emissions, therefore are considered not relevant.

Methodology: Our preliminary assessment of Scope 3 emissions was conducted using 2018 data, when Nutrien had 22 retail franchise sites. Emissions from these sites arise primarily from use of electricity at the sites. Energy use for retail sites was estimated using square foot data. Electricity intensity was sourced from

the US Department of Energy's Commercial Building Survey which provides electricity intensity by building size and building use. Emissions were estimated using IEA 2018 factors for these locations.

**Investments**

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**Evaluation status**

Relevant, not yet calculated

**Please explain**

We continue to advance our climate strategy, which includes exploring Scope 3 GHG emissions to better understand our greatest impacts and opportunities, and evaluating reduction opportunities and mitigation strategies along our entire value chain. We completed a preliminary assessment of our Scope 3 emissions inventory and found that emissions from investments account for a small percentage (more than 1%) of total emissions, therefore are considered to be relevant. Our calculation methodologies are currently being refined.

**Other (upstream)**

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**Evaluation status**

**Please explain**

**Other (downstream)**

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**Evaluation status**

**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**

0.00067

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

13,378,105

**Metric denominator**

unit total revenue

**Metric denominator: Unit total**

20,023,000,000

**Scope 2 figure used**

Market-based

**% change from previous year**

8

**Direction of change**

Decreased

**Reason for change**

NPK production was down by 8% due to market conditions and discontinuation of phosphate production at the Redwater facility, while revenues remained relatively stable, in part due to growth of the Retail Business Unit.

**Intensity figure**

0.73

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

13,378,105

**Metric denominator**

unit of production

**Metric denominator: Unit total**

1,838,000

**Scope 2 figure used**

Market-based

**% change from previous year**

2

**Direction of change**

Increased

**Reason for change**

Production decreased by 8% in 2019 from 2018, emissions decreased by 6% resulting in a net 2% increase in intensity.

Note the production denominator for this intensity calculation was changed from the metric used in 2018 to use only NPK manufacturing production quantities and excludes product throughput at low emitting, non-manufacturing sites. Over 96% of Scope 1 and 2 emissions are directly associated with NPK manufacturing.

## 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).

Greenhouse gas	Scope 1 emissions (metric tons of CO <sub>2</sub> e)	GWP Reference
CO <sub>2</sub>	9,421,103	IPCC Fourth Assessment Report (AR4 - 100 year)
CH <sub>4</sub>	123,719	IPCC Fourth Assessment Report (AR4 - 100 year)
N <sub>2</sub> O	982,207	IPCC Fourth Assessment Report (AR4 - 100 year)

## C7.2

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

Country/Region	Scope 1 emissions (metric tons CO <sub>2</sub> e)
Canada	2,930,600
United States of America	4,580,345
Trinidad and Tobago	3,009,849
South America	6,235

## C7.3

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

By business division

### C7.3a

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

Business division	Scope 1 emissions (metric ton CO <sub>2</sub> e)
Nitrogen	9,082,995
Phosphate	599,019
Potash	474,042
Specialty Products (includes feed plants, Loveland Products Inc. operations, Rainbow facilities)	89,471
Transportation & Distribution	10,400
Retail	271,102

## 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 CO<sub>2</sub>e.

Gross Scope 1 emissions, metric tons CO <sub>2</sub> e	Comment
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<b>Chemicals production activities</b>	10,245,527	Includes all Scope 1 emissions from facilities that produce NPK products as well as Specialty Products (feed plants, Loveland Products Inc. operations, Rainbow facilities). It excludes emissions associated with Transportation & Distribution and Retail facilities.
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## C7.5

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

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted for in Scope 2 market-based approach (MWh)
Canada	1,879,707	1,879,707	1,108,548	0
United States of America	854,213	857,058	0	0
Trinidad and Tobago	108,720	108,720	0	0
South America	2,444	2,444	0	0
Australia	3,130	3,130	0	0

## C7.6

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

By business division

### C7.6a

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

Business division	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Nitrogen	1,164,207	1,170,182
Phosphate	361,425	360,995
Potash	1,208,700	1,208,700
Specialty Products (includes feed plants, Loveland Products Inc. operations, Rainbow facilities)	21,543	21,883
Transportation & Distribution	14,851	15,078
Retail	74,308	71,079
Corporate Offices	3,180	3,182

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

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

	Scope 2, location-based, metric tons CO2e	Scope 2, market-based (if applicable), metric tons CO2e	Comment
<b>Chemicals production activities</b>	2,755,875	2,761,722	Includes Scope 2 emissions from facilities that produce NPK products as well as Specialty Products (feed plants, Loveland Products Inc. operations, Rainbow facilities). It excludes emissions associated with

		Transportation & Distribution facilities, Retail facilities and corporate offices.
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## C-CH7.8

**(C-CH7.8) Disclose the percentage of your organization's Scope 3, Category 1 emissions by purchased chemical feedstock.**

Purchased feedstock	Percentage of Scope 3, Category 1 tCO <sub>2</sub> e from purchased feedstock	Explain calculation methodology
Natural gas	9	This value represents the estimated Scope 3 Category 1 emission contribution for natural gas feedstock used in ammonia production. We continue to advance our climate strategy, which includes exploring Scope 3 GHG emissions to better understand our greatest impacts and opportunities, and evaluating reduction opportunities and mitigation strategies along our entire value chain. As indicated in question C6.5, we completed a preliminary assessment of our Scope 3 emissions inventory and found that emissions from purchased goods and services (categories 1 and 2 combined) are the second largest source of emissions in our Scope 3 inventory.
High Value Chemicals (Steam cracking)	6	This value represents the estimated Scope 3 Category 1 emission contribution for purchased hydrogen feedstock used in ammonia production at our Joffre plant. We continue to advance our climate strategy, which includes exploring Scope 3 GHG emissions to better understand our greatest impacts and opportunities, and evaluating reduction opportunities and mitigation strategies along our entire value chain. As indicated in question C6.5, we completed a preliminary assessment of our Scope 3 emissions inventory and found that emissions from purchased goods and services (categories 1 and 2 combined) are the second largest source of emissions in our Scope 3 inventory.

## C-CH7.8a

**(C-CH7.8a) Disclose sales of products that are greenhouse gases.**

	Sales, metric tons	Comment
Carbon dioxide (CO <sub>2</sub> )	1,220,045	Includes CO <sub>2</sub> to third parties for Enhanced Oil Recovery (EOR) and other industrial use.
Methane (CH <sub>4</sub> )	0	
Nitrous oxide (N <sub>2</sub> O)	0	
Hydrofluorocarbons (HFC)	0	
Perfluorocarbons (PFC)	0	
Sulphur hexafluoride (SF <sub>6</sub> )	0	
Nitrogen trifluoride (NF <sub>3</sub> )	0	

## 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?**

Decreased

## 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 emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption	0	No change	0	
Other emissions reduction activities	0	No change	0	
Divestment	0	No change	0	
Acquisitions	1,700	Increased	0.01	Minor increase in emissions due to growth of the Retail business unit through acquisitions of other agricultural supply and technology providers . ~1700 T CO2e S1&S2 / 14,241,481 T CO2e S1&S2 organization emissions in 2018 x 100, as restated in this submission.
Mergers	0	No change	0	
Change in output	877,000	Decreased	6.2	Reduced emissions in 2019 from NPK manufacturing operations due to lower production of nitrogen and potash as a result of market conditions and facility maintenance schedules, and discontinuation of phosphate production at the Redwater facility. ~877,000 T CO2e S1&S2 / 14,241,481 T CO2e S1&S2 organization emissions in 2018 x 100, as restated in this submission.
Change in methodology	0	No change	0	
Change in boundary	12,000	Increased	0.08	Included emission contributions from several Transportation and Distribution Terminals and the Loveland, CO office where data was not available in 2018. ~12,000 T CO2e S1&S2 / 14,241,481 T CO2e S1&S2 organization emissions in 2018 x 100, as restated in this submission.
Change in physical operating conditions	0	No change	0	
Unidentified	0	No change	0	
Other	0	No change	0	

