

**Module: Introduction****Page: Introduction**

---

**CC0.1****Introduction**

Please give a general description and introduction to your organization.

The Mosaic Company is one of the world's leading producers and marketers of 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 2016 were approximately \$7.2 billion, representing sales of approximately 24 million tonnes of finished product. Our business engages in every phase of crop nutrition development, from the mining of resources to the production of crop nutrients, feed and industrial products for customers around the globe. Our customer base includes wholesalers, retail dealers and individual growers in approximately 40 countries.

At Mosaic, we believe in operating responsibly and sustainably. In doing so, we are managing our financial risks, pursuing growth and innovation—and driving towards greater value for our company, employees and stakeholders. Our company took an important step forward in 2015 by announcing three measurable 2020 Environmental Targets, progress toward which we report annually. We have developed and now use expanded metrics to track our performance in freshwater and energy use, and greenhouse gas emissions. Mosaic's Commitment on Climate Change states that global climate change creates uncertainty for our business and poses challenges for the health and well-being of the world's populations - ecologically, socially and economically.

Mosaic remains committed to the United Nations Global Compact and the ten universal principles it supports, including human rights, labor, environment and anticorruption. In 2016, Mosaic was recognized in Corporate Responsibility Magazine's 100 Best Corporate Citizens List for the seventh consecutive year.

---

**CC0.2****Reporting Year**

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

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

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

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

Enter Periods that will be disclosed
Fri 01 Jan 2016 - Sat 31 Dec 2016

---

### CC0.3

#### Country list configuration

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

Select country
United States of America
Brazil
Canada
Paraguay

---

### CC0.4

#### Currency selection

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

USD(\$)

---

## CC0.6

### Modules

As part of the request for information on behalf of investors, companies in the electric utility sector, companies in the automobile and auto component manufacturing sector, companies in the oil and gas sector, companies in the information and communications technology sector (ICT) and companies in the food, beverage and tobacco sector (FBT) should complete supplementary questions in addition to the core questionnaire.

If you are in these sector groupings, the corresponding sector modules will not appear among the options of question CC0.6 but will automatically appear in the ORS navigation bar when you save this page. If you want to query your classification, please email [respond@cdp.net](mailto:respond@cdp.net).

If you have not been presented with a sector module that you consider would be appropriate for your company to answer, please select the module below in CC0.6.

---

## Further Information

**Module: Management**

**Page: CC1. Governance**

---

## CC1.1

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

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

---

## CC1.1a

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

- i. Board/ Executive Board: The Environmental Health, Safety, and Sustainable Development Committee (EHSS Committee) of the Mosaic Board of Directors
- ii. The EHSS Committee of the Mosaic Board of Directors (the Board) 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.

The EHSS Committee's responsibilities include, among others:

- overseeing the effectiveness of management's systems, policies and processes that support our EHSS goals, commitments and compliance obligations;
- conducting an annual environment, health and safety management system review;
- reviewing with management compliance with environmental, health and safety laws, and pending or threatened environmental, health and safety administrative, regulatory, or judicial proceedings;
- overseeing our processes for managing EHSS risks;
- reviewing product sustainability issues, including product stewardship;
- overseeing our processes and practices with respect to interactions relating to EHSS matters with communities, customers and other key stakeholders; and
- reviewing the disclosures in the Company's annual report on Form 10-K relating to EHSS matters, and periodically review other material public disclosures by the Company relating to corporate social responsibility and sustainable development; and
- Review the disclosures in the Company's annual report on Form 10-K relating to EHSS matters;

The Board and the Senior Leadership Team (SLT) consisting as of December 31, 2016 of the CEO, EVP and CFO, SVP-Phosphate, SVP-Potash, SVP and General Counsel, SVP-Commercial and SVP-HR, review the EHSS Committee's recommendations in order to develop new company-wide policies, initiatives, targets and goals.

## CC1.2

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

Yes

## CC1.2a

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

Who is entitled to benefit from these incentives?	The type of incentives	Incentivized performance indicator	Comment
Chief Executive	Monetary	Emissions	Performance measures for members of Mosaic's management team and all salaried employees are

Who is entitled to benefit from these incentives?	The type of incentives	Incentivized performance indicator	Comment
Officer (CEO)	reward	reduction project Energy reduction target Other: Controlling operating costs	based on financial and operational performance, including operating earnings, operating costs per tonne, incentive selling, general and administrative expenses and safety. Climate change is indirectly linked to compensation through operating cost savings that are achieved through site-specific initiatives and companywide programs aimed at reducing energy use and emissions.
Management group	Monetary reward	Energy reduction project	As part of our strategic priority of Investing in People, we have a performance management process called EDGE – Evaluating, Developing and Growing Excellence. Our performance management process has evolved to include scaled competencies, goal alignment and an emphasis on employee and career development. Management and employees at various levels can establish individual goals, including achievement of or progress towards energy reduction projects and/or targets, results of which are linked to their respective annual incentives.
Other: Crews at mining facilities	Other non-monetary reward	Energy reduction project Efficiency target	In 2016, operating crews at our Florida mining facilities continued an energy conservation contest – a friendly competition across shifts and locations to see which crew runs its shift using the least amount of energy. Before the start of each shift, crews use a performance scorecard to communicate energy saving successes and opportunities for improvement. The winning crews were awarded with a meal at the end of the contest.

## Further Information

**Page: CC2. Strategy**

### CC2.1

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

Integrated into multi-disciplinary company wide risk management processes

### CC2.1a

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

Frequency of monitoring	To whom are results reported?	Geographical areas considered	How far into the future are risks considered?	Comment
Annually	Board or individual/sub-set of the Board or committee appointed by the Board	Mosaic's mission is to help the world grow the food it needs. As a company with operations and customers and farmers located throughout the world, we assess climate change risks and opportunities globally.	> 6 years	Climate, including climate changes, and associated risks and opportunities are monitored regularly and the results are reported to the Board, the SLT and the EHSS Committee, and periodically to additional stakeholders through our quarterly 10-Q filings, Annual Report on Form 10-K, Annual Report to Shareholders and annual sustainability disclosure. Mosaic considers risks and opportunities well into the future and understands that many of the impacts of climate change on our operations and those affecting our customers are uncertain.

**CC2.1b**

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

Company level: The EHSS Committee reviews and discusses policies regarding risk assessment and management, including sustainability issues and climate change, with management and an internal auditor. It is the responsibility of management to assess and manage the Company's exposure to risk and the EHSS Committee discusses and reviews guidelines and policies that govern the process. Discussion topics may include financial risk exposures and the steps management has taken to monitor and control such exposures.

Mosaic's SLT addresses environmental risks and opportunities while defining priorities, needs and performance gaps across the company, which are presented to the Board and EHSS Committee throughout the year. Mosaic's Enterprise Risk Management (ERM) Committee, consisting of a cross-functional team of senior leaders, assists in achieving business objectives through a systematic approach to anticipate, analyze and review material risks. Further, Mosaic's EHS and Public Affairs professionals interact with policy makers and global thought leaders to encourage the transfer of knowledge and to bring the latest thinking on climate and sustainability into the Mosaic risk management process.

Asset (facility) level: Mosaic has an EHS Management system through which it sets EHS procedures and protocols for preventing, identifying and communicating risks. Our business segments are responsible for implementing day-to-day elements of our EHS program, assisted by an integrated staff of EHS professionals. We conduct audits to verify that each facility has identified risks, achieved regulatory compliance, implemented continuous EHS improvement and incorporated EHS management systems into day-to-day functions. Our Insurance & Risk Management department works with property insurance carriers to regularly conduct risk assessments to identify risks and make recommendations for mitigating the risk of loss associated with property damage and/or business interruption.

---

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

Priorities are set based on the assessment of the significance of the risk or opportunity, including the potential impact of the risk or opportunity as well as the probability of the risk or opportunity occurring. Criteria for significance (for sustainability reporting purposes) are informed by the EHSS committee within the broad areas of Mosaic's sustainability focus, which include: Food, Environment, People, Community and Company.

---

**CC2.1d**

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

Main reason for not having a process	Do you plan to introduce a process?	Comment
--------------------------------------	-------------------------------------	---------

---

**CC2.2****Is climate change integrated into your business strategy?**

Yes

---

**CC2.2a****Please describe the process of how climate change is integrated into your business strategy and any outcomes of this process**

Fertilizer production is an energy-intensive endeavor. Mosaic is committed to making informed choices that improve our operational efficiency, environmental stewardship, financial strength, community engagement and resource management. Mosaic's strategy has been influenced by climate change in several key ways:

i. Influence: Mosaic's climate change business strategy is influenced by interaction with stakeholders, including key leaders from other global companies, universities, INGOs and NGOs. The EHSS Committee provides oversight of our environmental, health, safety and sustainable development strategic vision and performance. The Committee's recommendations and reports are reviewed by the Board of Directors and the SLT.

ii. Example: Climate change considerations, and the focus on reducing GHG emissions have influenced our development and execution of our companywide 2020 Sustainability Targets, progress toward which we report annually. Climate change, specifically the Paris Agreement and related country-specific efforts to reduce greenhouse gas emissions, have influenced our engagement with stakeholders, including government and industry associations. For example, our Saskatchewan Potash facilities are working with the Saskatchewan Ministry of Environment and Environment Canada through participation in industry associations, to determine next steps for establishing a provincial greenhouse gas emissions reduction target. We discuss more examples in the short-term and long-term strategy sections below.

iii. Aspects: Climate change aspects being assessed include new product opportunities, regulatory changes, and the potential impacts to our business due to change in physical climate parameters.

iv. Short-term strategy: 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. For example, in an effort to mitigate potential climate change impacts and plan for associated regulation, we continuously work to identify opportunities to improve our use of energy and lower our emissions footprint – both today and well into the future. Engineers and/or sustainability site leads at individual facilities continuously help identify energy efficiency projects, like energy efficient upgrades, installation of cogeneration and process improvements.

Our efforts to lower our emissions footprint extend into our supply chain, and we've made investments that have resulted in significant improvements. For example, we contract a fleet of more than 50 trucks that run on clean-burning compressed natural gas (CNG), and a second Mosaic trucking partner added four CNG trailers to their fleet in 2015. In 2016, we moved a total of approximately 4.1 million tonnes of product by CNG fleet, resulting in fewer transportation-associated GHG emissions. We continue to explore opportunities to convert additional shipping volumes to CNG.

v. Long-term strategy: Our long-term business strategy has been influenced by climate change in several key ways. We strive for long-term operational excellence as a way to mitigate potential climate change impacts and have identified future cogeneration projects to further our progress towards energy independence. As another milestone of how climate change has influenced our long-term strategy, 2016 marked the end of our first year working toward our 2020 sustainability targets which have established, in part, our long-term focus on energy management through cogeneration, conservation and greater efficiency.

