

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 2020 were approximately \$8.7 billion. Our business engages in every phase of crop nutrition development, from the mining of resources to the production and distribution of crop nutrients, animal feed ingredients 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 ESG performance 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. While our emissions profile is relatively low compared to many of our industry peers, we have still prioritized greenhouse gas emissions reductions as part of our long-term ESG strategy – in part because we are determined to participate in solutions to address climate change, and because we understand the interdependencies between climate, water, land and biodiversity and how critical they are to our mission to help the world grow the food it needs. Our action on climate change is good for the environment; the communities and ecosystems in which we operate; and for the long-term financial health and viability of our company.

We are a signatory to the United Nations Global Compact and we support its ten universal principles including human rights, labor, environment and anti-corruption.

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
Reporting year	January 1 2020	December 31 2020	No	<Not Applicable>

C0.3

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

- Brazil
- Canada
- Paraguay
- Peru
- 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 chosen approach for consolidating your GHG 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**

**Bulk inorganic chemicals**

Ammonia  
Fertilizers

**Other chemicals**

**C1. Governance**

**C1.1**

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

Yes

**C1.1a**

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

Position of individual(s)	Please explain
Board-level committee	The Environmental Health, Safety, and Sustainable Development Committee (EHSS Committee) of the Mosaic Board of Directors (BoD) 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 BoD may from time to time have input on climate-related issues. In 2019-2020, the EHSS Committee provided input on Mosaic's Environment, Social and Governance (ESG) framework, which included recognition of climate-related risks and opportunities and the eventual approval and release of climate-related targets (GHG emissions reductions targets).
Chief Executive Officer (CEO)	The Senior Leadership Team (SLT) consisting as of December 31, 2020 of the CEO, President and Director; SVP – CFO ; SVP – Human Resources; SVP – North America; SVP, General Counsel and Corporate Secretary; SVP – Mosaic Fertilizantes; SVP – Government and Public Affairs; SVP – Commercial; SVP – Mosaic Fertilizantes; SVP – Supply Chain and SVP – Strategy and Growth, 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	Scope of board-level oversight	Please explain
Scheduled – all meetings	<ul style="list-style-type: none"> <li>Reviewing and guiding strategy</li> <li>Reviewing and guiding major plans of action</li> <li>Reviewing and guiding risk management policies</li> <li>Reviewing and guiding annual budgets</li> <li>Reviewing and guiding business plans</li> <li>Setting performance objectives</li> <li>Monitoring implementation and performance of objectives</li> <li>Overseeing major capital expenditures, acquisitions and divestitures</li> </ul>	<Not Applicable>	In preparation for quarterly meetings with EHSS Committee, Mosaic personnel prepare updates related to our ESG targets performance (GHGs) for the EHSS Committee of the BoD's review. In line with mechanism of reviewing and guiding strategy and reviewing and guiding annual budgets, the EHSS Committee communicates with Mosaic's management team on the development and oversight of climate-related targets (energy and GHGs) and the pathways (projects, CAPEX investments, production considerations) for achieving them. Because targets are an instrument through which Mosaic strives for risk management and companywide performance improvement in climate-related areas, the EHSS Committee's reviewing and guiding our targets strategy directly contributes to oversight of these issues. The Committee is also regularly kept apprised of regulatory developments pertaining to the implementation of a carbon tax that impacts our Saskatchewan, Canada facilities.

## C1.2

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

Name of the position(s) and/or committee(s)	Reporting line	Responsibility	Coverage of responsibility	Frequency of reporting to the board on climate-related issues
Other C-Suite Officer, please specify (VP EHS)	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	More frequently than quarterly
Other C-Suite Officer, please specify (SVP Government and Public Affairs)	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	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 (do not include the names of individuals).**

Mosaic's Vice President of Corporate Environment, Health and Safety (VP EHS), a role that reports directly to Mosaic's SVP of Supply Chain, and among other things, manages the company's performance toward climate-related sustainability targets (GHGs). While climate-related responsibilities are shared by many at Mosaic, the rationale for the VP EHS having purview of these issues is due to the interplay between companywide EHS performance, which includes emissions performance and compliance with regulations, and our progress toward our climate-related sustainability targets. The VP EHS communicates directly with Mosaic's EHSS Committee of the BoD in quarterly meetings, providing regular updates on Mosaic's performance toward sustainability targets, our ESG strategy, and regulatory developments pertaining to the implementation of the carbon tax in Saskatchewan. Mosaic's SVP of Government and Public Affairs, a role that reports directly to our CEO, also has direct responsibility for assessing and managing climate-related risks and opportunities. The rationale for assigning this role the responsibility for sustainability at Mosaic is because the company prioritizes transparency and participates with various voluntary ESG or sustainability reporting initiatives throughout the year, including our annual companywide sustainability disclosure, an effort led by the public affairs team. This role has purview over the function of sustainability at Mosaic, which includes the collection and assurance of sustainability data, including GHG performance and tracking toward companywide GHG reduction targets; development of companywide sustainability strategy and the creation, implementation and monitoring of climate-related targets (GHGs and energy); communication of sustainability results to senior leaders, the EHSS Committee and other diverse stakeholders; issuance of the companywide sustainability disclosure and satisfying other ad hoc investor requests for information about Mosaic's performance; and the monitoring and communication of external climate issues that have the potential to impact Mosaic's business. These responsibilities rest with the SVP of Government and Public Affairs due to the need for broad, global external perspective and the role's extensive engagement with external stakeholders, including investors, communities, government and regulatory bodies. Also, this role is well suited for managing the broad issues of sustainability, including those related to climate change, because it interacts with and communicates heavily with the rest of the senior leadership team (SLT) and other senior leadership across geographies and business units at Mosaic.

## C1.3

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

	Provide incentives for the management of climate-related issues	Comment
Row 1	Yes	

## C1.3a

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

Entitled to incentive	Type of incentive	Activity incentivized	Comment
Corporate executive team	Monetary reward	Emissions reduction project Efficiency target	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 certain EHS metrics. 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. Further, annual incentive compensation is tied to climate through a management system effectiveness/risk reduction measure, the elements of which promote environmental, health, safety and sustainability behaviors and objectives.
Management group	Monetary reward	Emissions reduction target	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 or targets, results of which are linked to their respective annual incentives.

## C2. Risks and opportunities

### C2.1

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

Yes

## C2.1a

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

## C2.1b

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

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 or achieve business objectives. More specifically, though our definition of substantive varies by timing and situation, a financial impact to operational expenses (as just one example) quantified at \$1.9 billion or more would be considered substantive. Similarly, a greater than \$100 million impact on revenue would be considered substantive, although it may not meet the companywide threshold for materiality. In the context of climate-related risks, we consider risks across broad time horizons and assess other factors such as likelihood, speed of onset impact on business and resources required to manage potential impacts. Regardless of speed of onset (which ranges from little or no warning to occurs over a year or more), if a risk is considered to have a major or severe impact on the results of our business, it would be considered substantive. Similarly, from a qualitative perspective, we would consider an impact substantive if it is an event a reasonable shareholder would consider when making an investment decision.

## C2.2

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

**Value chain stage(s) covered**

Direct operations

**Risk management process**

Integrated into multi-disciplinary company-wide risk management process

**Frequency of assessment**

More than once a year

**Time horizon(s) covered**

Short-term

Medium-term

Long-term

**Description of process**

Transition climate risks such as changes in regulations (short-, medium- and long-term); and physical risks such as change in length of growing season or location of growing regions (medium- to long-term) and adverse weather (acute events such as floods and hurricanes, which can be short-term) could have an impact on Mosaic's direct operations and are part of a multi-disciplinary companywide risk management process. Climate, including climate changes, and associated risks and opportunities that apply at companywide and asset levels are monitored regularly by teams at Mosaic including EHS, public affairs, enterprise risk management and market analysis, and the results are reported to the BoD, the SLT and the EHSS Committee of the BoD, and to additional stakeholders through our annual sustainability disclosure. To identify risks that have a substantive financial or strategic impact, we consider factors such as magnitude, speed of onset, resources required for management, and business impact. 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. Many climate-related risks are considered as part of Mosaic's identification of 10-15 year "megatrends" that present in the form of potential risks and opportunities to our business. Additionally, as a complement to our standard risk identification process, we recently initiated a companywide climate risk assessment to identify long-term physical risks to our sites, such as sea level rise and other risks, and to assess the potential financial and production impacts on our operations – and to test the health of our cross-functional awareness of climate-related risks, how they cross over into other strategic areas, and their impacts to our business. The process, led by third-party subject matter experts, exposed a cross-functional group of senior managers and other leaders to new concepts and spurred conversation about how climate risk translates to company and strategic risk. The results of this assessment, which is still underway as of the date of this report, will help us further define, communicate and prioritize our response(s) to identified risks. As an example of physical risks to which these processes have been applied, changing weather patterns from climate change mean we are likely to suffer impacts from severe weather (including flood, hurricanes, etc.) to our operations. Our risk assessment process involves annual rainfall modeling, which helps anticipate the likelihood of severe rainfall events that have a direct impact on our rainfall preparedness plan and the actions our businesses take to mitigate potential risks. One such risk relates to our management of permitted phosphogypsum management systems or "gypstacks," which hold large quantities of process water. In 2020, in response to the risk assessment results, which showed increased likelihood of severe rainfall events that could have an adverse impact on water balances, we deployed new treatment techniques, including lime treatment at one site and the transfer of water between two other sites, to manage water and mitigate the risk associated with high water balances. The cost of lime treatment in 2020, in the context of this single campaign, was approximately \$3.4 million. The cost of transporting water was approximately \$5 million. This risk process has also helped identify, assess and respond to transition risks. As a result, a cross-functional team is assessing risk associated with the implementation of a carbon tax that affects our potash facilities in Saskatchewan, Canada. Similarly, the team is assessing costs from the carbon tax associated with energy and transportation and monitoring the pass-through impacts to Mosaic. We are also monitoring regulatory developments in the United States and Brazil, where we are anticipating the establishment of a price on GHG emissions which may restrict activities or have an impact on our financial condition. Because of inherent likelihood, impact and time horizon considerations, the risk assessment will help facilitate decision-making and prioritize actions for mitigating emissions in countries or at facilities where the financial repercussions are likely to be greater. For example, we may prioritize capital allocation in a geography where we are more exposed to regulatory risks.

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**Value chain stage(s) covered**

Upstream

Downstream

**Risk management process**

Integrated into multi-disciplinary company-wide risk management process

**Frequency of assessment**

Annually

**Time horizon(s) covered**

Short-term

Medium-term

Long-term

**Description of process**

Transition climate risks such as changes in regulations (short-, medium- and long-term); and physical risks such as length of growing season or location of growing regions (medium- to long-term) and adverse weather (short-term or acute events such as floods and hurricanes) could have an impact on Mosaic's upstream procurement of intermediate products and other critical raw material and other inputs, like sulfur and energy supplies. By quantifying the potential impact of such risks using the integrated risk assessment process, we are able to communicate urgency internally, develop a strategy and respond accordingly. Similarly, climate risks and opportunities could have an impact on Mosaic's downstream transportation of products or demand for existing and potential products. Both are part of multi-disciplinary companywide risk management processes.