## 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?

Market-based

## C8. Energy

### C8.1

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

More than 0% but less than or equal to 5%

### C8.2

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

	Indicate whether your organization undertook this energy-related activity in the reporting year
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	No
Generation of electricity, heat, steam, or cooling	Yes

### C8.2a

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

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total (renewable and non-renewable) MWh
Consumption of fuel (excluding feedstock)	HHV (higher heating value)	0	30,972,653	30,972,653
Consumption of purchased or acquired electricity		0	4,484,117	4,484,117
Consumption of purchased or acquired steam		0	1,108,557	1,108,557
Consumption of self-generated non-fuel renewable energy		0		0
<b>Total energy consumption</b>		<b>0</b>	<b>36,565,327</b>	<b>36,565,327</b>

### C-CH8.2a

(C-CH8.2a) Report your organization's energy consumption totals (excluding feedstocks) for chemical production activities in MWh.

	Heating value	Total MWh
Consumption of fuel (excluding feedstock)	HHV (higher heating value)	29,882,236
Consumption of purchased or acquired electricity		4,311,244
Consumption of purchased or acquired steam		1,108,557
Consumption of self-generated non-fuel renewable energy		0

<b>Total energy consumption</b>	35,302,038
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### C8.2b

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

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	No
Consumption of fuel for the generation of heat	Yes
Consumption of fuel for the generation of steam	No
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	No

### C8.2c

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

**Fuels (excluding feedstocks)**

Diesel

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

630,823

**Emission factor**

2.72

**Unit**

kg CO2e per liter

**Emissions factor source**

USEPA-Emission Factors for Greenhouse Gas Inventories and Environment Canada published emission factors.

**Comment**

Due to variations in regulatory jurisdictions, the emission factor represents an approximate weighted average across the organization. The CO2e emission factor was obtained by taking specific emission factors for CO2, CH4 & N2O and applying the global warming potentials.

**Fuels (excluding feedstocks)**

Natural Gas

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

29,212,235

**Emission factor**

53.47

**Unit**kg CO<sub>2</sub>e per million Btu**Emissions factor source**

US and Canadian facilities subject to regulatory greenhouse gas reporting programs calculate site specific carbon dioxide emission factors based on the site specific fuel composition. Non-regulated facilities utilize published emission factors based on USEPA (Table C-1 to Subpart C of Part 98-Default CO<sub>2</sub> Emission Factors and High Heat Values for Various Types of Fuel & Table C-2 to Subpart C of Part 98-Default CH<sub>4</sub> and N<sub>2</sub>O Emission Factors for Various Types of Fuel) or Environment Canada published guidance.

**Comment**

Due to variations in regulatory jurisdictions, the emission factor represents an approximate weighted average across the organization. The CO<sub>2</sub>e emission factor was obtained by taking specific emission factors for CO<sub>2</sub>, CH<sub>4</sub> & N<sub>2</sub>O and applying the global warming potentials. Generally, emissions are based on the HHV, however, in some instances sites may be required by regulation to calculate emissions using the carbon content of the fuel.

**Fuels (excluding feedstocks)**

Propane Gas

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

11,103

**Emission factor**

1.54

**Unit**kg CO<sub>2</sub>e per liter**Emissions factor source**

USEPA-Emission Factors for Greenhouse Gas Inventories and Environment Canada published emission factors.

**Comment**

Due to variations in regulatory jurisdictions, the emission factor represents an approximate weighted average across the organization. The CO<sub>2</sub>e emission factor was obtained by taking specific emission factors for CO<sub>2</sub>, CH<sub>4</sub> & N<sub>2</sub>O and applying the global warming potentials.

**Fuels (excluding feedstocks)**

Motor Gasoline

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

346,138

**Emission factor**

2.34

**Unit**

kg CO2e per liter

**Emissions factor source**

USEPA-Emission Factors for Greenhouse Gas Inventories and Environment Canada published emission factors.

**Comment**

Due to variations in regulatory jurisdictions, the emission factor represents an approximate weighted average across the organization. The CO2e emission factor was obtained by taking specific emission factors for CO2, CH4 & N2O and applying the global warming potentials.

**Fuels (excluding feedstocks)**

Fuel Oil Number 2

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

22,979

**Emission factor**

74.21

**Unit**

kg CO2e per million Btu

**Emissions factor source**

Table C-1 to Subpart C of Part 98-Default CO2 Emission Factors and High Heat Values for Various Types of Fuel & Table C-2 to Subpart C of Part 98-Default CH4 and N2O Emission Factors for Various Types of Fuel.

**Comment**

This fuel is limited to US sites, therefore only the published Part 98 factors are used.

**Fuels (excluding feedstocks)**

Fuel Oil Number 6

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

65,914

**Emission factor**

75.35

**Unit**

kg CO2e per million Btu

**Emissions factor source**

Table C-1 to Subpart C of Part 98-Default CO2 Emission Factors and High Heat Values for Various Types of Fuel & Table C-2 to Subpart C of Part 98-Default CH4 and N2O Emission Factors for Various Types of Fuel.

**Comment**

This fuel is limited to US sites, therefore only the published Part 98 factors are used.

**Fuels (excluding feedstocks)**

Subbituminous Coal

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

333,846

**Emission factor**

97.92

**Unit**

kg CO2e per million Btu

**Emissions factor source**

Table C-1 to Subpart C of Part 98-Default CO2 Emission Factors and High Heat Values for Various Types of Fuel & Table C-2 to Subpart C of Part 98-Default CH4 and N2O Emission Factors for Various Types of Fuel.

**Comment**

This fuel is limited to US sites, therefore only the published Part 98 factors are used.

**Fuels (excluding feedstocks)**

Marine Fuel Oil

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

238,255

**Emission factor**

3,160

**Unit**

kg CO2e per metric ton

**Emissions factor source**

UK Government GHG Conversion Factors for Company Reporting

**Comment**

The CO<sub>2</sub>e emission factor was obtained by taking specific emission factors for CO<sub>2</sub>, CH<sub>4</sub> & N<sub>2</sub>O and applying the global warming potentials.

**Fuels (excluding feedstocks)**

Marine Gas Oil

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

96,431

**Emission factor**

3,250

**Unit**

kg CO<sub>2</sub>e per metric ton

**Emissions factor source**

UK Government GHG Conversion Factors for Company Reporting

**Comment**

The CO<sub>2</sub>e emission factor was obtained by taking specific emission factors for CO<sub>2</sub>, CH<sub>4</sub> & N<sub>2</sub>O and applying the global warming potentials.

**Fuels (excluding feedstocks)**

Jet Kerosene

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

14,032

**Emission factor**

9.84

**Unit**

kg CO<sub>2</sub>e per gallon

**Emissions factor source**

Table C-1 to Subpart C of Part 98-Default CO<sub>2</sub> Emission Factors and High Heat Values for Various Types of Fuel & Table C-2 to Subpart C of Part 98-Default CH<sub>4</sub> and N<sub>2</sub>O Emission Factors for Various Types of Fuel.