Innovation is one of Mosaic's guiding principles. Built on our leadership in product, process and sustainability solutions, innovation shapes our long term strategy and response to climate change as we seek to reduce energy use and greenhouse gas emissions in operations while delivering unique value to our stakeholders. For example, we partner with key universities to develop innovative fertilizer formulations that improve nutrient use efficiency in a variety of climates, which could potentially allow for growing crops in increasingly difficult growing conditions. In 2016, we conducted more than 1400 small-plot and demonstration plot trials in Argentina, Brazil, Chile, China, Canada, Europe, India, Northern Latin America (Mexico to Peru) and the United States. As part of these research efforts, Mosaic invested more than \$800,000 in a University-based Fertilizer Technology and Research Centre in 2016.

Climate change also influences the topics on which we engage with governments, peer companies and other stakeholders. For example, Mosaic is committed to educating farmers, retailers and stakeholders about the "4Rs" (right fertilizer source at the right rate, at the right time and in the right place) to achieve timely, ongoing and long-term sustainable plant nutrition while protecting natural resources and reducing GHGs. We also engage lawmakers on renewable energy and tax policies that incentivize and expand the generation and use of existing low-cost renewables, like low-emissions cogeneration, and promote fairer pricing for third-party renewable producers when selling power back to the electrical grid. Both of these examples are included in our short and long-term strategies.

vi. Strategic advantage: Mosaic's strategic advantages align with our climate change strategy in several key ways. Most of Mosaic's products are agricultural commodities. Both the commodities and agricultural industries are cyclical, which means that managing costs across the cycle – so we have the ability to succeed in good times and bad – is essential to our sustainability. By continuously improving efficiencies, we are realizing operating cost savings that may be redirected to other company initiatives. Operating efficiencies and innovation may also translate to opportunities such as higher margins for our products. By developing new products that respond to anticipated climate change risks, we are better equipped to capitalize on new opportunities.

vii. One of the most significant decisions Mosaic made in 2016 was bringing another turbo generator online at our Uncle Sam facility that is expected to provide an additional 15 megawatts of virtually GHG emissions-free electrical generation capacity and offset the amount of fossil fuel-based power the facility would have otherwise had to purchase from the local grid. The decision to add this infrastructure, which cost approximately \$21 million and is just one part of a much broader investment in Mosaic's energy independence, was influenced, in part, by the possibility of future regulatory changes and the potential impacts to our business due to change in physical climate parameters.

---

**CC2.2b**

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

---

**CC2.2c**

**Does your company use an internal price on carbon?**

Yes

---

**CC2.2d**

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

Our Saskatchewan Potash facilities will continue to work with the Environment and Climate Change Canada and the Saskatchewan Ministry of Environment, through participation in industry associations to determine next steps for this file. As part of that engagement, we are monitoring developments relating to the anticipated proposed federal legislation on national carbon pricing, as well as the potential future effect on our operating activities, energy, raw material and transportation costs, results of operations, liquidity or capital resources.

---

**CC2.3**

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

Direct engagement with policy makers  
Trade associations  
Funding research organizations

---

**CC2.3a**

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

Focus of legislation	Corporate Position	Details of engagement	Proposed legislative solution
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.

**CC2.3b**

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

Yes

**CC2.3c**

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

Trade association	Is your position on climate change consistent with theirs?	Please explain the trade association's position	How have you, or are you attempting to, influence the position?
Fertilizer Canada	Consistent	Per Fertilizer Canada's website, "The fertilizer industry takes seriously its responsibility as stewards of our soil, air and water	Mosaic is a member and Sarah Fedorchuk, Sr. Director of Public Affairs, serves on the Board of

Trade association	Is your position on climate change consistent with theirs?	Please explain the trade association's position	How have you, or are you attempting to, influence the position?
		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."	Directors for Fertilizer Canada (previously Canadian Fertilizer Institute).
The Fertilizer Institute (TFI)	Consistent	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."	Mosaic is a member of TFI and Joc O'Rourke, President and Chief Executive Officer of The Mosaic Company, was elected in 2016 to serve a one-year term on TFI's Board of Directors. Programs of TFI are funded by member companies that are dedicated to advocating for the fertilizer industry.
Saskatchewan Mining Association (SMA)	Consistent	The Canadian government has established a pan-Canadian framework for addressing climate change. The SMA offers ongoing solution-based technical assistance to Environment and Climate Change Canada framework.	Mosaic currently chairs SMA's Board of Directors and is active in efforts to provide solution-based technical assistance to Environment and Climate Change Canada.

**CC2.3d**

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

No

**CC2.3e**

**Please provide details of the other engagement activities that you undertake**

---

**CC2.3f****What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?**

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 Commitment on Climate Change that states our position on climate change, Mosaic has a process in place to carefully consider, on a case-by-case basis, the relevance of the engagement opportunities and alignment with our values and business strategies and pursues mutually beneficial partnerships. For example, we participate in key cross-sector and industry partnerships through membership and Board and/or committee involvement, which allows us to influence the work done by respective organizations in a way that is consistent with our strategy.

Mosaic takes part in industry efforts to address the challenges of climate change and commits to further engage with policy makers and stakeholders on the issue of climate change. Mosaic recognizes that our action on climate change is good for the environment and for the long term financial health and viability of our company.

Agronomy, EHS, and Public Affairs professionals interact with policymakers and global thought leaders to encourage the transfer of knowledge and to incorporate the latest thinking on sustainability into the Mosaic risk management process.

---

**CC2.3g**

Please explain why you do not engage with policy makers

---

**Further Information**

**Page: CC3. Targets and Initiatives**

---

**CC3.1****Did you have an emissions reduction or renewable energy consumption or production target that was active (ongoing or reached completion) in the reporting year?**

Intensity target

CC3.1a

Please provide details of your absolute target

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

CC3.1b

Please provide details of your intensity target

ID	Scope	% of emissions in scope	% reduction from base year	Metric	Base year	Normalized base year emissions covered by target	Target year	Is this a science-based target?	Comment
Int1	Scope 1+2 (location-based)	100%	10%	Metric tonnes CO2e per metric tonne of product	2012	0.267	2020	No, and we do not anticipate setting one in the next 2 years	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 2016, we achieved a 2.7% reduction in Scope 1 and 2 emissions from our 2012 baseline. Current GHG reduction targets are based on internal operational performance and cover Scope 1 and 2 emissions from operations in North and South America. Our GHG target, although not recognized by the Science Based Targets Initiative for being in line with their particular methodology, was developed with science-based models that take company and industry-specific factors into account. Our GHG target does

ID	Scope	% of emissions in scope	% reduction from base year	Metric	Base year	Normalized base year emissions covered by target	Target year	Is this a science-based target?	Comment
									not include Scope 3 emissions at this time. However, we made progress toward defining a more comprehensive Scope 3 emissions footprint in 2015 by engaging a third party consultant to help us assess the relevance of Scope 3 emissions categories and calculate their respective GHG impacts. We report those emissions in Section 14.

**CC3.1c**

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

ID	Direction of change anticipated in absolute Scope 1+2 emissions at target completion?	% change anticipated in absolute Scope 1+2 emissions	Direction of change anticipated in absolute Scope 3 emissions at target completion?	% change anticipated in absolute Scope 3 emissions	Comment
Int1	Increase	7.6	No change	0	Forecasts for production through target year. Efficiency projects are required to meet intensity targets. Our GHG target does not include Scope 3 emissions at this time.

**CC3.1d**

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

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

**CC3.1e**

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

ID	% complete (time)	% complete (emissions or renewable energy)	Comment
Int1	50%	27%	2020 Intensity target is now in effect for 100% of Scope 1 and 2 emissions from North America operations.

**CC3.1f**

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

**CC3.2**

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

Yes

CC3.2a

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

Level of aggregation	Description of product/Group of products	Are you reporting low carbon product/s or avoided emissions?	Taxonomy, project or methodology used to classify product/s as low carbon or to calculate avoided emissions	% revenue from low carbon product/s in the reporting year	% R&D in low carbon product/s in the reporting year	Comment
Product	Mosaic's premium product MicroEssentials® has been shown to increase corn yields an average of 7.2 bushels per acre, or 4.3%, compared to traditional fertilizer.	Avoided emissions	Other: US EPA Climate Leaders: Direct HFC and PFC Emissions from Manufacturing Refrigeration and Air Conditioning Equipment The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition) US EPA Climate Leaders: Direct Emissions from Mobile Combustion Sources US EPA Mandatory Greenhouse Gas Reporting Rule: Subpart G (Ammonia) and Z (Phosphoric Acid) US EPA Climate Leaders: Indirect Emissions from Purchases/Sales of Electricity and Steam Stoichiometric mass balance for reactive species containing CO2 or carbon compounds Mass Balance from European Fertilizer Manufacturers	17%		Mosaic's premium product MicroEssentials® has been shown to increase corn yields an average of 7.2 bushels per acre, or 4.3%, compared to traditional fertilizer. Assuming a 4.3% yield advantage with MicroEssentials®, a corn farmer with a 350 acre farm can theoretically produce yields similar to those from a 365.05 acre farm. By using MicroEssentials®, this farmer could avoid approximately 0.1816 tonnes of Scope 1 carbon emissions per year, through reduced corn harvesting equipment usage, resulting in greater yields with MicroEssentials® and fewer acres farmed. This theoretical example is fleshed out below to give an idea of annual scale of avoided emissions for

Level of aggregation	Description of product/Group of products	Are you reporting low carbon product/s or avoided emissions?	Taxonomy, project or methodology used to classify product/s as low carbon or to calculate avoided emissions	% revenue from low carbon product/s in the reporting year	% R&D in low carbon product/s in the reporting year	Comment
			Association Guidance for Ammonia Manufacturing University of Missouri Extension: Agricultural Fuel Requirement Estimates for Selected Field Operations GWP: IPCC Second Assessment Report (SAR - 100 year)			100 farms. The estimate takes into consideration the tonnes of CO2e/gallon generated by the diesel fuel needed for the operation of a corn harvester per acre. The potential yield of a 350 acre farm yielding 365.05 acres worth of crops was used as the baseline for this Scope 1 emissions savings. A 2.5 mph corn harvester (farming equipment) uses 1.15 gallons/acre of diesel fuel, which equates to 0.0120648 tonnesCO2e/gallon of diesel fuel. Assuming a 4.3% yield advantage with MicroEssentials®, a corn farmer with a 350 acre farm can theoretically produce yields similar to those from a 365.05 acre farm. This farmer could avoid approximately 0.1816 tonnes of Scope 1 carbon emissions per year by harvesting the same yield on a smaller area. For every 100 farms similar to this example equals a combined savings of 18.16 tonnes of Scope 1 carbon emissions per year. This is a theoretical example only. This percentage of total sales is for all premium products as a share of total Phosphates and Potash crop nutrient revenues. Sales for MicroEssentials® are not available as a separate line item, but this product category

Level of aggregation	Description of product/Group of products	Are you reporting low carbon product/s or avoided emissions?	Taxonomy, project or methodology used to classify product/s as low carbon or to calculate avoided emissions	% revenue from low carbon product/s in the reporting year	% R&D in low carbon product/s in the reporting year	Comment
						includes MicroEssentials®.