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**C2.2a**

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

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	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 regulatory risks are relevant to Mosaic's ongoing risk assessment process and are regularly 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 comply with new standards. Mosaic's EHS, public affairs and legal teams are responsible for interpreting and implementing these regulatory changes, while Mosaic's finance team coordinates cross-functionally with those groups to estimate the financial impact of such changes.
Emerging regulation	Relevant, always included	Mining and fertilizer manufacturing are energy- and emissions-intensive endeavors and we are subject to complex laws and regulations. Accordingly, emerging climate regulations are relevant to Mosaic's ongoing risk assessment process and are regularly included in Mosaic's broad consideration and analysis of climate-related risks. For example, we are currently experiencing effects of indirect costs from a carbon tax in Canada associated with energy and transportation that are passed through to Mosaic. Similarly, we continue to monitor developments relating to environmental regulation (e.g. carbon tax, Clean Fuel Standard, etc.) that impacts our Saskatchewan, Canada potash facilities. A cross-functional team made up of public affairs, legal, EHS, finance and operations colleagues at Mosaic is currently working with the Saskatchewan Ministry of Environment, Environment and Climate Change Canada, industrial associations and other government stakeholders to determine next steps for finalizing a regulatory and policy framework. We are also assessing the potential impacts of the proposed Clean Fuel Standard now under development by the federal government in Canada, which will apply to liquid fuels.
Technology	Relevant, always included	Regulatory changes could require process changes, operational modifications, installation of new technologies and research in the design of new equipment or technologies. For example, we may be required to make investments in technology, including burner replacements and additional heat recovery systems, in order to meet new regulatory requirements. This represents a risk to Mosaic in the form of potentially significant costs of equipment, or fines in the event that we are not compliant with regulations. Mosaic's finance team coordinates cross-functionally with EHS, legal and operations groups to estimate the financial impact of such changes. Accordingly, these risks are relevant to us and are regularly included in our consideration 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 comply with new standards. Mosaic's EHS, public affairs and legal teams monitor for, interpret and implement regulatory changes while Mosaic's finance team coordinates cross-functionally with those groups to estimate the financial impact of such changes.
Legal	Not relevant, explanation provided	At this time, climate-related litigation claims have not been relevant to Mosaic because there have not been any climate-related legal claims against our company; therefore, at this time, legal risks are not included in our risk assessment process. However, we anticipate that this topic might be relevant to us in the future since the frequency of litigation by government and private parties against corporations is increasing. We will continue to monitor legal precedent and claims against us and our peers to assess this category's relevance to us.
Market	Relevant, always included	Market risks are relevant to Mosaic's ongoing risk assessment process and they are regularly included in Mosaic's broad consideration and analysis of climate-related risks. Mosaic's market analysis team monitors climate and growing regions, like the Midwest region of the United States, forecasting for climate-related events like droughts and floods, to determine their potential impact on fertilizer markets and Mosaic's financial performance. For example, a widespread flood might impact agricultural commodity (fertilizer or commodity crop) markets, which could in turn have a detrimental effect on Mosaic's annual net sales.
Reputation	Relevant, always included	Reputational risks are relevant to Mosaic's ongoing risk assessment process and they are regularly included in Mosaic's broad consideration and analysis of climate-related risks. For example, negative public perceptions of Mosaic or the mineral 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. Similarly, climate-related issues could prompt permitting challenges that affect Mosaic's license to operate. Mosaic's EHS, legal and public affairs team regularly monitors issues and reputational vulnerabilities, assessing inputs such as media coverage and stakeholder perceptions of issues affecting our business.
Acute physical	Relevant, always included	Acute physical risks, such as hurricanes and acute seasonal flooding, are relevant to Mosaic's ongoing risk assessment process, and they are regularly included in Mosaic's broad consideration and analysis of climate-related risks. For example, Mosaic's market analysis team monitors climate and growing regions, like the growing regions in the Midwest region of the United States, 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 regularly included in Mosaic's broad consideration and analysis of climate-related risk. For example, Mosaic has approximately \$7 billion in physical assets in hurricane-prone areas. Widespread damage resulting in business interruption or facility closure to facilities within the zone(s) of risk could be detrimental to our operating activities and financial condition. Led by Mosaic's risk management group, we conduct annual property risk engineering assessments to identify and mitigate risk of loss associated with weather-related property damage or business interruption.

**C2.3**

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

Yes

**C2.3a**

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

**Identifier**

Risk 1

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

Direct operations

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

Current regulation	Carbon pricing mechanisms
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**Primary potential financial impact**

Increased indirect (operating) costs

**Climate risk type mapped to traditional financial services industry risk classification**

<Not Applicable>

**Company-specific description**

Various governmental initiatives to limit greenhouse gas emissions are under way or under consideration around the world. As Mosaic's mining and manufacturing operations are emissions-intensive, 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, are currently subject to a combination of federal and provincial regulations that assign a comprehensive tax on carbon emissions. Collectively, these facilities in Canada represented about 40% of Mosaic's total finished crop nutrient production and approximately 30% of total companywide emissions in 2020.

**Time horizon**

Short-term

**Likelihood**

Virtually certain

**Magnitude of impact**

Medium-low

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

Yes, a single figure estimate

**Potential financial impact figure (currency)**

4500000

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

<Not Applicable>

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

<Not Applicable>

**Explanation of financial impact figure**

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 late 2018, the federal government implemented a federal carbon pricing backstop system that applies in any province or territory that does not have a carbon pricing system in place by 2018. The federal system applies, in part, to our Saskatchewan Potash facilities. The federal government accepted Saskatchewan's plan for regulating industrial GHG emissions and Mosaic now reports to the Saskatchewan Ministry of Environment to meet 2030 reduction targets; however, Ottawa has imposed a carbon tax on GHG emissions from electricity in Saskatchewan and Mosaic is paying for that portion of its operations. In 2020 we paid more than \$4.5 million USD in carbon levy funds to our electricity provider, translating to an increase in indirect costs to our company. The levy was in effect for all of 2020; we arrived at this estimate by anticipating similar full-year costs moving forward. There are other potential direct and indirect costs associated with the provincial and federal carbon plans and these, not accounted for here, could be significant to us.

**Cost of response to risk**

80000

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

Our Saskatchewan Potash facilities will continue to work with government agencies, through participation in industry associations, to determine next steps related to pricing mechanisms. We will also continue to monitor developments relating to the 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 or mitigate the potential risks of regulatory changes that are driven by climate change. As a specific example of our management efforts, the Potash business invested in lighting in 2020, reducing CO2e by more than 1,500 tonnes/year at three sites. There are other projects under consideration, costs for which vary drastically. The lighting cost was approximately \$500,000, which represented the cost of new appliances and installation. We are also responding to this risk by engaging associations and funding research that investigates new technologies that can deliver environmentally sustainable, secure and reliable, and cost-competitive energy that supports economic development and growth for our industry. As a specific example, in 2020 we invested approximately \$80,000 in membership of International Minerals Innovation Institute (IMII) to research promising technologies such as hydrogen, small modular reactors, and next generation carbon capture. Because all the projects we initiated in 2020 were smaller in terms of the investment required and their impact on our business, and realizing upgraded lighting on its own is not an adequate response to addressing the threat of regulation, we are opting to highlight the costs associated with membership in IMII as our response for this particular risk for this reporting cycle. The sum of all costs associated with our response to carbon pricing in Canada is not available as an individual line item.

**Comment**

**Identifier**

Risk 2

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

Direct operations

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

Emerging regulation	Carbon pricing mechanisms
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**Primary potential financial impact**

Increased indirect (operating) costs

**Climate risk type mapped to traditional financial services industry risk classification**

<Not Applicable>

**Company-specific description**

Mosaic is subject to environmental regulations (some of which are driven by climate change) that 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. In addition to the carbon price already established in Canada, we are anticipating the potential implementation of a price on carbon in the United States and Brazil, jurisdictions which, combined, account for approximately 67% of our companywide emissions. 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**

Short-term

**Likelihood**

Likely

**Magnitude of impact**

High

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

Yes, a single figure estimate

**Potential financial impact figure (currency)**

160000000

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

<Not Applicable>

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

<Not Applicable>

**Explanation of financial impact figure**

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. As of the date of this report, we are still monitoring regulatory developments and modeling their potential financial impacts on our business, so the figures we are providing at this stage are gross and simplified estimates. If we apply the International Energy Agency’s (IEA) recommended price of \$63 per tonne of CO2e generated to the direct emissions from our U.S. facilities (roughly 1.8 million tonnes), the impact would be greater than \$110 million. In Brazil – where our emissions are approximately 750,000 tonnes CO2e per year– assuming the same IEA price on carbon, the impact to us would be approximately \$50 million. We are citing the sum of these estimates for the U.S. and Brazil (\$110 million + \$50 million = \$160 million) as our potential impact figure for this particular risk.

**Cost of response to risk**

500000

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

Broadly, Mosaic proactively emphasizes energy efficiency in our operations as one way to manage or mitigate the potential risks of climate-related regulatory changes and resulting potential changes in technology requirements. As a specific example of our management efforts, the Mosaic Fertilizantes business in Brazil undertook projects to optimize processes, replace fuels and upgrade equipment in 2020, all as part of a strategy to reduce GHG emissions and improve efficiency of operations. The result of the projects was reduced fuel use and emissions savings of approximately 10,000 tonnes CO2e. The costs for these initiatives totaled approximately \$500,000 and delivered annual savings of approximately \$500,000/year. There are other projects and approaches under consideration, costs for which vary drastically; the \$500,000 cited as part of this risk was derived from actual costs (equipment and engineering/contractor support) associated with specific projects completed in 2020.

**Comment**

**Identifier**

Risk 3

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

Direct operations

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

Acute physical	Increased severity and frequency of extreme weather events such as cyclones and floods
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**Primary potential financial impact**

Increased indirect (operating) costs

**Climate risk type mapped to traditional financial services industry risk classification**

<Not Applicable>

**Company-specific description**

The trend of increased floods, windstorms, cyclones and other events as a result of climate change could affect Mosaic’s business. Mosaic has approximately \$7 billion in physical assets in hurricane-prone areas of Florida and Louisiana. Mosaic’s insurance deductible for a covered wind event is, at a minimum, \$50 million per occurrence for mines and fertilizer production facilities in North America. Although our containments in these areas are built to withstand storms, additional sustained hurricane activity could force a change in design standards for buildings, equipment or containments. Similarly, a severe storm could cause physical damage to our facilities or business interruption. This could result in increased capital costs or costs per tonne of product.

**Time horizon**

Short-term

**Likelihood**

Virtually certain

**Magnitude of impact**

Medium

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

Yes, a single figure estimate

**Potential financial impact figure (currency)**

50000000

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

<Not Applicable>

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

<Not Applicable>

**Explanation of financial impact figure**

Mosaic’s insurance deductible for a covered wind event is, at a minimum, \$50 million per occurrence for mines and fertilizer production facilities in North America. Although our containments and facilities 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 as a result of a severe storm, we may face costs up to or exceeding our insurance deductible of \$50 million.

**Cost of response to risk**

1500000

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

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 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 in place in 2020 during summer hurricane season, which affects our facilities in Florida and Louisiana; similarly, we employed these procedures in 2017 in anticipation of Hurricane Irma, which hit Florida as a Category 2 storm and caused damage to Mosaic’s Bartow concentrates facility. Part of our strategy to manage the risk of hurricanes is to conduct property risk engineering assessments on an ongoing basis to 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. The approximate cost of installing fasteners to secure roof panels as a way to reduce or avoid damage from hurricanes is \$150,000. This exact cost example is based on a project we completed in 2017 at one of our distribution facilities and included the equipment and associated engineering/contractor support. As a result of installing these fasteners, the roof exceeded wind uplift requirements and thus, was theoretically less vulnerable to effects of hurricanes. In 2020 we continued planning for additional projects at one of our Florida sites that include wind mitigation considerations, like constructing a motor control center above 100-year flood elevation requirements; and constructing a small storage building and replacing siding on a dock-side structure to meet new wind design requirements. The expected cost of these projects is approximately \$1.5 million. The costs associated replacing or redesigning roof structures and making enhancements to structures vary widely; they do not represent full costs associated with hurricane preparedness.

