

## C0. Introduction

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### C0.1

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

The Mosaic Company is the world's leading producer and marketer of concentrated potash and phosphate crop nutrients. Our mission is to help the world grow the food it needs. The combination of our substantial company-owned mineral reserves, our production capacity, geographic locations and worldwide supply chain and distribution network differentiates Mosaic from other crop nutrient companies. Net sales for calendar year 2017 were approximately \$7.4 billion, representing sales of approximately 22 million tonnes of finished product. Our business engages in every phase of crop nutrition development, from the mining of resources to the production of crop nutrients, feed and industrial products for customers around the globe. Our customer base includes wholesalers, retail dealers and individual growers in approximately 40 countries.

At Mosaic, we think of sustainability broadly: as the ability to sustain our business, to prosper and deliver value to our myriad stakeholders over many years. Our sustainability targets, progress toward which we report annually, allow us to stretch for meaningful long-term improvements in the areas that are most important to our business. We have developed and use expanded metrics to track our performance in freshwater and energy use, and greenhouse gas emissions.

Mosaic's Leadership on Climate Change acknowledges that global climate change creates uncertainty for our business and poses challenges for the health and well-being of the world's populations – ecologically, socially and economically. Mosaic remains a signatory to the United Nations Global Compact and we support its ten universal principles including human rights, labor, environment and anticorruption. In 2017, Mosaic was recognized in Corporate Responsibility Magazine's 100 Best Corporate Citizens List for the eighth consecutive year.

### C0.2

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**(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
Row 1	January 1 2017	December 31 2017	No	<Not Applicable>
Row 2	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Row 3	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Row 4	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>

### C0.3

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

- Brazil
- Canada
- Paraguay
- United States of America

C0.4

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

USD

C0.5

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**(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 consolidation approach to your Scope 1 and Scope 2 greenhouse gas inventory.**

Operational control

C-CH0.7

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

Row 1

**Bulk organic chemicals**

Please select

**Bulk inorganic chemicals**

Ammonia

Fertilizers

**Other chemicals**

Please select

C1. Governance

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C1.1

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

Yes

C1.1a

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**(C1.1a) Identify the position(s) of the individual(s) on the board with responsibility for climate-related issues.**

Position of individual(s)	Please explain
Board/Executive board	The Environmental Health, Safety, and Sustainable Development Committee (EHSS Committee) of the Mosaic Board of Directors provides oversight of our environmental, health, safety and sustainable development (EHSS) strategic vision and performance, including the safety and health of employees and contractors; environmental performance; the systems and processes designed to manage EHSS risks, commitments, public responsibilities and compliance; relationships with and impact on communities with respect to EHSS matters; public policy and advocacy strategies related to EHSS issues; and achieving societal support of major projects. Climate-related issues are Mosaic's EHSS committee's responsibility because the subject matter is most closely aligned with this committee's expertise. Other committees of the Board may from time to time have input on climate-related issues.
Chief Executive Officer (CEO)	The Senior Leadership Team (SLT) consisting as of December 31, 2017 of the CEO, SVP and CFO, SVP - Phosphate, SVP - Potash, SVP and General Counsel, SVP - Commercial and SVP - HR, review the EHSS Committee's recommendations in order to develop new companywide policies, initiatives, targets and goals.

## 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
Scheduled – all meetings	Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding business plans Setting performance objectives Monitoring implementation and performance of objectives Overseeing major capital expenditures, acquisitions and divestitures	Mosaic's EHSS Committee receives updates about Mosaic's performance toward climate-related targets (GHGs and energy) at regularly scheduled quarterly meetings. The Committee is also regularly kept apprised of regulatory developments pertaining to the implementation of a carbon tax that could impact our Saskatchewan, Canada facilities.

## C1.2

**(C1.2) Below board-level, provide the highest-level management 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
Other C-Suite Officer, please specify (VP EHS; VP Corp. Public Affairs)	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly

## C1.2a

**(C1.2a) Describe where in the organizational structure this/these position(s) and/or committees lie, what their associated responsibilities are, and how climate-related issues are monitored.**

Mosaic's Vice President of Environment, Health and Safety (VP EHS), a role that reports directly to Mosaic's Sr. VP Phosphates, manages Mosaic's EHS strategy and development, including the company's performance toward climate-related sustainability targets (GHGs and energy). While climate-related responsibilities are shared by many at Mosaic, the VP EHS role has purview of these issues due to the interplay between companywide EHS performance and our progress toward our climate-related sustainability targets. The VP EHS also participates in a cross-functional working group that is responsible for managing and monitoring the status of a potential carbon tax that could impact our Saskatchewan, Canada facilities. The VP EHS communicates directly with Mosaic's EHSS Committee of the Board of Directors, providing quarterly updates on Mosaic's performance toward sustainability targets and regulatory developments pertaining to the implementation of the carbon tax in Saskatchewan. Mosaic's VP Corporate Public Affairs, a role that reports directly to our CEO, manages Mosaic's companywide sustainability strategy and development, including the implementation and monitoring of sustainability targets (GHGs and energy).

## C1.3

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

Yes

**C1.3a**

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**(C1.3a) Provide further details on the incentives provided for the management of climate-related issues.**

**Who is entitled to benefit from these incentives?**

Corporate executive team

**Types of incentives**

Monetary reward

**Activity incentivized**

Emissions reduction project

**Comment**

Performance measures for members of Mosaic's executive and management teams and all salaried employees are based on financial and operational performance, including operating earnings, operating costs per tonne, incentive selling, general and administrative expenses and safety. Climate change is indirectly linked to compensation through operating cost savings that are achieved through site-specific initiatives and companywide programs aimed at reducing energy use and emissions.

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**Who is entitled to benefit from these incentives?**

Management group

**Types of incentives**

Monetary reward

**Activity incentivized**

Energy reduction project

**Comment**

As part of our strategic priority of developing, engaging and empowering our people, we have a performance management process called EDGE – Evaluating, Developing and Growing Excellence. Our performance management process has evolved to include scaled competencies, goal alignment and an emphasis on employee and career development. Management and employees at various levels can establish individual goals, including achievement of or progress towards energy reduction projects and/or targets, results of which are linked to their respective annual incentives.

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**C2. Risks and opportunities**

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**C2.1**

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**(C2.1) Describe what your organization considers to be short-, medium- and long-term horizons.**

	From (years)	To (years)	Comment
Short-term	0	4	The short-term time horizon is generally aligned with Mosaic's general strategic planning horizons. Specifically, the five-year planning process is considered "medium-term" so the time period less than five years is considered "short-term."
Medium-term	5	9	The medium-term time horizon is generally aligned with Mosaic's general strategic planning horizons. Specifically, the company's five-year planning process is considered "medium-term."
Long-term	10	20	The long-term time horizon is generally aligned with Mosaic's general strategic planning horizons. Specifically, the company's five-year planning process is considered "medium-term" so the horizon beyond that, including the company's 2030 vision, is considered "long-term."

## C2.2

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**(C2.2) Select the option that best describes how your organization's processes for identifying, assessing, and managing climate-related issues are integrated into your overall risk management.**

Integrated into multi-disciplinary company-wide risk identification, assessment, and management processes

## C2.2a

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**(C2.2a) Select the options that best describe your organization's frequency and time horizon for identifying and assessing climate-related risks.**

	Frequency of monitoring	How far into the future are risks considered?	Comment
Row 1	Six-monthly or more frequently	>6 years	Mosaic's mission is to help the world grow the food it needs. As a company with operations and customers and farmers located throughout the world, we assess climate change risks and opportunities globally. Climate, including climate changes, and associated risks and opportunities are monitored regularly and the results are reported to the Board, the SLT and the EHSS Committee, and periodically to additional stakeholders through our annual sustainability disclosure. Climate change risks that could impact our business are reported on our Annual Report on Form 10-K and quarterly 10-Q reports. Mosaic considers risks and opportunities well into the future and understands that many of the impacts of climate change on our operations and those affecting our customers are uncertain.

## C2.2b

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**(C2.2b) Provide further details on your organization's process(es) for identifying and assessing climate-related risks.**

Mosaic's mission is to help the world grow the food it needs. As a company with operations, customers and farmers located throughout the world, we assess climate change risks and opportunities globally. Climate, including climate changes, and associated risks and opportunities are monitored regularly by teams at Mosaic including EHS, public affairs, enterprise risk management and market analysis, and the results are reported to the Board, the SLT and the EHSS Committee of the Board of Directors, and periodically to additional stakeholders through our annual sustainability disclosure. Mosaic considers risks and opportunities well into the future and understands that many of the impacts of climate change on our operations and those affecting our customers are uncertain. We define "substantive impact" as an impact, financial or non-financial, that could hinder our ability to achieve our strategy, or one that threatens Mosaic's ability to sustain our business.

## C2.2c

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**(C2.2c) Which of the following risk types are considered in your organization's climate-related risk assessments?**

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	Legal requirements and environmental regulations (driven by climate change) that Mosaic is subject to could adversely affect our business, financial condition and results of operations, and the results could be material to us. Accordingly, current regulation risks are relevant to Mosaic's ongoing risk assessment process and are always included in Mosaic's broad consideration and analysis of climate-related risks. For example, future changes to air quality standards required us to start replacing catalysts at some of our Florida concentrates facilities in order to achieve compliance on time. We monitor the risk of regulatory changes like these in an effort to strive toward compliance with requirements and standards.
Emerging regulation	Relevant, always included	Emerging climate regulations are relevant to Mosaic's ongoing risk assessment process and are always included in Mosaic's broad consideration and analysis of climate-related risks. For example, we are currently assessing potential environmental regulation (carbon tax) that could impact our Saskatchewan, Canada potash facilities. A cross-functional team is currently working with the Saskatchewan Ministry of Environment, Climate Change Canada and other government stakeholders to determine next steps for establishing a regulatory and policy framework.
Technology	Relevant, always included	Because regulatory changes could require operational changes and installation of new technology, including burner replacements and additional heat recovery systems, this risk is relevant to us and are included in our consideration of climate-related risks.
Legal	Relevant, always included	Legal requirements and environmental regulations (driven by climate change) that Mosaic is subject to could adversely affect our business, financial condition and results of operations, and the results could be material to us. Accordingly, these risks are relevant to Mosaic's ongoing risk assessment process and are always included in Mosaic's broad consideration and analysis of climate-related risks.
Market	Relevant, always included	Market risks are relevant to Mosaic's ongoing risk assessment process and they are always included in Mosaic's broad consideration and analysis of climate-related risks. Mosaic's market analysis team monitors climate and growing regions, forecasting for climate-related events like droughts and floods, to determine their potential impact on the markets and Mosaic's financial performance. For example, a widespread flood might impact agricultural commodity markets, which could in turn have an effect on Mosaic's annual sales.
Reputation	Relevant, always included	Reputational risks are relevant to Mosaic's ongoing risk assessment process and they are included in Mosaic's broad consideration and analysis of climate-related risks. For example, negative public perceptions of Mosaic or the fertilizer industry that are a result of climate-related issues could potentially lead to reduced demand for goods, reduced revenue, or could negatively impact our profit.
Acute physical	Relevant, always included	Acute physical risks are relevant to Mosaic's ongoing risk assessment process, and they are always included in Mosaic's broad consideration and analysis of climate-related risks. Mosaic's market analysis team monitors climate and growing regions, forecasting for climate-related events like droughts and floods, to determine their potential impact on the markets and Mosaic's business performance. Our engineering, EHS and operations teams also regularly monitor acute physical risks. For example, our Phosphates facilities have a rainfall preparedness plan that forecasts how each of our concentrates facilities will perform with 30-percent above-normal rainfall rates. The plan, updated annually prior to the start of peak rainfall season, models the impact of above-average rainfall on a site's storage capacity and defines a contingency plan and necessary actions to mitigate potential risks.
Chronic physical	Relevant, always included	Chronic physical risks are relevant to Mosaic's ongoing risk assessment process and they are always included in Mosaic's broad consideration and analysis of climate-related risk. For example, Mosaic has approximately \$7 billion in assets in hurricane-prone areas. We do annual property risk engineering assessments to identify and mitigate risk of loss associated with weather-related property damage and/or business interruption.
Upstream	Relevant, sometimes included	Upstream risks are relevant to Mosaic's ongoing risk assessment process and they are sometimes included in Mosaic's broad consideration and analysis of climate-related risks. For example, we rely on raw material inputs for our manufacturing process. Interference of our supply of those goods due to climate-related weather events could result in business interruption or reduced operational output.
Downstream	Relevant, sometimes included	Downstream risks are relevant to Mosaic's ongoing risk assessment process and they are sometimes included in Mosaic's broad consideration and analysis of climate-related risks. We consider potential downstream risks, like the risk of temperature volatility adversely impacting Mosaic's customers' ability to grow crops in certain areas around the world.