**CC3.3**

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

Yes

**CC3.3a**

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

Stage of development	Number of projects	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	2	5030
To be implemented*	20	45000
Implementation commenced*	8	103000
Implemented*	8	39520
Not to be implemented	0	0

CC3.3b

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

Activity type	Description of activity	Estimated annual CO2e savings (metric tonnes CO2e)	Scope	Voluntary/ Mandatory	Annual monetary savings (unit currency - as specified in CC0.4)	Investment required (unit currency - as specified in CC0.4)	Payback period	Estimated lifetime of the initiative	Comment
Low carbon energy installation	We began operation of a new turbine generator at our Uncle Sam facility that will provide virtually greenhouse gas emissions-free cogenerated power for operations, offsetting the amount of power purchased from the local grid.	9742	Scope 2 (location-based)	Voluntary	1100000	21000000	16-20 years	Ongoing	
Energy efficiency: Processes	The Wingate mine completed a project to bypass a tank and pump in the flotation process and send water by gravity to a different tank, thereby saving energy and associated greenhouse gas emissions.	381	Scope 1	Voluntary	50000	160000	4-10 years	Ongoing	
Low carbon energy installation	A new power line connecting our South Pierce and South Pasture facilities will allow Mosaic to increase our internal use of cogenerated power.	16765	Scope 2 (location-based)	Voluntary	1000000	14000000	11-15 years	Ongoing	
Behavioral change	Employees across minerals and concentrates facilities initiated a behavioral change program to run bulldozers in "ECO" mode, which resulted in reductions of fuel use and	850	Scope 1	Voluntary	120000	400000	4-10 years	Ongoing	

Activity type	Description of activity	Estimated annual CO2e savings (metric tonnes CO2e)	Scope	Voluntary/ Mandatory	Annual monetary savings (unit currency - as specified in CC0.4)	Investment required (unit currency - as specified in CC0.4)	Payback period	Estimated lifetime of the initiative	Comment
	greenhouse gas emissions.								
Energy efficiency: Building services	Mosaic completed several companywide LED projects, which resulted in energy and GHG emissions reductions.	11530	Scope 2 (location-based)	Voluntary	325000	1400000	4-10 years	6-10 years	
Energy efficiency: Processes	Our Carlsbad facility installed a variable frequency drive control and automation system on an incoming freshwater pumping system, which resulted in energy and GHG savings.	2	Scope 1	Voluntary	54000	600000	11-15 years	Ongoing	
Energy efficiency: Processes	The Esterhazy facility programmed underground conveyor belts to shut down when not being used, saving energy and associated GHGs.	230	Scope 2 (location-based)	Voluntary	220000	500	<1 year	Ongoing	
Low carbon energy installation	The Fospar port installed a solar energy system to supply energy to a portion of the port's operations.	.20	Scope 2 (location-based)	Voluntary	400	9000	4-10 years	Ongoing	

### CC3.3c

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

Method	Comment
Employee engagement	Mosaic emphasizes the philosophy of continuous energy improvements to improve energy use in our manufacturing facilities and support functions and recognizes that employees on the front line often have the best ideas. Mosaic fosters a culture which encourages employees to come forward with ideas, and this open dialogue has driven investments that result in energy savings and/or emissions reductions. In 2016, we continued an internal communications effort around "small wins" as a way to recognize employees for their efforts, big and small, in improving environmental performance and meeting companywide 2020 Sustainability Targets.
Other	Mosaic facilities have employees that are designated engineers and/or sustainability site leads. The role of these site leads, in part, is to identify project opportunities for improving energy efficiency and GHG emissions that will help us achieve our 2020 target to reduce energy use and GHG emissions by 10% per tonne of product.

### CC3.3d

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

### Further Information

Please note - in 3.3b, payback periods are calculated based on project costs and annual savings only.

### Page: CC4. Communication

### CC4.1

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

Publication	Status	Page/Section reference	Attach the document	Comment
-------------	--------	------------------------	---------------------	---------

Publication	Status	Page/Section reference	Attach the document	Comment
In mainstream reports (including an integrated report) but have not used the CDSB Framework	Complete	PDF pg 64, 66, 157	<a href="https://www.cdp.net/sites/2017/82/12382/Climate Change 2017/Shared Documents/Attachments/CC4.1/2016 10-K.pdf">https://www.cdp.net/sites/2017/82/12382/Climate Change 2017/Shared Documents/Attachments/CC4.1/2016 10-K.pdf</a>	2016 Form 10-K attached. We are committed to finding ways to meet the challenges of crop nutrient and animal feed ingredient production and distribution in the context of the need to reduce greenhouse gas emissions. While focused on helping the world grow the food it needs, we have proven our commitment to using our resources more efficiently and have implemented innovative energy recovery technologies that result in our generation of much of the energy we need, particularly in our U.S. Phosphates operations, such as high efficiency heat recovery systems that result in lower greenhouse gas emissions.
In voluntary communications	Complete	PDF pg 7	<a href="https://www.cdp.net/sites/2017/82/12382/Climate Change 2017/Shared Documents/Attachments/CC4.1/ceo-message_Mosaic State of the Business.pdf">https://www.cdp.net/sites/2017/82/12382/Climate Change 2017/Shared Documents/Attachments/CC4.1/ceo-message_Mosaic State of the Business.pdf</a>	We continue to work toward achieving our environmental targets by reducing our energy and water use and greenhouse gas emissions by 10% per unit of production that we announced in 2015. CEO Message: <a href="http://www.mosaicco.com/2016stateofthebusinessreport/ceo-message/">http://www.mosaicco.com/2016stateofthebusinessreport/ceo-message/</a> Strategic Performance: <a href="http://www.mosaicco.com/2016stateofthebusinessreport/strategic-performance/">http://www.mosaicco.com/2016stateofthebusinessreport/strategic-performance/</a>
In voluntary communications	Complete		<a href="https://www.cdp.net/sites/2017/82/12382/Climate Change 2017/Shared Documents/Attachments/CC4.1/Sustainability Disclosure_Environment_June 2017.pdf">https://www.cdp.net/sites/2017/82/12382/Climate Change 2017/Shared Documents/Attachments/CC4.1/Sustainability Disclosure_Environment_June 2017.pdf</a>	Company sustainability disclosure:

#### Further Information

### Module: Risks and Opportunities

#### Page: CC5. Climate Change Risks

##### CC5.1

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

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

CC5.1a

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

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
General environmental regulations, including planning	Various governmental initiatives, such as the Paris Agreement, to mitigate climate change risk are underway or under consideration around the world. These initiatives could restrict Mosaic's operating activities, require changes in our operating activities that would increase our operating costs, reduce our efficiency or limit our output, require	Increased operational cost	3 to 6 years	Direct	About as likely as not	Medium	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. Hypothetical regulatory changes that required installation of technology such as additional heat recovery systems and related equipment could cost Mosaic more than \$100 million.	Mosaic proactively emphasizes energy efficiency in our operations as one way to manage and/or mitigate the potential risks of regulatory changes that are driven by climate change. Mosaic's three-pronged approach of energy management through cogeneration, conservation and greater efficiency	Cogeneration is part of Mosaic's three-pronged approach of energy management. 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

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>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 Saskatchewan Potash facilities are working with the Saskatchewan Ministry of Environment and Climate Change Canada, through participation in industry associations, to determine next steps for establishing a regulatory and policy framework.</p>							<p>aims to lead the industry in reducing the energy we use and maximizing the clean energy we generate. As a specific example of our management efforts, in 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, improving the facility's energy efficiency and offsetting the amount of fossil fuel-based power that Mosaic would have otherwise had to purchase from the local grid.</p>	<p>capacity. This initiative cost approximately \$21 million.</p>

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Uncertainty surrounding new regulation	Environmental regulations (driven by climate change) with which Mosaic complies 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.	Increased operational cost	3 to 6 years	Direct	More likely than not	Medium	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. Hypothetical regulatory changes that required installation of technology such as additional heat recovery systems and related equipment could cost Mosaic more than \$100 million.	Mosaic's approach to the risk of regulatory uncertainty is multi-faceted. In addition to engaging government officials and legislators at the state/ provincial and federal level to develop climate change related legislation, Mosaic proactively emphasizes energy efficiency in our operations as one way to manage and/or mitigate the potential risks of regulatory changes that are driven by climate change. As a specific example of our management efforts, in 2016, Mosaic brought another turbo generator online	Cogeneration is part of Mosaic's three-pronged approach of energy management. 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.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								at our Uncle Sam facility that is expected to provide an additional 15 megawatts of low-GHG electrical generation capacity, improving the facility's energy efficiency and offsetting the amount of fossil fuel-based power that Mosaic would have otherwise had to purchase from the local grid.	
Carbon taxes	Mosaic has office and warehouse and blender facilities in China, where the government has considered the implementation of a carbon tax per tonne of carbon emitted. Though modest compared to previous estimates, this tax	Increased operational cost	3 to 6 years	Direct	Likely	Low	The possible implementation of a carbon tax in China that would tax 10 Yuan (approximately \$1.50 USD) per tonne of carbon emitted is predicted to have a minimal financial impact of approximately 2,000-3,000 Yuan	Mosaic proactively emphasizes energy efficiency in our operations as one way to manage and/or mitigate the potential risks of carbon taxes that are driven by climate change. As an example of one such	The cost of replacing these lights, which reduced energy use and associated GHGs, was approximately \$500 USD.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	could affect our operating costs, both directly and through suppliers.						(approximately \$600-750 USD) per year on our operations in China, based on historic emissions. At this time, these effects are not material to us. This value excludes any financial implications passed on to us by suppliers and is an approximation only.	project, in 2016, our YMF bulk blending plant replaced several high pressure sodium lamps with LED lights. This initiative saved energy and associated GHGs.	
Cap and trade schemes	In order to mitigate the potential risks of climate change, the California Air Resource Board implemented a cap and trade program that is enforceable as of January 1, 2013. We do not have operations in California, so while this program does not currently affect our operations, if a similar program	Increased operational cost	>6 years	Direct	About as likely as not	Medium	A cap and trade scheme like the one implemented in California could have a modest impact on our operations. Covered entities under the California program were initially granted 90 percent of their emissions allowances without penalty, allocated based on historical	Mosaic's approach to this risk is multi-faceted. In addition to engaging government officials and legislators at the state/ provincial and federal level to develop climate change related legislation, Mosaic proactively emphasizes	Cogeneration is part of Mosaic's three-pronged approach of energy management. 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

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>were implemented throughout the rest of the United States or Canada, our operations could be affected. Such initiatives 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, 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.</p>						<p>emissions, while the remaining 10 percent were purchased via auction. Permits to offset 10% of Mosaic's emissions would require an approximate investment in the range of \$1.5 to 2 million USD based on normalized production rates.</p>	<p>energy efficiency in our operations as one way to manage and/or mitigate potential risks that are driven by climate change. Cogeneration is part of Mosaic's three-pronged approach of energy management. 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, improving the facility's energy efficiency and offsetting the amount of fossil</p>	<p>megawatts of low-GHG electrical generation capacity. This initiative cost approximately \$21 million.</p>

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								fuel-based power that Mosaic would have otherwise had to purchase from the local grid.	