**Comment**

**Identifier**

Risk 4

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

Direct operations

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

Chronic physical	Changes in precipitation patterns and extreme variability in weather patterns
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**Primary potential financial impact**

Decreased revenues due to reduced production capacity

**Climate risk type mapped to traditional financial services industry risk classification**

<Not Applicable>

**Company-specific description**

Mosaic is dependent on freshwater in our mining and production processes. Changes in precipitation resulting in droughts or water shortages in our operating geographies across North and South America 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**

About as likely as not

**Magnitude of impact**

Medium

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

Yes, a single figure estimate

**Potential financial impact figure (currency)**

87000000

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

<Not Applicable>

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

<Not Applicable>

**Explanation of financial impact figure**

Mosaic's 2020 net sales totaled approximately \$8.7 billion. A theoretical decrease in production output that resulted in 1% lower sales companywide could translate to approximately \$87 million less revenue based on 2020 performance.

**Cost of response to risk**

5800000

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

We are committed to responsible water use. We manage these potential climate change risk of extreme changes in precipitation patterns by recycling high percentages of the water used in our operations and by exploring the use of alternative water sources like reclaimed water, where possible. We have also invested in reverse osmosis (RO) technology, which reduces our reliance on freshwater resources. For example, as part of their larger water conservation efforts, Mosaic's Bartow facility uses reverse osmosis to produce more than 250 gallons per minute of treated water back for use at the facility's sulfuric acid plant, thereby reducing freshwater needs by the same amount. It cost approximately \$5.8 million to run the reverse osmosis plant at our Bartow facility in 2020. These cost estimates represent contract services, production materials, rental of equipment and required repairs and supplies for the year.

**Comment**

**Identifier**

Risk 5

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

Downstream

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

Chronic physical	Changes in precipitation patterns and extreme variability in weather patterns
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**Primary potential financial impact**

Decreased revenues due to reduced demand for products and services

**Climate risk type mapped to traditional financial services industry risk classification**

<Not Applicable>

**Company-specific description**

Potential climate change risks that contribute to adverse and increasingly severe weather conditions, including the impact of changes in precipitation patterns, floods and excess rainfall in key growing regions could have a negative impact on Mosaic in the form of decreased demand for our finished crop nutrient products. Even longer-term, changing precipitation and temperature patterns could make certain growing regions permanently less productive, thus affecting demand for Mosaic's core fertilizer products. As a specific example, some models project that climate change will contribute to a decline in yields in key growing regions in the United States, where approximately 30% of Mosaic's net sales originated in 2020 (please note, this estimate is for net sales from the United States in total and not a reference to a specific at-risk growing region).

**Time horizon**

Long-term

**Likelihood**

About as likely as not

**Magnitude of impact**

Medium

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

Yes, a single figure estimate

**Potential financial impact figure (currency)**

87000000

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

<Not Applicable>

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

<Not Applicable>

**Explanation of financial impact figure**

Mosaic's 2020 net sales totaled approximately \$8.7 billion. A theoretical decrease in demand for our products that resulted in 1% lower sales companywide could translate to approximately \$87 million less revenue based on 2020 performance.

**Cost of response to risk**

15000000

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

Mosaic's market analysis team continually 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, and Mosaic's overall financial performance. As another strategy to manage this risk, we are investing in research and product development and partnership opportunities to study and maximize the performance of Mosaic's fertilizer product portfolio in diverse, changing and stressful soil and climatic environments. For example, Mosaic's agronomic research program focuses on methods to build resilient soils with soil health, 4R nutrient stewardship and balanced crop nutrition initiatives. Our data from lab, greenhouse, and field research consistently demonstrates that healthy soils achieve enhanced productivity and profitability, especially in climate-induced stressful growing conditions. In 2020 we conducted 400 small plot trials in Argentina, Brazil, Chile, China, Canada, India, Latin America (Mexico to Peru), Turkey and the United States. These activities cost approximately \$3 million in 2020. Also, in 2020 we announced agreements to develop and launch agricultural solutions, including a nutrient efficiency product and a nitrogen-fixing microbial product, that contribute to soil health in diverse applications and have positive environmental benefits. In 2020 we invested approximately \$12 million in R&D agreements, equity investments and venture capital investments to progress this work.

**Comment**

**Identifier**

Risk 6

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

Upstream

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

Market	Other, please specify (Decreased supply of key raw materials)
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**Primary potential financial impact**

Decreased revenues due to reduced production capacity

**Climate risk type mapped to traditional financial services industry risk classification**

<Not Applicable>

**Company-specific description**

Energy companies are beginning to transition away from oil to other forms of low-carbon energy. As a result, reduced oil refinery operating rates in the U.S. could result in decreased availability of molten sulfur, which could increase costs of sulfur procurement or decrease availability of sulfur, an essential raw material input for our phosphate fertilizer production operations. While we were not subject to such results in the sulfur procurement markets in 2020, reduced sulfur availability did have a minor impact on our ability to produce in the first half of 2021 (though supply has since normalized and we do not expect any further sulfur supply shortfalls in the second half of 2021). We can project that if it becomes necessary to procure sulfur at higher costs, and if we are unable to pass those costs on in our product prices, or if we are unable to procure sulfur at volumes necessary for our operations, such events could have a material adverse effect on our phosphate business, and/or our financial condition or operating results. For context, in 2020 we used approximately 4.6 million long tons of sulfur to produce crop nutrient products.

**Time horizon**

Medium-term

**Likelihood**

About as likely as not

**Magnitude of impact**

Medium

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

Yes, a single figure estimate

**Potential financial impact figure (currency)**

20000000

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

<Not Applicable>

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

<Not Applicable>

**Explanation of financial impact figure**

The following example of a financial impact occurred outside the calendar year covered in this report; however, we are electing to use it to demonstrate the potential impact of the risk of low sulfur supplies on our financial performance. In early 2021 we realized higher raw material costs, primarily for sulfur, as a result of oil refinery closures in 2020 and 2021 due to lower fuel demand and extreme cold weather in the gulf region in the first quarter of 2021. Drawing from the experience from these events (which contributed to an approximately 250,000 tonnes reduction of production in Q1 2021) to demonstrate the potential impact of low sulfur supplies in the future, results in a hypothetical impact of approximately \$20 million. We arrived at this figure by assuming a 250,000-tonne reduction in production multiplied by the Q1 2021 average finished product selling price of \$477 and applying a gross margin of 17%.

**Cost of response to risk**

13000000

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

Deployment of a diverse supply chain strategy is one way we mitigate the potential risk of high raw material costs and disruptions in raw materials supply. Specifically, dedicated sulfur transportation barges and tugs and a 50% ownership interest in a company that has sulfur transportation and terminaling businesses in the Gulf of Mexico position Mosaic to source an adequate, flexible and cost-effective supply of sulfur, our third key input, to our Florida and Louisiana phosphate production facilities. Further, we believe that our investments in sulfur logistical and melting assets continue to afford us a competitive advantage compared to other producers in cost and access to sulfur in that we can supplement our need for molten sulfur with prilled sulfur. The cost of our operation of the sulfur melter in 2020 was approximately \$13 million, which represented utilities, process chemicals, people costs (payroll), contract labor, maintenance, repair costs and other costs. It excludes depreciation.

**Comment**

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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

**Primary potential financial impact**

Returns on investment in low-emission technology

**Company-specific description**

Proposed legislation in the United States and Brazil that promotes and incentivizes clean energy production (which reduces greenhouse gas emissions) could provide Mosaic tax incentives or fairer pricing for surplus electricity that Mosaic supplies to local utility grids. As an example, Mosaic would benefit from tax incentives or fairer pricing for surplus electricity that Mosaic supplied in 2020, specifically in the United States, where our Uncle Sam, Bartow, New Wales and Riverview concentrates facilities provided nearly 500,000 MWh to local utility grids.

**Time horizon**

Short-term

**Likelihood**

About as likely as not

**Magnitude of impact**

Medium

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

Yes, a single figure estimate

**Potential financial impact figure (currency)**

10000000

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

<Not Applicable>

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

<Not Applicable>

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**Explanation of financial impact figure**

In 2020, Mosaic produced approximately 4.9 million MWh of electrical energy from cogenerated electricity in our Phosphate business and sent nearly 500,000 MWh to local grids from our Uncle Sam Bartow, New Wales and Riverview concentrates facilities. In this business alone, the potential positive impacts of energy legislation could be upwards of \$10 million. This financial impact estimate represents hypothetical tax incentives or fairer pricing that could happen in the United States (at the four sites listed here) as a result of our supplying excess electricity (approximately 500,000 MWh from four sites) to local utility grids.

**Cost to realize opportunity**

12500000

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

In order to manage this opportunity, Mosaic has been actively involved in dialogues at the legislative and executive branch levels and through industry associations, engaging on issues such as fairer pricing for the power we export to the utility grid, tax credits, and incentives to encourage the production of clean power. Internally, Mosaic continually 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 electricity, specifically the addition of a tie line that connected two facilities and allowed us to increase internal use of cogenerated power (thus offsetting what we would have otherwise had to purchase from the grid, which would increase Mosaic's Scope 2 emissions). In 2020 we produced 4.9 million MWh of cogenerated electricity, approximately 90% of which we consumed internally. The installation of another tie line, this one connecting our Bartow and South Pierce facilities, will further maximize our internal use of cogenerated power. The cost of this initiative is approximately \$4 million. The cost of engaging policymakers is not available as an individual line item. The investment in cogeneration examples cited above were in the range of \$4-21 million. We are reporting a cost of \$12.5 million for this opportunity as this is the average cost associated with Mosaic's most recent investments in cogeneration (calculated as the simple average of projects costing \$21 million [new turbo generator], \$14 million [power line and associated infrastructure] and \$4 million [installation of a tie line]). Other cogeneration optimization projects are under consideration, costs for which vary widely.

**Comment****Identifier**

Opp2

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

Downstream

**Opportunity type**

Markets

**Primary climate-related opportunity driver**

Access to new markets

**Primary potential financial impact**

Increased revenues through access to new and emerging markets

**Company-specific description**

Fertilizers like the ones Mosaic produces help produce up to 50% of crop yields globally. Considering the world will have to feed nine billion people by 2050 on existing arable land, while controlling global greenhouse gas emissions, it is easy to see the importance of properly used mineral fertilizers in ensuring sustainable food security. As pressure on agriculture to reduce emissions while increasing yields escalates, Mosaic has an opportunity in the form of new markets for products related to soil health, and increased demand for existing products and services like our performance product line, MicroEssentials®, which has been shown to increase corn yields an average of 7.2 bushels per acre, or 4.3%, compared to traditional fertilizer due to product benefits such as uniform nutrient distribution. MicroEssentials® was also recently labeled an Enhanced Efficiency Fertilizer (EEF), which means it reduces nutrient losses to the environment while increasing nutrient availability for the plant or crop. As pressure on growers and other partners in the value chain to reduce the impact of farming practices on the environment, there may be new or increased demand for EEFs, including MicroEssentials®.

**Time horizon**

Long-term

**Likelihood**

About as likely as not

**Magnitude of impact**

Medium-high

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

Yes, a single figure estimate

**Potential financial impact figure (currency)**

27000000

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

<Not Applicable>

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

<Not Applicable>

**Explanation of financial impact figure**

Mosaic's sales of performance products like MicroEssentials® as a percentage of total sales may be further improved if pressure on agricultural systems to reduce environmental impact or increase yields on existing farmland escalates. Mosaic can potentially command a premium price and higher margins for our performance products, potentially resulting in an overall increase of our gross margin as a percent of net sales. Therefore, this change in sales percentage for higher yield performance products could have a positive effect on our operating results and financial condition. A hypothetical 2% increase in gross margin to 14.3% gross margin percentage, from actual sales of performance products in 2020 (\$1,370.8 million), would equate to approximately \$27 million in added profit margins.