**C2.2d**

**(C2.2d) Describe your process(es) for managing climate-related risks and opportunities.**

On a company level, Mosaic's EHSS Committee reviews and discusses policies regarding risk assessment and management, including sustainability issues and climate change, with management and an internal auditor. It is the responsibility of management to assess and manage the Company's exposure to risk and the EHSS Committee discusses and reviews guidelines and policies that govern the process. Discussion topics may include financial risk exposures and the steps management has taken to monitor and control such exposures. Mosaic's SLT addresses environmental risks and opportunities while defining priorities, needs and performance gaps across the company, which are presented to the Board and EHSS Committee regularly throughout the year. Mosaic's Enterprise Risk Management (ERM) Committee, consisting of a cross-functional team of senior leaders, meets biannually and assists in achieving business objectives through a systematic approach to anticipate, analyze and review material risks. Finally, Mosaic's EHS and Public Affairs professionals interact with policy makers and global thought leaders to encourage the transfer of knowledge and to bring the latest thinking on climate and sustainability into the Mosaic risk management process. At a facility level, Mosaic has an EHS Management system through which it sets EHS procedures and protocols for preventing, identifying and communicating risks. Our business segments are responsible for implementing day-to-day elements of our EHS program, assisted by an integrated staff of EHS professionals. We conduct audits to verify that each facility has identified risks, achieved regulatory compliance, implemented continuous EHS improvement and incorporated EHS management systems into day-to-day functions. We assess EHS risks with a "risk register" process that allows for the systematic identification, evaluation and ranking of EHS risks. Our Insurance & Risk Management department works with property insurance carriers to regularly conduct risk assessments to identify risks and make recommendations for mitigating the risk of loss associated with property damage and/or business interruption.

Priorities are set and decisions are made based on the assessment of the significance of the risk or opportunity, including the potential impact of the risk or opportunity as well as the probability of the risk or opportunity occurring.

As an example of a transition risk to which this process has been applied, a cross-functional team is assessing risk associated with the potential implementation of a carbon tax that could affect our potash facilities in Saskatchewan, Canada. In addition to working with the provincial and federal government to determine next steps for establishing a regulatory and policy framework, we are assessing various scenarios under consideration and evaluating strategies that could help us reduce emissions. An opportunity we have applied this process to relates to our generation of virtually GHG-free cogenerated energy, which provides benefits to Mosaic in the form of cost savings and environmental performance improvements. Since 2015 we have prioritized opportunities to complete numerous cogeneration projects that improve the efficiency and output of our cogeneration assets, like installing a new turbine generator and adding a power line to increase our generation and internal use of cogenerated power. We manage opportunities like these by analyzing costs against potential benefits to our company, like cost savings, favorable reputation impacts, and efficiency or performance improvements.

As an example of a physical risk to which this process has been applied, Mosaic conducts annual property risk engineering assessments to identify risk exposures due to effects from extreme weather events, like wind, flood and storm surge. Those assessments result in recommendations for actions to mitigate risks, which are prioritized based on criteria such as cost, likelihood of occurring and extent and type of impact. The types of actions that results from these assessments include improving existing flood and emergency response plans, replacing or redesigning roof structures to meet or exceed wind uplift requirements, and making enhancements to structures.

**C2.3**

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**(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**

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**(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

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**Risk type**

Transition risk

**Primary climate-related risk driver**

Policy and legal: Increased pricing of GHG emissions

**Type of financial impact driver**

Policy and legal: Increased operating costs (e.g., higher compliance costs, increased insurance premiums)

**Company- specific description**

Various governmental initiatives to limit greenhouse gas emissions are under way or under consideration around the world. These initiatives could restrict Mosaic's operating activities, require us to make changes in our operating activities that would increase our operating costs, reduce our efficiency or limit our output, require us to make capital improvements to our facilities, increase our energy, raw material and transportation costs or limit their availability, or otherwise adversely affect our results of operations, liquidity or capital resources, and these effects could be material to us. Our Canadian potash mines, located in the Province of Saskatchewan, could be subject to federal or provincial regulation that assigns a comprehensive tax on carbon emissions.

**Time horizon**

Short-term

**Likelihood**

About as likely as not

**Magnitude of impact**

Medium

**Potential financial impact**

10000000

**Explanation of financial impact**

One of the regulations under consideration, proposed by the Canadian Federal Government, applies a starting tax of \$10 per unit of CO<sub>2</sub>e generated above a specific threshold increasing to \$50 per unit by 2022. Assuming a tax of \$10 per unit of CO<sub>2</sub>e, the annual cost to Mosaic could be over \$10 million. Note: This impact represents an estimate only, and is a simplification of one scenario under consideration at the time of our completing this report.

**Management method**

Our Saskatchewan Potash facilities will continue to work with the Saskatchewan Ministry of Environment and Environment and Climate Change Canada, through participation in industry associations, to determine next steps. We will also continue to monitor developments relating to the anticipated proposed legislation, as well as the potential future effect on our operating activities, energy, raw material and transportation costs, results of operations, liquidity or capital resources. Mosaic proactively emphasizes energy efficiency in our operations as one way to manage and/or mitigate the potential risks of regulatory changes that are driven by climate change. Mosaic's three-pronged approach of energy management through cogeneration, conservation and greater efficiency aims to lead the industry in reducing the energy we use and maximizing the clean energy we generate. As a specific example of our management efforts, in 2017, Mosaic installed a solar array at our Carlsbad facility that powers the site's administration building, thereby improving the facility's energy efficiency and offsetting the amount of fossil fuel-based power that Mosaic would have otherwise had to purchase from the local grid.

**Cost of management**

150000

**Comment**

The solar installation project referenced above cost approximately \$150,000. There are other projects and approaches under consideration, costs for which vary drastically.

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**Identifier**

Risk 2

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

Direct operations

**Risk type**

Transition risk

**Primary climate-related risk driver**

Technology: Unsuccessful investment in new technologies

**Type of financial impact driver**

Technology: Costs to adopt/deploy new practices and processes

### Company- specific description

Environmental regulations (driven by climate change) that Mosaic is subject to could adversely affect our business, financial condition and results of operations, and the results could be material to us. There are various initiatives under consideration in the United States, Canada and internationally that, if adopted, could adversely affect our operating activities, energy, raw material and transportation costs, results of operations, liquidity or capital resources, and these effects could be material to us. For example, we have facilities in Saskatchewan, Canada that could be affected by Canada's intended NDC, which aims to achieve, by 2030, an economy-wide target of reducing GHG emissions by 30% below 2005 levels. We are monitoring developments relating to the anticipated proposed legislation, as well as the potential future effect on our operating activities, energy, raw material and transportation costs, results of operations, liquidity or capital resources.

### Time horizon

Long-term

### Likelihood

About as likely as not

### Magnitude of impact

Medium

### Potential financial impact

10000000

### Explanation of financial impact

One of the regulations under consideration, proposed by the Canadian Federal Government, applies a starting tax of \$10 per unit of CO<sub>2</sub>e generated above a specific threshold increasing to \$50 per unit by 2022. Assuming a tax of \$10 per unit of CO<sub>2</sub>e, the annual cost to Mosaic could be over \$10 million. Note: This impact represents an estimate only, and is a simplification of one scenario under consideration at the time of our completing this report. Any agreement, regulation or program that limits or taxes direct and indirect GHG emissions from our facilities could increase operating costs directly and through suppliers. In the United States, hypothetical regulatory changes that required installation of technology such as burner replacements or additional heat recovery systems and related equipment could cost Mosaic more than \$100 million.

### Management method

Mosaic proactively emphasizes energy efficiency in our operations as one way to manage and/or mitigate the potential risks of regulatory changes that are driven by climate change. Mosaic's three-pronged approach of energy management through cogeneration, conservation and greater efficiency aims to lead the industry in reducing the energy we use and maximizing the clean energy we generate. As a specific example of our management efforts, in 2017, Mosaic installed a solar array at our Carlsbad facility that powers the site's administration building, thereby improving the facility's energy efficiency and offsetting the amount of fossil fuel-based power that Mosaic would have otherwise had to purchase from the local grid.

### Cost of management

150000

### Comment

The solar installation project referenced above cost approximately \$150,000. There are other projects and approaches under consideration, costs for which vary drastically.

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### Identifier

Risk 3

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

Direct operations

### Risk type

Physical risk

### Primary climate-related risk driver

Acute: Increased severity of extreme weather events such as cyclones and floods

### Type of financial impact driver

Increased capital costs (e.g., damage to facilities)

### Company- specific description

Mosaic has approximately \$7 billion in assets in hurricane-prone areas. Mosaic's insurance deductible for a covered wind event is, at a minimum, \$25 million per occurrence. Although our containments are built to withstand storms, additional sustained hurricane activity could force a change in design standards for buildings, equipment or containments. This could result in increased capital costs or costs per tonne of product.

### Time horizon

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Current

**Likelihood**

About as likely as not

**Magnitude of impact**

Medium

**Potential financial impact**

25000000

**Explanation of financial impact**

Mosaic's insurance deductible for a covered wind event is, at a minimum, \$25 million per occurrence. Although our containments are built to withstand storms, additional sustained hurricane activity could force a change in design standards for buildings, equipment or containments. This could result in increased capital costs or costs per tonne of product. In the event of widespread damage, we may face costs up to or exceeding our insurance deductible of \$25 million.

**Management method**

We manage these potential climate change risks by focusing on hurricane preparedness at all facilities that are within the zone of risk. Each site's preparation process includes the establishment of procedures and guidelines for the direction, control, and coordination for securing, shutdown, safe evacuation (if required), and the orderly restoration of plant operations in the event of a storm. These procedures and guidelines were used in 2017 in the days leading up to, during and following Hurricane Irma. We also conduct property risk engineering assessments on an ongoing basis to address risk identifying and mitigating risks associated with property damage and business interruption. The types of actions that results from these assessments include improving existing flood and emergency response plans, replacing or redesigning roof structures to meet or exceed wind uplift requirements, and making enhancements to structures.

**Cost of management**

150000

**Comment**

The approximate cost of installing fasteners to secure roof panels as a way to reduce and/or avoid damage from hurricanes is 150,000.

**Identifier**

Risk 4

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

Direct operations

**Risk type**

Physical risk

**Primary climate-related risk driver**

Chronic: Changes in precipitation patterns and extreme variability in weather patterns

**Type of financial impact driver**

Increased operating costs (e.g., inadequate water supply for hydroelectric plants or to cool nuclear and fossil fuel plants)

**Company- specific description**

Changes in precipitation resulting in droughts or water shortages at our mines in Florida or Saskatchewan where we manage large volumes of water in our daily operations could restrict our operating activities, require us to make changes in our operating activities that would increase our operating costs, reduce our efficiency or limit our output.

**Time horizon**

Medium-term

**Likelihood**

Unlikely

**Magnitude of impact**

Medium

**Potential financial impact**

74000000

**Explanation of financial impact**

Mosaic's 2017 net sales totaled approximately \$7.4 billion. A theoretical decrease in production output that resulted in 1% lower sales companywide could translate to approximately \$74 million less revenue based on 2017 performance.

**Management method**

We are committed to responsible water use. We manage these potential climate change risks by recycling high percentages of the water used in our Phosphates and Potash businesses and by exploring the use of alternative water sources like reclaimed water, where possible. Mosaic reuses or recycles water used in our Florida phosphates manufacturing facilities and Canadian potash facilities. As part of their larger water conservation efforts, the Bartow facility uses reverse osmosis to produce approximately 200 gallons per minute of treated water back for use at the facility's sulfuric acid plant, thereby reducing freshwater needs by the same amount.

**Cost of management**

8000000

**Comment**

It cost approximately \$8.2 million to run the reverse osmosis plant at our Bartow facility in 2017. Savings from reduced reagent use for that period were approximately \$500,000.