**Comment**

The CO<sub>2</sub>e emission factor was obtained by taking specific emission factors for CO<sub>2</sub>, CH<sub>4</sub> & N<sub>2</sub>O and applying the global warming potentials.

**Fuels (excluding feedstocks)**

Liquefied Petroleum Gas (LPG)

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

877

**Emission factor**

6.13

**Unit**

kg CO2e per gallon

**Emissions factor source**

GHG Protocol and IPCC Emissions Factor Database

**Comment**

The CO2e emission factor was obtained by taking specific emission factors for CO2, CH4 & N2O and applying the global warming potentials.

**Fuels (excluding feedstocks)**

Compressed Natural Gas (CNG)

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

21

**Emission factor**

7.21

**Unit**

kg CO2e per gallon

**Emissions factor source**

GHG Protocol and IPCC Emissions Factor Database

**Comment**

The CO2e emission factor was obtained by taking specific emission factors for CO2, CH4 & N2O and applying the global warming potentials.

**C8.2d**

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

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity	371,083.4	371,083.4	0	0

Heat	29,646,076	29,646,076	0	0
Steam	0	0	0	0
Cooling	0	0	0	0

### C-CH8.2d

(C-CH8.2d) Provide details on electricity, heat, steam, and cooling your organization has generated and consumed for chemical production activities.

	Total gross generation (MWh) inside chemicals sector boundary	Generation that is consumed (MWh) inside chemicals sector boundary
Electricity	371,083.4	371,083.4
Heat	29,494,976	29,494,976
Steam	0	0
Cooling	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**

None (no purchases of low-carbon electricity, heat, steam or cooling)

**Low-carbon technology type**

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

**MWh consumed accounted for at a zero emission factor**

**Comment**

### C-CH8.3

(C-CH8.3) Does your organization consume fuels as feedstocks for chemical production activities?

Yes

### C-CH8.3a

(C-CH8.3a) Disclose details on your organization’s consumption of fuels as feedstocks for chemical production activities.

**Fuels used as feedstocks**

Natural gas

**Total consumption**

3,897,452

**Total consumption unit**

thousand cubic metres

**Inherent carbon dioxide emission factor of feedstock, metric tons CO2 per consumption unit**

1.92

**Heating value of feedstock, MWh per consumption unit**

10.85

**Heating value**

HHV

**Comment**

Due to variations in site processes and equipment, the natural gas feedstock emission factor and/or heating value may vary from site to site.

### C-CH8.3b

(C-CH8.3b) State the percentage, by mass, of primary resource from which your chemical feedstocks derive.

	Percentage of total chemical feedstock (%)
Oil	0
Natural Gas	100
Coal	0
Biomass	0
Waste (non-biomass)	0
Fossil fuel (where coal, gas, oil cannot be distinguished)	0
Unknown source or unable to disaggregate	0

## C9. Additional metrics

### C9.1

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

### C-CH9.3a

(C-CH9.3a) Provide details on your organization’s chemical products.

**Output product**

Ammonia

**Production (metric tons)**

6,160,000

**Capacity (metric tons)**

7,100,000

**Direct emissions intensity (metric tons CO<sub>2</sub>e per metric ton of product)**

1.32

**Electricity intensity (MWh per metric ton of product)**

0.29

**Steam intensity (MWh per metric ton of product)****Steam/ heat recovered (MWh per metric ton of product)****Comment**

Direct emission intensity is based on Scope 1 emissions associated with production of all nitrogen fertilizer products, the vast majority of which are emissions associated with ammonia production, and excludes CO<sub>2</sub> captured for urea manufacturing, export for enhanced oil recovery or sale to third-parties. Electricity intensity is based on electricity consumption associated with all activities at nitrogen manufacturing facilities, including manufacturing of nitric acid, which is primarily produced as an intermediate feedstock for manufacturing other fertilizer products. Steam intensity and steam recovery has not been quantified.

**Output product**

Nitric acid

**Production (metric tons)**

1,730,000

**Capacity (metric tons)**

1,920,000

**Direct emissions intensity (metric tons CO<sub>2</sub>e per metric ton of product)**

0.5

**Electricity intensity (MWh per metric ton of product)****Steam intensity (MWh per metric ton of product)**

0

**Steam/ heat recovered (MWh per metric ton of product)****Comment**

Electricity consumption is tracked at the facility level, not at the product level. Electricity consumption specifically associated with nitric acid production has not been quantified since nitric acid production facilities also produce other products. Nitric acid is generally an exothermic process where excess heat is captured for use in other operations, however the quantity of steam / heat recovered has not been quantified.

**Output product**

Other, please specify

Potash

**Production (metric tons)**

11,700,000

**Capacity (metric tons)**

13,800,000

**Direct emissions intensity (metric tons CO<sub>2</sub>e per metric ton of product)**

0.04

**Electricity intensity (MWh per metric ton of product)**

0.14

**Steam intensity (MWh per metric ton of product)**

**Steam/ heat recovered (MWh per metric ton of product)**

0

**Comment**

The volume of steam consumed in potash production activities has not been quantified.

**Output product**

Other, please specify

Phosphate fertilizer products (as P<sub>2</sub>O<sub>5</sub>)

**Production (metric tons)**

1,610,000

**Capacity (metric tons)**

2,000,000

**Direct emissions intensity (metric tons CO<sub>2</sub>e per metric ton of product)**

0.37

**Electricity intensity (MWh per metric ton of product)**

0.77

**Steam intensity (MWh per metric ton of product)**

**Steam/ heat recovered (MWh per metric ton of product)**

**Comment**

The intensity associated with steam consumed or captured in the manufacturing of phosphate fertilizer products has not been quantified.

## 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?

Investment in low-carbon R&D		Comment
Row 1	Yes	

### C-CH9.6a

(C-CH9.6a) Provide details of your organization's investments in low-carbon R&D for chemical production activities over the last three years.

Technology area	Stage of development in the reporting year	Average % of total R&D investment over the last 3 years	R&D investment figure in the reporting year (optional)	Comment
<b>Carbon capture, utilization and storage (CCUS)</b>	Large scale commercial deployment	0%		We don't consider this as R&D as the technology is well established. Carbon capture and storage (CCS) provides another technical option for reducing GHG emissions. Our Geismar, LA facility has captured CO <sub>2</sub> since 2013 and sells it for enhanced oil recovery (EOR), diverting more than 248,000 tonnes of CO <sub>2</sub> from the atmosphere in 2019. Our Redwater, AB facility started capturing previously vented CO <sub>2</sub> in December 2019. The CO <sub>2</sub> is now compressed into a near-liquid state and injected into a pipeline to be transported to an oilfield near Clive, Alberta for use in EOR. This is used for carbon injection, which is a technique that helps maximize recovery and extend the life of oil reservoirs. The post-EOR CO <sub>2</sub> remains in permanent storage in an underground geological formation. GHG reductions from the Redwater CCS project are being realized in 2020 with approximately 400 tonnes of CO <sub>2</sub> per day being sequestered.
<b>Waste heat recovery</b>	Large scale commercial deployment	0%		We don't consider this as R&D as the technology is well established. Purchasing or generating lower carbon energy is one of the ways we can reduce our energy-related emissions. We have two cogeneration projects that efficiently combine heat and power generation. These facilities use natural gas to generate electricity using an efficient gas turbine,