**Cost to realize opportunity**

3000000

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

In order to manage the potential opportunity of higher demand for Mosaic's performance products, which can translate to opportunities in the form of higher sales margins, we conduct small plot trials and have established relationships with key universities around the globe to develop and test high-yield performance products, and products that thrive in increasingly stressful environments, like MicroEssentials®. The benefits of small plot trials and research are data and outcomes we can use to inform Mosaic's agronomy activities and our sales/commercial strategy, which could ultimately contribute to higher sales of performance products. For example, we are analyzing the

potential benefits of synergy of Mosaic's phosphate and potash performance products in different soils to support our product portfolio; we are also assessing micronutrient addition and their uptake in various soil conditions. The cost associated with conducting more than 400 trials in 2020 was approximately \$3 million.

**Comment**

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**Identifier**

Opp3

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

Upstream

**Opportunity type**

Products and services

**Primary climate-related opportunity driver**

Shift in consumer preferences

**Primary potential financial impact**

Increased revenues resulting from increased demand for products and services

**Company-specific description**

Mosaic sells its products to customers in 40 countries. Changes in the length of growing seasons in certain regions, like portions of Canada, may increase the productivity (and therefore planting demand) of some crops, which could improve the productivity of agriculture and result in an increased demand for agricultural inputs like the crop nutrients Mosaic supplies as its core business. For reference, our net sales to Canada in 2020 were approximately \$550 million, or roughly 6% of companywide net sales in 2020. In a scenario where certain growing region could become more productive due to climate change, Mosaic could see increased demand for higher-yield fertilizer products like MicroEssentials®, and the increased demand could have a positive effect on our operating results and financial condition. The effects could be significant to us.

**Time horizon**

Long-term

**Likelihood**

About as likely as not

**Magnitude of impact**

Medium-high

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

Yes, a single figure estimate

**Potential financial impact figure (currency)**

137000000

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

<Not Applicable>

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

<Not Applicable>

**Explanation of financial impact figure**

Our company had sales of approximately \$1.4 billion of performance products, a category which includes MicroEssentials®, during 2020. A hypothetical increase of 10% in sales volume of specialty products, including MicroEssentials®, from 2020 levels could result in over \$137 million in added revenue (calculated by multiplying 2020 performance product sales of \$1,370.8 million from Form 10-K by 110%).

**Cost to realize opportunity**

3000000

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

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 temperature and the length of growing season. 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. In 2020 we conducted 400 small plot trials in Argentina, Brazil, Chile, China, Canada, India, Northern Latin America (Mexico to Peru), Turkey and the United States. The benefits of small plot trials and research are data and outcomes we can use to inform Mosaic's agronomy activities and our sales/commercial strategy, which could ultimately contribute to higher sales of performance products. For example, we are analyzing the potential benefits of synergy of Mosaic's phosphate and potash performance products in different soils to support our product portfolio; we are also assessing micronutrient addition and their uptake in various soil conditions. The cost associated with conducting more than 400 trials in 2020 was approximately \$3 million.

**Comment**

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### C3. Business Strategy

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#### C3.1

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

Yes

#### C3.1b

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**(C3.1b) Does your organization intend to publish a low-carbon transition plan in the next two years?**

	Intention to publish a low-carbon transition plan	Intention to include the transition plan as a scheduled resolution item at Annual General Meetings (AGMs)	Comment
Row 1	Yes, in the next two years	No, we do not intend to include it as a scheduled AGM resolution item	We are currently assessing options for participating in a net-zero carbon economy. While we haven't finalized a transition plan or target, once we do, we will also confirm our communications plan to convey relevant details to stakeholders, investors included, about how Mosaic will continue to thrive in a net-zero carbon world in the future.

**C3.2**

**(C3.2) Does your organization use climate-related scenario analysis to inform its strategy?**

Yes, qualitative and quantitative

**C3.2a**

**(C3.2a) Provide details of your organization's use of climate-related scenario analysis.**

Climate-related scenarios and models applied	Details
RCP 2.6 RCP 6 IEA Sustainable development scenario Other, please specify (IEA Stated Policies Scenario)	Mosaic has been working with a third party subject matter expert to conduct a climate risk assessment and physical and transition scenario analyses. We selected RCP 6.0 and RCP 2.6 scenarios for physical risks scenario analysis; and Stated Policies and Sustainable Development Scenarios for transition risk scenario analysis. The inputs to the scenario analysis were individual site latitude and longitude; impact metrics for each site like finished product production, throughput for distribution sites and employees per site; summaries of mitigation strategies; and company production forecasts. We selected the highest-scored physical and transition global risks from a climate risk assessment for the scenario analysis. The timelines we considered were 2030 and 2050. The 2030 timeline is relevant given its proximity to Mosaic's five-year planning period, which we use for capital and strategic planning; however, it is limiting in the context of this exercise in that many long-term physical risks will not materialize within the time window. As such, we selected the 2050 timeline to model the impact of longer-term nature of chronic physical risks and transition risks on Mosaic's business. Conversely, transition risks, particularly those related to emerging regulation, are likely to materialize much sooner, so for that reason, the 2030 timeline is relevant. The risk assessment and scenario analysis considered Mosaic's direct operations; upstream and downstream supply chains; and market for products. A summary of the results are as follows: From a physical perspective, the peril our business is most at risk of is hurricane. Not surprisingly, there is significant hurricane risk related to our Florida and Louisiana facilities in both of the time periods analyzed. The most significant transition risk is the potential or current implementation of carbon price in the countries where we have operations. This risk is concentrated in the U.S., where a carbon pricing structure is under consideration, although its structure is still uncertain; and in Canada, where a carbon pricing structure is already in place. Another transition risk that could potentially affect our operations is the increased cost of raw materials, specifically related to volatility in ammonia and sulfur availability and prices – two key inputs to the phosphate manufacturing process. Although we are still processing takeaways from the scenario analysis at this time, we anticipate that it will inform our business objectives and strategy in key ways: 1) by helping inform our approach for buttressing facilities against climate-related physical threats; and 2) by reinforcing the strategic imperative of activities such as generation of low-carbon energy through cogeneration from waste heat at our facilities, and in the company's investment of significant capital in the development of Esterhazy K3, a potash mine expansion that is expected to deliver significant risk reduction, operational and GHG reduction benefits to our company.

**C3.3**

**(C3.3) Describe where and how climate-related risks and opportunities have influenced your strategy.**

	Have climate-related risks and opportunities influenced your strategy in this area?	Description of influence
Products and services	Yes	Climate-related risks and opportunities related to meeting the evolving needs of customers and growers, such as reducing the impact of crop nutrients on the environment, have influenced our product development strategy. Recently, Mosaic made the strategic decision to formalize the companywide priority to "Grow and Strengthen Our Product Portfolio." As a result, Mosaic's newly formed strategy and growth team, led by a Senior Vice President that reports directly to Mosaic's CEO, was established to pursue diverse opportunities and yield mutual benefits for Mosaic and its customers. The group is exploring products and solutions that address myriad agricultural challenges, some of which are driven by increasing climate-related risks and opportunities, like a plant's ability to thrive in increasingly stressful conditions (drought, changing temperatures, etc.). In 2020 we invested approximately \$12 million in R&D agreements, equity investments and venture capital investments to progress this work. Some of the opportunities associated with this strategy could be realized in the short-term (within four years), namely the commercialization of new product solutions.
Supply chain and/or value chain	Yes	Agriculture is susceptible to climate impacts in many ways, particularly as it relates to downstream use of our products because the use of crop nutrient products contributes to climate change, primarily through the release of N2O from the application of nitrogen-based fertilizers. It is in this context that climate-related risks and opportunities have influenced our strategy across the value chain. We know it is important to contribute to solutions that address climate change, and that is why we are adapting our product portfolio and seeking opportunities to bring products to market that help the users of our products – growers – reduce the impact of their activities on the environment. As a specific example, in 2020, Mosaic launched a partnership with Anuvia to produce products that would also support healthy soils with the development of Sus-Terra fertilizer. Sus-Terra fertilizer is a first-of-its-kind product that transforms recycled organic matter into a powerful phosphate-based, single granular fertilizer. The unique chemical composition of Sus-Terra fertilizer, built with up to 15% recycled organic matter, promotes a more balanced microbiome to support soil health. In addition, its 30% slow-release nitrogen meets the required designation as an enhanced efficiency fertilizer (EEF). EEF products reduce nutrient losses to the environment through the slow release of nutrients or by disrupting the conversion of nutrient forms in the soil that are susceptible to loss all while increasing nutrient availability for the crop. Combined with 4R practices, the use of EEFs and other emerging technologies will help to promote more sustainable farming practices while also solving for the world's increasing demand in food supply. Pressure on the agricultural value chain to minimize the impact of agriculture on the environment is increasing; accordingly, we are anticipating the release of other biological products within the next four years (short-term). Other risks, such as the risk of widespread changes in location and productivity of growing regions will materialize more slowly and thus, our response to them is longer-term in nature.
Investment in R&D	Yes	Mosaic has made the strategic decision to establish relationships with key universities and research organizations around the globe to develop and test innovative products like our MicroEssentials® line. Mosaic invests in research partnerships that focus on soil chemistry and fertilizer technology and develop innovative fertilizer formulations to improve nutrient use efficiency in a variety of climate regimes, which could potentially allow for growing crops in increasingly stressful growing conditions. Climate risks and opportunities have shaped the extent to which we invest in certain research partnerships on an annual (short-term) basis; they have also shaped the nature of our ongoing (longer-term) research. As an example of a notable strategic decision in this area, in 2020 we invested approximately \$12 million in R&D agreements, equity investments and venture capital investments related to efforts to grow and strengthen our product portfolio. Some of our R&D investments were related to development of products such as nitrogen-fixing microbial products, which help promote more sustainable farming practices while also solving for the world's increasing demand in food supply.
Operations	Yes	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. The most substantial strategic decision in this area in 2020 was our announcement of new companywide targets to reduce GHG emissions by 20% per tonne of finished product by 2025. Each facility has an individual target that rolls up to the companywide one. Site leads communicate monthly about projects, operational improvements and practices that can help drive improved performance. This helps drive accountability at all levels of the workforce. Some of the changes proposed will be subtle, whereas others might have significant impacts on the way we operate our facilities. As of the end of 2020, we were approximately 10% to our 20% target.