**Identifier**

Risk 5

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

Direct operations

**Risk type**

Physical risk

**Primary climate-related risk driver**

Acute: Increased severity of extreme weather events such as cyclones and floods

**Type of financial impact driver**

Reduced revenue from decreased production capacity (e.g., transport difficulties, supply chain interruptions)

**Company- specific description**

Potential climate change risks that contribute to adverse weather conditions, including the impact of potential hurricanes, floods and and excess rainfall could cause a loss of Mosaic's production and/or an increase in operating costs due to disruptions in our supply chain.

**Time horizon**

Short-term

**Likelihood**

About as likely as not

**Magnitude of impact**

Medium

**Potential financial impact**

5000000

**Explanation of financial impact**

Based on average production levels, if the Faustina, Louisiana plant were shut down for a week and production could not be diverted to another facility, quantifiable business interruption costs could be greater than \$5 million.

**Management method**

We manage these potential climate change risks by engaging Mosaic's team of Supply Chain professionals to closely monitor product supply and demand and any weather conditions or seasonal patterns/risks (potentially climate change related) that could interfere with products reaching our customers. We also conduct property risk engineering assessments on an ongoing basis to address risk identifying and mitigating risks associated with property damage and business interruption. The types of actions that results from these assessments include improving existing flood and emergency response plans, replacing or redesigning roof structures to meet or exceed wind uplift requirements, and making enhancements to structures.

**Cost of management**

375000

**Comment**

Drought or flood conditions may require us to implement certain solutions to ensure we maintain acceptable inventory levels and meet customer demand. Mosaic may send product early, in anticipation of possible suspension of river traffic later in the season. This scenario could result in increased inventory storage expenses of \$250 per day per barge. As a theoretical example, if we send 50 barges for one month (30 days) additional costs would be approximately \$375,000. As another example, the approximate cost of installing fasteners to secure roof panels as a way to reduce and/or avoid damage and business interruption from hurricanes is

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## C2.4

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**(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

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

**Identifier**

Opp1

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

Direct operations

**Opportunity type**

Energy source

**Primary climate-related opportunity driver**

Use of supportive policy incentives

**Type of financial impact driver**

Returns on investment in low-emission technology

**Company- specific description**

Various proposed legislation in the US promoting and incentivizing renewable energy production (potentially reduced greenhouse gas emissions) could provide Mosaic tax incentives and/or fairer pricing for surplus electricity that Mosaic supplies to local utility grids. As an example, Mosaic would benefit from tax incentives and/or fairer pricing for surplus electricity that Mosaic supplied in 2017, specifically in Florida, where we provided nearly 200,000 MWh to the local grid.

**Time horizon**

Short-term

**Likelihood**

Unlikely

**Magnitude of impact**

Medium

**Potential financial impact**

10000000

**Explanation of financial impact**

In 2017, Mosaic produced approximately 1.9 million MWh of electrical energy from cogeneration in our Phosphates business unit, and sent approximately 200,000 MWh to the local grid. In this business unit alone, the potential positive impacts (tax incentives and/or fairer pricing) of energy legislation could be upwards of \$10 million.

**Strategy to realize opportunity**

In order to manage this opportunity, Mosaic has been actively involved in dialogues at the legislative and executive branch levels. We strongly support the enactment of a reasonable state energy policy in Florida, in which cost effective and abundant sources of renewable energy are encouraged and incentivized to diversify the state's generation portfolio, while also advocating that ratepayer impacts be closely watched and minimized to avoid harm to Florida's residents and businesses. We have engaged on myriad issues in the energy arena, from fairer pricing for the power we export to the utility grid, to tax credits and incentives to encourage the production of clean power. Mosaic continuously looks for opportunities to improve the efficiency and expand the output of our cogeneration assets. As a specific example of our management efforts, in 2016, Mosaic brought another turbo generator online at our Uncle Sam facility that is expected to provide an additional 15 megawatts of low-GHG electrical generation capacity. This initiative cost approximately \$21 million. A power line connecting our South Pierce and South Pasture facilities, installed in 2016 at a price of \$14 million, has allowed Mosaic to increase its internal use of cogenerated power. In 2017 we produced 1.9 million MWh

cogen, approximately 88% of which we consumed internally.

**Cost to realize opportunity**

14000000

**Comment**

The cost of engaging policymakers is not available as a separate line item. The investment in cogeneration examples cited above were in the range of \$14-21 million.

---

**Identifier**

Opp2

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

Direct operations

**Opportunity type**

Markets

**Primary climate-related opportunity driver**

Access to new markets

**Type of financial impact driver**

Increased revenues through access to new and emerging markets (e.g., partnerships with governments, development banks)

**Company- specific description**

Considering that the world will have to feed nine billion people by 2050, it is easy to see the importance of properly used mineral fertilizers in reducing future greenhouse gas emissions and preventing deforestation. Mosaic is one of the world's leading producers and marketers of concentrated phosphate and potash. As the number of people to feed in the world increases, Mosaic has an opportunity in the form of increased demand for existing products and services like our premium product line, MicroEssentials®

**Time horizon**

Long-term

**Likelihood**

About as likely as not

**Magnitude of impact**

Medium-high

**Potential financial impact**

60000000

**Explanation of financial impact**

If international pressure on regulation to improve fertilizer yields occurred, then Mosaic's production of MicroEssentials® as a percentage of total production may be further improved. Mosaic can potentially command a premium price and higher margins for our higher-yield products, potentially resulting in an overall increase of our gross margin as a percent of net sales. Therefore, this change in production percentage for higher-yield products like MicroEssentials® could have a positive effect on our operating results and financial condition. A hypothetical 2% increase in gross margin as a percentage of Phosphates Business Segment net sales, based on 2017 performance, would equate to approximately \$63 million.

**Strategy to realize opportunity**

In order to manage this opportunity, Mosaic has established relationships with key universities around the globe to develop and test high-yield premium products, like MicroEssentials®. In 2017, Mosaic invested more than \$900,000 in a university-based Fertilizer Technology and Research Centre. To further respond to and manage this risk, Mosaic has invested in expansion projects to increase MicroEssentials® production capacity. In 2014, Mosaic announced plans to expand MicroEssentials® capacity, adding an incremental 1.2 million tonnes and bringing our total capacity to 3.5 million tonnes in 2017.

**Cost to realize opportunity**

900000

**Comment**

In 2017, Mosaic invested more than \$900,000 in a university-based Fertilizer Technology and Research Centre. Our investment in the MicroEssentials® production capacity is not currently available as a separate line item.

---

**Identifier**

Opp3

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

---

Direct operations

**Opportunity type**

Products and services

**Primary climate-related opportunity driver**

Shift in consumer preferences

**Type of financial impact driver**

Better competitive position to reflect shifting consumer preferences, resulting in increased revenues

**Company- specific description**

Changes in rainfall patterns may make some regions of the world that have not been traditionally suited to large scale agriculture potentially productive. This change in production percentage for higher-yield products like MicroEssentials® may have a positive effect on our operating results and financial condition and the effects could be significant to us.

**Time horizon**

Long-term

**Likelihood**

About as likely as not

**Magnitude of impact**

Medium

**Potential financial impact**

90000000

**Explanation of financial impact**

Our Phosphates segment sold approximately 2.7 million tonnes of MicroEssentials® during 2017. A hypothetical increase of 10% in sales volume of MicroEssentials® from 2017 levels could result in over \$90 million in additional sales (calculated by using the average selling price per tonne, FOB destination, per our 2017 Form 10-K).

**Strategy to realize opportunity**

Mosaic's balanced approach to crop nutrition is a strategy to manage potential opportunities driven by the effects of climate change, such as change in precipitation pattern. Mosaic has established relationships with key universities and research organizations around the globe to develop and test innovative products like our MicroEssentials® line, which features crop nutrient blends specially designed for the soils of various parts of the world. Mosaic established and continues to fund a university-based Fertilizer Technology and Research Centre, which focuses on soil chemistry and fertilizer technology, and utilizes the latest technology to develop innovative fertilizer formulations to improve nutrient use efficiency in a variety of climates. Our investment in this centre in 2017 totaled more than \$900,000.

**Cost to realize opportunity**

900000

**Comment**

In 2017, Mosaic invested more than \$900,000 in a university-based Fertilizer Technology and Research Centre. Our investment in the MicroEssentials® production capacity is not currently available as a separate line item.

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C2.5

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**(C2.5) Describe where and how the identified risks and opportunities have impacted your business.**

	Impact	Description
Products and services	Impacted	In 2017 operating results were unfavorably impacted by Hurricane Irma which resulted in increased operating costs and delayed and lost sales and lost production in Florida. Specifically, the Phosphates segment's third quarter gross margin includes \$26 million of higher costs from Hurricane Irma which lowered the gross margin rate from 12 percent to nine percent during the third quarter.
Supply chain and/or value chain	Impacted for some suppliers, facilities, or product lines	Our joint venture (JV) operation of the Miski Mayo mine in the Bayovar region of Peru was negatively impacted by flooding in the region in 2017. Phosphate rock from the JV operations supplements our overall phosphate rock needs. As a result of flooding, supply of phosphate rock from the JV was interrupted and we had to seek alternative sources of phosphate rock. The financial impact of this supply disruption was approximately \$3 million in 2017. Note: these costs are an estimation of the incremental costs of purchasing rock from another supplier to supplement what we would have otherwise received from the Miski Mayo mine. This is not an estimation of the full financial impact associated with the flooding event.
Adaptation and mitigation activities	Impacted for some suppliers, facilities, or product lines	We have more than \$7 billion in assets in hurricane prone areas. We conduct property risk engineering assessments on an ongoing basis to identify and mitigate risks associated with property damage and business interruption. The types of actions that results from these assessments include improving existing flood and emergency response plans, replacing or redesigning roof structures to meet or exceed wind uplift requirements, and making enhancements to structures to protect from increased risk of severe weather events caused by climate changes As an example of the cost associated with one such project, the cost to adapt a roof structure with fasteners to withstand high winds is approximately \$150,000.
Investment in R&D	Impacted	Mosaic has established relationships with key universities and research organizations around the globe to develop and test innovative products like our MicroEssentials® line. Mosaic established and continues to fund a University-based Fertilizer Technology and Research Centre, which focuses on soil chemistry and fertilizer technology and utilizes the latest technology to develop innovative fertilizer formulations to improve nutrient use efficiency in a variety of climate regimes. As an example of one of our R&D activities, we invested approximately \$900,000 in a university-based Fertilizer Technology and Research Centre in 2017.
Operations	Impacted	In 2017 sales volumes were unfavorably impacted by Hurricane Irma which resulted in delayed and lost sales and lost production in Florida. We also sustained approximately \$7 million worth of property damage at one of our product warehouses.
Other, please specify	Not evaluated	

**C2.6**

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**(C2.6) Describe where and how the identified risks and opportunities have factored into your financial planning process.**

