

# ENVIRONMENT

## 2016 Annual Sustainability Disclosure

# Responsibility In All We Do

**G4-DMA: RESPECT FOR THE NATURAL ENVIRONMENT IS ESSENTIAL TO THE SUSTAINABILITY OF OUR BUSINESS.** From our potash mines in Saskatchewan to our Florida phosphate operations and distribution and blending facilities in Brazil, we strive to optimize our production processes and reduce our environmental impact.

At Mosaic, we believe lasting success comes from making smart choices about how we manage resources. We are committing significant resources to advancing our efforts in water conservation, land reclamation, waste reduction and producing clean energy through cogeneration in our phosphates operations. These efforts are resulting in operating cost savings and improvements in environmental performance.

We are also committed to the responsible and sustainable use of our products. By promoting and advancing [4R Nutrient Stewardship](#), we are working to mitigate potentially negative environmental impacts stemming from improper use of fertilizer by others.

Last year, we developed sustainability targets to help focus our efforts and track our progress in the areas of water, energy, greenhouse gases and waste. We are committed to achieving these targets and will work to evaluate future areas for measurement and improvement. Please see [Our Progress](#) for an update on our 2016 progress.

# WATER

## Managing Our Water Footprint

**RESPONSIBLE USE OF WATER IS A FUNDAMENTAL COMPONENT OF MOSAIC'S GLOBAL SUSTAINABILITY EFFORTS.** Our water management programs involve facility-specific and segment-wide initiatives to reduce our water impact.

### Water Withdrawals

**G4-EN8** We strive to manage the risks of water scarcity by emphasizing the responsible use of water across our operations.

## GLOBAL WATER WITHDRAWALS

,000M<sup>3</sup>

	2012	2013	2014	2015	2016
<b>Groundwater</b>	71,218	67,277	64,380	68,270	<b>65,085</b>
<b>Municipal</b>	118	133	781	730	<b>914</b>
<b>Reclaimed Water</b>	1,084	1,167	3,429	7,515	<b>9,247</b>
<b>Surface Water</b>	215,854	250,427	240,780	224,168	<b>233,512</b>
<b>Total</b>	<b>288,274</b>	<b>319,004</b>	<b>309,370</b>	<b>300,683</b>	<b>308,758</b>

**NOTE:** Surface water figure includes once-through cooling water. Approximately 44 percent of Phosphates business segment surface water withdrawals are used for once-through cooling. The increase in use of reclaimed water in 2014 was primarily due to our acquisition of the Florida Phosphate assets of CF Industries, Inc.

In alignment with our [Sustainability Targets](#), we have modified our water intensity reporting to reflect a freshwater intensity measurement. In setting a water target, our intent is to drive water efficiency improvements across our business and to increase the use of alternative sources. Mosaic's freshwater withdrawals per tonne of dry product crop nutrient and animal feed production are as shown below:

## FRESHWATER INTENSITY

M<sup>3</sup>/TONNE

	2011	2012	2013	2014	2015	2016
<b>Mosaic</b>	4.37	5.43	5.07	4.59	4.86	<b>4.76</b>

**NOTE:** “Intensity” refers to the volume of water (m<sup>3</sup>) used in making a single metric tonne of product. Production includes all crop nutrients and animal feed ingredients produced in the calendar year. “Freshwater” is defined as groundwater and surface water withdrawals and excludes reclaimed water, brine, seawater, rainwater, and once-through cooling and process water withdrawn from the Mississippi River in Louisiana.

Our intent is to drive water efficiency improvements across our business and to increase the use of alternative sources

For withdrawals and total intensity broken down by business segment, please see our [Environment Metrics Supplement](#).

**G4-EN9** Mosaic’s Central Florida fertilizer production facilities operate using recycled or reused water when possible. We use captured rainfall as an “alternative water supply.” Groundwater use is heavily regulated and is used by Mosaic to supplement captured rainfall. Local regulations promote the use of available alternative water supplies, such as reclaimed water from municipalities, before groundwater use. Mosaic Florida sites received reclaimed water from six municipal waste water treatment plants in 2016 at an average rate of 6.7 million gallons per day (MGD). Please see [G4-EN8](#) and [G4-EN10](#) for additional context.

In the Phosphates business segment, to avoid impacts on adjacent wetlands and other surface water sources, active mining areas are surrounded by a recharge ditch and berm system that assists in maintaining the groundwater elevation. Groundwater levels are monitored regularly under our water withdrawal permits to verify no impact to our adjacent properties and water resources.

## Water Recycling

**G4-EN10** Our facilities monitor and evaluate water use to confirm it is minimized, and water recycling and reuse are maximized. Recycle and reuse volumes for Mosaic's Potash and Phosphates business segments are presented here. Figures are based on total water used by facility, less freshwater withdrawals.

### RECYCLE AND REUSE VOLUME

Business Segment	Recycle and Reuse Volume (,000m <sup>3</sup> )
Phosphates	996,048
Potash	176,632

**NOTE:** Carlsbad, N.M., South Pierce, Fla., and Faustina and Uncle Sam, La., are not included in respective business segment calculations. Belle Plaine is a solution mine and therefore, water use and methodology for recycle/reuse rate differs from shaft mining operations. Mosaic operations capture rainfall, a portion of which is impounded and used in the various production processes, with some discharged through permitted outfalls at Phosphates facilities. Traditionally, Mosaic has considered captured rainfall use as an alternative water supply, and it is used in part to estimate recycle/reuse water usage rates at Florida concentrate and minerals operations.

Due to relatively high annual rainfall, a significant percentage of the NPDES permitted total outfall discharge from our Florida phosphate operations is collected rainwater that exceeds our water usage needs

## Effluents & Waste

## Water Discharges

**G4-EN22, G4-EN26** Discharges from Mosaic’s Florida and Louisiana phosphate operations to downstream water bodies are highly regulated through federal National Pollutant Discharge Elimination System (NPDES) permits that are administered by the Florida Department of Environmental Protection (FDEP) and Louisiana Department of Environmental Quality (LDEQ). None of our outfalls discharge directly into a designated protected area, although discharges occur in two riverine basins upstream of Outstanding Florida Waters (segments of Little Manatee River and Myakka River) and Florida Wild and Scenic Rivers (segment of Myakka River). As an overarching principle, water that falls within the active, operational footprint of Mosaic’s phosphate mining and fertilizer production facilities is actively managed, used in our operations, treated if necessary and discharged through these NPDES outfalls pursuant to water quality standards stipulated by our permit. Discharges are monitored, sampled and analyzed regularly by Mosaic, with reports provided to regulatory agencies to demonstrate ongoing compliance with permit limitations.