				and waste heat from the exhaust is recovered to make valuable steam. In both cases, the energy efficiency does not change but the emissions impact is significant. Read more in our 2020 ESG Report, page 14.
<b>Other, please specify digital tools and precision agriculture services</b>	Pilot demonstration	≤20%		<p>Nutrien Ag Solutions offers digital tools to provide agronomic insights and hands-on customer support that drive economic value and can provide environmental benefits, including GHG reductions at the farm level. We have an opportunity to impact millions of acres in collaboration with strong partners in our value chain. Nutrien is piloting proof-of-concept input strategies that increase grower profitability while also improving environmental outcomes. Digital tools include Echelon, Agrible and our new digital portal. Echelon®: Our precision farming and data management platform, which includes services such as yield data mapping, record keeping, soil fertility management, variable-rate fertility and variable-rate seeding recommendations. Precision agriculture is the practice of using the latest technology, including GPS and geospatial data processing analytics, to allow growers to address variability in a field's yield potential and maximize crop input uptake by the plants. When applied to nutrient management, seeding and crop protection, precision agriculture makes site-specific adjustments to the use of those inputs that increase yields, reduce input costs and minimize losses to the environment (including GHGs).</p> <p>Agrible: We use our Agrible software tool to provide growers with field-specific sustainability analytics. The metrics can be anonymized and aggregated for downstream partners (for example, consumer packaged goods companies) who want to measure the environmental impact of agriculture in their supply chain. In addition to this, the Agrible platform helps growers access available subsidies and premiums resulting from sustainable farming. Through our platform, we can help farmers report their performance and access incentives. New Digital Portal: We launched the first phase of a cutting-edge farmer-facing digital platform across North America in 2018. This integrated platform, which will eventually integrate the capabilities of Echelon® and Agrible, aims to provide</p>

				comprehensive solutions for our growers' evolving needs. Additional functionality continues to be rolled out.
<b>Other, please specify emerging technologies and alternative low carbon hydrogen sources</b>	Applied research and development	≤20%		We have a scope 1 and 2 emissions team looking at all options for minimizing our GHG footprint. We are systematically analyzing every source of emissions, at every facility, and conducting a techno economic assessment of mitigation options. This includes, but is not limited to, alternative low carbon hydrogen sources (including "green" hydrogen sourced from renewable electricity and water), self gen/cogen and efficiency improvements to name a few.

## C10. Verification

### C10.1

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

Verification/assurance status	
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**

Reasonable assurance

**Attach the statement**

 2019 Consolidated Alberta CCIR Verification Reports.pdf

**Page/ section reference**

PDF pages 66, 149, 234, 329.

Alberta based nitrogen facilities are required to be annually verified to a Reasonable Level of Assurance under the Carbon Competitiveness Incentive Regulation. The 2019 verification reports for each of the four Alberta nitrogen facilities are consolidated into a single file and attached.

**Relevant standard**

ISO14064-3

**Proportion of reported emissions verified (%)**

23

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**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Underway but not complete for current reporting year – first year it has taken place

**Type of verification or assurance**

Reasonable assurance

**Attach the statement**

**Page/ section reference**

Saskatchewan based potash facilities are required to be annually verified to a Reasonable Level of Assurance under The Management and Reduction of Greenhouse Gases Regulations. 2019 was the first year for regulatory compliance reporting. Verification reports are not yet available as they are due to be submitted under the regulation by Oct. 31, 2020.

**Relevant standard**

ISO14064-3

**Proportion of reported emissions verified (%)**

5

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**Verification or assurance cycle in place**

Biennial process

**Status in the current reporting year**

No verification or assurance of current reporting year

**Type of verification or assurance**

Limited assurance

**Attach the statement**

**Page/ section reference**

KPMG undertook a limited assurance engagement for 2018 reported Scope 1 and 2 emissions. 2019 emissions were quantified using the same methodologies as 2018, however no assurance was completed on the 2019 emission data. A limited assurance engagement is scheduled to be conducted for the 2020 Scope 1 and 2 emissions. KPMG's limited assurance statement for 2018:  
[https://www.nutrien.com/sites/default/files/uploads/2020-04/KPMG\\_Limited\\_Assurance\\_Statement\\_for\\_2018\\_Scope\\_1\\_and\\_2\\_GHG\\_Emissions.pdf](https://www.nutrien.com/sites/default/files/uploads/2020-04/KPMG_Limited_Assurance_Statement_for_2018_Scope_1_and_2_GHG_Emissions.pdf)

**Relevant standard**

ISAE 3410

**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.**

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**Scope 2 approach**

Scope 2 location-based

**Verification or assurance cycle in place**

Biennial process

**Status in the current reporting year**

No verification or assurance of current reporting year

**Type of verification or assurance**

Limited assurance

**Attach the statement**

**Page/ section reference**

KPMG undertook a limited assurance engagement for 2018 reported Scope 1 and 2 emissions. 2019 emissions were quantified using the same methodologies as 2018, however no assurance was completed on the 2019 emission data. A limited assurance engagement is scheduled to be conducted for the 2020 Scope 1 and 2 emissions. KPMG's limited assurance statement for 2018:

[https://www.nutrien.com/sites/default/files/uploads/2020-04/KPMG\\_Limited\\_Assurance\\_Statement\\_for\\_2018\\_Scope\\_1\\_and\\_2\\_GHG\\_Emissions.pdf](https://www.nutrien.com/sites/default/files/uploads/2020-04/KPMG_Limited_Assurance_Statement_for_2018_Scope_1_and_2_GHG_Emissions.pdf)

**Relevant standard**

ISAE 3410

**Proportion of reported emissions verified (%)**

100

## 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?**

No, we do not verify any other climate-related information reported in our CDP disclosure

## 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  
 Canada federal fuel charge  
 Saskatchewan OBPS - ETS  
 Other carbon tax, please specify  
 Alberta carbon levy

## 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

22.7

##### % of Scope 2 emissions covered by the ETS

0

##### Period start date

January 1, 2019

##### Period end date

December 31, 2019

##### Allowances allocated

3,595,922

##### Allowances purchased

99,363

##### Verified Scope 1 emissions in metric tons CO<sub>2</sub>e

2,394,552

##### Verified Scope 2 emissions in metric tons CO<sub>2</sub>e

0

##### Details of ownership

Facilities we own and operate

##### Comment

Nutrien's four Alberta nitrogen manufacturing facilities are regulated under the Alberta Carbon Competitiveness Incentive Regulation (CCIR). Under the CCIR, an emission allocation for imported electricity, steam and hydrogen is factored into the above reported 'Allowances allocated', however the allocation is not aligned with methodology used to quantify Scope 2 emissions. The CCIR program assigns a program specific emission factor that is to be used by all large emitters in the CCIR program for all imported electricity, steam and hydrogen. The mandated output-based allocation factor is unrelated to the Location or Market-based Scope 2 quantification methods reported in this submission. While the quantity of imported electricity and steam is verified for accuracy and completeness under the CCIR program, the associated Scope 2 emissions reported in this submission are not assessed as part of the CCIR verification process. As such, the 'Verified Scope 2 emissions' is assigned 0.

The Allowances allocated under the CCIR program, as reported above, include Scope 3 emissions

associated with carbon dioxide consumed onsite in the production of urea, as well as CO<sub>2</sub> exported for enhanced oil recovery (EOR), which are not included in the Verified Scope 1 emission total reported above as they are considered Scope 3 emissions for this submission.