**C3.4**

**(C3.4) Describe where and how climate-related risks and opportunities have influenced your financial planning.**

	Financial planning elements that have been influenced	Description of influence
Row 1	Revenues Indirect costs Capital expenditures Capital allocation Access to capital Assets	Revenues: As part of our annual financial planning process, for example, a widespread flood might impact agricultural commodity markets, which could in turn affect Mosaic's annual sales. Selling prices for Mosaic's phosphate products in North America were approximately 16% lower in 2019, due in part to reduced demand as a result of the adverse weather in North America that significantly delayed crop planting and harvest, and thereby impacted fertilizer demand. Non-weather events were also significant factors in the decline in selling prices, including an influx of imported product into North America, competitive dynamics, and global supply and demand conditions. Expressed in terms of net sales, the impact of lower average sales prices and lower sales volumes to Mosaic was approximately \$640 million. The impact could have been higher had it not been partially offset by our exports of finished products to other regions. This impact on our financial condition is considered high magnitude. Indirect costs: One of the consequences of the carbon tax in Canada is pass-through costs to Mosaic from third parties. Specifically, in 2020 we continued to see price increases for electricity consumption at our Saskatchewan facilities as a result of the regulations (approximately \$4.5 million USD in 2020) and for rail freight services that are required to move Mosaic's products downstream to customers (approximately \$500,000 USD). Accordingly, indirect costs are part of our financial planning process. Direct costs, capital expenditures (CAPEX), capital allocation: We consider EHS 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 direct costs or decreased production. These impacts are part of our broad financial planning process on an annual basis. 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 and Mosaic's overall financial performance. As another example that has an impact on our operating costs, Mosaic forecasts the financial implications of carbon pricing mechanisms 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. In 2020 we continued to see price increases for electricity consumption at our Saskatchewan facilities as a result of these changing regulations. Specifically, we paid more than \$4.5 million USD (\$5.5 million CAD) in the form of carbon levy funds to the utility provider in Saskatchewan – charges that are tied directly to Mosaic's electricity consumption due to pass-through costs from the utility. This impact on our operating costs is considered low magnitude. We also consider availability of CAPEX for projects that could improve our environmental performance, including energy or GHG efficiency. As an example, Mosaic is assessing changes in emission allowances that should be effective by 2023 that will have an impact on some of our Phosphate concentrate facilities. Current equipment may not meet emissions requirements and we have initiated projects requiring capital expenditures to replace or upgrade catalysts at the affected facilities. The approximate cost per catalyst replacement is \$2 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 boiler emission allowances that will be effective in 2026 that will have significant impact on one of our Saskatchewan potash mines. Current boilers may not meet emissions requirements and we are exploring options, including equipment alterations that would require capital investments (thus affecting capital allocation), 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 \$72 million. This impact on our capital expenditures is considered high magnitude. Moreover, these costs impact Mosaic's ability to remain competitive against other global fertilizer and mining companies that operate in lower-cost jurisdictions without similar carbon tax or environmental costs. Access to capital: At this time, our identified risks related to climate change have not had an impact on our company's access to capital. However, Mosaic understands that climate-related issues can possibly have an impact on a company's credit score, which could, in turn, affect long-term access to debt capital. Similarly, we understand that external perceptions of Mosaic's ESG performance by the investor community, including elements related to climate, could have a positive or negative impact on our access to equity capital. We are employing adaptation and mitigation strategies at our operations and regularly engaging financial stakeholders in order to minimize or avoid negative impacts, and to impart an understanding of the criticality of fertilizer to sustainable food security. We are also contemplating the use of "green" financial instruments, tied to our sustainability performance, to further drive company progress toward ESG targets and to access lower borrowing interest rates. Operating assets: 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. In the past, hurricanes have resulted in minor physical damage to our facilities in Florida and Louisiana. These impacts to operating assets are part of our broad annual financial planning process. In 2017, one 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. This impact is considered moderate magnitude. 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 (operating assets) may 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 \$72 million. This impact on our operating assets is considered high magnitude.

## C3.4a

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(C3.4a) Provide any additional information on how climate-related risks and opportunities have influenced your strategy and financial planning (optional).

## 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

---

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

**Target reference number**

Int 1

**Year target was set**

2015

**Target coverage**

Company-wide

**Scope(s) (or Scope 3 category)**

Scope 1+2 (location-based)

**Intensity metric**

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

**Base year**

2012

**Intensity figure in base year (metric tons CO<sub>2</sub>e per unit of activity)**

0.27

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

100

**Target year**

2020

**Targeted reduction from base year (%)**

10

**Intensity figure in target year (metric tons CO<sub>2</sub>e per unit of activity) [auto-calculated]**

0.243

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

7.6

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

0

**Intensity figure in reporting year (metric tons CO<sub>2</sub>e per unit of activity)**

0.239

**% of target achieved [auto-calculated]**

114.814814814815

**Target status in reporting year**

Replaced

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

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

**Target ambition**

<Not Applicable>

**Please explain (including target coverage)**

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 2020 we achieved an 11% reduction in Scope 1 and 2 emissions from our 2012 baseline thanks to efforts of our employees to create fuel- and energy-saving projects across the business. Current GHG reduction targets are based on internal operational performance and cover Scope 1 and 2 emissions from operations in North and South America, excluding facilities acquired in our Mosaic Fertilizantes business in early 2018. 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.

---

**Target reference number**

Int 2



**Year target was set**

2020

**Target coverage**

Company-wide

**Scope(s) (or Scope 3 category)**

Scope 1+2 (location-based)

**Intensity metric**

Metric tons CO2e per metric ton of product

**Base year**

2015

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

0.256

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

100

**Target year**

2025

**Targeted reduction from base year (%)**

20

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

0.2048

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

10

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

0

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

0.231

**% of target achieved [auto-calculated]**

48.828125

**Target status in reporting year**

New

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

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

**Target ambition**

&lt;Not Applicable&gt;

**Please explain (including target coverage)**

In 2020, we announced a target to reduce our combined Scope 1 and Scope 2 GHG emissions by 20% per tonne of finished product by 2025. In 2020 we achieved a -10% reduction in Scope 1 and 2 emissions from our baseline thanks to efforts of our employees to conduct fuel- and energy-saving projects across the businesses. Current GHG reduction targets are based on internal operational performance and cover Scope 1 and 2 emissions from operations in North and South America, including facilities acquired in our Mosaic Fertilizantes business in early 2018. 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 are engaging our supply chain to reduce the most relevant Scope 3 emissions. We report those emissions categories in Section 6. For our GHG target, we selected a 2015 baseline year for our North America business because it represented a fairly "typical" year for Mosaic whereas the years that followed brought cyclical market conditions and operational decisions that are not representative of our business. We selected a 2018 baseline year for our Mosaic Fertilizantes business due to the "first-hand" availability of data following our 2018 acquisition of mining and production sites in Brazil.

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

Other climate-related target(s)

**C4.2b**

**(C4.2b) Provide details of any other climate-related targets, including methane reduction targets.**

**Target reference number**

Oth 1

**Year target was set**

2015

**Target coverage**

Company-wide

**Target type: absolute or intensity**

Intensity

**Target type: category & Metric (target numerator if reporting an intensity target)**

Energy consumption or efficiency	GJ
----------------------------------	----

**Target denominator (intensity targets only)**

metric ton of product

**Base year**

2012

**Figure or percentage in base year**

2.73

**Target year**

2020

**Figure or percentage in target year**

2.46

**Figure or percentage in reporting year**

2.57

**% of target achieved [auto-calculated]**

59.2592592592593

**Target status in reporting year**

Retired

**Is this target part of an 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

**Please explain (including target coverage)**

In 2020, we achieved an 11% reduction in energy intensity from our 2012 baseline. This reduction was due to efficiency efforts and reductions in energy use in our Potash operations.

**C4.3**

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

Yes

**C4.3a**

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

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	20	3000000
To be implemented*	4	100000
Implementation commenced*	6	30000
Implemented*	6	66765
Not to be implemented		

**C4.3b**

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

**Initiative category & Initiative type**

Low-carbon energy consumption	Liquid biofuels
-------------------------------	-----------------

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

300

**Scope(s)**

Scope 1

**Voluntary/Mandatory**

Voluntary

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

4000

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

0

**Payback period**

<1 year

**Estimated lifetime of the initiative**

Ongoing

**Comment**

One of our Brazil sites replaced fossil fuel with a biofuel.

**Initiative category & Initiative type**

Energy efficiency in production processes	Other, please specify (Reduced consumption of biomass for energy )
---	--

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

10000

**Scope(s)**

Scope 1

**Voluntary/Mandatory**

Voluntary

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

250000

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

0

**Payback period**

<1 year

**Estimated lifetime of the initiative**

Ongoing

**Comment**

One of our facilities reduced their consumption of biomass as a source of energy.

**Initiative category & Initiative type**

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

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

300

**Scope(s)**

Scope 2 (location-based)

**Voluntary/Mandatory**

Voluntary

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

450000

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

100000

**Payback period**

4-10 years

**Estimated lifetime of the initiative**

Ongoing

**Comment**

Companywide, we completed small optimization projects (for example, maintenance of steam traps) that reduced our energy needs and reduced scope 2 emissions.

**Initiative category & Initiative type**

Energy efficiency in production processes	Machine/equipment replacement
---	-------------------------------

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

165

**Scope(s)**

Scope 1  
Scope 2 (location-based)

**Voluntary/Mandatory**

Voluntary

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

12000

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

20000

**Payback period**

1-3 years

**Estimated lifetime of the initiative**

Ongoing

**Comment**

Small-scale equipment replacements/upgrades, like the replacement of pumps at one of our Florida mining facilities and the purchase of a thermostat for a firewater pump at a Saskatchewan mine site, reduced energy use, thereby having a positive impact on our scope 1 and 2 emissions.

**Initiative category & Initiative type**

Energy efficiency in buildings	Lighting
--------------------------------	----------

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

9000

**Scope(s)**

Scope 2 (location-based)

**Voluntary/Mandatory**

Voluntary

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

6000000

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

2000000

**Payback period**

4-10 years

**Estimated lifetime of the initiative**

6-10 years

**Comment**

Companywide, we upgraded lighting to more efficient LEDs, which reduces purchased electricity and GHG emissions.

**Initiative category & Initiative type**

Energy efficiency in production processes	Reuse of water
---	----------------

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

47000

**Scope(s)**

Scope 1

**Voluntary/Mandatory**

Voluntary

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

25000

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

95000

**Payback period**

1-3 years

**Estimated lifetime of the initiative**

Ongoing

**Comment**

Our Belle Plaine potash site modified a process to reduce their pumping of freshwater for dilution, which resulted in lower Scope 1 emissions.

C4.3c

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

Method	Comment
Employee engagement	Mosaic emphasizes the philosophy of continuous improvements to reduce energy use in our manufacturing facilities and support functions, and we recognize that employees on the front line often have the best ideas. Mosaic fosters a culture which encourages employees to bring forward ideas, and this open dialogue has driven investments that result in energy savings and/or emissions reductions. In 2020, we continued an internal communications effort around "small wins" to recognize employees for their efforts, large and small, in improving environmental performance and meeting companywide 2025 ESG Performance Targets.
Other (Site responsibility for sustainability initiatives)	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 (some of which require investments) for improving energy efficiency and GHG emissions that will help us achieve our 2025 target to reduce GHG emissions by 20% 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. We analyze the cost of complying with regulatory compliance against the cost of intervening with solutions that will reduce GHG emissions.

C4.5

**(C4.5) Do you classify any of your existing goods and/or services as low-carbon products or do they enable a third party to avoid GHG emissions?**

Yes

C4.5a

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

**Level of aggregation**

Product

**Description of product/Group of products**

Mosaic's performance product MicroEssentials® has been shown to increase corn yields an average of 7.2 bushels per acre, or 4.3%, compared to traditional fertilizer. MicroEssentials® was also recently labeled an Enhanced Efficiency Fertilizer (EEF), which means it reduces nutrient losses to the environment while increasing nutrient availability for the plant or crop.

**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)

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

16

**% of total portfolio value**

<Not Applicable>

**Asset classes/ product types**

<Not Applicable>

**Comment**

Mosaic's performance 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 CO2e/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 (farm 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 emissions/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 CO2e/year. This is a theoretical example only. The percentage of total sales is for revenue from performance products (a category that includes MicroEssentials®) as a share of total revenue from all product types. Sales for MicroEssentials® are not available as a separate line item. Note for Methodology: US EPA Climate Leaders: Direct HFC and PFC Emissions from Manufacturing Refrigeration and Air Conditioning Equipment; 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.

C5. Emissions methodology

C5.1

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

**Scope 1**

**Base year start**

January 1 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 emissions.**

- The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)
- US EPA Center for Corporate Climate Leadership: Indirect Emissions From Purchased Electricity
- US EPA Center for Corporate Climate Leadership: Direct Emissions from 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 emissions.**

- Other 1: by stoichiometric mass balance for reactive species containing CO2 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?**

**Reporting year**

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

3437836

**Start date**

<Not Applicable>

**End date**

<Not Applicable>

**Comment**

## C6.2

---

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

#### Row 1

##### Scope 2, location-based

We are reporting a Scope 2, location-based figure

##### Scope 2, market-based

We are reporting a Scope 2, market-based figure

##### Comment

Market based emissions available for most locations in the United States, Brazil and Saskatchewan, representing 96% of our total Scope 2 emissions. We do not have market-based emission factors available for sites in Peru or Paraguay at this time.