**In 2016, Mosaic’s Canadian potash facilities helped preserve water quality off-site by maintaining a “zero-discharge” approach, with the capture of surface water runoff from the sites.**

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In certain high precipitation events, off-site discharges of freshwater surface runoff are warranted and are approved in advance by the Saskatchewan Ministry of Environment and Saskatchewan Water Security Agency. There were no such instances in 2016. Please see [G4-MM3](#) for a discussion of our Potash segment’s brine disposal methods.

Due to relatively high annual rainfall, a significant percentage of the total outfall discharge from our Florida mining operations is collected rainwater that exceeds our water usage needs. The discharge pattern tends to follow the rainfall pattern (e.g., more discharges occurring after rainfall events) with the total discharge volume varying year to year based

on precipitation. Our Florida operations are located in the following river basins: Alafia River, Hillsborough River, Little Manatee River, Myakka River and Peace River, with one fertilizer manufacturing facility's outfalls directing water to Tampa Bay. Mosaic's phosphates facilities in Louisiana have permitted outfalls that discharge water to the Mississippi River. The following table summarizes the total surface water discharge from our phosphates operations in Florida and Louisiana combined.

### TOTAL WATER DISCHARGE OF MOSAIC PHOSPHATES BUSINESS SEGMENT

	2012	2013	2014	2015	2016
<b>Phosphates Annual Outfall Discharges</b> (,000m <sup>3</sup> )	321,318	444,035	304,569	401,242	<b>456,861</b>
<b>Phosphates Outfall Discharge Annual Phosphorous Loadings</b> (Tonnes)	2,465	2,691	2,680	2,025	<b>1,826</b>
<b>Phosphates Outfall Discharge Annual Nitrogen Loadings</b> (Tonnes)	115	210	278	388	<b>490</b>

**NOTE:** Outfall discharge totals include once-through cooling water. Phosphorous loadings are heavily influenced by once-through cooling water.

## Highlight

### New Wales Water Loss Incident

Phosphogypsum storage systems ("gypstacks") are used to store byproduct phosphogypsum that is produced during the manufacturing of phosphate fertilizers. The phosphogypsum is pumped as a slurry to the gypstack, where it separates from the water and hardens. The water is returned to the manufacturing facility for reuse.

Mosaic Fertilizer, LLC, our subsidiary, operates groundwater monitoring systems around its gypstacks to evaluate their performance. In August 2016, monitoring at our New Wales facility in Florida showed a decline in the water levels of a pond atop one of the two cells of the active gypstack—the west cell. Mosaic Fertilizer reported the water loss to the relevant government authorities—the Florida Department of Environmental Protection (FDEP), the U.S. Environmental Protection Agency and Polk County. When the water loss was detected, we began pumping water out of the pond to reduce the amount of drainage. Once the cell drained, Mosaic Fertilizer confirmed a sinkhole had formed under the west cell, damaging a liner system at the base of the gypstack. As a result, approximately 215 million gallons of process water stored in the pond drained into the Floridan aquifer.

Upon confirmation of the sinkhole, we activated a recovery well to capture lost process water. We subsequently began remediation work to address the sinkhole. We also provided community members with free bottled water and third-party testing of their drinking water wells. See [G4-EN34](#) for more information on those efforts. To date, extensive groundwater monitoring and sampling of third party drinking water wells have confirmed that no process water has migrated offsite as a result of the sinkhole.

In October 2016, Mosaic Fertilizer signed a consent order with the FDEP. Among other things, the consent order requires us to repair the sinkhole, and to perform additional groundwater monitoring and take action (including providing drinking water or water treatment services) if monitored off-site water does not comply with applicable standards as a result of the incident. We also agreed to provide \$40 million in financial assurance to support completion of those actions.

The eight riverine basins in which Mosaic operates in the United States and Canada are detailed below.



**RIVERINE BASINS WHERE MOSAIC OPERATES**

<b>Water Body/Basin</b>	<b>Basin Size (Hectares)</b>	<b>River Length (km)</b>
Hillsborough River	175,000	95
Peace River	608,000	169
Alafia River	109,000	38
Little Manatee River	58,000	58
Myakka River	155,000	106
Mississippi River	322,500,000	3,370
Pecos River <sup>1</sup>	11,500,000	1,490
Qu'Appelle <sup>2</sup>	1,780,000	430

**NOTES:**

<sup>1</sup> We do not discharge to the Pecos River.

<sup>2</sup> Mosaic's Saskatchewan facilities maintain a "zero-discharge" approach. When the discharge of freshwater is warranted following a high precipitation event, it is approved in advance by multiple regulatory agencies.

# ENERGY & EMISSIONS

## Energy

**SINCE OUR COMPANY'S FORMATION IN 2004, MOSAIC HAS INVESTED IN SITE-SPECIFIC INITIATIVES AND COMPANYWIDE PROGRAMS AIMED AT REDUCING ENERGY USE AND EMISSIONS.** These efforts are resulting in operating cost savings and improvements in environmental performance.