**CC5.1b**

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

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Change in mean (average) precipitation	Mosaic's main product is fertilizer, and fertilizer demand can be directly affected by the potential impact of climate change risks on agriculture, including temperature changes. Changing	Reduced demand for goods/services	>6 years	Indirect (Client)	About as likely as not	Low-medium	Drastic temperature changes could result in reduced demand for Mosaic's products, as certain farming activities may be reduced significantly or displaced to other regions	Mosaic's balanced approach to crop nutrition is part of our strategy to mitigate the adverse effects of potential climate change risks, such as temperature changes, drought, floods, and plant disease. Mosaic	In 2016, Mosaic invested more than \$800,000 in a university-based Fertilizer Technology and Research Centre. Our investment in the MicroEssentials® production capacity is not currently available as a separate line

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	growing seasons in already dry areas could make growing crops using traditional methods increasingly difficult.						of the world where we may or may not have a presence. Such reduced demand could adversely affect our operating results and financial condition and the effects could be material to us. As an example, Mosaic's 2016 net sales totaled approximately \$7.2 billion. A theoretical decrease in demand that resulted in 10% lower sales companywide could translate to approximately \$720 million less revenue based on 2016	has established relationships with key universities and research organizations around the globe to develop and test innovative products like our MicroEssentials® line. Mosaic established and continues to fund a University-based Fertilizer Technology and Research Centre, which focuses on soil chemistry and fertilizer technology and utilizes the latest technology to develop innovative fertilizer formulations to improve nutrient use efficiency in a variety of climate regimes. To further respond to and manage this risk, Mosaic has invested in	item.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
							performance.	<p>expansion projects to increase MicroEssentials® production capacity. In 2014, Mosaic announced plans to expand MicroEssentials® capacity, and as stated in our 2016 10-K filing, we completed our investments to expand our MicroEssentials® capacity, adding an incremental 1.2 million tonnes and bringing our total capacity to 3.5 million tonnes in 2017. MicroEssentials® has over 12 years of proven data conducting over 1200 field trials globally and is being applied over 11% of all U.S. farmland today. . The data demonstrates that</p>	

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								MicroEssentials® gives growers a boost in yields across a variety of crops and soil conditions.	
Change in mean (average) precipitation	Mosaic's main product is fertilizer, and fertilizer demand can be directly affected by the potential impact of climate change risks on agriculture, including changes in mean precipitation. Unstable growing seasons could make growing crops using traditional methods increasingly difficult.	Reduced demand for goods/services	>6 years	Indirect (Client)	About as likely as not	Low-medium	Drastic changes in precipitation could result in reduced demand for Mosaic's products, as certain farming activities may be reduced significantly or displaced to other regions of the world where we may or may not have a presence. Such reduced demand could adversely affect our operating results and financial condition and the effects could be	Mosaic's balanced approach to crop nutrition is a strategy to mitigate the adverse effects of potential climate change risks, such as temperature changes, drought, floods, and plant disease. Mosaic has established relationships with key universities and research organizations around the globe to develop and test innovative products like our MicroEssentials® line. Mosaic established and continues to fund a University-based Fertilizer	In 2016, Mosaic invested more than \$800,000 in a university-based Fertilizer Technology and Research Centre. Our investment in the MicroEssentials® production capacity is not currently available as a separate line item.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
							<p>material to us. As an example, Mosaic's 2016 net sales totaled approximately \$7.2 billion. A theoretical decrease in demand that resulted in 10% lower sales companywide could translate to approximately \$720 million less revenue based on 2016 performance.</p>	<p>Technology and Research Centre, which focuses on soil chemistry and fertilizer technology and utilizes the latest technology to develop innovative fertilizer formulations to improve nutrient use efficiency in a variety of climates. To further respond to and manage this risk, Mosaic has invested in expansion projects to increase MicroEssentials® production capacity. In 2014, Mosaic announced plans to expand MicroEssentials® capacity, and as stated in our 2016 10-K filing, we completed our investments to expand our</p>	

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								MicroEssentials® capacity, adding an incremental 1.2 million tonnes and bringing our total capacity to 3.5 million tonnes in 2017. MicroEssentials® has over 12 years of proven data conducting over 1200 field trials globally and is being applied over 11% of all U.S. farmland today.	
Change in mean (average) precipitation	Changes in precipitation resulting in droughts or water shortages could adversely affect our operations, principally our mines in Florida and Saskatchewan where we use water.	Increased operational cost	>6 years	Direct	About as likely as not	Medium	Changes in precipitation resulting in droughts or water shortages at our mines in Florida or Saskatchewan where we manage large volumes of water in our daily operations could restrict our operating	We are committed to responsible water use. We manage these potential climate change risks by recycling high percentages of the water used in our Phosphates and Potash businesses and by exploring the use of alternative water sources like reclaimed	It cost approximately \$10 million to run the reverse osmosis plant at our Bartow facility in 2016. Savings from reduced reagent use for that period were approximately \$150,000.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
							activities, require us to make changes in our operating activities that would increase our operating costs, reduce our efficiency or limit our output.	water, where possible. Mosaic reuses or recycles water used in our Florida phosphates manufacturing facilities and Canadian potash facilities. As part of their larger water conservation efforts, the Bartow facility uses reverse osmosis to produce approximately 200 gallons per minute of treated water back for use at the facility's sulfuric acid plant, thereby reducing freshwater needs by the same amount.	
Change in precipitation extremes and droughts	Potential climate change risks including, flooding and drought may cause a loss of	Reduction/disruption in production capacity	Unknown	Direct	Unknown	Medium	Based on current production levels, if the Faustina plant were shut	We manage these potential climate change risks by engaging Mosaic's team of	Drought or flood conditions may require us to implement certain solutions to ensure we

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	Mosaic's production and/or increase in operating costs due to disruptions in our supply chain.						down for a week and production could not be diverted to another facility, quantifiable business interruption costs could be greater than \$5 million.	Supply Chain professionals to closely monitor product supply and demand and any weather conditions or seasonal patterns/risks (potentially climate change related) that could interfere with products reaching our customers.	maintain acceptable inventory levels and meet customer demand. Mosaic may send product early, in anticipation of suspension of river traffic later in the season. This scenario could result in increased inventory storage expenses of \$250 per day per barge. As a theoretical example, if we send 50 barges for 1 month (30 days) additional costs would be approximately \$375,000.
Change in precipitation extremes and droughts	Potential climate change risks contribute to water treatment costs, particularly at our Florida operations due	Increased operational cost	1 to 3 years	Direct	About as likely as not	Medium-high	If additional excess rainfall or hurricanes occur in coming years, our facilities may be required to	We manage these potential climate change risks by taking a proactive approach to monitoring our phosphogypsum	As water management efforts are considered within the scope of Mosaic's engineering team's workflows

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>to elevated water balances (caused, in part, by excess precipitation from hurricanes and other adverse weather). The Florida Department of Environmental Protection has adopted rules requiring phosphate production facilities to meet more stringent process water management objectives for phosphogypsum management systems.</p>						<p>take additional measures to manage process water to comply with existing or future requirements and these measures could potentially have a material effect on our business and financial condition. Such requirements could adversely affect our results of operations, liquidity or capital resources.</p>	<p>management systems, following applicable regulatory requirements. Additionally, Mosaic has implemented a voluntary Rainfall Preparedness Plan, designed to forecast how each of our facilities will perform with 30 percent above-normal rainfall rates. Prior to the start of the peak rainfall season, Mosaic models the impact of above average rainfall on a site's storage capacity (measured in inches of rain), as well as the contingency plan for each site (where applicable) and takes action as appropriate to mitigate potential</p>	<p>and part of the normal course of operations, there is no incremental cost specific to climate change associated with them. It cost approximately \$10 million to run the reverse osmosis plant at our Bartow facility in 2016. Savings from reduced reagent use for that period were over \$150,000.</p>

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								risks. Other facility-level initiatives focus on identifying new opportunities to reduce fresh water usage and reuse process water, as well as reducing process water inventory treating process water through reverse osmosis and evaporation. Mosaic's Bartow facility uses reverse osmosis to produce approximately 200 gallons per minute of treated water back for use at the facility's sulfuric acid plant, thereby reducing freshwater needs by the same amount.	
Tropical cyclones (hurricanes and typhoons)	Potential climate change risks that contribute to adverse weather	Reduction/disruption in production capacity	Unknown	Direct	About as likely as not	Medium	Mosaic has approximately \$7 billion in assets in hurricane-	We manage these potential climate change risks by focusing on hurricane	The cost of hurricane preparedness is not available as a separate line

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	conditions, including the impact of potential hurricanes and excess rainfall, have in the past and may in the future adversely affect Mosaic's operations, particularly our Phosphates business. In the past, hurricanes have resulted in physical damage to our facilities in Florida and Louisiana.						prone areas. Mosaic's insurance deductible for a covered wind event is, at a minimum, \$25 million per occurrence. Although our containments are built to withstand storms, additional sustained hurricane activity could force a change in design standards for containments. This could result in increased costs per tonne of product.	preparedness at all facilities that are within the zone of risk. Each site's preparation process includes the establishment of procedures and guidelines for the direction, control, and coordination for securing, shutdown, safe evacuation (if required), and the orderly restoration of plant operations in the event of a storm. Our Louisiana Operations' plan includes the pre-season rental of seven backup generators to supply power to the facility's critical areas in the event of a power failure.	item at this stage. However, as an example the costs associated with the backup generator rentals at our Louisiana location are approximately \$120,000 annually.
Tropical cyclones (hurricanes)	Adverse weather may also cause a	Reduction/disruption in production capacity	Unknown	Direct	Unknown	Medium	Based on current production	In order to avoid and/or minimize the risk of	Employing this strategy is one part of our supply

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
and typhoons)	loss of production due to disruptions in Mosaic's supply chain. For example, a widespread event which affected pipeline infrastructure in Gulf regions could adversely impact supplies of natural gas.						levels, if the Faustina plant were shut down for a week due to adverse weather and production could not be diverted to another facility, quantifiable business interruption costs could be greater than \$5 million.	suspension or interference of natural gas supply, Mosaic exercises a strategy of pipeline redundancy, diversity in our portfolio of suppliers and preference for suppliers with onshore production.	chain's day-to-day responsibilities and therefore, costs are not available as a separate line item.