	Relevance	Description
Revenues	Impacted	As part of our annual financial planning process, Mosaic's market analysis team monitors climate and growing regions, forecasting for climate-related events like droughts, floods and severe weather events, to determine their potential impact on the markets, our production (which translates to revenue) and Mosaic's overall financial performance. For example, a widespread flood might impact agricultural commodity markets, which could in turn have an effect on Mosaic's annual sales. In 2017 operating results were unfavorably impacted by Hurricane Irma which resulted in increased operating costs, delayed and lost sales and lost production in Florida. Specifically, the Phosphates segment's third quarter gross margin includes \$26 million of higher costs from Hurricane Irma which lowered the gross margin rate from 12 percent to nine percent during the third quarter.
Operating costs	Impacted	As part of our annual financial planning process, we consider environmental, health and safety laws and regulations, some of which are climate-related, and their effect(s) on operating costs and capital expenditures. Severe climate-related events, including hurricanes, have in the past, and may in the future, adversely affect our operations, resulting in increased costs or decreased production. These impacts are part of our broad financial planning process. Mosaic's market analysis team monitors climate and growing regions, forecasting for climate-related events like droughts, floods and severe weather events, to determine their potential impact on the markets, our production (which translates to revenue) and Mosaic's overall financial performance. As another example that has yet to impact our operating costs, Mosaic is assessing the potential financial implications of federal and provincial carbon tax scenarios under consideration in Canada. Our evaluation is considering the operating cost impacts of direct energy consumption as well as indirect impacts of how the tax is passed on to Mosaic from third parties. Various scenarios are still under consideration and the effects of these potential tax scenarios could have a significant financial impact on us.
Capital expenditures / capital allocation	Not yet impacted	As part of our annual financial planning process, we consider environmental, health and safety laws and regulations, some of which are climate-related, and their affect(s) on operating costs and capital expenditures. We also consider availability of capital expenditures for projects that could improve our environmental performance, including energy or GHG efficiency. As an example, Mosaic is assessing changes in emission allowances that will be effective by 2023 that will have an impact on some of our Phosphate concentrate facilities. Current equipment will not meet emissions requirements and we have initiated projects requiring capital expenditures to replace catalysts at the affected facilities. The approximate cost per catalyst replacement is \$1 million and these planned costs, as well as the timeline for replacing the catalysts, are part of Mosaic's capital expenditures planning process. As another example, Mosaic is assessing changes in emission allowances that will be effective in 2026 that will have significant impact on one of our Saskatchewan potash mines. Current boilers will not meet emissions requirements and we are exploring options, including equipment alterations that would require capital investments, in order to meet compliance standards. A capital project team has been assembled to conduct detailed analyses to assess solutions and the potential cost implications, but based on preliminary estimates, the financial impact could be more than \$75 million.
Acquisitions and divestments	Not yet impacted	At this time, our identified risks related to climate change have not had an impact on our company's acquisitions and divestments. As part of the due diligence process leading up to our late 2017 acquisition of Vale Fertilizantes in Brazil, we considered the environmental performance, including GHG emissions footprint of facilities in the target company's portfolio. The financial impact of our ultimate decision cannot be estimated as an individual line item.
Access to capital	Not yet impacted	At this time, our identified risks related to climate change have not had an impact on our company's access to capital. Mosaic understands that climate-related issues can have an impact on a company's credit score, which could, in turn, impact their access to capital. We are employing adaptation and mitigation strategies and regularly engaging financial stakeholders in order to minimize and/or avoid such impacts.
Assets	Impacted	Severe storms, including hurricanes, have in the past, and may in the future, adversely affect our operations, resulting in damage to operating assets, increased costs or decreased production. These impacts are part of our broad financial planning process. In 2017, several of our facilities (operating assets) sustained damage as a result of Hurricane Irma, specifically a product warehouse that resulted in approximately \$7 million incurred for repairs/replacement. As an example, Mosaic is assessing changes in emission allowances that will be effective in 2026 that will have significant impact on one of our Saskatchewan potash mines. Current boilers (operating assets) will not meet emissions requirements and we are exploring options, including equipment alterations that would require capital investments, in order to meet compliance standards. A capital project team has been assembled to conduct detailed analyses to assess solutions and the potential cost implications, but based on preliminary estimates, the financial impact could be more than \$75 million.
Liabilities	Impacted	At this time, our identified risks related to climate change have not had an impact on our company's liabilities. However, we are assessing the potential financial implications of federal and provincial carbon tax scenarios under consideration in Canada that could have an impact on our tax liabilities, and the effects could be material to us.
Other	Please select	

**C3. Business Strategy**

**C3.1**

**(C3.1) Are climate-related issues integrated into your business strategy?**

Yes

### C3.1a

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

Yes, qualitative

**C-AC3.1b/C-CE3.1b/C-CH3.1b/C-CO3.1b/C-EU3.1b/C-FB3.1b/C-MM3.1b/C-OG3.1b/C-PF3.1b/C-ST3.1b/C-TO3.1b/C-TS3.1b)**

**(C-AC3.1b/C-CE3.1b/C-CH3.1b/C-CO3.1b/C-EU3.1b/C-FB3.1b/C-MM3.1b/C-OG3.1b/C-PF3.1b/C-ST3.1b/C-TO3.1b/C-TS3.1b) Indicate whether your organization has developed a low-carbon transition plan to support the long-term business strategy.**

In development, we plan to complete it within the next 2 years

### C3.1c

**(C3.1c) Explain how climate-related issues are integrated into your business objectives and strategy.**

Mosaic's strategy and business objectives have been influenced by climate change in several ways. Climate related issues, specifically the Paris Agreement and related country-specific efforts to reduce greenhouse gas emissions, have influenced our engagement with stakeholders, including government and industry associations. Similarly, fertilizer production is an energy- and GHG-intensive activity. In anticipation of changing weather patterns, potential shortages of water, the possibility of increasing energy costs and possible carbon/energy taxes and their potential effects on our business, Mosaic employs a strategy that focuses on operational excellence and we have made strategic decisions about our operating activities in order to address operating efficiency and resource management. For example, we strive to lower purchased energy consumption through more efficient processes and maximizing use of cogenerated energy, which has a direct impact on our GHG emissions. Climate change considerations, and the focus on reducing energy and GHG emissions, have influenced our development and execution of our companywide 2020 Sustainability Targets to reduce energy and GHGs by 10% per tonne of finished product, progress toward which we report annually. As an example of a substantial business decision in 2017, in line with our strategic efforts to reduce energy and GHGs, in 2017 we completed installation of a solar array at our Carlsbad facility that powers the site's administration building and reduces their reliance on fossil-fuel based power.

### C3.1d

**(C3.1d) Provide details of your organization's use of climate-related scenario analysis.**

Climate-related scenarios	Details
Nationally determined contributions (NDCs)	We have facilities in Saskatchewan, Canada that could be affected by Canada's intended NDC, which aims to achieve, by 2030, an economy-wide target of reducing GHG emissions by 30% below 2005 levels. In late 2016, the federal government announced plans for a comprehensive tax on carbon emissions, under which provinces opting out of the tax would have the option of adopting a cap-and-trade system. In the plans, the federal government also committed to implementing a federal carbon pricing backstop system that will apply in any province or territory that does not have a carbon pricing system in place by 2018. While no tax has formally been proposed as of the date of our completing this report, as implementation of the Paris Agreement proceeds, more stringent laws and regulations may be enacted to accomplish the goals set out in Canada's NDC. In addition, the Province of Saskatchewan, in which our Canadian potash mines are located, has publicly stated that a carbon pricing system will not be implemented in the province and that legal action will be sought against the federal government. In December 2017, Saskatchewan announced a comprehensive plan to address climate change that does not include an economy-wide price on carbon but does include a system of tariffs and credits for large emitters. The plan is subject to federal review and approval in late 2018. We are currently assessing scenarios proposed by the provincial and federal governments, including potential financial repercussions. One federal scenario, for example, would apply a starting tax of \$10 CAD per tonne of CO <sub>2</sub> e for businesses generating more than 50,000 tonnes CO <sub>2</sub> e. The tax would increase annually until 2022. Under this scenario, considering the 2022 time horizon, the financial repercussions for Mosaic, specifically our Potash Segment, could be significant to us. The results of our analyses have informed our CAPEX strategy as we plan for potential costs and continue to analyze options for reducing emissions in line with the NDC. Specifically, we have project trackers for each of our potash facilities that capture potential projects and associated costs, GHG and energy savings, and returns on investments.

## C4. Targets and performance

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### C4.1

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

Intensity target

### C4.1b

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

**Target reference number**

Int 1

**Scope**

Scope 1+2 (location-based)

**% emissions in Scope**

100

**% reduction from baseline year**

10

**Metric**

Metric tons CO<sub>2</sub>e per metric ton of product

**Base year**

2012

**Start year**

2015

**Normalized baseline year emissions covered by target (metric tons CO<sub>2</sub>e)**

0.27

**Target year**

2020

**Is this a science-based target?**

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

**% achieved (emissions)**

100

**Target status**

Underway

**Please explain**

In 2015 we announced a target to reduce our combined Scope 1 and Scope 2 GHG emissions by 10% per tonne of finished product by 2020. In 2017 we achieved a 17.6% reduction in Scope 1 and 2 emissions from our 2012 baseline thanks, in part, to efforts of our employees to create fuel- and energy-saving projects across the business. The reduction is also due to a decrease of our ammonia production due to plant downtime, which reduced our annual consumption of natural gas considerably. Current GHG reduction targets are based on internal operational performance and cover Scope 1 and 2 emissions from operations in North and South America. Our GHG target, although not recognized by the Science Based Targets Initiative for being in line with their particular methodology, was developed with science-based models that take company and industry-specific factors into account. Our GHG target does not include Scope 3 emissions at this time. However, we made progress toward defining a more comprehensive Scope 3 emissions footprint in 2015 by engaging a third party consultant to help us assess the relevance of Scope 3 emissions categories and calculate their respective GHG impacts. We report those emissions in Section 6. We are currently refreshing targets that will incorporate our newly acquired facilities in Brazil and considering the feasibility of science-based targets as part of this work.

**% change anticipated in absolute Scope 1+2 emissions**

7.6

**% change anticipated in absolute Scope 3 emissions**

0

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**C4.2**

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**(C4.2) Provide details of other key climate-related targets not already reported in question C4.1/a/b.**

**Target**

Energy usage

**KPI – Metric numerator**

Energy Consumption

**KPI – Metric denominator (intensity targets only)**

Metric tonne of product

**Base year**

2012

**Start year**

2015

**Target year**

2020

**KPI in baseline year**

2.73

**KPI in target year**

2.46

**% achieved in reporting year**

100

**Target Status**

Underway

**Please explain**

In 2017, we achieved a 15.4% reduction in energy intensity from our 2012 baseline. This reduction was due to efficiency efforts, and also due to a decrease of our ammonia production due to plant downtime, which reduced our annual consumption of natural gas considerably.

**Part of emissions target**

This target, though considered separate from our emissions target, is directly linked to emissions because reductions in direct and indirect energy help drive emissions reductions. Both the energy and GHG emissions targets are part of Mosaic's 2020 Sustainability Targets.

**Is this target part of an overarching initiative?**

No, it's not part of an overarching initiative

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**C4.3**

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**(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**

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

	Number of projects	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	14	100000
To be implemented*	10	50000
Implementation commenced*	2	2940
Implemented*	13	57181
Not to be implemented	5	0

## C4.3b

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

**Activity type**

Energy efficiency: Processes

**Description of activity**

Machine replacement

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

1750

**Scope**

Scope 1

**Voluntary/Mandatory**

Voluntary

**Annual monetary savings (unit currency – as specified in CC0.4)**

150000

**Investment required (unit currency – as specified in CC0.4)**

400000

**Payback period**

1-3 years

**Estimated lifetime of the initiative**

6-10 years

**Comment**

By overhauling a product belt filter and making a valve upgrade, teams at Carlsbad improved efficiency of the product dryer and saved approximately 5% of the plant's annual total natural gas use.

**Activity type**

Low-carbon energy installation

**Description of activity**

Solar PV

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

51.7

**Scope**

Scope 2 (location-based)

**Voluntary/Mandatory**

Voluntary

**Annual monetary savings (unit currency – as specified in CC0.4)**

6800

**Investment required (unit currency – as specified in CC0.4)**

150000

**Payback period**

21-25 years

**Estimated lifetime of the initiative**

>30 years

**Comment**

The Carlsbad facility installed a solar array that powers the site's administration building.

---

**Activity type**

Energy efficiency: Processes

**Description of activity**

Process optimization

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

2940

**Scope**

Scope 2 (location-based)

**Voluntary/Mandatory**

Voluntary

**Annual monetary savings (unit currency – as specified in CC0.4)**

900000

**Investment required (unit currency – as specified in CC0.4)**

0

**Payback period**

<1 year

**Estimated lifetime of the initiative**

6-10 years

**Comment**

The Riverview facility implemented more efficient processes to reduce the purchase of third-party produced power and enable internal use of cogenerated energy.

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**Activity type**

Energy efficiency: Building services

**Description of activity**

Lighting

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

2347

**Scope**

Scope 2 (location-based)

**Voluntary/Mandatory**

Voluntary

**Annual monetary savings (unit currency – as specified in CC0.4)**

250000

**Investment required (unit currency – as specified in CC0.4)**

2500000

**Payback period**

4 - 10 years

**Estimated lifetime of the initiative**

6-10 years

**Comment**

We installed LED lights at facilities across our Phosphate and Potash segments. The annual dollar savings and payback figures are simplified and do not fully capture other tangible and intangible savings related to maintenance and safety.

---

**Activity type**

Energy efficiency: Processes

**Description of activity**

Machine replacement

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

875

**Scope**

Scope 1

**Voluntary/Mandatory**

Voluntary

**Annual monetary savings (unit currency – as specified in CC0.4)**

2667280

**Investment required (unit currency – as specified in CC0.4)**

2370000

**Payback period**

<1 year

**Estimated lifetime of the initiative**

6-10 years

**Comment**

Changes to equipment at our Fospar distribution facility improved production capacity and decreased energy consumption.