**G4-EN3** Mosaic's worldwide total direct energy consumption in 2016 was 99.61 million gigajoules (GJ).

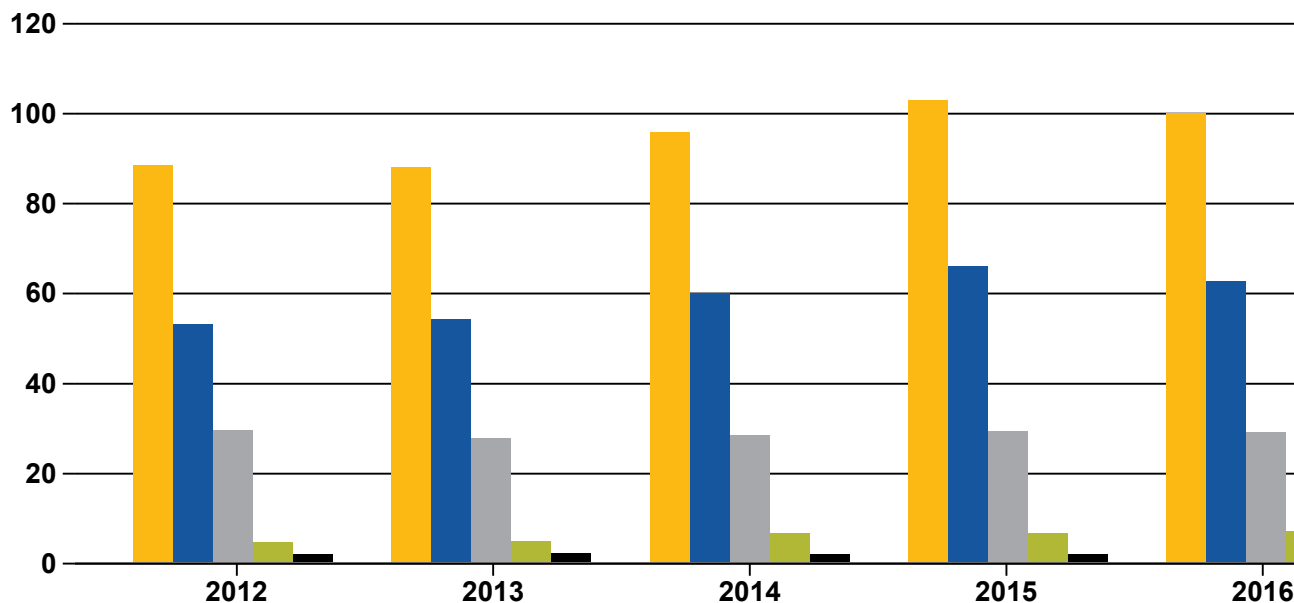
## Energy Consumption by Source

Approximately 91 percent of Mosaic's worldwide total direct energy consumption in 2016 was from two sources: waste heat from sulfuric acid production and natural gas. The remaining portion was made up of petroleum products and propane.



### TOTAL DIRECT ENERGY CONSUMPTION BY SOURCE

MILLION GJ



TOTAL DIRECT ENERGY CONSUMPTION  
 STEAM FROM CAPTURED HEAT  
 NATURAL GAS  
 COGENERATED ELECTRICITY  
 PETROLEUM PRODUCTS

**NOTE:** Waste heat and steam from the processing of sulfur are used as sources of energy. [ To a calculation error, the sum of 2015’s Total Direct Energy Consumption has been restated reflect use of 102.62 million GJ, not 96.25 million GJ as previously reported. The previous tot inadvertently excluded cogenerated electricity. Individual source totals were reported correctl and have not been changed.

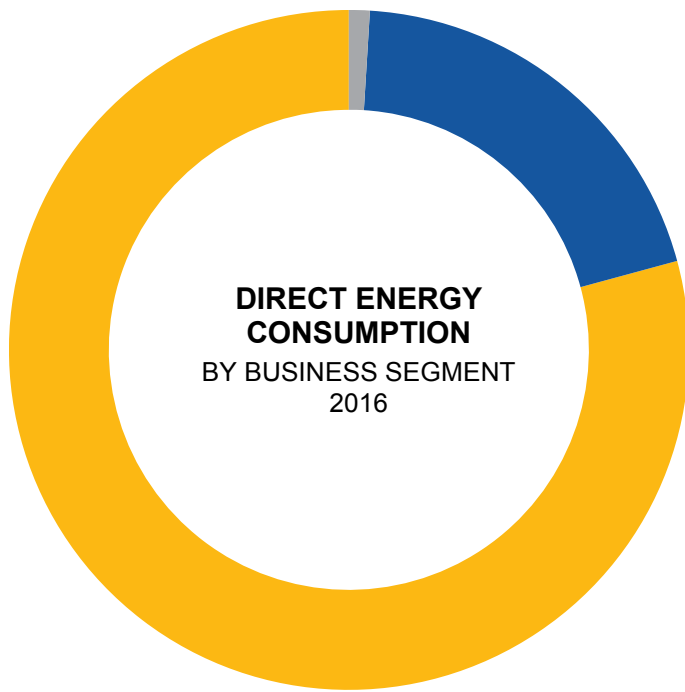


In 2016, our phosphates operations used a portion of steam energy from the sulfuric acid manufacturing process to produce 6.50 million GJ of electricity through a process called cogeneration, approximately 85 percent, or 5.53 million GJ, of which was used internally. We consider the waste heat from sulfuric acid production to be a direct primary energy source for our operations. We exported approximately 850,000 GJ of power to the local utility grid in Florida in 2016.

Mosaic looks for opportunities to improve the efficiency and expand the electricity output of our cogeneration assets. In 2016, Mosaic brought another turbo generator online at our Uncle Sam facility that is expected to provide an additional 15 megawatts of low-greenhouse gas (GHG) electrical generation capacity.

Mosaic could have additional opportunities for harnessing emissions-free power under a more supportive regulatory construct. We advocate for a balanced renewable energy policy that incentivizes and expands the generation and consumption of existing, low-cost renewables, such as waste heat recovery, and promotes fairer pricing for third-party renewable producers when selling power back to the electrical grid.