## C6.3

---

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

#### Reporting year

##### Scope 2, location-based

1482151

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

1446464

##### Start date

<Not Applicable>

##### End date

<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

---

### (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 this source is excluded

Historically, Scope 1 and Scope 2 emissions from these facilities have accounted for less than 0.1 percent of global company emissions. 2020 emissions were not calculated for our China and India facilities, but looking forward, we are planning to include them.

## C6.5

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

## Purchased goods and services

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

2415226

### Emissions calculation methodology

Ammonia purchased based on IPPC 2013 guidance for NH3 production with modern, natural gas NH3 plants.

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

0

### Please explain

This figure, assured by ERM CVS for the 2020 reporting year, represents emissions associated with ammonia purchases in 2020, which we estimate are the most material component of purchased goods and services category for Mosaic. It does not include other purchased goods and services, or other relevant cradle-to-grate emissions associated with purchases related to our activities.

## Capital goods

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

300000

### 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).

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

0

### Please explain

Figure represents emissions associated with capital expenditures data from our 10K for 2020. This figure was not assured by ERM CVS.

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

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

498116

### 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

### Please explain

This figure was assured by ERM CVS for the 2020 year.

## Upstream transportation and distribution

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

246754

### Emissions calculation methodology

Calculated using mode-specific emissions factors from The Climate Registry for CH4, N2O and CO2 for respective fuels: diesel and compressed natural gas.

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

80

### Please explain

This category was assured by ERM CVS for the 2020 reporting year. It includes emissions associated with the transport of in-process and finished goods by non-company owned trucks to support our Florida phosphate operations in 2020; and by non-company owned rail cars in our Brazil, Canada and United States businesses. Pipeline transportation of ammonia is excluded. We rely on transportation vendors to supply us with trips data that is used in our analysis of this category. We place reliance on the accuracy of their data; however, distance traveled is checked against internal records for accuracy.



## Waste generated in operations

### Evaluation status

Not relevant, calculated

### Metric tonnes CO2e

2787

### Emissions calculation methodology

Applied DEFRA factors for waste categories by treatment/disposal method.

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

0

### Please explain

This category was not assured by ERM CVS for the 2020 reporting year. It includes emissions associated with our disposal of non-mining wastes generated from our mines and manufacturing facilities. For wastes of "unknown" or mixed categories, we assigned an average of landfill factors for construction debris as provided by the DEFRA standard.

## Business travel

### Evaluation status

Not relevant, calculated

### Metric tonnes CO2e

619

### Emissions calculation methodology

Methodology from travel management company is based on DEFRA GHG Conversion Factors for short-, medium- and long-haul flights. The method evaluated flights based on airport locations and calculates emissions based on actual distance flown.

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

100

### Please explain

This category was assured by ERM CVS for the 2020 reporting year. It includes activity-specific data supplied by Mosaic's Travel Management vendor for companywide air travel and excludes travel by other modes.

## Employee commuting

### Evaluation status

Not relevant, calculated

### Metric tonnes CO2e

30000

### Emissions calculation methodology

Figure represents approximate CO2e associated with the commutes of employees at our Florida operations, representing approximately 30% of the total workforce. It considers an average commute distance of 22 miles, gleaned through an employee survey in 2018, and assumes gasoline use for an average size car in the United States. This represents less than 0.5% of our companywide total scope 3 emissions. In 2020, our workforce was primarily working remotely; therefore, emissions from this category would have been even lower in 2020.

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

0

### Please explain

Based on a third-party evaluation to assess the greenhouse gas emissions across our value chain, employee commuting for our total workforce is estimated to represent less than 1% of total scope 3 emissions. This is logical and in line with expectations considering the emissions accounted for in purchased goods and services, fuel- and energy-related activities and use of sold products categories.

## Upstream leased assets

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

Emissions associated with leased assets under Mosaic's operational control including land, pumps, autos, mobile equipment and railcars are accounted for in Scope 1 and 2 inventories. Emissions associated with other upstream leased assets (IT equipment, copiers, etc.) are estimated to represent less than 0.1% of total scope 3 emissions. This is logical and in line with expectations considering the emissions accounted for in purchased goods and services, fuel- and energy-related activities and use of sold products categories

## Downstream transportation and distribution

### Evaluation status

Not relevant, calculated

### Metric tonnes CO2e

25000

### Emissions calculation methodology

Based on Greenhouse Gas Protocol's Corporate Value Chain Accounting and Reporting Standard, a majority of Mosaic's shipments of finished products are accounted for within the Upstream Transportation category; however, we estimate that approximately 5% of maritime movements (estimated at 500,000 tonnes CO2e/year) are considered downstream, which would represent approximately 1% of companywide scope 3 emissions.

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

0

### Please explain

Based on Greenhouse Gas Protocol's Corporate Value Chain Accounting and Reporting Standard, a majority of Mosaic's shipments of finished products are accounted for within the Upstream Transportation category; however, we estimate that approximately 5% of maritime movements are considered downstream, which would represent approximately 1% of companywide scope 3 emissions. To date, we have not calculated the full CO2e impact of these movements. This figure is an estimate only.

## Processing of sold products

### Evaluation status

Not relevant, calculated

### Metric tonnes CO2e

5832

### Emissions calculation methodology

Calculated is based on the average emissions intensity (expressed in CO2e) of processing products at Mosaic blending locations.

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

0

### Please explain

Includes all tonnes of crop nutrients sold in North America and assumes that they are blended at the distributor level. This value was not assured by ERM CVS.

## Use of sold products

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

4798346

### Emissions calculation methodology

Applies Tier 1 IPCC 2019 factor for nitrogen-based fertilizers. We based emissions on the amount of nitrogen per tonne of finished phosphate product sold in 2020. This value was assured by ERM CVS for the 2020 year.

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

0

### Please explain

Applies Tier 1 IPCC 2019 factor for nitrogen-based fertilizers. We based emissions on the amount of nitrogen per tonne of finished phosphate product sold in 2020. This value was assured by ERM CVS for the 2020 year.

## End of life treatment of sold products

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

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

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

This figure represents emissions associated with downstream cattle leases on formerly mined land in the United States. The total was calculated using EPA figures for enteric fermentation. It assumes two mature beef cows per acre in the South Atlantic region of the U.S. and applies a factor of 69.80 kg CH4 per cow. In 2020, Mosaic leased approximately 67,000 acres for cattle. We consider this calculation simplified as it does not take into consideration the age and type (beef or dairy) characteristics of the cattle actually grazing on Mosaic-owned land. 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

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

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

## Investments

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

631470

### Emissions calculation methodology

Applied EPA factors for CO2, CH4 and N2O related to consumption of diesel, fuel oil, gasoline, natural gas and purchased electricity and applied a 25% ownership interest.

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

0

### Please explain

This figure represents emissions associated with our 25% equity share investment in Ma'aden Wa'ad Al Shamal Phosphate Company in the Kingdom of Saudi Arabia and includes emissions associated with fuels and purchased electricity. This figure was assured by ERM CVS for the 2020 reporting year. It does not include other equity-method investments.

## Other (upstream)

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

Not applicable to Mosaic operations. Upstream emissions accounted for in other categories.

## Other (downstream)

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

Not applicable to Mosaic operations. Downstream emissions accounted for in other categories.

## C6.7

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

No

## C6.10

---

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

**Intensity figure**

0.000565516

**Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO<sub>2</sub>e)**

4919986

**Metric denominator**

unit total revenue

**Metric denominator: Unit total**

8700000000

**Scope 2 figure used**

Location-based

**% change from previous year**

10

**Direction of change**

Increased

**Reason for change**

Both a decrease in revenue due to market conditions and an increase in absolute emissions caused our emissions intensity per unit of revenue to be higher in 2020 than in 2019.

---

**Intensity figure**

415.4

**Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO<sub>2</sub>e)**

4919986

**Metric denominator**

full time equivalent (FTE) employee

**Metric denominator: Unit total**

11844

**Scope 2 figure used**

Location-based

**% change from previous year**

11

**Direction of change**

Increased

**Reason for change**

Both a decrease in FTE employees due to the integration of our Potash and Phosphate businesses into a single business unit, and an increase in absolute emissions caused our emissions intensity per FTE to be higher than in 2019.

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## C7. Emissions breakdowns

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### C7.1

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

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	3419555	IPCC Fourth Assessment Report (AR4 - 100 year)
N2O	13168	IPCC Fourth Assessment Report (AR4 - 100 year)
CH4	5113	IPCC Fourth Assessment Report (AR4 - 100 year)

## C7.2

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

Country/Region	Scope 1 emissions (metric tons CO2e)
United States of America	1793292
Canada	838367
Brazil	673569
Paraguay	132468
Peru	140

## C7.3

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

By business division

By facility

## C7.3a

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

Business division	Scope 1 emissions (metric ton CO2e)
Phosphate	1883978
Potash	876098
Fertilizantes	673709
Distribution	4051

## C7.3b

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

Facility	Scope 1 emissions (metric tons CO2e)	Latitude	Longitude
Faustina	857719	30.083384	-90.914391
New Wales	367000	27.832701	-82.051048
Bartow	174602	27.907545	-81.800537
Plant city	1659	28.168056	-82.141667
Uncle Sam	166386	30.037428	-90.827377
Riverview	130550	27.860191	-82.3936
Four Corners	24241	27.646202	-82.087097
Green Bay	0	27.820769	-81.784767
South Fort Meade	10293	27.647848	-81.756477
South Pierce	13305	27.765583	-81.940331
South Pasture	3111	27.585763	-81.94291
Wingate	2346	27.504131	-82.130203
Hookers Prairie	0	27.917828	-82.437286
Big Bend	300	27.80416	-82.397083
Taft	0	30.019122	-90.774707
Belle Plaine	663627	50.427658	-105.198296
Esterhazy K2	110040	50.65768	-101.848412
Colonsay	18266	51.934105	-105.763496
Esterhazy K1	40726	50.729282	-101.933723
Carlsbad	37731	32.412258	-103.939217
Esterhazy K3	5709	50.646084	-101.991946
Fospar	52284	-25.510841	-48.521633
Tampa Marine	216	27.926672	-82.43187
Houston	119	29.744053	-95.114723
Savage	284	44.779415	-93.336426
Henderson	1194	37.815159	-87.658173
Paranagua	146	-25.510841	-48.521633
Uberaba	0	-19.982393	-47.900391
Alto Araguaia	0	-17.151678	53.192689
Rio Verde	120	-17.807942	-51.008695
Candeias	68	-12.66295	-38.51944
Sorriso	247	-12.604993	-55.749907
Pekin	35	40.587875	-89.660637
Campo Grande	35	-21.258281	-48.492311
Paranagua II	390	-25.531969	-48.549938
Uberaba II	256	-19.788737	-47.943228
Villela	140	-25.667817	-57.690011
Rondonopolis	384	-16.619864	-54.701082
Catalao	114	-18.190415	-47.970764
Hopewell	0	27.915899	-82.131219
Bonnie	0	27.863068	-81.932498
Hookers Point	647	27.917532	-82.439013
Port Sutton	116	27.905096	-82.410554
Rio Grande II	247	-32.102711	-52.113065
Cajati	214620	-24.714879	-48.124609
Uberaba III	223283	-19.993207	-47.883844
Araxa	30904	-19.629278	-46.977984
Catalao II	42478	-18.164763	-47.905652
Patrocínio	29132	-19.015003	-46.80879
Tapira	69457	-19.842885	-46.852427
Taquari Vassouras	9140	-10.651971	-37.03583
Patos de Minas	169	-18.374014	-46.913118
Miski Mayo	132468	-5.802229	-81.05289
Pine Bend	1441	44.740681	-93.112228
Carnalita	93	-10.651971	-37.03583