---

**Activity type**

Other, please specify (Installed power line between facilities)

**Description of activity**

<Not Applicable>

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

43344

**Scope**

Scope 2 (location-based)

**Voluntary/Mandatory**

Voluntary

**Annual monetary savings (unit currency – as specified in CC0.4)**

2500000

**Investment required (unit currency – as specified in CC0.4)**

14000000

**Payback period**

4 - 10 years

**Estimated lifetime of the initiative**

16-20 years

**Comment**

A recently installed power line connecting two of our Florida facilities allowed Mosaic to triple our internal use of cogenerated power at the South Pasture facility in 2017.

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**Activity type**

Energy efficiency: Processes

**Description of activity**

Heat recovery

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

2520

**Scope**

Scope 2 (location-based)

**Voluntary/Mandatory**

Voluntary

**Annual monetary savings (unit currency – as specified in CC0.4)**

1000000

**Investment required (unit currency – as specified in CC0.4)**

21000000

**Payback period**

16-20 years

**Estimated lifetime of the initiative**

>30 years

**Comment**

A recently installed turbo generator at our Uncle Sam facility enabled additional generation and consumption of cogenerated energy in 2017, displacing fossil fuel-based electricity we would have otherwise had to purchase from the grid.

---

**Activity type**

Energy efficiency: Processes

**Description of activity**

Machine replacement

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

3353

**Scope**

Scope 1

**Voluntary/Mandatory**

Voluntary

**Annual monetary savings (unit currency – as specified in CC0.4)**

546000

**Investment required (unit currency – as specified in CC0.4)**

430000

**Payback period**

<1 year

**Estimated lifetime of the initiative**

16-20 years

**Comment**

A new furnace was installed and various improvements were made to the granulation line at our Fospar facility that resulted in improved efficiency and reduced fuel oil use.

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**C4.3c**

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

Method	Comment
Employee engagement	Mosaic emphasizes the philosophy of continuous energy improvements to improve energy use in our manufacturing facilities and support functions and recognizes that employees on the front line often have the best ideas. Mosaic fosters a culture which encourages employees to come forward with ideas, and this open dialogue has driven investments that result in energy savings and/or emissions reductions. In 2017, we continued an internal communications effort around "small wins" as a way to recognize employees for their efforts, large and small, in improving environmental performance and meeting companywide 2020 Sustainability Targets.
Other	Mosaic facilities have employees that are designated engineers and/or sustainability site leads. The role of these site leads, in part, is to identify project opportunities for improving energy efficiency and GHG emissions that will help us achieve our 2020 target to reduce energy use and GHG emissions by 10% per tonne of product.
Compliance with regulatory requirements/standards	New or proposed regulatory emissions requirements may require modifications to our facilities or to operating procedures and these modifications may involve significant investments.

**C4.5**

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**(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**

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**(C4.5a) Provide details of your products and/or services that you classify as low-carbon products or that enable a third party to avoid GHG emissions.**

**Level of aggregation**

Product

**Description of product/Group of products**

Mosaic's premium product MicroEssentials® has been shown to increase corn yields an average of 7.2 bushels per acre, or 4.3%, compared to traditional fertilizer.

**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 (See Comment)

*Other: US EPA Climate Leaders: Direct HFC and PFC Emissions from Manufacturing Refrigeration and Air Conditioning Equipment The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition) US EPA Climate Leaders: Direct Emissions from Mobile Combustion Sources US EPA Mandatory Greenhouse Gas Reporting Rule: Subpart G (Ammonia) and Z (Phosphoric Acid) US EPA Climate Leaders: Indirect Emissions from Purchases/Sales of Electricity and Steam Stoichiometric mass balance for reactive species containing CO2 or carbon compounds Mass Balance from European Fertilizer Manufacturers Association Guidance for Ammonia Manufacturing University of Missouri Extension: Agricultural Fuel Requirement Estimates for Selected Field Operations GWP: IPCC Second Assessment Report (SAR - 100 year)*

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

28

**Comment**

Mosaic's premium product MicroEssentials® has been shown to increase corn yields an average of 7.2 bushels per acre, or 4.3%, compared to traditional fertilizer. Assuming a 4.3% yield advantage with MicroEssentials®, a corn farmer with a 350 acre farm can theoretically produce yields similar to those from a 365.05 acre farm. By using MicroEssentials®, this farmer could avoid approximately 0.1816 tonnes of Scope 1 carbon emissions per year, through reduced corn harvesting equipment usage, resulting in greater yields with MicroEssentials® and fewer acres farmed. This theoretical example is fleshed out below to give an idea of annual scale of avoided emissions for 100 farms. The estimate takes into consideration the tonnes of CO2e/gallon generated by the diesel fuel needed for the operation of a corn harvester per acre. The potential yield of a 350 acre farm yielding 365.05 acres worth of crops was used as the baseline for this Scope 1 emissions savings. A 2.5 mph corn harvester (farming equipment) uses 1.15 gallons/acre of diesel fuel, which equates to 0.0120648 tonnesCO2e/gallon of diesel fuel. Assuming a 4.3% yield advantage with MicroEssentials®, a corn farmer with a 350 acre farm can theoretically produce yields similar to those from a 365.05 acre farm. This farmer could avoid approximately 0.1816 tonnes of Scope 1 carbon emissions per year by harvesting the same yield on a smaller area. For every 100 farms similar to this example equals a combined savings of 18.16 tonnes of Scope 1 carbon emissions per year. This is a theoretical example only. The percentage of total sales is for tonnes of MicroEssentials® as a share of total Phosphates sales tonnes. Sales for MicroEssentials® are not available as a separate line item expressed as revenue. Note for Methodology: US EPA Climate Leaders: Direct HFC and PFC Emissions from Manufacturing Refrigeration and Air Conditioning Equipment;The GHG Protocol: A Corporate Accounting and Reporting Standard; US EPA Climate Leaders: Direct Emissions from Mobile Combustion Sources US EPA Mandatory Greenhouse Gas Reporting Rule: Subpart G (Ammonia) and Z (Phosph. Acid); US EPA Climate Leaders: Indirect Emissions from Purchases/Sales of Electricity and Steam Stoichiometric mass balance for reactive species containing CO2 or carbon compounds; Mass Balance from European Fertilizer Manufacturers Association Guidance for Ammonia

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**C5. Emissions methodology**

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**C5.1**

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

**Scope 1**

**Base year start**

January 1 2012

**Base year end**

December 31 2012

**Base year emissions (metric tons CO2e)**

2904196

**Comment**

**Scope 2 (location-based)**

**Base year start**

January 1 2012

**Base year end**

December 31 2012

**Base year emissions (metric tons CO2e)**

1605383

**Comment**

**Scope 2 (market-based)**

**Base year start**

January 1 2012

**Base year end**

December 31 2012

**Base year emissions (metric tons CO2e)**

1605383

**Comment**

**C5.2**

---

**(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions.**

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

US EPA Climate Leaders: Direct HFC and PFC Emissions from Manufacturing Refrigeration and Air Conditioning Equipment

US EPA Climate Leaders: Indirect Emissions from Purchases/ Sales of Electricity and Steam

US EPA Climate Leaders: Direct Emissions from Mobile Combustion Sources

US EPA Mandatory Greenhouse Gas Reporting Rule

Other, please specify (See 5.2a for details)

**C5.2a**

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**(C5.2a) Provide details of the standard, protocol, or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions.**

Other 1: by stoichiometric mass balance for reactive species containing CO<sub>2</sub> or carbon compounds to estimate emissions from materials used in water treatment

Other 2: mass balance from European Fertilizer Manufacturers Association Guidance for Ammonia Manufacturing to estimate emissions from ammonia production

## C6. Emissions data

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### C6.1

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

**Row 1**

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

2430167

**End-year of reporting period**

<Not Applicable>

**Comment**

### C6.2

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

**Row 1**

**Scope 2, location-based**

We are reporting a Scope 2, location-based figure

**Scope 2, market-based**

We are reporting a Scope 2, market-based figure

**Comment**

Market based emissions available for most locations in the United States and Saskatchewan, representing 95% of our total Scope 2 emissions. We do not have market based emission factors available for sites in Brazil or Paraguay facilities at this time.

### C6.3

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

**Row 1**

**Scope 2, location-based**

1741674

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

1762758

**End-year of reporting period**

<Not Applicable>

**Comment**

### C6.4

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**(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

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**(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**

China and India Facilities

**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 the source is excluded**

Historically, Scope 1 and 2 emissions from these facilities have accounted for less than 0.1 percent of global company emissions. CY2017 emissions were not calculated for our China and India facilities

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## C6.5

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

**Purchased goods and services**

**Evaluation status**

Relevant, calculated

**Metric tonnes CO<sub>2</sub>e**

2140000

**Emissions calculation methodology**

Ammonia purchased based on IPPC 2013 guidance for NH<sub>3</sub> production with modern, natural gas NH<sub>3</sub> plants.

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

0

**Explanation**

Emissions from production of purchased ammonia. Ammonia, an input material to our final products, accounts for a majority of the environmental impacts associated with purchased goods and services. Accordingly, emissions associated with ammonia are currently calculated. This value was included in our 2017 data assurance process.

## Capital goods

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

291600

### Emissions calculation methodology

Calculated with third-party proprietary hybrid EEIO/LCA model in conjunction with company spend data to calculate absolute emissions from Mosaic's capital goods (e.g., equipment). Figure represents emissions associated with capital expenditures data for 2017 from our North American operations. Some capital expenditures may have been inadvertently excluded. This value was not included in our 2017 data assurance process.

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

0

### Explanation

2017 emissions from capital expenditures associated with North American operations were calculated using an average factor from a third-party analysis of 2014 data that was applied to 2017 capital expenditures figures. Some capital expenditures may have been inadvertently excluded. This value was not included in our 2017 data assurance process.

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

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

447700

### Emissions calculation methodology

Calculated by using average DEFRA emission factors for upstream emissions per unit of consumption of the relevant fuel and energy types based on internally-collected fuel use data.

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

0

### Explanation

Includes companywide fuels and electricity purchases. This value was not included in our 2017 data assurance process.

## Upstream transportation and distribution

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

425700

### Emissions calculation methodology

Calculations basis derived from GHG Protocol Technical Guidance for Calculating Scope 3 Emissions (April 2013). Road Transport calculations consider empty backhauling. Road Transport calculations based on miles traveled, tons hauled, average fuel efficiency and considers empty back hauling. Maritime Transport based on tons shipped, fuel efficiency, mileage, transport time and other factors including ship efficiency rating from RightShip. This value was included in our 2017 data assurance process.

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

100

### Explanation

Includes movements by rail, truck, articulated barge and vessel in North American and some international transport. Does not include river barges in North America. We have started gathering emissions data from an additional rail transportation provider in 2017. This value was included in our 2017 data assurance process.

## Waste generated in operations

### Evaluation status

Not relevant, calculated

### Metric tonnes CO2e

5400

### Emissions calculation methodology

Calculated with average DEFRA and Eco-Invent emission factors for respective waste disposal methods. This value was not included in our 2017 data assurance process.

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

0

### Explanation

Does not include mining wastes.

## Business travel

### Evaluation status

Not relevant, calculated

### Metric tonnes CO2e

2873

### Emissions calculation methodology

Business Travel includes air and rail travel and uses DEFRA 2017 emission factors.

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

100

### Explanation

Includes all corporate travel for Mosaic employees by rail and air. This value was included in our 2017 data assurance process.

## Employee commuting

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

### Emissions calculation methodology

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

### Explanation

Employee commuting is estimated to represent less than 1% of total scope 3 emissions.

## Upstream leased assets

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

### Emissions calculation methodology

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

0

### Explanation

Upstream leased assets are estimated to represent less than 0.1% of total scope 3 emissions.

## Downstream transportation and distribution

### Evaluation status

Relevant, calculated

### Metric tonnes CO<sub>2</sub>e

156200

### Emissions calculation methodology

Calculations basis derived from GHG Protocol Technical Guidance for Calculating Scope 3 Emissions (April 2013). Road Transport calculations consider empty backhauling. Road Transport calculations based on miles travel, tons hauled, average fuel efficiency and considers empty back hauling. Maritime Transport based on tons shipped, fuel efficiency, mileage, transport time and other factors including ship efficiency rating from RightShip.

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

### Explanation

Includes movements by rail, truck, articulated barge and vessel in North American and some international transport. Does not include river barges in North America. Excludes transport of products when customers arrange for transportation. This value was included in our 2017 data assurance process.