## **Energy Consumption by Business Segment**



**Phosphate** 80%

**Potash** 20%

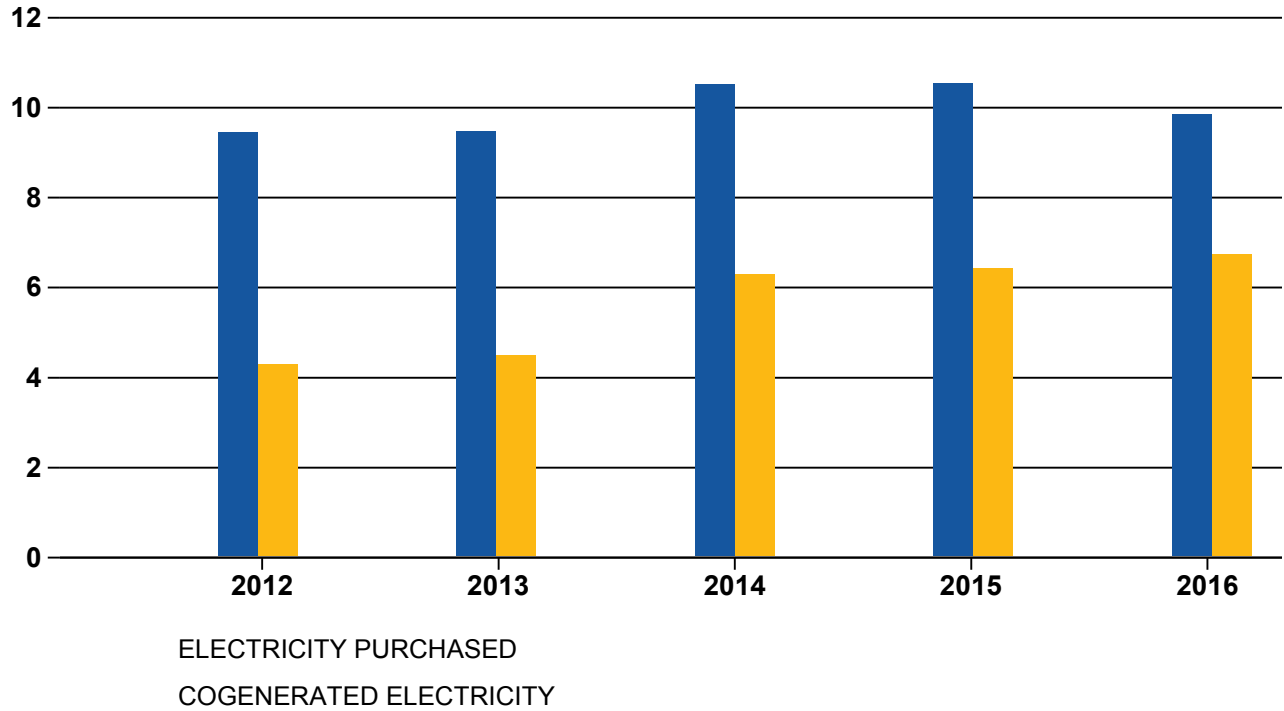
**International Distribution** < 1%

**NOTE:** The Phosphates segment uses a significant amount of waste heat energy from the sulfuric acid manufacturing process, which is accounted for here.



### INDIRECT ENERGY CONSUMPTION BY PRIMARY ENERGY SOURCE

MILLION GJ

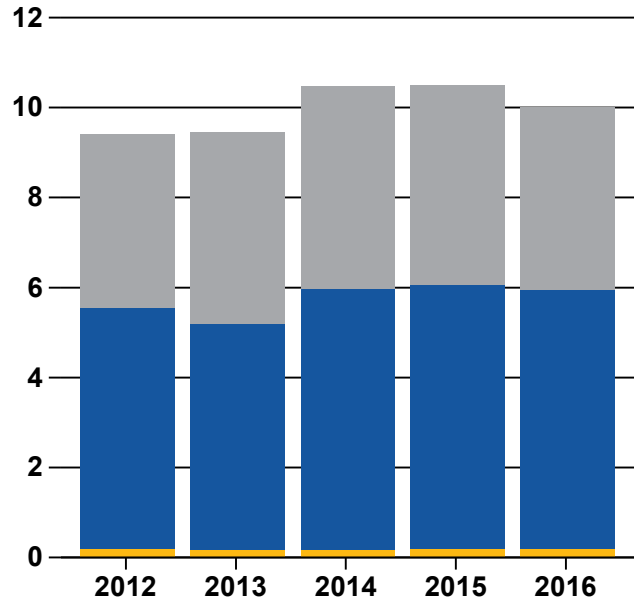


## Indirect Energy Consumption by Business Segment

Mosaic consumes indirect energy solely through the purchase of electricity produced by third parties. Mosaic’s worldwide indirect energy consumption was 9.81 million GJ for 2016.

### INDIRECT ENERGY CONSUMPTION BY BUSINESS SEGMENT

MILLION GJ

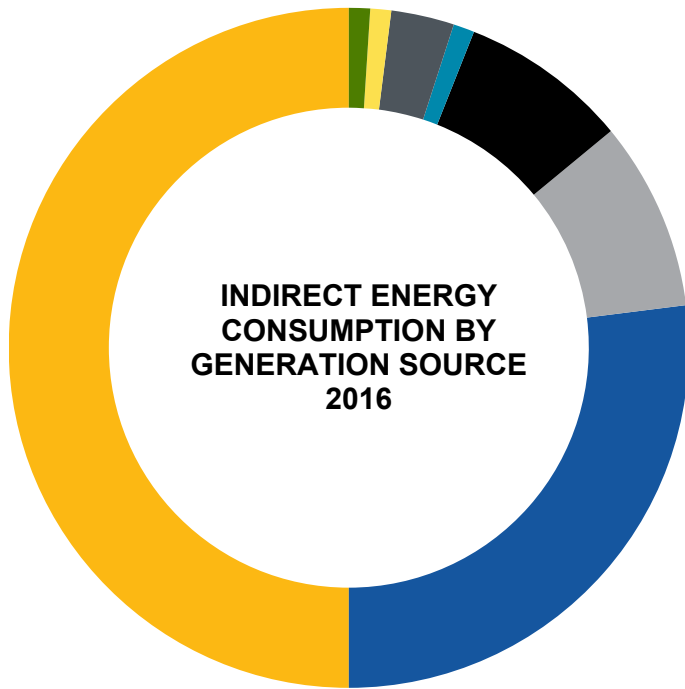


INTERNATIONAL DISTRIBUTION  
PHOSPHATE  
POTASH



## Indirect Energy Consumption by Fuel Source

Approximately 12 percent of Mosaic’s worldwide indirect energy consumption is from renewable sources, including hydroelectric, biomass sources and wind power.