### Saskatchewan OBPS - ETS

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**% of Scope 1 emissions covered by the ETS**

4.5

**% of Scope 2 emissions covered by the ETS**

0

**Period start date**

January 1, 2019

**Period end date**

December 31, 2019

**Allowances allocated**

483,765

**Allowances purchased**

0

**Verified Scope 1 emissions in metric tons CO<sub>2</sub>e**

474,042

**Verified Scope 2 emissions in metric tons CO<sub>2</sub>e**

0

**Details of ownership**

Facilities we own and operate

**Comment**

All six of Nutrien's potash facilities are regulated under the Saskatchewan OBPS program. 2019 was the first compliance year for the Saskatchewan OBPS. Under the program, regulated large emitting facilities are required to submit a verified Emissions Return in 2020 for the 2019 emission year, however Compliance Returns (i.e. purchase of additional emission allowances over the emission allocation) are not required until 2021, which will cover the 2019 and 2020 compliance years. As a result, no compliance allowances were purchased for 2019 emissions.

Scope 2 emissions are not included in the Saskatchewan OBPS system.

## C11.1c

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

### Canada federal fuel charge

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**Period start date**

April 1, 2019

**Period end date**

December 31, 2019

**% of total Scope 1 emissions covered by tax**

0.31

**Total cost of tax paid**

489,005

**Comment**

The Canadian federal fuel charge applied in all provinces Nutrien operates beginning April 1, 2019 with the exception Alberta. Alberta already had a provincial carbon levy in effect between Jan. 1, 2019 and May 30, 2019. The Canadian federal fuel charge did not apply in Alberta until Jan. 1, 2020. The 2019 federal fuel charge was based on a carbon price of CDN\$20/tonne CO<sub>2</sub>e. The federal fuel charge only applied to fuel consumers who were not regulated in a large emitter program. The total cost of tax paid listed here is converted to U.S. dollars. Costs paid are estimated based on the annual emissions and 2019 carbon price, pro-rated for the portion of the year the tax was in effect. Only Canadian distribution terminals (excluding Alberta) and Canadian Retail locations (excluding Alberta) were subject to the federal fuel charge.

**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**

0.1

**Total cost of tax paid**

232,441

**Comment**

The Alberta provincial carbon levy was in effect between Jan. 1, 2019 and May 30, 2019. The Canadian federal fuel charge did not apply in Alberta until Jan. 1, 2020. The 2019 Alberta carbon levy was based on a carbon price of CDN\$30/tonne CO<sub>2</sub>e. The federal fuel charge only applied to fuel consumers who were not regulated in the Alberta CCIR large emitter program, specifically Alberta based Retail locations and distribution terminals. The total cost of tax paid listed here is converted to U.S. dollars. Costs paid are estimated based on the annual emissions and carbon price, pro-rated for the portion of the year the tax was in effect.

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

Compliance under the Alberta CCIR program is met through use of Emission Performance Credits (EPCs) or Offset Credits, or payment into the Alberta Climate Change and Emissions Management Fund (the Fund) at the carbon price of the reporting year. Nutrien annually receives some Emission Performance Credits through a credit transfer agreement with a third-party co-located cogeneration facility that provides utilities to the Carseland Nitrogen facility. Additional EPCs may be generated and banked for future use if a facility's emissions are below its output-based emission allocation. This was the case in 2019 for the Joffe and Fort Saskatchewan facilities which generated emission performance credits that can be used to meet a portion of future compliance obligations for any of the Alberta nitrogen facilities. The Alberta Carbon Competitiveness Incentive Regulation limits the use of credits for meeting compliance obligations, requiring a portion of any compliance to be met by payment into the Fund. In 2019, Nutrien met 48% of the compliance obligation using EPCs and Offset Credits with the remaining 52% met through payment into the Fund. Future compliance obligations are expected to be met utilizing credits at or near the 60% annual credit limit with

Fund payment used to meet the remaining full compliance. In addition, future facility energy efficiency improvements will reduce the compliance obligation for regulated facilities, and increasing the amount of carbon dioxide captured and transferred to a third party for Enhanced Oil Recovery will provide Alberta offset credits to meet a portion of future compliance obligations.

The Saskatchewan OBPS credit system is currently under development by the regulator. Operations regulated under the Saskatchewan program are expected to have similar options to comply with the emission allowances as Alberta - energy efficiency / emission reductions where feasible, purchase of offset or performance credits, or payment into a government technology fund. The first compliance return with compliance payments and credit true-up will be submitted in 2021.

## 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.**

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### Credit origination or credit purchase

Credit origination

### Project type

Energy efficiency: industry

### Project identification

The Joffre and Fort Saskatchewan nitrogen facility emissions were both below their output based emission allocation under the Alberta Carbon Competitiveness Incentive Regulation, resulting in an Emission Performance Credit for each tonne of CO<sub>2</sub>e they were below their allowance. These facilities met their emission allowance as a result of being among the most energy efficient ammonia producers in the province with emissions below the provincial intensity based benchmark. The credits are expected to be registered and serialized on the Alberta Carbon Registry in 2020 and can be used for meeting future compliance obligations.

### Verified to which standard

Other, please specify

Alberta Carbon Competitiveness Incentive Regulation Standard for Validation, Verification and Audit (December 2018), based on ISO 14064-3:2006.

### Number of credits (metric tonnes CO<sub>2</sub>e)

172,307

### Number of credits (metric tonnes CO<sub>2</sub>e): Risk adjusted volume

172,307

### Credits cancelled

No

### Purpose, e.g. compliance

Compliance

## C11.3

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

No, but we anticipate doing so in the next two years

## C12. Engagement

### C12.1

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

Yes, our customers

Yes, other partners in the value chain

### C12.1b

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

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#### Type of engagement

Education/information sharing

#### Details of engagement

Run an engagement campaign to educate customers about the climate change impacts of (using) your products, goods, and/or services

#### % of customers by number

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

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

We believe it's critical to minimize the impact our products have on the environment and we work closely with our growers to help them sustainably intensify crop production by supporting science-based management plans such as 4R Nutrient Stewardship initiatives. Our priority is to continually improve upon our environmental performance, and we work with our grower customers regarding GHG emissions resulting from use of our sold products as we estimate this represents more than 50% of our Scope 3 emissions.

The 4R Nutrient Stewardship System (4Rs) involves determining the right nutrient source, and applying it at the right time, at the right rate and in the right place. The 4Rs aim to deliver on local economic, social and environmental goals by implementing region-specific best management practices in all four performance areas. They help optimize the efficiency of crop inputs and minimize environmental impacts. We provide a variety of services and products to deliver farm-specific 4R programs through precision agriculture and controlled-release fertilizers.

The application of nitrogen fertilizer must be properly managed to maximize its uptake by plants and prevent the production of GHGs. For example: in waterlogged soil, nitrate can be converted to nitrous oxide (N<sub>2</sub>O), which has a global warming potential about 300 times more potent than carbon dioxide (CO<sub>2</sub>). By using the 4Rs, we reduce the amount of nitrate present in waterlogged conditions, thus reducing N<sub>2</sub>O emissions.

Nutrien has been a strong advocate of the 4Rs. We promote sustainable nutrient management for increased food production in an economically viable way while retaining the ecological integrity of food systems. We provide advice to growers that is aligned with the 4R Nutrient Stewardship System in North America and Fertcare in Australia. Both organizations promote the adoption of best practices in fertilizer application.