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	1711520	<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 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 (midstream)	<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 for in Scope 2 market-based approach (MWh)
United States of America	727207	693376	1680497	58
Canada	655290	653286	1001972	73
Brazil	74841	74841	1011363	0
Paraguay	80	80	1078	0
Peru	24882	24882	83610	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 (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Phosphate	671485	637829
Potash	727084	725080
Distribution	8808	8634
Fertilizantes	74921	74921

**C7.6b**

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

Facility	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Belle Plaine	15235	15188
Carlsbad	71795	71795
Big Bend	905	878
Bonnie	0	0
Bartow	42787	41510
Faustina	38260	26536
Green Bay	0	0
Colonsay	31969	31871
Mulberry	0	0
Nichols	0	0
New Wales	31571	30628
Plant City	14264	13839
Riverview	23717	23009
South Pierce	4651	4512
Taft	0	0
Uncle Sam	13634	9456
Henderson	1122	1122
Hookers Point	1001	972
Houston	221	221
Pekin	311	311
Port Sutton	986	956
Savage	314	314
Tampa Marine	225	218
Esterhazy K1	170652	170130
Esterhazy K2	399252	398031
Esterhazy K3	38182	38065
Alto Arguaia	0	0
Candeias	30	30
Campo Grande	4	4
Catalao	59	59
Fospar	2342	2342
Paranagua	62	62
Paranagua II	96	96
Rondonopolis	87	87
Rio Verde	46	46
Sorriso	88	88
Uberaba	0	0
Uberaba II	20	20
Villetea	80	80
Four Corners	329175	319348
Fort Green	0	0
Hookers Prairie	0	0
Hopewell	0	0
Miski Mayo	24882	24882
Lonesome	0	0
South Fort Meade	81403	78973
South Pasture	0	0
Wingate	66237	64259
Streamsong	3633	3524
Rio Grande II	63	63
Cajati	5489	5489
Guara	5	5
Uberaba III	12676	12676
Araxa	10482	10482
Catalao II	9263	9263
Tapira	22453	22453
Taquari-Vassouras	11313	11313
Patrocinio	227	227
Patos de Minas	33	33

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	169789	150367	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 (midstream)	<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	At this time our reporting of Category 1 includes only ammonia purchases, which represents what we estimate to be our most material category 1 emissions source. This figure has been third-party assured by ERM CVS.

**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?**  
Increased

**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	Our renewable energy consumption did not change from the previous year.
Other emissions reduction activities	66704	Decreased	1.46	Our emissions savings projects for 2020 decreased our overall emissions by 0.43%. We arrived at this percentage by dividing the reduction from projects by the 2019 total emissions, $(19,765/4,583,958)*100=0.43\%$ . One of our Potash facilities was able to reuse pond water at their site, reducing reliance on pumps and other fuel consuming processes. We experienced a 1.02% decrease in tonnes of CO2e as a result. We arrived at this percentage by dividing the decrease in CO2e from the site by the 2019 total emissions $(46,939/4,583,958)*100=1.02\%$ .
Divestment		<Not Applicable >		
Acquisitions		<Not Applicable >		
Mergers		<Not Applicable >		
Change in output	443275	Increased	9.67	Due to a year-over-year increase in ammonia production, we experienced a 3.41% increase in tonnes of CO2e. We arrived at this percentage by dividing the increase in ammonia production by the 2019 total emissions, $(156,398/4,583,958)*100=3.41\%$ . Increase in finished product tonnes accounted for 6.26% increase in year-over-year GHG emissions. We arrived at this percentage by multiplying the increased tonnes by the 2020 emissions rate and then dividing by the 2019 total emissions, $((1,224,687*0.23)/4,583,958)*100=6.26\%$ .
Change in methodology		<Not Applicable >		
Change in boundary		<Not Applicable >		
Change in physical operating conditions		<Not Applicable >		
Unidentified	40542	Decreased	0.88	Due to 'unidentified' reasons, emissions were lower than the previous year by less than 1%. Last year, 44,542 tonnes of CO2e were decreased by means we could not readily separate. Our total Scope 1 & Scope 2 emissions in the previous year were 4,583,958. We arrived at 0.88% by $(44,542/4,583,958)*100=0.88\%$ .
Other		<Not Applicable >		

### 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 undertook this energy-related activity in the reporting year
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	No
Consumption of purchased or acquired steam	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 (renewable and non-renewable) MWh
Consumption of fuel (excluding feedstock)	LHV (lower heating value)	357189	9366765	9723955
Consumption of purchased or acquired electricity	<Not Applicable>	131	3778520	3778651
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>	357320	13145285	13502605

**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)	2452269
Consumption of purchased or acquired electricity	<Not Applicable>	411006
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>	2863275

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

**C8.2c**

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

**Fuels (excluding feedstocks)**

Diesel

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

1247442

**MWh fuel consumed for 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

**Emission factor**

10.3

**Unit**

kg CO2e per gallon

**Emissions factor source**

source: Pg. 29 The Climate Registry Default Emission Factors, revised May 2018

**Comment**

Number represents the summation of CO2, N2O and CH4 emissions converted to CO2e using base factors of 25 for CH4 and 298 for N2O as per IPCC Fourth Assessment Report (AR4).

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**Fuels (excluding feedstocks)**

Natural Gas

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

7565868

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

0

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

4273690

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

474854

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

<Not Applicable>

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

2817324

**Emission factor**

53.09

**Unit**

kg CO2e per gallon

**Emissions factor source**

source: Pg. 2 The Climate Registry Default Emission Factors, revised May 2018

**Comment**

Number represents the summation of CO2, N2O and CH4 emissions converted to CO2e using base factors of 25 for CH4 and 298 for N2O as per IPCC Fourth Assessment Report (AR4).

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**Fuels (excluding feedstocks)**

Propane Gas

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

29081

**MWh fuel consumed for 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

**Emission factor**

5.74

**Unit**

kg CO2e per gallon

**Emissions factor source**

source: Pg. 31 The Climate Registry Default Emission Factors, revised March 2018

**Comment**

Number represents the summation of CO2, N2O and CH4 emissions converted to CO2e using base factors of 25 for CH4 and 298 for N2O as per IPCC Fourth Assessment Report (AR4).

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**Fuels (excluding feedstocks)**

Motor Gasoline

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

26130

**MWh fuel consumed for 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**

&lt;Not Applicable&gt;

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

0

**Emission factor**

8.96

**Unit**

kg CO2e per gallon

**Emissions factor source**

Pg. 29 The Climate Registry Default Emissions Factors, revised May 2018

**Comment**

Number represents the summation of CO2, N2O and CH4 emissions converted to CO2e using base factors of 25 for CH4 and 298 for N2O as per IPCC Fourth Assessment Report (AR4).

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**Fuels (excluding feedstocks)**

Fuel Oil Number 1

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

498244

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

0

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

498244

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

0

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

&lt;Not Applicable&gt;

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

0

**Emission factor**

11.3

**Unit**

kg CO2e per gallon

**Emissions factor source**

Pg. 29 The Climate Registry Default Emissions Factors, revised May 2018

**Comment**

Number represents the summation of CO2, N2O and CH4 emissions converted to CO2e using base factors of 25 for CH4 and 298 for N2O as per IPCC Fourth Assessment Report (AR4).

---

**Fuels (excluding feedstocks)**

Other, please specify (Ethanol)

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

264

**MWh fuel consumed for 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**

&lt;Not Applicable&gt;

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

0

**Emission factor**

5.76

**Unit**

kg CO2e per gallon

**Emissions factor source**

Pg. 1 of EPA Climate Leadership Emission Factors as of March 2018

**Comment**

Number represents the summation of CO2, N2O and CH4 emissions converted to CO2e using base factors of 25 for CH4 and 298 for N2O as per IPCC Fourth Assessment Report (AR4).

**Fuels (excluding feedstocks)**

Other, please specify (Biomass)

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

356925

**MWh fuel consumed for 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

**Emission factor**

113.94

**Unit**

kg CO2e per gallon

**Emissions factor source**

IPCC 2006, Volume 2, Chapter 2

**Comment**

Number represents the summation of CO2, N2O and CH4 emissions converted to CO2e using base factors of 25 for CH4 and 298 for N2O as per IPCC Fourth Assessment Report (AR4).

**C8.2d**

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

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity	1921193	1809208	0	0
Heat	4771934	4771934	0	0
Steam	21588484	21588484	0	0
Cooling	0	0	0	0

**C-CH8.2d**

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

	Total gross generation (MWh) inside chemicals sector boundary	Generation that is consumed (MWh) inside chemicals sector boundary
Electricity	1351233	1012788
Heat	498244	498244
Steam	16261010	16261010
Cooling	0	0

**C8.2e**

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

**Sourcing method**

Power purchase agreement (PPA) with a grid-connected generator with energy attribute certificates

**Low-carbon technology type**

Wind

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

Canada

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

73

**Comment**

Mosaic's Colonsay facility has a green power purchase agreement with utility (SaskPower) to purchase low carbon electricity and it is accounted for here.

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**Sourcing method**

Other, please specify (Off-grid energy consumption from an on-site installation or through a direct line to an off-site generator owned by another company)

**Low-carbon technology type**

Solar

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

United States of America

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

58

**Comment**

Solar power located on site in Carlsbad, NM. 58 MWh generated to offset the purchase of electricity.

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**C-CH8.3**

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

Yes

**C-CH8.3a**

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

**Fuels used as feedstocks**

Natural gas

**Total consumption**

221942

**Total consumption unit**

thousand cubic metres

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

1.78

**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 0.8kg/m<sup>3</sup>.

**Fuels used as feedstocks**

Other, please specify (Molten Sulfur)

**Total consumption**

4672306

**Total consumption unit**

metric tons

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

0

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

0

**Heating value**

LHV

**Comment**

Emissions from feedstock 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 production converted to per ton feedstock input.

**C-CH8.3b**

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

	Percentage of total chemical feedstock (%)
Oil	0
Natural Gas	5
Coal	0
Biomass	0
Waste (non-biomass)	0
Fossil fuel (where coal, gas, oil cannot be distinguished)	95
Unknown source or unable to disaggregate	0

**C9. Additional metrics**

**C9.1**



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

**Description**

Energy usage

**Metric value**

2.57

**Metric numerator**

Total Energy Consumption

**Metric denominator (intensity metric only)**

Metric tonnes finished product

**% change from previous year**

7

**Direction of change**

Increased

**Please explain**

Increase due to resuming ammonia production in 2020 after idle conditions in 2019.

---

**Description**

Other, please specify (Cogenerated power)

**Metric value**

1921194

**Metric numerator**

MWh

**Metric denominator (intensity metric only)**

**% change from previous year**

1

**Direction of change**

Decreased

**Please explain**

Cogenerated power is generated by harnessing waste heat from the sulfuric acid manufacturing process. Emissions associated with original source of the heat, sulfuric acid production, are accounted for in scope 1 emissions. As there are no incremental emissions associated with the production of power from this process, we are including it as a low-carbon source.

---

**C-CH9.3a**

---

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

**Output product**

Ammonia

**Production (metric tons)**

331693

**Capacity (metric tons)**

455000

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

0

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

0

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

0

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

0

**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)**

19991052

**Capacity (metric tons)**

225000

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

0

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

0

---

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

0

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

1.39

**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)**

4903332

**Capacity (metric tons)**

5300000

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

0

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

0

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

0

**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 Production)

**Production (metric tons)**

7800000

**Capacity (metric tons)**

11700000

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

0.24

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

0.21

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

1.37

**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)**

8400000

**Capacity (metric tons)**

10500000

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

0.1

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

0.13

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

0

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

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

C-CH9.6a

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

Technology area	Stage of development in the reporting year	Average % of total R&D investment over the last 3 years	R&D investment figure in the reporting year (optional)	Comment
Waste heat recovery	Large scale commercial deployment	≤20%		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. We are investigating technology upgrades that would allow us to harness additional waste heat to enable more production of cogenerated electricity at our Brazil phosphate facilities. Multiple heat recovery systems would cost \$250,000,000.
Unable to disaggregate by technology area	<Not Applicable>	≤20%	80000	As a specific example, in 2020 we invested approximately \$80,000 in membership of International Minerals Innovation Institute (IMI) to research topics like safety; promising technologies; and emissions-reducing solutions such as hydrogen, small modular reactors, and next generation carbon capture.