- Natural Gas** 50%
- Coal** 27%
- Hydroelectric** 9%
- Nuclear** 8%
- Oil** 1%
- Wind** 3%
- Biomass** 1%
- Unknown** 1%
- Geothermal** 0%
- Solar** 0%

**NOTE:** Purchased electricity sources for facilities in the United States are categorized consistent with the U.S. Department of Energy 2014 Emissions & Generation Resource Integrated Database (eGRID) regional. Canada-purchased electricity sources are based on Saskpower 2015-2016 Annual Report. International facilities' power generation sources are based on the U.S. Energy Information Administration's national energy profiles. Renewable sources, including hydroelectric, wind, biomass, geothermal and solar total 1,223,450 GJ and 12



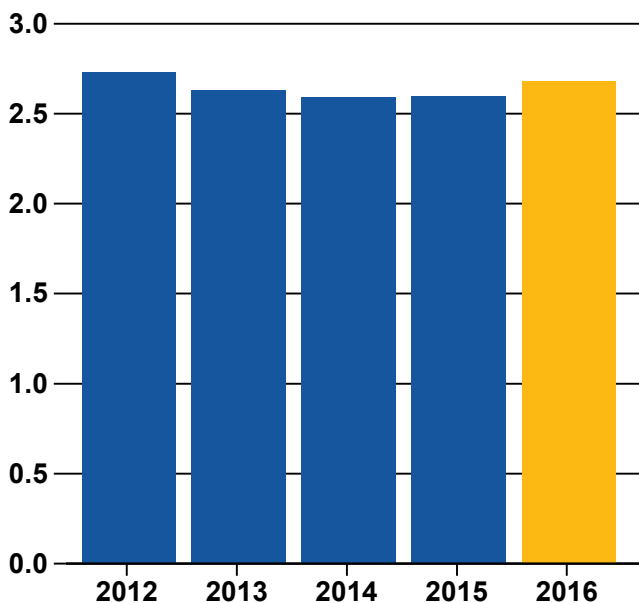
percent. The remaining 8,588,106 GJ of purchased electricity is from non-renewable sources.

## Energy Intensity

**G4-EN5** Tracking our energy use per tonne of finished product helps us focus on energy efficiency and conservation across operations.

### TOTAL ENERGY PER TONNE FINISHED PRODUCT

GJ/FINISHED PRODUCT TONNES



**NOTE:** Total energy includes electricity, natural gas, petroleum and energy from waste heat consumed by Mosaic operations including mines, manufacturing plants, distribution sites, offices, agricultural operations and our Streamsong Resort. In alignment with our sustainability targets and progress tracking, steam is excluded as a source of energy. Accordingly, prior years' energy per tonne of finished product have been restated. Energy consumed in sinking our Esterhazy K3 shaft mine and the operation of our Streamsong Resort are included since 2012 only.



## Reducing Our Energy Consumption

**G4-EN6** Our energy improvement and sustainability process is part of a broader strategic business plan designed to help Mosaic meet or exceed efficiency, production and profitability requirements. This plan includes strategies for lowering purchased energy consumption through more efficient processes and maximizing use of cogenerated energy.

We also emphasize energy efficiency in our office facilities. Mosaic's Florida headquarters in FishHawk maintains its ENERGY STAR certification. Mosaic's leased Regina, Canada, offices were built to Leadership in Energy & Environmental Design (LEED) standards and included the purchase of interior design elements, furniture and products, as well as other energy efficiencies associated with LEED. Similarly, Mosaic's Colonsay mill dry building in Saskatchewan was designed and constructed according to LEED standards. The LEED certification process for both buildings is underway.

We estimate savings of approximately 200,000 GJ due to conservation and efficiency improvement projects that were executed in 2016. Several examples of energy efficiency efforts by our operations are outlined below.

We estimate savings of approximately 200,000 GJ due to conservation and efficiency improvement projects that were executed in 2016

## SUSTAINABILITY INITIATIVES IN ACTION

2016 Activity & Outcome	Estimated Annual Energy Savings (Gigajoules)	Estimated Annual CO <sub>2e</sub> Savings (Metric Tonnes CO <sub>2e</sub> )
<b>Phosphates Business Segment</b>		
We began operation of a new turbine generator at our Uncle Sam facility that will provide virtually greenhouse gas (GHG) emissions-free cogenerated power for operations, offsetting the amount of power purchased from the local grid.	67,795	9,741.79
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 GHG emissions.	2,268	381.02
A new power line connecting our South Pierce and South Pasture facilities will allow Mosaic to increase our internal use of cogenerated power.	99,792	16,765.06
Our Four Corners facility converted a dragline to LED lights, which resulted in significant maintenance and energy savings.	518	313.39
The Phosphates business segment converted lights to LED fixtures, saving energy and associated GHGs.	7,708	4,661.80
Employees across Phosphates minerals and concentrates facilities initiated a behavioral change program to run bulldozers in "ECO" mode, which resulted in fuel use and GHG emissions reductions.	5,060	850.03
<b>Potash Business Segment</b>		
Our Carlsbad facility converted over 3,300 bulbs to LED lights.	10,800	6,531.84
	4	2.18
<b>Total Savings</b>	<b>195,731</b>	<b>39,520</b>

2016 Activity & Outcome	Estimated Annual Energy Savings (Gigajoules)	Estimated Annual CO <sub>2</sub> e Savings (Metric Tonnes CO <sub>2</sub> e)
The Carlsbad facility installed a variable frequency drive control and automation system on an incoming freshwater pumping system, which resulted in energy and GHG savings.		
Our Esterhazy Potash facilities upgraded to LED fixtures, resulting in energy and GHG emissions savings.	98	16.89
The Esterhazy facility programmed underground conveyor belts to shut down when not being used, saving energy and associated GHGs.	1,336	230.28
<b>International Business Segment</b>		
The Fospar port installed a solar energy system to supply energy to a portion of the port's operations.	11	0.20
The Fospar port converted 100 sodium vapor lights to LED, resulting in energy and GHG savings.	315	5.95
Our YMF bulk blending plant in China replaced high-pressure sodium lights with LED lights, saving energy and GHGs and reducing maintenance costs.	26	19.70
<b>Total Savings</b>	<b>195,731</b>	<b>39,520</b>

**G4-EN7** Innovation is one of Mosaic’s guiding principles. It influences our long-term business strategy and our companywide efforts to reduce energy use and GHG emissions. Through process and product innovation, we’re driving greater value for customers and stakeholders. Please see the [Food](#) page for more information.