### **Impact of engagement, including measures of success**

While GHG emission reductions associated with using the 4Rs are difficult to quantify at this time, we track 4R training and certifications as measures of success. By training crop advisors that work directly with growers and achieving employee- and facility-based certifications (applicable depending on the region), we integrate the 4Rs into our recommendations and facilitate 4R implementation at the field level. In 2019, Nutrien employed 20 “4R Designated” agronomists in Canada, completed 35 4R training sessions in Canada, had 11 “4R Certified” Retail facilities in the Western Lake Erie Basin, and employed 400 “Fertcare accredited” agronomists in Australia.

We also consider external recognition as measures of success. Examples:

(1) Avoiding nitrogen fertilizer application in waterlogged conditions is a climate-smart practice that leading food companies are increasingly incorporating into their value chain. Nutrien is a leader in the development of a Nitrous Oxide Emissions Reduction Protocol (NERP), which defines best practices growers can employ. Government agencies are supportive of NERP. Growers who use these practices can often apply for carbon offsets and participate in carbon markets, since a tonne of GHG emissions reduced on the farm can offset a tonne produced elsewhere. The United Nations Food and Agriculture Organization also officially endorsed the NERP 4R management practices for Climate Smart Agriculture.

(2) Nutrien Ag Solutions was named the 2019 4R Nutrient Stewardship Agri-Retailer in Canada (sponsored by Fertilizer Canada, please see <https://caar.org/the-communicator/april-2019/1012-4r-nutrient-stewardship-agri-retailer-nutrien-ag-solutions>) and was recognized for supporting one of the 2020 4R Advocates with 4R practices (sponsored by The Fertilizer Institute in the US, please see <https://nutrientstewardship.org/advocates/2020-advocates/morgan-obannon-farm/>).

### **Type of engagement**

Collaboration & innovation

### **Details of engagement**

Run a campaign to encourage innovation to reduce climate change impacts

### **% of customers by number**

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

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

We believe it’s critical to minimize the impact our products have on the environment and we work closely with our growers to help them sustainably intensify crop production with investments in digital technology. Our priority is to continually improve upon our environmental performance, and we work with our grower customers regarding GHG emissions resulting from use of our sold products as we estimate this represents more than 50% of our Scope 3 emissions.

Agrible is an integrated platform connecting data, science and predictive analytics. It connects the entire supply chain – starting at the field level with growers and ag retailers, on through to consumer-packaged

goods companies and consumers. Nutrien acquired Agrible in 2018, which not only provides field-level predictive analytics, but it is also fully aligned with the Field to Market® sustainability metrics, enabling farmers to quantify their performance (including GHG emissions) and pursue opportunities for continuous improvement. At the same time, Agrible enhances connectivity, enabling food companies and other value chain partners to benchmark growers and meet their own sustainability goals. It can aggregate and quantify sustainability attributes for the supply chain and support GHG offset protocols or other performance indicators.

We have an opportunity to impact millions of acres in collaboration with strong partners in our value chain. We selected positive return-on-investment solutions for growers that target improved environmental outcomes, and are piloting several projects to prove the concept so that it can be scaled. We use our Agrible software tool to provide growers with field-specific sustainability analytics. The metrics can be anonymized and aggregated for downstream partners (for example, consumer packaged goods companies) who want to measure the environmental impact of agriculture (GHG emissions and more) in their supply chain.

### **Impact of engagement, including measures of success**

Nutrien is piloting proof-of-concept input strategies that increase grower profitability while also improving environmental outcomes. In 2019, Nutrien Ag Solutions had 450,000 acres tracked for sustainability metrics and more than 5,000 acres participating in the three pilot projects. The ultimate measures of success will be customer uptake and ability to scale these projects.

The following pilot projects are underway and include these more immediate measures of success:

- Pilot 1: Corn (Nebraska) – cost neutral solution targeting a 15 percent reduction in emissions by reducing fertilizer use while adding a biocatalyst to achieve a low GHG irrigated food-grade corn. Field to Market® metrics will be used to quantify GHG and water efficiency improvements.
- Pilot 2: Rice (Arkansas) – cost neutral solution targeting a 10 percent reduction in emissions pairing the University of Arkansas N-STaR fertilizer recommendation system with foliar applications of late season plant nutrition.
- Pilot 3: Cotton (Texas) – ROI positive solution targeting a 20 percent reduction in emissions through our Nutriscription program, which uses soil, water, and tissue samples to provide nutrition recommendations throughout the growing season.

## **C12.1d**

### **(C12.1d) Give details of your climate-related engagement strategy with other partners in the value chain.**

Because Nutrien's operations are integrated from mining raw materials for fertilizer production through to selling to growers, we are able to identify and address sustainability issues in a holistic manner. We work with researchers, industry associations, peers, government and others to ensure our products are applied using best management practices to improve performance. We partner with organizations that are science-based, well respected and have a wide reach to create effective stewardship programs.

Nutrien's climate strategy spans our integrated business and utilizes our external reach to reduce agricultural emissions through development of methodologies and collaboration with others. We prioritize the product use stage, where significant GHG reductions can be made, and work to promote and further develop the 4R Nutrient Stewardship System (4Rs). The system helps farmers around the world to meet their economic, social and environmental goals by applying regionally specific best management practices in the areas of nutrient rate, time, place and source. Through the 4Rs, farmers are able to sustainably intensify crop production, increasing yield without bringing more land into agricultural production, while reducing nutrient losses to the environment. The 4Rs support the UN SDGs to enhance food security, improve water quality, enrich soils, increase economic returns for farmers and build communities.

Case Study: Nutrien is a major sponsor of the 4R Solution Project, a collaboration between government, industry and industry associations to advance sustainable agriculture in Sub-Saharan Africa by incorporating the 4Rs into fertilizer management practices for more than 80,000 smallholder farmers (50% women). The program will help smallholder farmers in Ethiopia, Ghana and Senegal grow more nutritious and marketable crops, increase productivity and profit margins, and support improvements in the cooperative business structure. The increased profits can be used to expand farming operations and increase access to education, health care and a more stable and nutritious food supply. We participate in 4R Solution Steering Committee meetings which provide oversight and advise. This project aligns with Nutrien's Sustainability Strategy priorities of sustainable agriculture and diversity and inclusion.

Project description: <https://4rsolution.org/about/>, as follows:

The Challenge: Half a billion people live on small farms, most of which are in Sub-Saharan Africa. These small farms, of which the majority are managed by women, produce 80 per cent of food in developing countries, employ 62 per cent of the population, and generate 27 per cent of GDP. Three key issues faced by smallholder farmers are:

- (1) The limited quality of their production, resulting from depleted soils, unsustainable agricultural practices, especially fertilizer usage;
- (2) Poor post-harvest handling and;
- (3) Limited access to markets.

These challenges are even more intense for women farmers who are further constrained by limited and unreliable access to land, labour, financial services and training opportunities.

The Solution: Addressing these issues will help increase resilience, incomes, and food security, and reduce poverty for men, women and children. Smallholder farmers working through their own co-operatives will grow more, nutritious, and marketable crops, benefiting from better agricultural practices, especially fertilizer usage following 4R Nutrient Stewardship, a science-based fertilizer management program supported by Canada's fertilizer industry.