## Processing of sold products

### Evaluation status

Not relevant, calculated

### Metric tonnes CO<sub>2</sub>e

3400

### Emissions calculation methodology

Calculated based on average emissions intensity of processing products at Mosaic blending locations.

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

0

### Explanation

Includes all tonnes of crop nutrients sold in North America and assumes that they are blended at the distributor level. This value was not included in our annual data assurance process.

## Use of sold products

### Evaluation status

Relevant, calculated

### Metric tonnes CO<sub>2</sub>e

538520

### Emissions calculation methodology

Limited calculation based on the amount of nitrogen per tonne of finished phosphate product sold in 2017 using 2006 IPCC Guidelines for National Greenhouse Gas Inventories related to fertilizer use.

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

0

### Explanation

In 2015 we engaged third party to evaluate the environmental impacts associated with activities across our value chain. Emissions associated with use of sold products, as reported here, are based on results of a limited assessment based strictly on the amount of nitrogen per tonne of finished phosphate product sold in 2017. We continue to engage industry resources to provide a more holistic emissions figure for this relevant scope 3 category. This value was not included in our annual data assurance process.

## End of life treatment of sold products

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

### Emissions calculation methodology

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

### Explanation

Not applicable. Mosaic's principle products are crop nutrients, which are applied to the soil and then taken up by plants; the plants can be used for human or animal food.

## Downstream leased assets

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

### Emissions calculation methodology

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

### Explanation

Not applicable to Mosaic operations. Most emissions from leased assets under Mosaic's operational control are included in Scope 1 and 2 inventories. The remainder are not material to total emissions footprint.

## Franchises

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

### Emissions calculation methodology

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

### Explanation

Not applicable to Mosaic operations. Mosaic does not operate franchises.

## Investments

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

45700

### Emissions calculation methodology

This figure represents emissions from energy consumption associated with Mosaic's 35% stake in the Miski Mayo joint venture.

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

100

### Explanation

Represents emissions associated with Mosaic's stake in the Miski Mayo joint venture. This value was not included in our annual data assurance process.

**Other (upstream)**

**Evaluation status**

Not relevant, explanation provided

**Metric tonnes CO2e**

**Emissions calculation methodology**

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

**Explanation**

Not applicable to Mosaic operations. Upstream emissions accounted for above.

**Other (downstream)**

**Evaluation status**

Not relevant, explanation provided

**Metric tonnes CO2e**

**Emissions calculation methodology**

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

**Explanation**

Not applicable to Mosaic operations. Downstream emissions accounted for above.

C6.7

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**(C6.7) Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?**

No

C6.10

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**(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**

0.0005627

**Metric numerator (Gross global combined Scope 1 and 2 emissions)**

4169220

**Metric denominator**

unit total revenue

**Metric denominator: Unit total**

7409400000

**Scope 2 figure used**

Location-based

**% change from previous year**

11.6

**Direction of change**

Decreased

**Reason for change**

In 2017, decreased ammonia production and efficiency improvements resulted in reduced CO2e emissions. Revenue also improved slightly year-over-year, improving our CO2e intensity per unit total revenue.

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**Intensity figure**

0.221

**Metric numerator (Gross global combined Scope 1 and 2 emissions)**

4169220

**Metric denominator**

unit of production

**Metric denominator: Unit total**

18807101

**Scope 2 figure used**

Location-based

**% change from previous year**

16.3

**Direction of change**

Decreased

**Reason for change**

In 2017, decreased ammonia production and efficiency improvements reduced CO2e emissions, thus significantly improving our performance.

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## C7. Emissions breakdowns

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### C7.1

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**(C7.1) Does your organization have greenhouse gas emissions other than carbon dioxide?**

Yes

## C7.1a

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**(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 CO2e)	GWP Reference
CO2	2425017	IPCC Fourth Assessment Report (AR4 - 100 year)
CH4	1942	IPCC Fourth Assessment Report (AR4 - 100 year)
N2O	3208	IPCC Fourth Assessment Report (AR4 - 100 year)

## C7.2

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

Country/Region	Scope 1 emissions (metric tons CO2e)
United States of America	1534377
Canada	867225
Brazil	28442
Paraguay	124

## C7.3

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

By business division

By facility

## C7.3a

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

Business division	Scope 1 emissions (metric ton CO2e)
Phosphate	1498557
Potash	899427
International and Distribution	32184

## C7.3b

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

Facility	Scope 1 emissions (metric tons CO2e)	Latitude	Longitude
Faustina	627083	30.083384	-90.914391
New Wales	342385	27.832701	-82.051048
Bartow	141665	27.907545	-81.800537
Plant city	112264	28.168056	-82.141667
Uncle Sam	78773	30.037428	-90.827377
Riverview	142136	27.860191	-82.3936
Four Corners	23791	27.646202	-82.087097
Green Bay	0	27.820769	-81.784767
South Fort Meade	10611	27.647848	-81.756477
South Pierce	10884	27.765583	-81.940331
South Pasture	5754	27.585763	-81.94291
Wingate	2710	27.504131	-82.130203
Hookers Prairie	0	27.917828	-82.437286
Big Bend	432	27.80416	-82.397083
Taft	0	30.019122	-90.774707
Belle Plaine	672126	50.427658	-105.198296
Esterhazy K2	95429	50.65768	-101.848412
Colonsay	49443	51.934105	-105.763496
Esterhazy K1	46808	50.729282	-101.933723
Carlsbad	32202	32.412258	-103.939217
Esterhazy K3	3418		
Fospar	26026	-25.510841	-48.521633
Tampa Marine	376	27.926672	-82.43187
Houston	1101	29.744053	-95.114723
Savage	201	44.779415	-93.336426
Henderson	1758	37.815159	-87.658173
Paranagua	274	-25.510841	-48.521633
Uberaba	71	-19.982393	-47.900391
Alto Arguaia	93	-17.151678	53.192689
Rio Verde	86	-17.807942	-51.008695
Candeias	59	-12.66295	-38.51944
Sorriso	167	-12.604993	-55.749907
Pekin	78	40.587875	-89.660637
Campo Grande	112	-21.258281	-48.492311
Paranagua II	296	-25.531969	-48.549938
Uberaba II	80	-19.788737	-47.943228
Villeta	124	-25.667817	-57.690011
Rondonopolis	368	-16.619864	-54.701082
Catalao	101	-18.190415	-47.970764
Hopewell	0	27.915899	-82.131219
Bonnie	69	27.863068	-81.932498
Hookers Point	0	27.917532	-82.439013
Port Sutton	103	27.905096	-82.410554
Rio Grande II	708	-32.102711	-52.113065

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

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

	Gross Scope 1 emissions, metric tons CO2e	Net Scope 1 emissions , metric tons CO2e	Comment
Cement production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Chemicals production activities	1481217	<Not Applicable>	This emissions total represents the sum of all phosphates concentrates (chemical manufacturing) facilities.
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Electric utility generation activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Metals and mining production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (upstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (downstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Steel production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport OEM activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport services activities	<Not Applicable>	<Not Applicable>	<Not Applicable>

**C7.5**

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

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 in market-based approach (MWh)
United States of America	903302	1058769	1668024.86	0
Canada	831000	696617	1083386.67	0.8
Brazil	6604	6604	35399.29	0
Paraguay	766	766	1227.45	0

**C7.6**

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

- By business division
- By facility

**C7.6a**

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

Business division	Scope 2, location-based emissions (metric tons CO2e)	Scope 2, market-based emissions (metric tons CO2e)
Phosphate	803917	962110
Potash	914227	779844
International and Distribution	19056	20802



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

Facility	Scope 2 location-based emissions (metric tons CO2e)	Scope 2, market-based emissions (metric tons CO2e)
Belle Plaine	27012	22644
Carlsbad	83226	83226
Big Bend	1382	1686
Bonnie	0	0
Bartow	61168	74854
Faustina	38667	22835
Green Bay	0	0
Colonsay	135292	113413
Mulberry	0	0
Nichols	0	0
New Wales	8640	10593
Plant City	36727	44727
Riverview	11099	13552
South Pierce	4820	5883
Taft	0	0
Uncle Sam	4473	2642
Henderson	2310	2310
Hookers Point	1456	1766
Houston	474	474
Pekin	260	260
Port Sutton	1344	1630
Savage	443	443
Tampa Marine	422	512
Esterhazy K1	217547	182368
Esterhazy K2	440039	368880
Esterhazy K3	11109	9311
Alto Araguaia	43.6	43.6
Candeias	33.2	33.2
Campo Grande	7.1	7.1
Catalao	786.4	786.4
Fospar	2398	2398
Paranagua	121.5	121.5
Paranagua II	827.4	827.4
Rondonopolis	746.7	746.7
Rio Verde	61.5	61.5
Sorriso	122.98	122.98
Uberaba	17.28	17.28
Uberaba II	215.7	215.7
Villeta	766.3	766.3
Four Corners	314012	384678
Fort Green	0	0
Hookers Prairie	0	0
Hopewell	0	0
Kingsford	0	0
Lonesome	0	0
South Fort Meade	132591	162269
South Pasture	114332	140019
Wingate	80474	98367
Streamsong	4974	6032
Rio Grande	1223	1223

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
Cement production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Chemicals production activities	167996	177487	This emissions total represents the sum of all phosphates concentrates (chemical manufacturing) facilities.
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Metals and mining production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (upstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (downstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Steel production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport OEM activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport services activities	<Not Applicable>	<Not Applicable>	<Not Applicable>

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 tCO2e from purchased feedstock	Explain calculation methodology
Ammonia	100	GHG impacts from the purchase of ammonia represent approximately 50% of Mosaic's total scope 3 impact. At this time, our reporting of category 1 includes only ammonia purchases, which represent our most material category 1 emissions. Accordingly, we are reporting 100% of category 1 emissions are from a purchased feedstock. Calculations basis derived from GHG Protocol Technical Guidance for Calculating Scope 3 Emissions (April 2013). Emission factors based on GHG Emissions from Transport or Mobile sources (GHG Protocol May 2015). Ammonia purchased based on IPCC 2013 guidance for NH3 production with modern, natural gas NH3 plants.

C-CH7.8a

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

	Sales, metric tons	Comment
Carbon dioxide (CO2)	0	
Methane (CH4)	0	
Nitrous oxide (N2O)	0	
Hydrofluorocarbons (HFC)	0	
Perfluorocarbons (PFC)	0	
Sulphur hexafluoride (SF6)	0	
Nitrogen trifluoride (NF3)	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	57181	Decreased	1.25	Due to 'other emissions reduction activities' implemented during the year, emissions were reduced from last year. Last year 57,181 tons of CO2e were reduced by our emissions reduction projects. Our total Scope 1 and Scope 2 emissions in the previous year was 4558215 tCO2e. We arrived at -1.25% through $(57181/4558215)*100 = 1.25\%$ Decrease in part due to energy efficiency and emissions projects reported in 4.3 b.
Divestment	0	No change	0	
Acquisitions	0	No change	0	
Mergers	0	No change	0	
Change in output	199132	Decreased	4.4	Due to 'change in output' that occurred during the year, emissions were reduced from previous year. Last year 199,132 tons of CO2e were reduced due to lower ammonia production. Our total Scope 1 and Scope 2 emissions in the previous year was 4,558,215 tCO2e. We arrived at -4.4% through $(199132/4558215)*100 = -4.4\%$ . Decrease in part due to energy efficiency and emissions projects reported in 4.3 b. and a decrease in ammonia production
Change in methodology	0	No change	0	
Change in boundary	0	No change	0	
Change in physical operating conditions	0	No change	0	
Unidentified	132682	Decreased	0.4	Due to 'unidentified' reasons, emissions were lower than previous year. Last year 132,682 tons of CO2e were reduced via means we could not readily separate. Our total Scope 1 and Scope 2 emissions in the previous year was 4558215 tCO2e. We arrived at -3.11% through $(132682/4558215)*100 = 3.11\%$ . Decrease in part due to the impacts of weather on operations and variability in production activities.
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?**

Location-based

**C8. Energy**

**C8.1**

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

More than 5% but less than or equal to 10%

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

	Indicate whether your organization undertakes this energy-related activity
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	No
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 MWh
Consumption of fuel (excluding feedstock)	LHV (lower heating value)	0	7407894	7407894
Consumption of purchased or acquired electricity	<Not Applicable>	73	2787967	2788040
Consumption of purchased or acquired heat	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired steam	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired cooling	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	0	<Not Applicable>	0
Total energy consumption	<Not Applicable>	73	10195861	10195934

**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)	LHV (lower heating value)	2289905
Consumption of purchased or acquired electricity	<Not Applicable>	349589
Consumption of purchased or acquired heat	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired steam	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired cooling	<Not Applicable>	<Not Applicable>
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	0
Total energy consumption	<Not Applicable>	2639494

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

**C8.2c**

---

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

**Fuels (excluding feedstocks)**

Diesel

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

326173

**MWh fuel consumed for the self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

0

**MWh fuel consumed for self-generation of steam**

0

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self- cogeneration or self-trigeneration**

0

---

**Fuels (excluding feedstocks)**

Natural Gas

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

6969376

**MWh fuel consumed for the self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

3558547

**MWh fuel consumed for self-generation of steam**

0

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self- cogeneration or self-trigeneration**

3410828

---

**Fuels (excluding feedstocks)**

Propane Gas

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

2748.05

**MWh fuel consumed for the self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

0

**MWh fuel consumed for self-generation of steam**

0

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self- cogeneration or self-trigeneration**

0

---

**Fuels (excluding feedstocks)**

Motor Gasoline

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

27850.83

**MWh fuel consumed for the self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

0

**MWh fuel consumed for self-generation of steam**

0

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self- cogeneration or self-trigeneration**

0

---

**Fuels (excluding feedstocks)**

Fuel Oil Number 1

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

81745

**MWh fuel consumed for the self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

81745

**MWh fuel consumed for self-generation of steam**

0

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self- cogeneration or self-trigeneration**

0

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## C8.2d

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### (C8.2d) List the average emission factors of the fuels reported in C8.2c.