In addition to developing products and services that enhance customers' productivity and positively impact their energy efficiency, Mosaic maintains active partnerships with industry-leading research centers, targeting agriculture efficiency and productivity improvements. For more information on our partnerships, please see [G4-EN27](#).

In 2016, energy efficient or renewable energy-based initiatives resulted in 165,000 GJ of energy savings. Please refer to the table in [G4-EN6](#) for additional information on our efforts to provide energy efficient or renewable energy-based products or services.

# Reducing Our Emissions

**G4-EN15, G4-EN16** We generate direct and indirect GHG emissions in the mining, production, distribution and use of our phosphate and potash crop nutrient products.

## Direct and Indirect Emissions

## WORLDWIDE GREENHOUSE GAS EMISSIONS

MILLION TONNES CO<sub>2</sub>E

Business Segment / Emission Type	2012	2013	2014	2015	2016
<b>Phosphates</b>					
<b>Phosphates Totals</b>	2.67	2.54	2.87	2.83	<b>2.69</b>
<b>Direct Emissions</b>	1.79	1.80	1.91	1.97	<b>1.92</b>
<b>Indirect Emissions</b>	0.88	0.73	0.96	0.86	<b>0.76</b>
<b>Potash</b>					
<b>Potash Totals</b>	1.74	1.80	1.80	1.90	<b>1.80</b>
<b>Direct Emissions</b>	1.04	0.93	0.95	0.95	<b>0.97</b>
<b>Indirect Emissions</b>	0.70	0.87	0.85	0.95	<b>0.83</b>
<b>International Distribution</b>					
<b>International Distribution Totals</b>	0.10	0.07	0.06	0.05	<b>0.07</b>
<b>Direct Emissions</b>	0.08	0.06	0.04	0.04	<b>0.05</b>
<b>Indirect Emissions</b>	0.02	0.01	0.01	0.02	<b>0.01</b>
<b>Total Emissions</b>					
<b>Total Direct Emissions</b>	2.91	2.79	2.90	2.96	<b>2.94</b>
<b>Total Indirect Emissions</b>	1.60	1.61	1.82	1.83	<b>1.60</b>
<b>Total</b>	<b>4.51</b>	<b>4.41</b>	<b>4.73</b>	<b>4.78</b>	<b>4.56</b>

**NOTE:** Direct emissions include Mosaic's consumption of natural gas, diesel, other fuels, process related activities, water treatment and refrigerants. Indirect emissions include electricity purchased from third-party utilities. Mosaic uses guidance from the CDP for calculating and reporting carbon dioxide equivalence (CO<sub>2</sub>e). Subtotals may not always add up to totals due to rounding. Please see Mosaic's [CDP Climate Change response](#) for more information on our GHG emissions performance.

**G4-EN17** Mosaic has engaged upstream and downstream stakeholders in our supply chain to better quantify the impacts of our business. In 2016, Mosaic collaborated with approximately 20 vendors and contractors to quantify GHG emissions associated with business travel and rail transport of raw materials and finished products.

Scope 3 emissions from ammonia purchases, upstream transportation and business travel are reported below.



## OTHER INDIRECT GREENHOUSE GAS EMISSIONS

MILLION TONNES CO<sub>2</sub>E (EXCEPT BUSINESS TRAVEL)

Source	2012	2013	2014	2015	2016
Ammonia Purchases	2.13	2.12	2.20	2.31	<b>2.63</b>
Truck Transport (Florida)	0	0	0.01	0.03	<b>0.04</b>
Rail Transport (Florida and Canada)	0.01	0.01	0.01	0.01	<b>0.03</b>
Business Travel	5,335	5,140	4,652	4,328	<b>2,777</b>
Marine Transport	0	0	0	0.20	<b>0.25</b>
<b>Total</b>	<b>2.15</b>	<b>2.14</b>	<b>2.23</b>	<b>2.44</b>	<b>2.95</b>

**NOTE:** Ammonia purchases depicted in the table above are for production of crop nutrients in the Phosphates business segment only. Emission factor for purchased ammonia revised for 2013 and prior years per IPCC 2013 guidance for ammonia production with modern, natural gas ammonia plants. In 2014, we accounted for emissions totals from one of our trucking partners, and in 2016, we accounted for emissions totals from two of our trucking partners. These figures, which represent a portion of our total trucking emissions, are not available for 2011-2013. The increase in rail transport emissions is due to expanding our reporting boundary and gathering data from a rail vendor in Canada. Business Travel is presented in total tonnes of CO<sub>2</sub>e. Emissions associated with product use are addressed as part of our product stewardship programs. Please see the [Food](#) section and our 2016 [CDP Climate Change response](#) for more information.

## Emissions Intensity

**G4-EN18** We actively monitor GHG emissions per tonne of finished product. Our goal is to reduce our GHG emissions through improving the energy efficiency of our operations and promoting sustainable agricultural practices; we are adapting to the potential threats of climate change and reducing the environmental impact of fertilizers on the global food supply.

## DIRECT AND INDIRECT GREENHOUSE GAS EMISSIONS INTENSITY

MTN CO<sub>2</sub>E/PER TONNE OF FINISHED PRODUCT

	2012	2013	2014	2015	2016
<b>Mosaic</b>	0.28	0.27	0.26	0.26	<b>0.26</b>

**NOTE:** Emissions intensity refers to total CO<sub>2</sub>e emissions generated in metric tonnes per unit of product measured in metric tonnes. Excludes co-products. Includes all Scope 1 and Scope 2 emissions sources reported in previous GRI/CDP.

Greenhouse gas emissions reductions equal approximately 40,000 tonnes of CO<sub>2</sub>e, the equivalent of taking more than 8,500 average United States cars off the road for a year

**G4-EN19** Mosaic is taking a proactive approach to reductions in GHG emissions, with particular emphasis on improving energy efficiency.