### CC5.1c

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

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Fluctuating socio-economic conditions	Mosaic Phosphate and Potash products are marketed worldwide to crop	Reduced demand for goods/services	>6 years	Direct	About as likely as not	Low-medium	This risk could result in reduced demand for Mosaic's products, as	Mosaic's balanced approach to crop nutrition is a strategy to mitigate the adverse effects	In 2016, Mosaic invested more than \$800,000 in a university-based Fertilizer

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>nutrient manufacturers, distributors, retailers, and farmers. Mosaic's main product is fertilizer, and fertilizer demand can be directly affected by the potential impact of climate change risks on agriculture. Mosaic's Potash and Phosphate products are applied across many regions globally. Top phosphate importers are India and Brazil and top potash importers include China, India, USA and Brazil. Due to temperature and/or precipitation volatility, regions of previously viable agricultural land may eventually become</p>						<p>certain farming activities may be reduced significantly or displaced to other regions of the world where we may or may not have a presence. Such reduced demand could adversely affect our operating results and financial condition and the effects could be material to us. As an example, Mosaic's 2016 net sales totaled approximately \$7.2 billion. A theoretical decrease in demand resulting in 10% lower sales companywide could translate to approximately \$720 million less revenue based on 2016 performance.</p>	<p>of drought, floods, and plant disease. 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 2016, we conducted 453 small-plot trials in Argentina, Brazil, Chile, China, Canada, Europe, India, Northern Latin America (Mexico to Peru) and the United States. Our investment in one university based research center in 2016 totaled more than \$800,000.</p>	<p>Technology and Research Centre.</p>

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>unsuitable for growing, leaving local or regional farming communities in widespread financial distress. This could drastically change the landscape of the agriculture and fertilizer industries. For example in India, we have distribution facilities to import and sell crop nutrients, accounting for nearly 10% of our International Distribution. In India, there is a risk of flooding increasing under a high emissions scenario where the number of days with very heavy precipitation may increase by about 5 days, according to the 2015 India Climate and</p>								

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	Health Country Profile by the World Health Organization.								
Reputation	Fertilizer production is an energy-intensive endeavor. If the potential effects of climate change risks worsen, companies like Mosaic may become more susceptible to potential impacts associated with negative perceptions of the public.	Reduced demand for goods/services	>6 years	Direct	Unlikely	Unknown	Mosaic's sales for 2016 were approximately \$7.2 billion. Negative public perceptions could potentially lead to reduced demand for goods, decreased revenue, and could negatively impact our profit. For example, a 1% decrease in sales due to a negative reputation event could cost us approximately \$72 million in annual revenue based on 2016 performance.	As part of our effort to manage these potential reputational risks caused by climate change, Public Affairs (PA) professionals work with employees across the company to clearly communicate our progress on matters related to sustainability, energy reduction, greenhouse gases and climate change. We publish annual sustainability disclosure and respond to CDP annually. Our PA team also manages the company's community investment activities, which have the potential to have a positive impact on our reputation. We	In 2016, Mosaic targeted to invest more than 1% of profits over a three-year rolling average into our communities. The Mosaic Company, The Mosaic Company Foundation and The Mosaic Institute in Brazil make investments in our global communities through philanthropic funding, employee engagement and in-kind donations. Combined contributions in 2016 totaled more than \$17 million.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								focus our community investments in three core areas that help us achieve this goal: Food, Water and Local Community Investments.	

---

CC5.1d

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

---

CC5.1e

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

---

CC5.1f

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

---

#### Further Information

Our Annual Report on 10-K for the year ended December 31, 2016 provides additional information regarding risks related to climate change. While we at present cannot predict the full prospective impact of potential climate change, including laws or regulations relating to climate change, on our results of operations, liquidity or capital resources, we provide the foregoing as examples of some of the potential risks.

---

#### Attachments

[https://www.cdp.net/sites/2017/82/12382/Climate Change 2017/Shared Documents/Attachments/ClimateChange2017/CC5.ClimateChangeRisks/2016 Form 10-K.pdf](https://www.cdp.net/sites/2017/82/12382/Climate%20Change%202017/Shared%20Documents/Attachments/ClimateChange2017/CC5.ClimateChangeRisks/2016%20Form%2010-K.pdf)

#### Page: **CC6. Climate Change Opportunities**

---

##### CC6.1

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

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

---

##### CC6.1a

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

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Fuel/energy taxes and regulations	Various proposed legislation in the US promoting and incentivizing renewable energy production (potentially reduced greenhouse gas emissions) could provide Mosaic tax incentives and/or fairer pricing for surplus electricity that Mosaic supplies to local utility grids. As an example, Mosaic would benefit from tax incentives and/or fairer pricing for surplus electricity that Mosaic supplied in 2016, specifically in Florida, where we provided nearly 855,000 GJ to the local grid.	Reduced operational costs	1 to 3 years	Direct	Likely	Low-medium	In 2016, Mosaic produced approximately 1.8 million MWh of electrical energy from cogeneration in our Phosphates business unit. Hence, in this business unit alone, the potential positive impacts (tax incentives and/or fairer pricing) of energy legislation could be upwards of \$10 million.	In order to manage this opportunity, Mosaic has been actively involved in dialogues at the legislative and executive branch levels. We strongly support the enactment of a reasonable state energy policy in Florida, in which cost effective and abundant sources of renewable energy are encouraged and incentivized to diversify the state's generation portfolio, while also advocating that ratepayer impacts be closely watched and minimized to avoid harm to Florida's residents and businesses. We have engaged on a myriad of	Mosaic continuously looks for opportunities to improve the efficiency and expand the output of our cogeneration assets. As a specific example of our management efforts, in 2016, Mosaic brought another turbo generator online at our Uncle Sam facility that is expected to provide an additional 15 megawatts of low-GHG electrical generation capacity. This initiative cost approximately \$21 million.

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								<p>different issues in the energy arena, from fairer pricing for the power we export to the utility grid, to tax credits and incentives to encourage the production of clean power. Mosaic's three-pronged approach of energy management through cogeneration, conservation and greater efficiency aims to lead the industry in reducing the energy we use and maximizing the clean energy we generate. As a specific example of our management efforts, in 2016 Mosaic brought another turbo generator online at our Uncle</p>	

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								Sam facility that is expected to provide an additional 15 megawatts of low-GHG electrical generation capacity, offsetting the amount of fossil fuel-based power that Mosaic would have otherwise had to purchase from the local grid.	
International agreements	Adoption of international climate change agreements requiring reductions in GHGs by states in which competitors operate could provide Mosaic a competitive advantage over our global competitors due to our current environmental performance	Other: increase in competitive capacity	1 to 3 years	Direct	Unlikely	Low-medium	Mosaic's Phosphates business unit has amongst the lowest cost of production per tonne product in the industry while adhering to strict North American environmental standards. If the same EPA standards were applied internationally	In order to manage this opportunity, Mosaic's PA group engages with organizations such as the International Fertilizer Industry Association to promote best practice environmental management in our industry.	Mosaic has a full time Public Affairs staff that work with various stakeholders. As these efforts are considered part of the normal course of doing business as a global organization, there are no incremental costs specific to climate change

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	and/ or planned performance and initiatives related to environment and greenhouse gas emissions. In some cases, foreign competitors are required to comply with less stringent regulatory requirements. In those cases, more stringent requirements in our competitors' jurisdictions may provide Mosaic with a relative competitive advantage.						then it is possible our competitors' cost of production would increase even further, thus making Mosaic even more cost competitive. This scenario would likely have a positive effect on our operating results and financial conditions in relation to our competitors.		associated with them.
Product efficiency regulations and standards	Changes in the regulation of fertilizers to mandate minimum yields could favor premium products such as Mosaic's MicroEssentials®.	Increased demand for existing products/services	1 to 3 years	Direct	Unknown	High	If international pressure on regulation to improve fertilizer yields occurred, then Mosaic's production of MicroEssentials® as a percentage of total production may be further	In order to manage this opportunity, Mosaic has established relationships with key universities around the globe to develop and test high-yield premium products, like	In 2016, Mosaic invested more than \$800,000 in a university-based Fertilizer Technology and Research Centre. Our investment in the MicroEssentials® production capacity is not

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
							<p>improved. Mosaic can potentially command a premium price and higher margins for our higher-yield products, potentially resulting in an overall increase of our gross margin as a percent of net sales. Therefore, this change in production percentage for higher-yield products like MicroEssentials® could have a positive effect on our operating results and financial condition. A hypothetical 2% increase in gross margin as a percentage of Phosphates Business Segment net sales, based on</p>	<p>MicroEssentials®. In 2016, Mosaic invested more than \$800,000 in a university-based Fertilizer Technology and Research Centre. To further respond to and manage this risk, Mosaic has invested in expansion projects to increase MicroEssentials® production capacity. In 2014, Mosaic announced plans to expand MicroEssentials® capacity, and as stated in our 2016 10-K filing, we completed our investments to expand our MicroEssentials® capacity, adding an incremental 1.2 million tonnes and bringing our total capacity to</p>	<p>currently available as a separate line item.</p>

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
							2016 performance, would equate to approximately \$74 million.	3.5 million tonnes in 2017.	

CC6.1b

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

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Change in mean (average) precipitation	The efficient use of fertilizers in precision agriculture allows for greater uptake of water by plants, which means less water is needed to grow the plant over its life. Unstable precipitation patterns may require farmers to place more of an emphasis on precision agriculture, which would provide	Premium price opportunities	>6 years	Direct	About as likely as not	Medium	Changes in rainfall patterns may make some regions of the world that have not been traditionally suited to large scale agriculture potentially productive. This change could have a positive effect on sales of products like MicroEssentials®. We sold approximately 2.3 million tonnes of	Mosaic's balanced approach to crop nutrition and development of new innovative products is a strategy to manage potential opportunities driven by the effects of climate change, such as change in precipitation. Mosaic has established relationships with key universities	In 2016, Mosaic invested more than \$800,000 in a university-based Fertilizer Technology and Research Centre.

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>expanded premium product opportunities for Mosaic. Our innovative premium product, MicroEssentials®, is a nutritionally balanced fertilizer granule, providing a season-long boost in soil fertility. It is utilized in various parts of the world.</p>						<p>MicroEssentials® during 2016. A hypothetical increase of 10% in sales volume of MicroEssentials® from 2016 levels could result in over \$77 million in additional sales (calculated by using the average selling price per tonne, FOB destination, per our 2016 Form 10-K).</p>	<p>and research organizations around the globe to develop and test innovative products like our MicroEssentials® line, which features crop nutrient blends specially designed for the soils of various parts of the world. Mosaic established and continues to fund a University-based Fertilizer Technology and Research Centre, which focuses on soil chemistry and fertilizer technology, and utilizes the latest technology to develop innovative fertilizer formulations to improve nutrient use efficiency in a variety of climates. Our investment in this centre in 2016 totaled more than \$800,000.</p>	

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Change in precipitation pattern	Unstable temperature conditions that put agricultural yields at risk may require farmers to place more of an emphasis on precision agriculture, which would provide expanded premium product opportunities for Mosaic	Premium price opportunities	>6 years	Direct	About as likely as not	Medium	Changes in rainfall patterns may make some regions of the world that have not been traditionally suited to large scale agriculture potentially productive. This change in production percentage for higher-yield products like MicroEssentials® may have a positive effect on our operating results and financial condition and the effects could be significant to us. We sold approximately 2.3 million tonnes of MicroEssentials® during 2016. A hypothetical increase of 10% in sales volume of MicroEssentials® from 2016 levels could result in over \$77 million in additional sales (calculated by	Mosaic's balanced approach to crop nutrition is a strategy to manage potential opportunities driven by the effects of climate change, such as change in precipitation pattern. Mosaic has established relationships with key universities and research organizations around the globe to develop and test innovative products like our MicroEssentials® line, which features crop nutrient blends specially designed for the soils of various parts of the world. Mosaic established and continues to fund a university-based Fertilizer Technology and Research Centre, which focuses on soil chemistry and	In 2016, Mosaic invested more than \$800,000 in a university-based Fertilizer Technology and Research Centre.