#### Diesel

**Emission factor**

10.3

**Unit**

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

**Emission factor source**

Pg. 29 The Climate Registry Default Emission Factors, revised March 2017

**Comment**

Number represents the summation of CO<sub>2</sub>, N<sub>2</sub>O and CH<sub>4</sub> emissions converted to CO<sub>2</sub>e using base factors of 25 for CH<sub>4</sub> and 298 for N<sub>2</sub>O as per IPCC Fourth Assessment Report (AR4).

#### Fuel Oil Number 1

**Emission factor**

11.3

**Unit**

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

**Emission factor source**

Pg. 29 The Climate Registry Default Emission Factors, revised March 2017

**Comment**

Number represents the summation of CO<sub>2</sub>, N<sub>2</sub>O and CH<sub>4</sub> emissions converted to CO<sub>2</sub>e using base factors of 25 for CH<sub>4</sub> and 298 for N<sub>2</sub>O as per IPCC Fourth Assessment Report (AR4).

#### Motor Gasoline

**Emission factor**

8.86

**Unit**

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

**Emission factor source**

Pg. 29 The Climate Registry Default Emission Factors, revised March 2017 (page 29)

**Comment**

Number represents the summation of CO<sub>2</sub>, N<sub>2</sub>O and CH<sub>4</sub> emissions converted to CO<sub>2</sub>e using base factors of 25 for CH<sub>4</sub> and 298 for N<sub>2</sub>O as per IPCC Fourth Assessment Report (AR4).

#### Natural Gas

**Emission factor**

53.1

**Unit**

kg CO<sub>2</sub>e per million Btu

**Emission factor source**

Pg. 2 The Climate Registry Default Emission Factors, revised March 2017

**Comment**

Number represents the summation of CO<sub>2</sub>, N<sub>2</sub>O and CH<sub>4</sub> emissions converted to CO<sub>2</sub>e using base factors of 25 for CH<sub>4</sub> and 298 for N<sub>2</sub>O as per IPCC Fourth Assessment Report (AR4).

## Propane Gas

### Emission factor

1.55

### Unit

kg CO2e per liter

### Emission factor source

EPA / Pg. 31 The Climate Registry Default Emission Factors, revised March 2017

### Comment

Number represents the summation of CO<sub>2</sub>, N<sub>2</sub>O and CH<sub>4</sub> emissions converted to CO<sub>2</sub>e using base factors of 25 for CH<sub>4</sub> and 298 for N<sub>2</sub>O as per IPCC Fourth Assessment Report (AR4).

## C8.2e

---

**(C8.2e) 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	2060004	1853406	0	0
Heat	7051121	7051121	0	0
Steam	17251243	17251243	0	0
Cooling	0	0	0	0

## C-CH8.2e

---

**(C-CH8.2e) 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	1752926	1225361.7
Heat	3640292	3640292
Steam	17251243	17251243
Cooling	0	0

## C8.2f

---

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

**Basis for applying a low-carbon emission factor**

Power Purchase Agreement (PPA) with energy attribute certificates

**Low-carbon technology type**

Wind

**MWh consumed associated with low-carbon electricity, heat, steam or cooling**

73

**Emission factor (in units of metric tons CO<sub>2</sub>e per MWh)**

0

**Comment**

The Colonsay facility has a green power purchase agreement with SaskPower to purchase low carbon electricity and is accounted for here.

---

**C-CH8.3**

---

**(C-CH8.3) Disclose details on your organization's consumption of feedstocks for chemical production activities.**

**Feedstocks**

Natural gas

**Total consumption**

192145

**Total consumption unit**

thousand cubic metres

**Inherent carbon dioxide emission factor of feedstock, metric tons CO<sub>2</sub> per consumption unit**

1.89

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

10.7

**Heating value**

LHV

**Comment**

Calculated using 1 MMBtu equivalent to 27.3 m<sup>3</sup> natural gas from U.S. Energy Information Administration. Density of natural gas estimated at .8 kg/m<sup>3</sup>.

---

**Feedstocks**

Other, please specify (Molten Sulfur)

**Total consumption**

4302561

**Total consumption unit**

metric tons

**Inherent carbon dioxide emission factor of feedstock, metric tons CO<sub>2</sub> per consumption unit**

0

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

4.57

**Heating value**

LHV

**Comment**

Emissions from feed stock take the form of SO<sub>2</sub> which is consumed in the process to create an intermediary for our process. The heating value was calculated using energy generation per ton of intermediary product converted to per ton feedstock input.

---

## C-CH8.3a

---

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

	Percentage of total chemical feedstock (%)
Oil	0
Natural Gas	3.4
Coal	0
Biomass	0
Waste	0
Fossil fuel (where coal, gas, oil cannot be distinguished)	96.6
Unknown source or unable to disaggregate	0

## C9. Additional metrics

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### C9.1

---

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

**Description**

Energy use

**Metric value**

2.31

**Metric numerator**

Total Energy Consumption

**Metric denominator (intensity metric only)**

Metric tonnes finished product

**% change from previous year**

13.8

**Direction of change**

Decreased

**Please explain**

Lower consumption of natural gas for ammonia production.

---

## C-CH9.3a

---

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

**Output product**

Ammonia

**Production (metric tons)**

282874

**Capacity (metric tons)**

455000

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

---

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

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

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

**Comment**

As ammonia is an input used in our finished crop nutrient products, we have not calculated the emissions intensity associated with this chemical specifically.

---

**Output product**

Other, please specify (Sulfuric Acid)

**Production (metric tons)**

12703410

**Capacity (metric tons)**

**Direct emissions intensity (metric tons CO2e per metric ton of product)**

**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)**

1.496

**Comment**

As sulfuric acid is an intermediate input used in our finished crop nutrient products, we have not calculated the emissions intensity associated with this chemical specifically. Rather, it is included in the facility, business unit and company-wide emissions figures.

---

**Output product**

Other, please specify (Phosphoric Acid)

**Production (metric tons)**

4400000

**Capacity (metric tons)**

5300000

**Direct emissions intensity (metric tons CO2e per metric ton of product)**

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

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

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

0

**Comment**

As phosphoric acid is an intermediate input used in our finished crop nutrient products, we have not calculated the emissions intensity associated with this chemical specifically. Rather, it is included in the facility, business unit and company-wide emissions figures.

---

**Output product**

Other, please specify (Phosphate crop and animal feed products)

**Production (metric tons)**

9400000

**Capacity (metric tons)**

11700000

**Direct emissions intensity (metric tons CO2e per metric ton of product)**

0.159

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

0.33

---

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

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

0

**Comment**

Per CDP methodology, direct emissions intensity represents the Scope 1 emissions per unit production of operations related to phosphate crop and animal feed products. Also per CDP methodology, electricity intensity represents the electrical power consumed, both purchased and electricity that is generated within the facility, per unit production of operations related to phosphate crop and animal feed products.

---

**Output product**

Other, please specify (Potash Crop Nutrient)

**Production (metric tons)**

8700000

**Capacity (metric tons)**

10500000

**Direct emissions intensity (metric tons CO2e per metric ton of product)**

0.103

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

0.17

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

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

**Comment**

Per CDP methodology, direct emissions intensity represents the Scope 1 emissions per unit production of operations related to potash crop nutrients. Also per CDP methodology, electricity intensity represents the electrical power consumed, both purchased and electricity that is generated within the facility, per unit production of operations related to potash crop nutrients.

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C-CH9.6

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**(C-CH9.6) Disclose your organization's low-carbon investments for chemical production activities.**

**Investment start date**

March 1 2004

**Investment end date**

December 31 2017

**Investment area**

Property, plant and equipment

**Technology area**

Waste heat recovery

**Investment maturity**

Large scale commercial deployment

**Investment figure**

21000000

**Low-carbon investment percentage**

81 - 100%

**Please explain**

Mosaic has invested heavily in equipment that enables the internal generation of electricity in a process called cogeneration. The process of heat recovery allows several of our Phosphate plants and mines to significantly reduce the amount of third-party, primarily fossil-fuel based electricity required from utility companies. The cogeneration process begins at our manufacturing operations, where we use sulfuric acid to liberate crop nutrients (phosphorous) from raw material inputs. This process generates a significant amount of waste heat that is recovered and converted to steam by bottoming cycle combined heat and power systems. This steam is sent to turbine generators and converted to virtually greenhouse gas emissions-free electricity that powers our manufacturing facilities and mines. In instances when we generate more clean cogenerated energy than we can use at our own operations, the excess is exported to the local grid. We are constantly looking for opportunities to improve the efficiency and output of our cogeneration assets, including bringing additional turbo generators online to increase our low-GHG electrical generation capacity, when possible. Accordingly, there is no "end date" for this investment. The amount of investment depends on the specific project, but as an example of an investment figure, in 2016 we brought a turbo generator online at our Uncle Sam facility that can provide up to an additional 15 megawatts of low-GHG electrical generation capacity. This initiative cost approximately \$21 million. The "start date" for this investment was assigned to March, 2004, as that was when The Mosaic Company was incorporated. However, Mosaic's legacy companies employed cogeneration technology prior to that date.

**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	Third-party verification or assurance process in place

**C10.1a**

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

**Scope**

Scope 1

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Moderate assurance

**Attach the statement**

MOS Final Assurance\_6-14-18.pdf

**Page/ section reference**

pg. 1/2

**Relevant standard**

A1000AS

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

100

---

**Scope**

Scope 2 location-based

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Moderate assurance

**Attach the statement**

MOS Final Assurance\_6-14-18.pdf

**Page/ section reference**

pg. 1/2

**Relevant standard**

A1000AS

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

100

---

**C10.1b**

---

**(C10.1b) Provide further details of the verification/assurance undertaken for your Scope 3 emissions and attach the relevant statements.**

**Scope**

Scope 3- at least one applicable category

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Attach the statement**

MOS Final Assurance\_6-14-18.pdf

**Page/section reference**

pg. 1/2

**Relevant standard**

AA1000AS

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**C10.2**

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

Yes

**C10.2a**

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

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C8. Energy	Other, please specify (Direct and indirect energy consumption)	AA1000AS	Energy information related to consumption and intensity verified by Trucost.
C7. Emissions breakdown	Year on year change in emissions (Scope 1 and 2)	AA1000AS	Additional data assured in 2016 is year-on-year emissions change in Scope 2. See page 1 of attached Trucost Assurance Statement.