GHG emissions reductions resulting from the initiatives reported in [G4-EN6](#) equal approximately 40,000 tonnes of CO<sub>2</sub>e, the equivalent of taking more than 8,500 average United States cars off the road for a year.

For more information on Mosaic's efforts to reduce GHG emissions and address climate change, please see our [2016 CDP Climate Change response](#).

The results of a value chain exercise we worked with a third party to complete in 2016 confirmed that the GHG impacts associated with the application of our products—primarily potash and phosphate crop nutrients—are minimal. However, Mosaic promotes the use of best agricultural practices, including research and practices to minimize GHG emissions and other environmental impacts associated with the use of crop nutrient products. Further, Mosaic supports the minimization of GHG emissions and

other environmental impacts from the global food supply by encouraging stakeholders to enhance their understanding, adoption and promotion of [4R Nutrient Stewardship](#).

## Other Emissions

**G4-EN21** Significant air emissions as reported to regulation agencies.

### CRITERIA AIR AND OTHER POLLUTANTS

IN ,000 TONNES

	2012	2013	2014	2015	Normalized 2015
<b>NOx</b>	4.56	3.06	3.55	4.20	<b>0.23</b>
<b>CO</b>	1.77	4.02	2.26	1.39	<b>0.08</b>
<b>PM</b>	3.66	3.87	5.09	5.73	<b>0.31</b>
<b>SO2</b>	13.11	13.65	17.04	15.97	<b>0.87</b>
<b>VOC</b>	2.61	0.25	0.66	0.25	<b>0.01</b>
<b>NH3</b>	1.1	1.4	1.86	1.82	<b>0.10</b>
<b>FL</b>	0.15	0.14	0.15	0.13	<b>0.01</b>
<b>H2S</b>	0.11	0.0	0.0	0.00	<b>0.00</b>
<b>SAM</b>	0.12	0.13	0.15	0.16	<b>0.01</b>
<b>HF</b>	0.45	0.07	0.39	0.00	<b>0.00</b>

**NOTE:** All business segments included. Emissions based on stack test results and emission factors. "Normalized" refers to the emissions value per tonne of finished product. Emission values for 2016 to be added after the completion of regulatory reporting cycle in the Fall of 2017.

# Transportation

**G4-DMA: OUR SUPPLY CHAIN MISSION IS TO DELIVER GOODS AND SERVICES AT THE BEST VALUE TO MEET BUSINESS REQUIREMENTS, ALWAYS**

**CONSIDERING SAFETY AND SUSTAINABILITY.** In any given year, Mosaic moves upwards of 60 million tons of raw materials, work-in-progress goods and finished products. We strive to transport materials as efficiently as possible, both in terms of cost and environmental impact.

**G4-EN30** Environmental impacts of transporting our materials are primarily related to GHG emissions resulting from combustion of fuels by transport vehicles. In 2016, we engaged approximately 20 external supply chain providers to attempt to better understand the emissions impact associated with upstream and downstream transportation. We evaluate additional sources of emissions and, if appropriate based on the results of our evaluation, will continue to expand the scope of our reporting in the future to include additional sources. Please see [G4-EN17](#) for more information on those impacts.

## LAND & RECLAMATION

### How & Where We Mine

**IN OUR FLORIDA PHOSPHATES OPERATIONS, WE CONDUCT EFFECTIVE ACRE-FOR-ACRE WETLAND RECLAMATION AND RETURN MINED LANDS TO PRODUCTIVE USES FOR BOTH WILDLIFE AND PEOPLE.** We use advanced science and technology to do this important work.

**G4-EN11** As of December 31, 2016, Mosaic owned or maintained mineral interests in about 359,000 acres of land in Florida related to our phosphates mining operations. For each permit, Mosaic works with professional biologists, hydrologists and other specialists, in conjunction with as many as 12 local, regional, state and federal regulatory agencies, to identify areas of environmental sensitivity that should be preserved and protected, and to develop comprehensive reclamation plans that promote hydrologic function and biodiversity.

As of December 31, 2016, Mosaic owns or controls more than 22,500 acres in Florida that are designated as non-impacted floodplain, high-quality wetlands, and other preservation for which Mosaic has granted conservation easements.

Mosaic operates three Canadian potash facilities, all located in the southern half of the province of Saskatchewan, including our solution mine at Belle Plaine, two interconnected mine shafts at our Esterhazy shaft mine and our shaft mine at Colonsay. Mosaic has mineral rights to approximately 584,000 acres in Saskatchewan for potash mining and surface rights to approximately 33,000 acres. Mosaic's United States potash operations include a shaft mine in Carlsbad, New Mexico, with mineral rights to approximately 77,000 acres for potash mining and approximately 7,186 acres of surface rights. Since shaft mining in Saskatchewan occurs at more than 3,000 feet below surface, and solution mining requires limited acreage for pipeline and cluster infrastructure, the only surface areas that are disturbed are the actual footprint of the mine shaft and the adjacent above-ground processing facilities and tailings management areas.

Although there are no International Union for Conservation of Nature (IUCN) protected management areas in the vicinity of our operations, Mosaic's Florida operations have placed about 13,000 acres in conservation easements along wildlife corridors and other ecologically significant habitats.

## Mosaic oversees land for our mining operations

359KAres in Florida

584KAres in Saskatchewan

13KAres in Florida Conservation easements

**G4-EN12** Phosphate mining in Florida, representing our largest phosphate reserve holdings, is regulated by as many as 12 local, regional, state and federal permitting authorities. This robust regulatory oversight promotes efforts to avoid, minimize, and mitigate impacts in accordance with all legal and regulatory requirements. This stringent regulatory oversight emphasizes that: appropriate environmentally sensitive land is preserved from mining; use of project designs intended to minimize environmental impacts to the maximum extent practicable; compensatory mitigation for unavoidable minimized impacts; employment of best-in-class reclamation practices; and ongoing monitoring activities such as the Horse Creek Stewardship and Peace River Monitoring programs, intended to identify potential impacts quickly to ensure mining does not significantly impact the water quality, water quantity and biodiversity on riverine systems within or outside of our property boundaries. Please see our [website](#) for more information.