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
							using the average selling price per tonne, FOB destination, per our 2016 Form 10-K).	fertilizer technology, and utilizes the latest technology to develop innovative fertilizer formulations to improve nutrient use efficiency in a variety of climates. Our investment in this centre in 2016 totaled more than \$800,000.	

CC6.1c

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

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Changing consumer behavior	Due to changing consumer behavior spurred by the public's better understanding of the importance of mineral fertilizers and precision	Increased demand for existing products/services	>6 years	Direct	About as likely as not	Medium-high	The consumer-driven demand for more efficient fertilizer products could directly increase demand for	Innovation is one of Mosaic's strategic priorities. As part of our management of this opportunity, Mosaic has established relationships with	In 2016, Mosaic invested more than \$800,000 in a university-based Fertilizer Technology and Research

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>agriculture--not only in helping the world grow the food it needs but also in combating climate change-- climate change may provide an opportunity for Mosaic in the form of increased demand for our innovative products. Mosaic has developed high yield premium products such as the MicroEssentials® brand.</p>						<p>Mosaic's key products, which could have a positive effect on our operating results and financial condition. As an example, Mosaic's 2016 net sales totaled approximately \$7.2 billion. A theoretical increase in demand that resulted in 10% higher sales companywide could translate to approximately \$720 million in additional revenue based on 2016 performance.</p>	<p>key universities and research organizations around the globe to develop and test innovative products like our MicroEssentials® line, which features crop nutrient blends specially designed for the soils of various parts of the world. Mosaic established and continues to fund a university-based Fertilizer Technology Center, which focuses on soil chemistry and fertilizer technology, and uses the latest technology to develop innovative fertilizer formulations to improve nutrient use efficiency in a variety of climates. Our investment in this</p>	<p>Centre.</p>

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								centre in 2016 totaled more than \$800,000. In 2016, we conducted 453 small-plot trials in Argentina, Brazil, Chile, China, Canada, Europe, India, Northern Latin America (Mexico to Peru) and the United States.	
Increasing humanitarian demands	Considering that the world will have to feed nine billion people by 2050, it is easy to see the importance of properly used mineral fertilizers in reducing future greenhouse gas emissions and preventing deforestation. Mosaic is one of the world's leading producers and marketers of concentrated phosphate and potash. As the number of people to feed in the	Increased demand for existing products/services	>6 years	Direct	About as likely as not	Medium-high	Governments understand the importance of increasing crop yields on our current agricultural footprint to feed nine billion people by 2050. It is possible that production or tax credits will emerge to encourage high yield sustainable agricultural practices including the efficient use of	As part of our efforts to manage this opportunity, Mosaic is actively promoting education on the importance of mineral fertilizers in increasing crop yields. Educating farmers on the concept of 4R Nutrient Stewardship (4Rs) encourages them to be good stewards of the environment while maximizing their yields. Ensuring farmers use the Right Fertilizer, at	For example in 2016, The Mosaic Company Foundation committed \$600,000 over three years to support on-farm improvements for rice growers in the Mississippi Alluvial Valley through the USA Rice and Ducks Unlimited Rice Stewardship Partnership.

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	world increases, Mosaic has an opportunity in the form of increased demand for existing products and services.						quality fertilizers. These tools could increase demand for Mosaic's products, which would have a positive effect on sales volumes and therefore our financial condition. As a theoretical example, increase in demand that resulted in 10% higher sales companywide could translate to approximately \$720 million in additional revenue based on 2016 performance.	the Right Rate, applied at the Right Time and in the Right Place in the soil profile will minimize environmental impacts associated with fertilizer use, including potential greenhouse gas emissions.	

CC6.1d

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

---

CC6.1e

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

---

CC6.1f

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

---

**Further Information**

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

**Page: CC7. Emissions Methodology**

---

CC7.1

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

Scope	Base year	Base year emissions (metric tonnes CO2e)
Scope 1	Sun 01 Jan 2012 - Mon 31 Dec 2012	2904196
Scope 2 (location-based)	Sun 01 Jan 2012 - Mon 31 Dec 2012	1605383
Scope 2 (market-based)	Sun 01 Jan 2012 - Mon 31 Dec 2012	1605383

#### CC7.2

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

Please select the published methodologies that you use
US EPA Climate Leaders: Direct HFC and PFC Emissions from Manufacturing Refrigeration and Air Conditioning Equipment
US EPA Climate Leaders: Direct Emissions from Mobile Combustion Sources
US EPA Mandatory Greenhouse Gas Reporting Rule
US EPA Climate Leaders: Indirect Emissions from Purchases/Sales of Electricity and Steam
The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)
Other

#### CC7.2a

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

Other 1: by stoichiometric mass balance for reactive species containing CO<sub>2</sub> or carbon compounds to estimate emissions from materials used in water treatment  
 Other 2: mass balance from European Fertilizer Manufacturers Association Guidance for Ammonia Manufacturing to estimate emissions from ammonia production

**CC7.3**

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

Gas	Reference
CO <sub>2</sub>	IPCC Second Assessment Report (SAR - 100 year)
CH <sub>4</sub>	IPCC Second Assessment Report (SAR - 100 year)
N <sub>2</sub> O	IPCC Second Assessment Report (SAR - 100 year)
SF <sub>6</sub>	IPCC Second Assessment Report (SAR - 100 year)

**CC7.4**

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

Fuel/Material/Energy	Emission Factor	Unit	Reference
Other: Fuel Oil (CH <sub>4</sub> )	0.003	Other: kg CO <sub>2</sub> e per kg	US EPA Mandatory Greenhouse Gas Reporting Rule Subpart C
Other: Gasoline (N <sub>2</sub> O)	0.00016	Other: kg CO <sub>2</sub> e per gallon	US EPA Mandatory Greenhouse Gas Reporting Rule Subpart C
Motor gasoline	0.00886	Other: Metric tonnes CO <sub>2</sub>	US EPA Mandatory Greenhouse Gas

Fuel/Material/Energy	Emission Factor	Unit	Reference
		per gallon	Reporting Rule Subpart C
Other: Gasoline (CH4)	0.00015	Other: kg CO2e per gallon	US EPA Mandatory Greenhouse Gas Reporting Rule Subpart C
Propane	0.00579	Other: Metric tonnes CO2 per gallon	US EPA Mandatory Greenhouse Gas Reporting Rule Subpart C
Other: Limestone	0.39917	Other: Metric tonnes CO2 per short ton	US EPA Mandatory Greenhouse Gas Reporting Rule Subpart C
Other: Soda Ash	0.37649	Other: Metric tonnes CO2 per short ton	US EPA Mandatory Greenhouse Gas Reporting Rule Subpart C
Electricity	0.53598	metric tonnes CO2e per MWh	Climate Registry 2013 Conversion Factors
Other: Natural Gas (N2O)	0.0001	Other: kg CO2e per MMBTU	US EPA Mandatory Greenhouse Gas Reporting Rule Subpart C
Natural gas	0.5302	Other: metric tonnes CO2 per MMBTU	US EPA Mandatory Greenhouse Gas Reporting Rule Subpart C
Other: Natural Gas (CH4)	0.001	Other: kg CO2e per MMBTU	US EPA Mandatory Greenhouse Gas Reporting Rule Subpart C
Other: Diesel (N2O)	0.00008	Other: kg CO2e per gallon	US EPA Mandatory Greenhouse Gas Reporting Rule Subpart C
Other: Diesel (CO2)	0.01021	Other: Metric tonnes CO2 per gallon	US EPA Mandatory Greenhouse Gas Reporting Rule Subpart C
Other: Diesel (CH4)	0.00041	Other: kg CO2e per gallon	US EPA Mandatory Greenhouse Gas Reporting Rule Subpart C
Other: Fuel Oil (N2O)	0.0006	kg CO2 per liter	US EPA Mandatory Greenhouse Gas Reporting Rule Subpart C
Other: Fuel Oil (CO2)	0.0032	Other: Metric tonnes CO2 per kg	US EPA Mandatory Greenhouse Gas Reporting Rule Subpart C
Other: Propane (CH4)	0.00001	kg CO2e per liter	US EPA Mandatory Greenhouse Gas Reporting Rule Subpart C

#### Further Information

---

**CC8.1**

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

Operational control

---

**CC8.2**

**Please provide your gross global Scope 1 emissions figures in metric tonnes CO<sub>2</sub>e**

2947308

---

**CC8.3**

**Please describe your approach to reporting Scope 2 emissions**

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

---

**CC8.3a**

**Please provide your gross global Scope 2 emissions figures in metric tonnes CO<sub>2</sub>e**

Scope 2, location-based	Scope 2, market-based (if applicable)	Comment
1610907	1615842	Assurance of our 2016 location-based Scope 2 emission figures was verified. Our 2016 market-based Scope 2 figures were calculated using electricity supplier emission factors.

**CC8.4**

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

Yes

**CC8.4a**

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

Source	Relevance of Scope 1 emissions from this source	Relevance of location-based Scope 2 emissions from this source	Relevance of market-based Scope 2 emissions from this source (if applicable)	Explain why the source is excluded
China and India facilities	Emissions are not relevant	Emissions are not relevant	Emissions are not relevant	Historically, Scope 1 and 2 emissions from these facilities have accounted for less than 0.1 percent of global company emissions. CY2016 emissions were not calculated for our China and India facilities.

**CC8.5**

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

Scope	Uncertainty range	Main sources of uncertainty	Please expand on the uncertainty in your data
Scope 1	More than 2% but less than or equal to 5%	Assumptions	Process emissions from ammonia production, water neutralization, phosphate rock digestion and calcium carbonate digestion based on the methodology assuming 99.9% of carbon by mass is released as CO2. Actual release of emissions by weight is unknown.
Scope 2 (location-based)	More than 2% but less than or equal to 5%	Data Gaps Assumptions	Purchased electricity for some shared office spaces, utility accounts for road lighting, some offices and leased assets are not available. Emission factors based on EGrid may not account for regional variances in electrical production fuel sources.
Scope 2 (market-based)	More than 2% but less than or equal to 5%	Data Gaps Assumptions	Purchased electricity for some shared office spaces, utility accounts for road lighting, some offices and leased assets are not available. Emission factors based on EGrid may not account for regional variances in electrical production fuel sources.