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 emissions, and attach the relevant statements.

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Limited assurance

**Attach the statement**

ERM CVS 2021 CDP Assurance Statement Mosaic\_FINAL.pdf

**Page/ section reference**

Page 1/1

**Relevant standard**

ISAE3000

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

100

## C10.1b

---

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

**Scope 2 approach**

Scope 2 location-based

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Limited assurance

**Attach the statement**

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**Page/ section reference**

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**Relevant standard**

ISAE3000

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

100

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## C10.1c

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

**Scope 3 category**

Scope 3: Purchased goods and services

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Limited assurance

**Attach the statement**

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**Page/section reference**

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**Relevant standard**

ISAE3000

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

100

---

**Scope 3 category**

Scope 3: Fuel and energy-related activities (not included in Scopes 1 or 2)

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Limited assurance

**Attach the statement**

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**Page/section reference**

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**Relevant standard**

ISAE3000

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

100

---

**Scope 3 category**

Scope 3: Upstream transportation and distribution

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**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Limited assurance

**Attach the statement**

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**Page/section reference**

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**Relevant standard**

ISAE3000

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

100

---

**Scope 3 category**

Scope 3: Business travel

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Limited assurance

**Attach the statement**

ERM CVS 2021 CDP Assurance Statement Mosaic\_FINAL.pdf

**Page/section reference**

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**Relevant standard**

ISAE3000

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

100

---

**Scope 3 category**

Scope 3: Use of sold products

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Limited assurance

**Attach the statement**

ERM CVS 2021 CDP Assurance Statement Mosaic\_FINAL.pdf

**Page/section reference**

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**Relevant standard**

ISAE3000

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

100

---

**Scope 3 category**

Scope 3: Investments

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Limited assurance

**Attach the statement**

ERM CVS 2021 CDP Assurance Statement Mosaic\_FINAL.pdf

**Page/section reference**

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**Relevant standard**

ISAE3000

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

100

**C10.2**

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

Yes

**C10.2a**

**(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	Energy consumption	ISAE3000	Total energy use (consumption) verified by ERM CVS for the 2020 calendar year. ERM CVS 2021 CDP Assurance Statement Mosaic_FINAL.pdf
C7. Emissions breakdown	Year on year change in emissions (Scope 1 and 2)	ISAE3000	Additional data assured in 2020 is year-on-year emissions change in Scope 1 and Scope 2. See page 1 of attached ERM CVS 2020 Assurance Statement Mosaic_Final.PDF ERM CVS 2021 CDP Assurance Statement Mosaic_FINAL.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)?**

Yes

**C11.1a**

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

Saskatchewan OBPS - ETS

**C11.1b**

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

**Saskatchewan OBPS - ETS**

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

25

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

49

**Period start date**

January 1 2018

**Period end date**

December 31 2030

**Allowances allocated**

0

**Allowances purchased**

0

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

880000

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

730000

**Details of ownership**

Facilities we own and operate

**Comment**

2020 emissions cited here represent those which were third-party assured by ERM CVS to a moderate standard alongside the rest of Mosaic's companywide emissions. Mosaic undertakes a separate validation exercise of scope 1 emissions from sites that are governed by the Saskatchewan OBPS-ETS; however, as of the date of this report, the final 2020 results have not been validated by the Ministry of Environment.

C11.1d

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

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 late 2018, the federal government also implemented a federal carbon pricing backstop system that applies in any province or territory that does not have a carbon pricing system in place by 2018. The federal system applies, in part, to our Saskatchewan Potash facilities. The federal government accepted Saskatchewan's plan for regulating industrial GHG emission and Mosaic now reports to the Saskatchewan Ministry of Environment to meet 2030 reduction targets; however, the federal government imposed a carbon tax on GHG emissions from electricity, which will affect our facilities in Saskatchewan. Mosaic 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 the remaining regulatory details. 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 2025 ESG Performance Targets to reduce 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

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

**Objective for implementing an internal carbon price**

Navigate GHG regulations  
Change internal behavior

**GHG Scope**

Scope 1  
Scope 2

**Application**

In anticipation of regulatory changes in our operating geographies, namely the United States where we have phosphate and potash mining and chemical plants, we have applied various pricing scenarios to our emissions performance in order to assess our potential exposure to carbon pricing schemes. To date, the internal price on carbon hasn't been formalized as a decision-making tool for leadership, but we anticipate doing so in the next two years. We also have used this price to simulate the impact of carbon pricing on the economic feasibility of a project that would otherwise be difficult to justify.

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

63

**Variance of price(s) used**

Using the example above, we have applied uniform pricing for our U.S.-based operations, using current/average GHG performance.

**Type of internal carbon price**

Shadow price

**Impact & implication**

We have applied various pricing scenarios to our emissions performance in order to assess our potential exposure to carbon pricing schemes. For example, if we apply the International Energy Agency's (IEA) recommended price of \$63 per tonne of CO2e generated to the direct emissions from our U.S. facilities (roughly 1.8 million tonnes CO2e/year), the impact would be greater than \$110 million per year. This example is a gross simplification and doesn't take into account any potential exemptions for essential or energy intensive trade exposed industries like the one Mosaic operates in. We are monitoring these developments closely.

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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

**C12.1a**

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

**Type of engagement**

Information collection (understanding supplier behavior)

**Details of engagement**

Collect climate change and carbon information at least annually from suppliers

**% of suppliers by number**

51

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

80

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

26

**Rationale for the coverage of your engagement**

In 2020 we announced a target to engage suppliers and service providers, representing 80% of Mosaic's total North American procurement and supply chain expenditures. Our initial effort took the form of a survey, which was meant to gather baseline data to assess our supply chain's commitment to and performance in key ESG areas such as environment, diversity and human rights. Several of the questions centered on greenhouse gas emissions tracking and reduction strategies. By mid-2021, the survey had reached vendors, service providers and suppliers representing spend in excess of \$2.5 billion, which is more than 75% of North American supply chain and procurement expenditures. We selected this figure because it represents a majority of our North American expenditures, both in terms of number and spend.

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

We are still analyzing the data from this survey and defining next steps; however, preliminary insights from the survey show that our larger vendors are more likely to have greenhouse gas emissions tracking and management practices in place. Moving forward, we will measure success of the engagement a number of ways: 1) by an absolute increase in the number of suppliers, vendors and service providers who report having GHG programs (of the approximately 1,000 respondents); 2) by a reduction in emissions associated with key Scope 3 categories, namely the purchase of goods and services (more specifically, ammonia). As the survey was only launched in 2020, it is too early to report impacts including a change in our Scope 3 emissions. Most of our Scope 3 emissions are associated with the purchase of goods from hard-to-abate industries, so we anticipate a gradual reduction in relevant categories, likely one that coincides with the adoption of technologies like industrial carbon capture and storage. Anecdotally, and although difficult to measure, we consider some of the conversations that happened during the engagement process to be another measure of success. Specifically, some of our vendors who were unaware of Mosaic's efforts in this area now are, and they also have a greater awareness of the extent to which we have prioritized the issues; similarly, it served as a capacity-building exercise for some Mosaic employees, many of whom had not been exposed to GHG concepts. The exercise spurred discussions at various levels of leadership, and we are enhancing supplier protocols and our Supplier Code to include stronger language about environmental stewardship criteria.

**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

**% of customers by number**

80

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

52

**Portfolio coverage (total or outstanding)**

<Not Applicable>

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

We know it is important to contribute to solutions that address the impacts of crop nutrient products on the environment, including management of emissions associated with ammoniated fertilizer products like the ones Mosaic sells to customers in 40 countries around the globe. 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 practices. 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 (namely the release of N<sub>2</sub>O). We select this group of customers due to their farming practices in key growing regions.

**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 4R Nutrient Stewardship Certification programs in the United States and Canada. As of 2020, we have facilitated adoption of 4R Nutrient Stewardship practices on more than 7.4 million acres, representing an increase of 4.1 acres, or 55% since 2019. Our measure of success is to have facilitated the adoption of 4R practices on 25 million acres by 2025. As of 2020, more than 90 nutrient service providers servicing 14,000 farmers are certified and validated, representing a 124% increase in acres under management since 2019. These nutrient service providers, who are Mosaic's direct customers, represent approximately 80% of total nutrient services providers.

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**C12.3**

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**(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

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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 was subject to federal review and approved by the federal government. 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, higher shipping costs and higher electricity 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 carbon tax will 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

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

Mosaic is a member and Mosaic's Vice President of Public Affairs for North America 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 influenced, or are you attempting to influence their position?**

Mosaic is a member of TFI and Joc O'Rourke, President and Chief Executive Officer of The Mosaic Company, serves 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 influenced, or are you attempting to influence their position?**

Mosaic currently has three members on the SMA Board of Directors and is active in efforts to provide solution-based technical assistance to Environment and Climate Change Canada and the Saskatchewan Ministry of Environment.

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**Trade association**

Brazilian Agribusiness Association (ABAG)

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

Consistent

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

ABAG has consistent position against illegal deforestation and respect to the Brazilian Forest Code. The association also supports the Ministry of Agriculture Plan to combat climate change, which is part of the Brazilian National Policy for Climate Change (launched in 2008). ABAG is a member of the Brazilian Coalition on Climate Forests and Agriculture, where it coordinates policy positions with other private sector organizations and environmental NGOs.

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

Mosaic currently participate as a member of different ABAG's Working groups: Legal Committee, Sustainability Committee and Logistics Committee.

---

**Trade association**

International Minerals Innovation Institute (IMII)

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

Consistent

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

IMII's major potash and uranium minerals company members share in the global commitment to reduce GHG emissions.

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

Mosaic participates as a member of IMII, paying an annual fee of approximately \$80,000 that, when pooled with other member companies' contributions, helps fund studies and critical research, some of which is related to opportunities for significantly reducing the industry's emissions associated with mining and milling operations in Saskatchewan.

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**C12.3d**

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

No

## C12.3f

**(C12.3f) What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?**

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 companywide 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. This applies across geographies and operating units. 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

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

### Publication

In mainstream reports

### Status

Complete

### Attach the document

2020 10K.pdf

### Page/Section reference

39-40/165

### Content elements

Governance  
Strategy  
Risks & opportunities

### Comment

### Publication

In voluntary sustainability report

### Status

Complete

### Attach the document

Mosaic 2020 GRI\_Final.pdf

### Page/Section reference

[https://mosaicco.com/fileLibrary/publicFiles/0-2020\\_Sustainability\\_Disclosure\\_and\\_GRI.pdf](https://mosaicco.com/fileLibrary/publicFiles/0-2020_Sustainability_Disclosure_and_GRI.pdf) Pg. 50/84

### Content elements

Risks & opportunities

### Comment

### Publication

In other regulatory filings

### Status

Complete

### Attach the document

2021 Proxy.pdf

### Page/Section reference

2021 Proxy Statement Pg. 8-9/80

### Content elements

Risks & opportunities  
Emissions figures  
Emission targets

### Comment

## C15. Signoff

C-FI

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

C15.1

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

	Job title	Corresponding job category
Row 1	President and Chief Executive Officer	Chief Executive Officer (CEO)

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

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

Please confirm below

I have read and accept the applicable Terms