The Approach: the Co-operative Development Foundation of Canada and Fertilizer Canada will work in partnership with local governments, local non-profit organizations, agricultural input companies, research institutions, and smallholder farmers organized in co-operatives to:

- (1) Enhance sustainable production, using climate smart, best management practices in agriculture and increased value chain access and integration by women and men farmers in the targeted regions in Ethiopia, Ghana and Senegal
- (2) Enhance representation and influence of women in leadership positions & decision-making bodies, especially in co-operatives within targeted communities of Ethiopia, Ghana and Senegal
- (3) Increase integration of gender sensitive 4R principles in relevant standards and policies in Ethiopia, Ghana and Senegal.

Working together, smallholder farmers and agricultural extension workers will benefit from using improved agricultural practices, especially 4R Nutrient Stewardship. Individually, farmers will benefit from increased yields and access to markets while co-operatives will increase their business, production and handling capacity, sustainably consolidating these gains. Government and research institutions will engage in research and exposure programs to increase recognition of the benefits of using 4R globally."

## 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?**

Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
<p><b>Cap and trade</b></p>	<p>Support with minor exceptions</p>	<p>Nutrien has engaged with Alberta Environment on the phasing in of the new Carbon Competitiveness Incentive Regulation (“CCIR”) program over 2018 and 2019, and continued to do so as the Alberta government replaced the CCIR with the "Technology Innovation and Emissions Reduction Regulation" ("TIER") on January 1, 2020. We engage by meeting directly with policy makers, through written requests for submissions from departmental officials, via industry associations as direct representatives in meetings or by providing policy guidance to association representatives.</p>	<p>We constructively engage with governments, either alone or through our industry associations, to help develop solutions to emerging regulatory or legislative issues. In addition to discussions on greenhouse gas regulations, we are actively engaging on discussions around how to sustainably supply the worlds growing food and fiber needs while minimizing environmental impacts on air, water quality and supply. Nutrien and our industry association partners support and promote 4R solutions for growers as a means to reduce GHG emissions and minimizing impacts to the environment.</p> <p>In terms of exceptions, the Government of Canada has signalled a gaseous Clean Fuel Standard, which contains significant uncertainties and could be duplicative to carbon pricing. Nutrien and industry associations are engaged with the federal government to provide feedback and to advise of technical limitations. Previous reservations about a carbon price in the Canadian context surrounded the treatment of process emissions. This has been addressed with the final TIER program in Alberta.</p>
<p><b>Other, please specify Sector-specific performance targets</b></p>	<p>Support with minor exceptions</p>	<p>Nutrien is continuing to take a leadership role in the fertilizer industry’s consultations with governments on fair and equitable product based emission performance standards in an effort to achieve a pragmatic and realistic compliance system that preserves the global competitiveness of the industry. To that end, Nutrien and the Canadian fertilizer industry are currently in discussions with the Government of Canada and relevant provinces on the industry’s GHG reduction target to help meet Canada’s commitment to global climate change objectives. We engage by meeting directly with policy makers, through written requests for submissions from departmental officials, via industry associations as direct representatives in meetings or by providing policy guidance to association representatives.</p>	<p>We constructively engage with governments, either alone or through our industry associations, to help develop solutions to emerging regulatory or legislative issues. In terms of exceptions, the adoption of industrial emission reduction programs in both Alberta and Saskatchewan has generally alleviated concerns surrounding the feasibility of targets that were previously set.</p>

<p><b>Other, please specify clean fuel standard</b></p>	<p>Support with minor exceptions</p>	<p>The Canadian federal government is currently conducting consultations with stakeholders to implement a federal Clean Fuel Standard that will apply to liquid fuels beginning in 2022 and gaseous fuels beginning in 2023. This standard will be designed to incent the development and use of lower carbon fuels. Nutrien is tracking development of the standard and will remain engaged through the consultation process both individually and as members of industry associations.</p>	<p>We constructively engage with governments, either alone or through our industry associations, to help develop solutions to emerging regulatory or legislative issues. The Canadian Government has yet to provide all the details or to begin consultation on the most impactful fuel stream.</p> <p>In terms of exceptions, the Clean Fuel Standard which, in its current proposed form, contains significant uncertainties and could contain penalties duplicative to the carbon price. It is difficult to provide support for this program in its current state, however Nutrien and industry associations are engaged with the government to provide feedback.</p>
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### 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**

Fertilizer Canada

**Is your position on climate change consistent with theirs?**

Consistent

**Please explain the trade association’s position**

Fertilizer Canada is an industry association that represents manufacturers, wholesale and retail distributors of nitrogen, phosphate and potash fertilizers. Fertilizer Canada’s vision is to play a leadership role in the global fertilizer industry in meeting the challenge of feeding the world with safe and nutritious food. Fertilizer Canada mission: As the unified voice of the Canadian fertilizer industry, promote safe, responsible, and sustainable, globally competitive fertilizer production, distribution and use. They strive to fulfil this mission by developing and implementing four key strategic initiatives: Issues and policy development; Knowledge development and education; Product stewardship; and, Industry services.

As per Fertilizer Canada in their July 12, 2018 press release, "Canada has the opportunity to become a world leader in reducing greenhouse gas emissions on-farms by helping growers become climate-smart. As the federal, provincial and territorial Agriculture Ministers are set to meet next week, they have the opportunity to develop a Pan-Canadian framework for the Canadian agriculture sector contributing to the low carbon economy and creating revenue from carbon pricing systems across the country. A national 4R Climate-Smart Protocol, also known as the Nitrous Oxide Emission Reduction Protocol, can achieve this. The 4R Climate-Smart Protocol is an easily adaptable, science-based solution for Canada’s growers to optimize nitrogen management in their cropping systems and quantifiably demonstrate carbon reductions.

Implementing the 4R Climate-Smart Protocol, which incorporates 4R Nutrient Stewardship (Right Source @ Right Rate, Right Time, Right Place®), increases economic performance for growers while reducing the input costs per unit of crop yield produced."

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

Nutrien participates on the Fertilizer Canada board and through various committees in an effort to help gain consensus. We believe that ongoing cooperation, sharing of information and pooling of resources leads to more informed, effective and lasting outcomes. Nutrien works with Fertilizer Canada regarding climate change by promoting the 4R Nutrient Stewardship System with our growers where possible, and further developing it through our active participation in projects such as the 4R Solution in Africa.

**Trade association**

The International Fertilizer Industry Association (IFA)

**Is your position on climate change consistent with theirs?**

Consistent

**Please explain the trade association's position**

The mission of the International Fertilizer Industry Association (IFA) is to act as the voice and the ear of the global fertilizer industry, which provides the crop nutrients that allow farmers everywhere to meet the world's growing food, feed, fibre and bioenergy needs in a sustainable manner. IFA serves its members, policy makers, farmers, the scientific community and the interests of the general public by: actively promoting the efficient and responsible production and use of plant nutrients to maintain and increase agricultural production worldwide in a sustainable manner; contributing to the formation of public policy relevant to crop nutrition and soil fertility management; Improving the operating environment of the fertilizer industry in the spirit of free enterprise and fair trade; collecting, compiling and disseminating statistics and other information relevant to the fertilizer industry; and, providing a platform for the discussion of all aspects of the production, distribution and consumption of fertilizers, their intermediates and raw materials.