**CC8.6**

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

Third party verification or assurance process in place

**CC8.6a**

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

Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/section reference	Relevant standard	Proportion of reported Scope 1 emissions verified (%)
Annual process	Complete	Moderate assurance	<a href="https://www.cdp.net/sites/2017/82/12382/Climate%20Change%202017/Shared%20Documents/Attachments/CC8.6a/2017-03-27_Mosaic_2017_Assurance_Statement_AA1000_v1_1.pdf">https://www.cdp.net/sites/2017/82/12382/Climate Change 2017/Shared Documents/Attachments/CC8.6a/2017-03-27_Mosaic_2017_Assurance_Statement_AA1000_v1_1.pdf</a>	1 of 2	AA1000AS	100

#### CC8.6b

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

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

#### CC8.7

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

Third party verification or assurance process in place

#### CC8.7a

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

Location-based or market-based figure?	Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/Section reference	Relevant standard	Proportion of reported Scope 2 emissions verified (%)
Location-based	Annual process	Complete	Moderate assurance	<a href="https://www.cdp.net/sites/2017/82/12382/Climate%20Change%202017/Shared%20Documents/Attachments/CC8.7a/2017-03-27_Mosaic_2017_Assurance_Statement_AA1000_v1_1.pdf">https://www.cdp.net/sites/2017/82/12382/Climate Change 2017/Shared Documents/Attachments/CC8.7a/2017-03-27_Mosaic_2017_Assurance_Statement_AA1000_v1_1.pdf</a>	1 of 2	AA1000AS	100

#### CC8.8

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

Additional data points verified	Comment
Other:	We made progress toward defining a more comprehensive Scope 3 emissions footprint in 2015 by engaging a third party to help us assess the relevance of Scope 3 emissions categories and calculate their respective GHG impact. Assurance of our Scope 3 emissions was verified in 2016.
Year on year change in emissions (Scope 2)	Additional data assured in 2016 is year-on-year emissions change in Scope 2. See page 1 of attached Trucost Assurance Statement.
Year on year change in emissions (Scope 1 and 2)	Additional data assured in 2016 is year-on-year emissions change in total Scope 1 and Scope 2. See page 1 of attached Trucost Assurance Statement.
Year on year change in emissions (Scope 1)	Additional data assured in 2016 is year-on-year emissions change in Scope 1. See page 1 of attached Trucost Assurance Statement.

#### CC8.9

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

No

---

CC8.9a

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

---

**Further Information**

Please see attached Trucost Assurance Statement of 2016 data.

---

**Attachments**

[https://www.cdp.net/sites/2017/82/12382/Climate Change 2017/Shared Documents/Attachments/ClimateChange2017/CC8.EmissionsData\(1Jan2016-31Dec2016\)/2017-03-27\\_Mosaic\\_2017\\_Assurance\\_Statement\\_AA1000\\_v1\\_1.pdf](https://www.cdp.net/sites/2017/82/12382/Climate%20Change%202017/Shared%20Documents/Attachments/ClimateChange2017/CC8.EmissionsData(1Jan2016-31Dec2016)/2017-03-27_Mosaic_2017_Assurance_Statement_AA1000_v1_1.pdf)

**Page: CC9. Scope 1 Emissions Breakdown - (1 Jan 2016 - 31 Dec 2016)**

---

CC9.1

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

Yes

---

CC9.1a

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

Country/Region	Scope 1 metric tonnes CO2e
United States of America	1971651
Canada	938361
Brazil	36975
Paraguay	320

---

**CC9.2**

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

- By business division
- By facility
- By GHG type

---

**CC9.2a**

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

Business division	Scope 1 emissions (metric tonnes CO2e)
Phosphate	1922353
Potash	970135
International and Distribution	54821

CC9.2b

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

Facility	Scope 1 emissions (metric tonnes CO2e)	Latitude	Longitude
Faustina	975721	30.083384	-90.914391
New Wales	385796	27.832701	-82.051048
Bartow	148179	27.907545	-81.800537
Plant City	131427	28.168056	-82.141667
Uncle Sam	88760	30.037428	-90.827377
Riverview	130335	27.860191	-82.393600
Four Corners	24165	27.646202	-82.087097
Green Bay	5372	27.820769	-81.784767
South Fort Meade	12094	27.647848	-81.756477
South Pierce	10741	27.765583	-81.940331
South Pasture	6512	27.585763	-81.942910
Wingate	2589	27.504131	-82.130203
Hookers Prairie	0	27.917828	-82.437286
Big Bend	400	27.804160	-82.397083
Taft	0	30.019122	-90.774707
Belle Plaine	738362	50.427658	-105.198296
Esterhazy K2	115497	50.658768	-101.848412
Colonsay	34529	51.934105	-105.763496
Esterhazy K1	46547	50.729282	-101.933723
Carlsbad	31773	32.412258	-103.939217
Esterhazy K3	3426		
Fospar	35506	-25.510841	-48.521633
Tampa Marine	249	27.926672	-82.431870
Houston	3228	29.744053	-95.114723
Savage	157	44.779415	-93.336426
Henderson	13658	37.815159	-87.658173

Facility	Scope 1 emissions (metric tonnes CO2e)	Latitude	Longitude
Paranagua	249	-25.510841	-48.521633
Uberaba	56	-19.982393	-47.900391
Alto Arguaia	96	-17.151678	53.192689
Rio Verde	93	-17.807942	-51.008695
Candeias	57	-12.662950	-38.519440
Sorriso	153	-12.604993	55.749907
Pekin	73	40.587875	-89.660637
Campo Grande	60	-21.258281	-48.492311
Paranagua II	334	-25.531969	-48.549938
Uberaba II	61	-19.788737	-47.943228
Villela	156	-25.667817	-57.690011
Rondonopolis	320	-16.619864	-54.701082
Catalao	156	-18.190415	-47.970764
Hopewell	0	27.915899	-82.131219
Bonnie	262	27.863068	-81.932498
Hookers Point	40	27.917532	-82.439013
Port Sutton	121	27.905096	-82.410554

### CC9.2c

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

GHG type	Scope 1 emissions (metric tonnes CO2e)
CO2	2942706
CH4	2283
N2O	2319

---

**CC9.2d**

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

Activity	Scope 1 emissions (metric tonnes CO2e)
----------	--

---

**Further Information**

**Page: CC10. Scope 2 Emissions Breakdown - (1 Jan 2016 - 31 Dec 2016)**

---

**CC10.1**

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

Yes

---

**CC10.1a**

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

Country/Region	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low carbon electricity, heat, steam or cooling accounted in market-based approach (MWh)
Brazil	3398	3398	35503	0

Country/Region	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low carbon electricity, heat, steam or cooling accounted in market-based approach (MWh)
Canada	773975	648814	1009041	0.8
United States of America	833385	1030247	1679324	0
Paraguay	150	150	1563	0

#### CC10.2

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

By business division

By facility

#### CC10.2a

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

Business division	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)
Phosphate	763587	958305
Potash	833452	692336
International and Distribution	13868	16013

CC10.2b

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

Facility	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)
Four Corners	259971	344699
South Pasture	164182	217691
South Fort Meade	112955	149769
Wingate	73107	96934
Faustina	40194	17255
Uncle Sam	20193	8699
Bartow	41695	55284
Plant City	29145	38643
New Wales	3881	5146
Riverview	16060	21294
Green Bay	0	0
South Pierce	684	907
Big Bend	1519	2014
Nichols	0	0
Hopewell	0	0
Taft	0	0
Esterhazy K2	443303	371616
Esterhazy K1	213628	179082
Colonsay	88055	73815
Carlsbad	59477	59477
Belle Plaine	19032	15954
Esterhazy K3	9958	8347
Hersey	0	0
Fospar	2601	2601
Henderson	1843	1843
Paranagua	128	128

Facility	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)
Quebracho	0	0
Savage	892	892
Sorriso	120	120
Uberaba	26	26
Rio Verde	63	63
Candeias	32	32
Pekin	376	376
Alto Araguaia	47	47
QMF	0	0
Houston	631	631
YMF	0	0
Tampa Marine	383	507
Campo Grande	9	9
Hookers Point	1284	1609
Streamsong	4114	5454
Fishhawk	0	0
Villela	104	104
Uberaba II	46	46
Paranaqua II	141	141
Rondonopolis	150	150
Catalao	81	81
Port Sutton	869	1153

CC10.2c

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

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

---

**Further Information**

**Page: CC11. Energy**

---

**CC11.1**

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

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

---

**CC11.2**

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

Energy type	MWh
Heat	0
Steam	0
Cooling	0

---

**CC11.3**

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

8508288

**CC11.3a**

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

Fuels	MWh
Natural gas	7976427
Distillate fuel oil No 2	408529
Motor gasoline	33550
Liquefied petroleum gas (LPG)	3854
Distillate fuel oil No 4	85928

**CC11.4**

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

Basis for applying a low carbon emission factor	MWh consumed associated with low carbon electricity, heat, steam or cooling	Emissions factor (in units of metric tonnes CO <sub>2</sub> e per MWh)	Comment
Direct procurement contract with a grid-connected generator or Power Purchase Agreement (PPA), supported by energy attribute certificates	0.8	0.643	The Colonsay facility has a green power purchase agreement with SaskPower to purchase low carbon electricity and is accounted for here.

**CC11.5**

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

Total electricity consumed (MWh)	Consumed electricity that is purchased (MWh)	Total electricity produced (MWh)	Total renewable electricity produced (MWh)	Consumed renewable electricity that is produced by company (MWh)	Comment
458459	2725432	2125434	1804275	1536868	Mosaic captures waste heat from sulfuric acid production and co-fired natural gas turbines. Only the energy produced by sulfuric acid waste heat capture is recognized by the state of Florida as a renewable energy source. A portion of the electricity not consumed is distributed along the utility grid and consumed by other entities.

**Further Information**

**Page: CC12. Emissions Performance**

**CC12.1**

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

Decreased

**CC12.1a**

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

Reason	Emissions value (percentage)	Direction of change	Please explain and include calculation
Emissions reduction activities	4.4	Decrease	Decrease in part due to energy efficiency activities reported in 3.3a (39,520 metric tonnes Scope 1 and 2 reductions), year-over-year increase in production of low carbon energy (120,756 metric tonnes Scope 2 reduction) and reduced natural gas consumption per ton (51,932 metric tonnes Scope 1 reductions). Reductions combined = $212,208 / 4,783,252$ (2015 Scope 1 and 2 emissions) = 4.4%
Divestment	0	No change	Not applicable
Acquisitions	0	No change	Not applicable
Mergers	0	No change	Not applicable
Change in output	0.9	Decrease	In July 2016, Mosaic's Colonsay facility idled production in response to market conditions, resulting in scope 1 and 2 emissions reductions of 65,957 metric tonnes; we completed our investments to expand our MicroEssentials® production capacity in 2016 resulting in an increase in scope 1 and 2 emissions of 24,339 metric tonnes; we commenced a Canpotex proving run at our Belle Plaine potash mine which resulted in an increase in scope 1 and 2 emissions of 348 metric tonnes. Change in output combined = $41,269 / 4,783,252$ (2015 scope 1 and 2 emissions) = 0.9% decrease.
Change in methodology	0.5	Increase	We have streamlined our data collection process for our potash facilities resulting in an apparent increase of Scope 1 emissions of 23,353 metric tonnes. Scope 1 and 2 data for our Port Sutton and Bonnie facilities are now being collected resulting in an increase of 1,252 metric tonnes. Change in methodology combined = $24,604 / 4,783,252$ (2015 scope 1 and 2 emissions) = 0.5% increase.
Change in boundary	0	No change	Not applicable
Change in physical operating conditions	0	No change	Not applicable
Unidentified	0	No change	Not applicable
Other	0.1	Increase	Increase in Scope 1 and 2 emissions resulted from increased efforts in obtaining ore at our Four Corners and Wingate facilities $(4306 / 4,783,252)$ (2015 scope 1 and 2 emissions) = 0.1% increase.