MOS Final Assurance\_6-14-18.pdf

**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)?**

No, but we anticipate being regulated in the next three years

**C11.1d**

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**(C11.1d) What is your strategy for complying with the systems in which you participate or anticipate participating?**

In late 2016, the Canadian federal government announced plans for a comprehensive tax on carbon emissions, under which provinces opting out of the tax would have the option of adopting a cap-and-trade system. In the plans, the federal government also committed to implementing a federal carbon pricing backstop system that will apply in any province or territory that does not have a carbon pricing system in place by 2018. Our Saskatchewan Potash facilities will continue to work with the Saskatchewan Ministry of Environment, Environment and Climate Change Canada and other government stakeholders, through participation in industry associations, to determine next steps. We will also continue to monitor developments relating to the anticipated proposed legislation, as well as the potential future effect on our operating activities, energy, raw material and transportation costs, results of operations, liquidity or capital resources. In the meantime, the facilities continue to actively work toward 2020 sustainability targets to reduce energy use and GHGs per tonne of product. Other efficiency projects and large-scale projects and partnerships that have the potential to drive further reductions in GHG emissions are under consideration.

**C11.2**

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

No

**C11.3**

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

Yes

**C11.3a**

---

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

**Objective for implementing an internal carbon price**

Navigate GHG regulations

**GHG Scope**

Scope 1

Scope 2

**Application**

In anticipation of federal or provincial regulatory changes in Saskatchewan, Canada where we have potash mines, we have applied various pricing scenarios to our emissions performance in order to assess our potential exposure. For example, one potential proposal applies a tax of \$10 CAD per tonne of CO<sub>2</sub>e for businesses whose GHG emissions are above a certain threshold. The tax would increase to \$50 per tonne by 2022. We are considering this price for our Potash operations in Saskatchewan, Canada, using current/average GHG performance.

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

10

**Variance of price(s) used**

Using the example above, we have applied differentiated pricing for our Potash operations in Saskatchewan, Canada, using current/average GHG performance.

**Type of internal carbon price**

Shadow price

**Impact & implication**

Using this example and assuming current/average GHG performance, the potential price implications to Mosaic could be more than \$10 million. Note: this impact represents an estimate only, and it a simplification of one scenario under consideration at the time of our completing this report. Our Saskatchewan Potash facilities will continue to work with the Environment and Climate Change Canada, the Saskatchewan Ministry of Environment and other government stakeholders, through participation in industry associations to determine next steps for this file. As part of that engagement, we are monitoring developments relating to the anticipated proposed federal legislation on national carbon pricing, as well as the potential future effect on our operating activities, energy, raw material and transportation costs, results of operations, liquidity or capital resources.

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**C12. Engagement**

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**C12.1**

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

Yes, our suppliers

Yes, our customers

Yes, other partners in the value chain

**C12.1a**

---

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

**Type of engagement**

Innovation & collaboration (changing markets)

**Details of engagement**

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

**% of suppliers by number**

1

**% total procurement spend (direct and indirect)**

5

**% Scope 3 emissions as reported in C6.5**

11

**Rationale for the coverage of your engagement**

Our efforts to lower our emissions footprint extend into our supply chain, and we've made investments that have resulted in significant improvements. For example, we contract a fleet of more than 50 trucks that run on clean-burning compressed natural gas (CNG), and a second Mosaic trucking partner added four CNG trailers to their fleet in 2015. Success is measured, in part, by year-over-year increase in shipping volumes transported more efficiently, and year-over-year reduction in transportation-associated emissions. We continue to explore opportunities with suppliers to convert additional shipping volumes to CNG.

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

In 2017 we moved a total of approximately 3.4 million tonnes of product by CNG fleet, contributing to fewer (>1%) year-over-year transportation-associated GHG emissions.

**Comment**

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**C12.1b**

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

**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

**Size of engagement**

75

**% Scope 3 emissions as reported in C6.5**

15

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

Mosaic is committed to supporting best agricultural practices, including research and practices to minimize GHG emissions associated with the use of our crop nutrient products. Mosaic supports the minimization of greenhouse gas emissions from the activities related to global food supply by encouraging stakeholders in the value chain, including direct retailer customers who interact directly with the end users of our products, to enhance their understanding, adoption and promotion of 4R Nutrient Stewardship. By applying the right fertilizer at the right rate, right time and in the right place, farmers minimize environmental impacts associated with fertilizer use, including potential greenhouse gas emissions.

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

We measure success of this engagement in a variety of ways, including the number of acres under the guidance of nutrient service providers that have earned 4R Nutrient Stewardship Certification through the Nutrient Stewardship Council's 4R Nutrient Stewardship Certification Program. As of 2017, more than 2.9 million acres in the Western Lake Erie Basin (WLEB) and Ohio were under the guidance of certified providers.

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**C12.1c**

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

Mosaic is committed to supporting best agricultural practices, including research and practices to minimize GHG emissions associated with the use of our crop nutrient products. Mosaic supports the minimization of greenhouse gas emissions from the activities related to global food supply by encouraging stakeholders in the value chain, including the direct users of our products (farmers) to enhance their understanding, adoption and promotion of 4R Nutrient Stewardship. By applying the right fertilizer at the right rate, right time and in the right place, farmers minimize environmental impacts associated with fertilizer use, including potential greenhouse gas emissions. We measure success of this engagement in a variety of ways, including the number of acres under the guidance of nutrient service providers that have earned 4R Nutrient Stewardship Certification through the Nutrient Stewardship Council's 4R Nutrient Stewardship Certification Program. As of 2017, more than 2.9 million acres in the Western Lake Erie Basin (WLEB) and Ohio were under the guidance of certified providers.

**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
Clean energy generation	Support with minor exceptions	As one of the world's leading crop nutrient companies, Mosaic has a responsibility to be actively engaged in the promotion of sound and sustainable public policies. We are proactive in educating government officials and staff at all levels of our company's operations, the key issues our company faces, our company's importance to local communities and the critical role we play in the world's food supply.	It is Mosaic's belief that the production of electrical energy from highly efficient waste heat recovery resources should be recognized and supported at the highest tier of cost effective clean energy resources. Mosaic could have additional opportunities for harnessing emissions-free power under a more supportive regulatory construct. We advocate for a balanced clean energy policy that encourages the generation, transmission, and consumption of existing, low-cost resources, such as waste heat recovery, protects the rights of waste heat generation under the provisions of the Public Utility Regulatory Policies Act of 1978, and promotes fairer pricing for third-party clean energy producers when selling power back to the electrical grid.
Carbon tax	Oppose	In 2016 the Canadian federal government announced plans for a comprehensive tax on carbon emissions, under which provinces opting out of the tax would have the option of adopting a cap-and-trade system. In addition, the Province of Saskatchewan, in which our Canadian potash mines are located, has stated that a carbon pricing system will not be implemented in the province and that legal action will be sought against the federal government, if necessary. In December 2017, Saskatchewan announced a comprehensive plan to address climate change that does not include an economy-wide price on carbon but does include a system of tariffs and credits for large emitters. The plan is subject to federal review and approval in late 2018. Our Saskatchewan Potash facilities will continue to work with the Saskatchewan Ministry of Environment and Environment and Climate Change Canada, through participation in industry associations, to determine next steps. We will also continue to monitor developments relating to the anticipated proposed legislation, as well as the potential future effect on our operating activities, energy, raw material and transportation costs, results of operations, liquidity or capital resources	Production of potash in Canada results in significantly lower CO2e emissions per ton of product than the potash produced by the major overseas producers. Canadian potash producers are already subject to higher tax rates and higher shipping costs than the world's other major potash producers. Implementation of a carbon tax in Canada would place an additional hardship on the Canadian potash producers, reducing their competitiveness and effectively suppressing the marketability of the world's most environmentally friendly potash; while adding to the advantages already enjoyed by the major overseas potash producers. Implementation of the proposed carbon tax would likely cause Canadian potash producers to lose market share due to inevitable operating cost increases. Overseas potash producers would be the beneficiaries of the Canadian carbon tax, resulting in increased carbon emission intensity from the global potash industry as a whole.

**C12.3b**

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

Yes

**C12.3c**

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**(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**

Per Fertilizer Canada's website, "The fertilizer industry takes seriously its responsibility as stewards of our soil, air and water resource. Sustainability can be achieved by balancing economic, social and environmental goals. Fertilizer Canada's members have been proactive in reducing their greenhouse gas emissions. Technological investments and process improvements have resulted in a significant reduction in emissions levels since the early 1990s. Further reductions are possible on the farm where fertilizer products are applied."

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

Mosaic is a member and Mosaic's Vice President of Public Affairs for the Potash segment serves on the Board of Directors for Fertilizer Canada (previously Canadian Fertilizer Institute).

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**Trade association**

The Fertilizer Institute (TFI)

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

Consistent

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

Per the TFI website, "TFI is the leading voice in the U.S. fertilizer industry, 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, and farm bill and conservation programs to promote the use of enhanced efficiency fertilizer."

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

Mosaic is a member of TFI and Joc O'Rourke, President and Chief Executive Officer of The Mosaic Company, was elected in 2016 to serve a one-year term ending in 2017 on TFI's Board of Directors. Programs of TFI are funded by member companies that are dedicated to advocating for the fertilizer industry.

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**Trade association**

Saskatchewan Mining Association (SMA)

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

Consistent

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

The SMA advocates for and protects the sustainability of the mining industry in the Province of Saskatchewan. Competitiveness of Saskatchewan mining companies continues to be a significant challenge due to lower rates of international taxation and less stringent regulatory requirements in other jurisdictions. The SMA believes strongly in a robust and protective regulatory regime, but this regime must be practical and cost-effective if industry is to survive/thrive in Saskatchewan and Canada. Implementation of a carbon tax in Canada will place an additional hardship on mining companies, reducing their competitiveness in the world market.

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

Mosaic currently chairs SMA's Board of Directors and is active in efforts to provide solution-based technical assistance to Environment and Climate Change Canada. Two employees from Mosaic's Potash segment serve on SMA's Board, including our Vice Presidents of Finance and Operations.

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**Trade association**

Saskatchewan Potash Producers Association (SPPA)

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

Consistent

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

The SPPA advocates for and protects the sustainability of potash producers in the Province of Saskatchewan. Canadian potash producers create fewer emissions than their competitors and are subject to higher tax rates and higher shipping costs than the world's other major potash producers. Implementation of a carbon tax in Canada would place an additional hardship on the Canadian potash producers, reducing their competitiveness and effectively suppressing the marketability of the world's most environmentally friendly potash; while adding to the advantages already enjoyed by the major overseas potash producers.

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

Mosaic's Vice President of Human Resources of Potash and Senior VP of Potash serve on SPPA's Board of Directors, contributing to SPPA's efforts to preserve global competitiveness of Potash industry in Saskatchewan.

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**C12.3d**

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

No

**C12.3f**

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**(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?**

Mosaic strives to be the global leader in the crop nutrient industry. We recognize the importance of being active in industry associations and cross-sector business forums that provide common platforms to advance cutting-edge scientific research and best management practices within our company and our industry. In addition to having a publicly available Leadership on Climate Change document that states our position on climate change, Mosaic has a process in place to carefully consider, on a case-by-case basis, the relevance of the engagement opportunities and alignment with our values and business strategies and pursues mutually beneficial partnerships. For example, we participate in key cross-sector and industry partnerships through membership and Board and/or committee involvement, which allows us to influence the work done by respective organizations in a way that is consistent with our strategy. Mosaic takes part in industry efforts to address the challenges of climate change and commits to further engage with policy makers and stakeholders on the issue of climate change. Mosaic recognizes that our action on climate change is good for the environment and for the long term financial health and viability of our company. Agronomy, EHS, and Public Affairs professionals interact with policymakers and global thought leaders to encourage the transfer of knowledge and to incorporate the latest thinking on sustainability into the Mosaic risk management process.

**C12.4**

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**(C12.4) Have you published information about your organization's response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s).**

**Publication**

In voluntary communications

**Status**

Complete

**Attach the document**

2017 State of the Business Report\_MOS.pdf

**Content elements**

Emissions figures

Emission targets

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**Publication**

In mainstream reports

**Status**

Complete

**Attach the document**

2017 10-k.pdf

**Content elements**

Strategy

Risks & opportunities

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**Publication**

In voluntary sustainability report

**Status**

Complete

**Attach the document**

Mosaic-Sustainability-Disclosure-and-GRI-Index.pdf

**Content elements**

Strategy

Risks & opportunities

Emissions figures

Emission targets

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## C14. Signoff

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### 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.**

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### C14.1

**(C14.1) Provide details for the person that has signed off (approved) your CDP climate change response.**

	Job title	Corresponding job category
Row 1	James O'Rourke, Chief Executive Officer, President and Director	Chief Executive Officer (CEO)

## Submit your response

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### In which language are you submitting your response?

English

### Please confirm how your response should be handled by CDP

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

### Please confirm below

I have read and accept the applicable Terms