As per IFA's website, IFA's position on climate change is that fertilizers play two essential roles in the fight against climate change. First, they forestall deforestation, as they allow for increased productivity on arable land. Second, they increase the carbon sequestration potential of agricultural soils by contributing to their building up of soil organic matter. In order to maximize carbon sequestration in soil organic matter, the fertilizer industry advocates for the integrated use of available plant nutrients (organic and inorganic) to improve crop and biomass production. Site-specific nutrient management practices optimize product efficacy and minimize nutrient losses to the environment. The 4Rs Principles are the core of these best management practices. When considering GHG emissions from fertilizer use, the focus should be on relative emissions of agricultural crops grown with the assistance of fertilizers. Zero losses are not an achievable goal given that we are dealing with natural biological processes. Whereas GHGs are emitted during fertilizer production and application, much greater GHG savings are made as a result of enhanced crop productivity through the use of fertilizers. The industry is also committed to reducing its production-related GHG emissions.

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

Nutrien participates in the IFA board and through various committees in an effort to help gain consensus. We believe that ongoing cooperation, sharing of information and pooling of resources leads to more informed, effective and lasting outcomes. Nutrien also works with IFA regarding climate change by promoting the 4R Nutrient Stewardship System with our growers where possible and participating in their benchmarking surveys.

### Trade association

The Fertilizer Institute (TFI)

### Is your position on climate change consistent with theirs?

Consistent

### Please explain the trade association's position

TFI is the leading voice in the fertilizer industry in the United States, representing the public policy, communication and statistical needs of producers, manufacturers, retailers and transporters of fertilizer. Issues of interest to TFI members include security, international trade, energy, transportation, the environment, worker health and safety, farm bill and conservation programs to promote the use of enhanced efficiency fertilizer. TFI's mission is to represent, promote and protect the fertilizer industry. To accomplish its mission, TFI has established the following strategic initiatives:

- To represent, promote and protect a sound fertilizer industry through legislative and regulatory activities at the federal, state and local level.
- To effectively address issues impacting TFI member companies.
- To promote a favorable public image of the fertilizer industry and agriculture.
- To share knowledge about the fertilizer industry with members, government and the agriculture industry on issues relating to fertilizer and the farm economy.

As per TFI's website, "TFI supports climate policies that preserve the competitiveness of U.S. fertilizer manufacturers in the world market. Natural gas plays a critical role in the production of fertilizers. It is the basic building block for nitrogen fertilizers—used to produce the primary ingredient of ammonia.

...

The modern method of producing nitrogen (the Haber-Bosch process) is fast approaching the limit of minimum energy consumption or the scientific end point of energy efficiency. Also, the greenhouse gas emissions from ammonia production are recycled by the fertilizer industry in urea production, beverages production and for use in enhanced oil recovery.

Furthermore, process gas emissions should be exempted from any future greenhouse gas reduction framework. The irreducible nature of emissions from the fertilizer manufacturing process must be considered in any climate change policy.

As energy consumers and producers of products that are essential to the nation's food production system, TFI believes an "all of the above" strategy would go far to help create a level playing field for all sources of energy and further encourage more efficiencies."

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

Nutrien participates on the TFI board and through various committees in an effort to help gain consensus. We believe that ongoing cooperation, sharing of information and pooling of resources leads to more informed, effective and lasting outcomes. Nutrien has representation and significant responsibility on many TFI Committees. We also participate in and contribute information to TFI's annual State of the Industry report, which is used to support and promote the fertilizer industry.

## 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?

Climate change is a global challenge requiring global solutions. We are working internally, with government and with partners to lower greenhouse gas emissions across the full lifecycle of our products, from

manufacturing to field use. These efforts are managed and aligned between Nutrien's corporate strategy and our new sustainability strategy, a key component of which is our climate strategy (under development) by our Executive Vice President of Stakeholder Relations & Chief Sustainability Officer. Nutrien has a Government & Industry Affairs group that manages all direct and indirect activities that influence government policy. This group reports to, and all of their activities have oversight by, our Executive Vice President of Stakeholder Relations & Chief Sustainability Officer. We actively participate in industry efforts to address the challenges of climate change and we engage with policy makers and stakeholders on these issues. Our action to manage climate change risks and opportunities benefits the environment, our industry and customers, and the long term profitability of our company. Nutrien participates in a wide array of organizations like the Sustainable Development Solutions Network, World Business Council for Sustainable Development, United Nations Global Compact, Field to Market, retail associations and other groups in which our employees participate. We also work with other like-minded stakeholders to form new entities, such as Ag for Life, to effect change. This widespread involvement contributes to a synergistic network of opportunities and more far-reaching awareness about the importance of agricultural issues, including climate change. These connections mobilize and motivate action at multiple levels, which is necessary to advance sustainability effectively.

## 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).**

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### Publication

In voluntary sustainability report

### Status

Complete

### Attach the document

 Nutrien 2020 ESG Report\_0.pdf

### Page/Section reference

2020 ESG Report, please see pages 12-21, 24-27, 45-46, 54-56 and 64

### Content elements

Governance  
Strategy  
Risks & opportunities  
Emissions figures  
Other metrics

### Comment

other metrics include energy use and water metrics

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### Publication

In mainstream reports

### Status

Complete

**Attach the document**

 Nutrien\_2019\_Annual\_Report\_Enhanced.pdf

**Page/Section reference**

2019 Annual Report, please see pages 15, 57-60

**Content elements**

Strategy  
Risks & opportunities

**Comment**

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**Publication**

In mainstream reports

**Status**

Complete

**Attach the document**

 2019\_Nutrien\_Annual\_Information\_Form.pdf

**Page/Section reference**

2019 Annual Information Form, please see pages 18-20, 23-28

**Content elements**

Risks & opportunities

**Comment**

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**Publication**

In mainstream reports

**Status**

Complete

**Attach the document**

 2020 Nutrien Proxy Circular.pdf

**Page/Section reference**

2020 Proxy Circular, please see page 31-32

**Content elements**

Governance



**Comment**

see also Safety, Health, Environment + Security Committee Charter (includes climate change, as part of sustainability): <https://www.nutrien.com/sites/default/files/uploads/2020-03/SHE%2BS%20Committee%20Charter.pdf>

## C15. Signoff

### C-FI

**(C-FI) 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.**

Climate change is the top ESG risk identified by Nutrien’s investors and other stakeholders. We have a significant role to play in helping farmers mitigate and adapt to the changing climate as well as increasing efficiency and reducing emissions from our operations. Fertilizer production and use have complex and conflicting impacts on GHG emissions along our value chain. Fertilizer use, especially nitrogen, generates GHG emissions. However, nitrogen is critical for healthy crops, soil organic carbon and increasing yields. Our approach will span Nutrien’s integrated business and utilize our strong connections with growers to create meaningful reductions in GHG emissions through effective nutrient management and carbon sequestration at the field and farm level. We intend to reduce the direct GHG emissions from our manufacturing facilities and the indirect emissions from purchased energy, such as steam and electricity, through GHG reduction and efficiency projects. We expect to disclose our climate strategy and targeted reductions within the next year. We are aligning our reporting with the Sustainability Accounting Standards Board (SASB) standards and the Task Force on Climate-Related Financial Disclosures (TCFD) recommendations. In 2019, we engaged KPMG to provide limited assurance of our 2018 baseline 2 Scope 1 and 2 GHG emissions, which improved information-gathering processes in order to support reduction initiatives and future target setting. We are currently in the process of performing scope 3 pre-assurance with third party support.

### C15.1

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

	Job title	Corresponding job category
Row 1	Vice President, Sustainability and Stakeholder Relations	Other, please specify Senior Leadership

## 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 to	Public or Non-Public Submission
I am submitting my response		Public