#### CC12.1b

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

Location-based

**CC12.2**

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

Intensity figure =	Metric numerator (Gross global combined Scope 1 and 2 emissions)	Metric denominator: Unit total revenue	Scope 2 figure used	% change from previous year	Direction of change from previous year	Reason for change
0.636	metric tonnes CO2e	7162880	Location-based	15.5	Increase	Lower revenue due to cyclical changes in the commodities market. Modest increased production

**CC12.3**

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

Intensity figure =	Metric numerator (Gross global combined Scope 1 and 2 emissions)	Metric denominator	Metric denominator: Unit total	Scope 2 figure used	% change from previous year	Direction of change from previous year	Reason for change
0.26	metric tonnes CO2e	metric tonne of product	17558996	Location-based	3.88	Decrease	Production decreased, however emissions decreased at a faster rate due to emission reduction activities.

---

**Further Information****Page: CC13. Emissions Trading**

---

**CC13.1**

**Do you participate in any emissions trading schemes?**

No, and we do not currently anticipate doing so in the next 2 years

---

**CC13.1a**

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

Scheme name	Period for which data is supplied	Allowances allocated	Allowances purchased	Verified emissions in metric tonnes CO2e	Details of ownership

---

**CC13.1b**

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

---

**CC13.2**

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

No

---

**CC13.2a**

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

Credit origination or credit purchase	Project type	Project identification	Verified to which standard	Number of credits (metric tonnes CO2e)	Number of credits (metric tonnes CO2e): Risk adjusted volume	Credits canceled	Purpose, e.g. compliance

**Further Information**

**Page: CC14. Scope 3 Emissions**

**CC14.1**

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

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Purchased goods and services	Relevant, calculated	2625092	Ammonia purchased based on IPPC 2013 guidance for NH3 production with modern, natural gas NH3 plants.	0.00%	Emissions from production of purchased ammonia. Ammonia, an input material to our final products, accounts for a majority of the environmental impacts associated with purchased goods and services. Accordingly, emissions associated with ammonia are currently calculated. This value was included in

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
					our 2016 data assurance process.
Capital goods	Relevant, calculated	183000	Calculated with third-party proprietary hybrid EEIO/LCA model in conjunction with company spend data to calculate absolute emissions from Mosaic's capital goods (e.g., equipment). Figure represents emissions associated with capital expenditures data for 2016 from our North American operations. Some capital expenditures may have been inadvertently excluded.	0.00%	CY2016 emissions from capital expenditures associated with North American operations, were calculated using an average factor from a third-party analysis of 2014 data. Some capital expenditures may have been inadvertently excluded.
Fuel-and-energy-related activities (not included in Scope 1 or 2)	Relevant, calculated	487954	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.	0.00%	Includes companywide fuels and electricity purchases.
Upstream transportation and distribution	Relevant, calculated	190531	Calculations basis derived from GHG Protocol Technical Guidance for Calculating Scope 3 Emissions (April 2013). Road Transport calculations consider empty backhauling. Road Transport calculations based on miles traveled, tons hauled, average fuel efficiency and considers empty back hauling. Maritime Transport based on tons shipped, fuel efficiency, mileage, transport time and other factors including ship efficiency rating from RightShip.	0.00%	Includes movements by rail, truck, articulated barge and vessel in North American and some international transport. Does not include river barges in North America. We have started gathering emissions data from an additional rail transportation provider in 2016. This value was included in our 2016 data assurance process.
Waste generated in operations	Not relevant, calculated	7519	Calculated with average DEFRA and Eco-Invent emission factors for respective waste disposal methods.	0.00%	Represents emissions from processing (landfill, recycling, treatment, incineration, etc.) approximately 97,000 tonnes of waste in 2016. Excludes mining wastes such as

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
					phosphogypsum and salt.
Business travel	Not relevant, calculated	2777	Business Travel includes air and rail travel and uses DEFRA 2016 emission factors.	100.00%	Includes all corporate travel for Mosaic employees by rail and air. This value was included in our 2016 data assurance process.
Employee commuting	Not relevant, explanation provided			0.00%	Employee commuting is estimated to represent less than 1% of total scope 3 emissions.
Upstream leased assets	Not relevant, explanation provided			0.00%	Upstream leased assets are estimated to represent less than 0.1% of total scope 3 emissions.
Downstream transportation and distribution	Relevant, calculated	137436	Calculations basis derived from GHG Protocol Technical Guidance for Calculating Scope 3 Emissions (April 2013). Road Transport calculations consider empty backhauling. Road Transport calculations based on miles travel, tons hauled, average fuel efficiency and considers empty back hauling. Maritime Transport based on tons shipped, fuel efficiency, mileage, transport time and other factors including ship efficiency rating from RightShip.	25.00%	Includes movements by rail, truck, articulated barge and vessel in North American and some international transport. Does not include river barges in North America. Excludes transport of products when customers arrange for transportation. This value was included in our 2016 data assurance process.
Processing of sold products	Not relevant, calculated	3284	Calculated based on average emissions intensity of processing products at Mosaic blending locations.	0.00%	Includes all tonnes of crop nutrients sold in North America and assumes that they are blended at the distributor level.
Use of sold products	Relevant, calculated	545000	Limited calculation based on the amount of nitrogen per tonne of finished phosphate product sold in 2015 using 2006 IPCC Guidelines for National Greenhouse Gas Inventories related to fertilizer use.	0.00%	In 2015, we began engaging a third party to evaluate the environmental impacts associated with activities across our value chain. Emissions associated with use of sold products, as reported here, are based on results of a limited

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
					assessment based strictly on the amount of nitrogen per tonne of finished phosphate product sold in 2016. We continue to engage industry resources to provide a more holistic emissions figure for this relevant scope 3 category.
End of life treatment of sold products	Not relevant, explanation provided				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	Not relevant, explanation provided				Not applicable to Mosaic operations. Most emissions from leased assets under Mosaic's operational control are included in Scope 1 and 2 inventories. The remainder are not material to total emissions footprint.
Franchises	Not relevant, explanation provided				Not applicable to Mosaic operations. Mosaic does not operate franchises.
Investments	Relevant, calculated	46000	This figure represents emissions from energy consumption associated with Mosaic's 35% stake in the Miski Mayo joint venture.		Represents emissions associated with Mosaic's stake in the Miski Mayo joint venture.
Other (upstream)	Not relevant, explanation provided				Not applicable to Mosaic operations. Upstream emissions accounted for above.
Other (downstream)	Not relevant, explanation provided				Not applicable to Mosaic operations. Downstream emissions accounted for above.

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

Third party verification or assurance process in place

**CC14.2a**

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

<b>Verification or assurance cycle in place</b>	<b>Status in the current reporting year</b>	<b>Type of verification or assurance</b>	<b>Attach the statement</b>	<b>Page/Section reference</b>	<b>Relevant standard</b>	<b>Proportion of reported Scope 3 emissions verified (%)</b>
Annual process	Complete	Moderate assurance	<a href="https://www.cdp.net/sites/2017/82/12382/Climate Change 2017/Shared Documents/Attachments/CC14.2a/2017-03-27_Mosaic_2017_Assurance_Statement_AA1000_v1_1.pdf">https://www.cdp.net/sites/2017/82/12382/Climate Change 2017/Shared Documents/Attachments/CC14.2a/2017-03-27_Mosaic_2017_Assurance_Statement_AA1000_v1_1.pdf</a>	1 of 2	AA1000AS	65

**CC14.3**

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

Yes

**CC14.3a**

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

Sources of Scope 3 emissions	Reason for change	Emissions value (percentage)	Direction of change	Comment
Purchased goods & services	Change in output	18	Increase	In 2016 we purchased 15% more ammonia, a process chemical used in our manufacturing process.
Capital goods	Change in output	3	Decrease	A decrease in capital goods spending resulted in a decrease in capital good emissions.
Fuel- and energy-related activities (not included in Scopes 1 or 2)	Change in methodology	11	Decrease	Fuel-and-energy-related emissions have fallen after updating our emission factors used in the calculations.
Upstream transportation & distribution	Change in boundary	52	Increase	We have started gathering emissions data from an additional rail transportation company and as a result, we have a 52% increase in our emissions in this category.
Waste generated in operations	Change in methodology	71	Increase	We have better accountability in place for waste generation in operations in 2016 and as a result demonstrated a 71% increase in our emissions in this category.
Business travel	Change in output	36	Decrease	Due to reduced capital spending in 2016, business travel decreased resulting in reduced business travel emissions.
Downstream transportation and distribution	Change in methodology	20	Increase	Downstream transportation and distribution emissions have increased because we accounted emissions related to additional maritime vessels.
Processing of sold products	Change in output	17	Increase	A net increase of about 14% in North American crop nutrient sold results in an increase processing of sold product emissions.
Use of sold products	Change in output	4	Increase	Our phosphate product output has slightly increased this reporting year, resulting in higher use of sold product related emissions.
Investments	Change in output	2	Increase	Our investment emissions increased slightly due to an increase in investments

#### CC14.4

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

- Yes, our suppliers
- Yes, our customers

Yes, other partners in the value chain

#### CC14.4a

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

i. Mosaic's success is rooted in our commitment to high quality products and supported by strong supplier relationships. We foster supplier relationships based on trust, fairness and mutual respect. We hold our suppliers, their employees and subcontractors to the same high standards of business integrity to which we hold ourselves.

Mosaic is committed to supporting best agricultural practices, including research and practices to minimize GHG emissions associated with the use of our crop nutrient products. Our approach to minimizing GHGs is multifaceted with focus on activities related to production, distribution and usage. We continuously work to identify opportunities to improve our use of energy and lower our emissions so the carbon footprint of our products is minimized. Mosaic supports the minimization of greenhouse gas emissions from the activities related to global food supply by encouraging stakeholders to enhance their understanding, adoption and promotion of 4R Nutrient Stewardship. By applying the right fertilizer at the right rate, right time and in the right place, farmers minimize environmental impacts associated with fertilizer use, including potential greenhouse gas emissions.

ii. Priorities are set based on the impact to Mosaic's value chain. In 2015, we began working with a third-party firm to assess and quantify environmental impacts across our value chain. We expect the results of that exercise to inform our engagement with key suppliers moving forward.

iii. Success is measured by various factors. For example, Mosaic continues to work with a transport contractor to reduce emissions by moving product by compressed natural gas (CNG) fleet in Central Florida. Success is measured, in part, by year-over-year increase in shipping volumes transported more efficiently, and year-over-year reduction in transportation-associated emissions. In 2015, our Phosphates Business Segment transported approximately 4.5 million tons of product by CNG fleet – an increase over the 2.9 million tonnes of product we moved by CNG trucks in 2014.

#### CC14.4b

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

Type of engagement	Number of suppliers	% of total spend (direct and indirect)	Impact of engagement
Active engagement	20	50%	We engage 20 suppliers which represented over 50% of our total logistics spend in 2016

---

CC14.4c

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

---

**Further Information**

**Module: Sign Off**

**Page: CC15. Sign Off**

---

CC15.1

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

Name	Job title	Corresponding job category
Joc O'Rourke	President and Chief Executive Officer	Chief Executive Officer (CEO)

---

**Further Information**

**CDP 2017 Climate Change 2017 Information Request**