Potash mining operations in Canada and the United States use shaft and solution mining techniques. Because of the limited footprint on surface features, such as surface infrastructure and tailings management areas, impacts to wildlife and habitats are also highly localized and relatively small in scale. Prior to surface development, Mosaic's Saskatchewan facilities consult multiple stakeholders as part of best management practices that are protective of wildlife and habitats.

## Land Mined and Reclaimed

**G4-MM1** Mosaic reports our Florida mining and reclamation activities to the Florida Department of Environmental Protection (FDEP) Mining and Mitigation program. As of the date of this publication's release, 2015 and 2016 figures have not been fully interviewed and deemed complete by FDEP. We provide estimates of mined and reclaimed acres for those years in the table below. Once we have satisfied all reclamation obligations with respect to mined and disturbed lands, and the regulatory agencies "release" those reclaimed lands, they are considered "released acres." Accordingly, a drop in annual

reclaimed acreage may be the result of our satisfaction of those reclamation obligations and agency release with respect to reclaimed acres.

## LAND MINED AND RECLAIMED

	Total Acres Disturbed, Not Reclaimed		Total Reclaimed		Total Released	
	Mined	Disturbed	Mined	Disturbed	Mined	Disturbed
<b>2012</b>	2,975	4,379	(4,548)	692	<b>4,242</b>	<b>3,687</b>
<b>2013</b>	1,243	1,728	563	(3,115)	<b>2,508</b>	<b>1,187</b>
<b>2014*</b>	12,320	5,320	3,776	2,214	<b>2,994</b>	<b>2,740</b>
<b>2015**</b>	2,401	4,703	2,668	2,631	<b>10,207</b>	<b>5,035</b>
<b>2016**</b>	2,585	1,117	(3,918)	(549)	<b>6,699</b>	<b>3,979</b>

\*As of the date of this publication's release, this year's data has not been validated by FDEP. Accordingly, these figures are estimates only and may be revised in future reports.

\*\*The increase in mined acres in 2014 is largely due to the inclusion of 7,761 acres from South Pasture mine as a result of our 2014 acquisition of the Florida Phosphate assets of CF Industries, Inc. This figure represents all mined acres for that location since its opening in 1995.

**G4-MM2** All active mine sites within the United States and Canada are required to operate pursuant to federal, state/provincial and local regulations related to management of habitat and wildlife. Phosphate mining operations within the United States require extensive assessment of the proposed area of operation as a significant component of

the permitting process. Mosaic performs environmental site assessments, wildlife surveys, impact studies, and hydrologic modeling and prepares mitigation plans prior to receiving a permit to operate on a parcel of land.

# Protecting Biodiversity & Restoring Habitats

**WE ARE COMMITTED TO MINIMIZING OUR IMPACTS ON THE ENVIRONMENT THROUGH RESPONSIBLE MINE PLANNING, PERMITTING, OPERATION AND RECLAMATION PRACTICES.**

**G4-EN13** In our phosphates mining operations, we restore or reclaim every acre of land we mine or disturb. In addition, environmentally sensitive lands—typically about 15 percent of a project site—are set aside for preservation and protected with recorded conservation easements and long-term management if necessary. Mined lands are reclaimed to a variety of land uses. Much of it is reclaimed as wildlife habitat (both wetlands and upland), with many of the reclaimed wetlands and some uplands (such as gopher tortoise recipient sites) protected through conservation easements. Beyond habitat, some land is reclaimed as agricultural lands.

Mosaic planted approximately 800,000 trees in 2016, reclaiming uplands, significant upland habitats and wetlands.

Mosaic coordinates with the FDEP Mining and Mitigation program to integrate habitat networks and wildlife corridors into preservation and reclamation plans. The FDEP implements and encourages permittees to participate in the development of these features as a benefit to water quality and quantity, facilitate wildlife habitat, and build connections between stream systems and significant environmental features.



## We are committed to reclaiming land and restoring habitats

- In our phosphates mining operations, we restore or reclaim every acre of land we mine or disturb
- Mosaic planted approximately 800,000 trees in 2016 reclaiming uplands, significant upland habitats and wetlands
- Mosaic previously made a grant to Ducks Unlimited for \$2 million that will restore at least 500 acres of wetlands over a 10-year period in Saskatchewan

Mosaic has fostered partnerships with, and funding for, a variety of non-governmental organizations (NGOs) and academic institutions to advance our understanding of the habitats we manage through reclamation. Examples of these groups include Tampa Bay Watch, The Nature Conservancy, Archbold Biologic Station and Audubon of Florida.

Mosaic's Potash business segment is similarly committed to habitat restoration. For example, in 2012, Mosaic made a grant to Ducks Unlimited for \$2 million that will restore at least 500 acres of wetlands over a 10-year period in Saskatchewan. 2016 marked the fifth year of this agreement. To date, approximately 300 acres have been restored as part of this initiative.

**G4-EN14** Mosaic does not specifically manage wildlife species per the International Union for Conservation of Nature (IUCN) List designations, but rather in accordance with rules established for threatened or endangered species by regulatory agencies with authority in the regions in which we operate.

Phosphates and potash operations' interaction with wildlife in the United States is regulated by state and federal agencies such as the Florida Fish and Wildlife Conservation Commission and the United States Fish and Wildlife Service (USFWS). These agencies maintain lists of protected species for which Mosaic develops species-specific habitat management plans for the proper protection measures are in place. Protection of these species is also reviewed and approved through the Federal, State and local permitting processes for our Florida phosphate mines.

In our potash facilities located in Saskatchewan, Canada, our approach to evaluating potential impacts to wildlife includes biological assessments for projects located in new or expanded footprint areas. Since potash mining is underground, such impacts are rare once a facility is in operation. Assessments include field surveys to identify rare species of plants, birds, mammals, reptiles and amphibians of special concern that may be impacted. Survey methods follow the recommendations of the Saskatchewan Ministry of Environment. Biological assessments for all expansion areas at the potash facilities followed this approach.

We work closely with regulators to not only ensure compliance with all applicable regulations and agency-approved management plans, but to fund and/or conduct research that promotes the goal of wildlife and habitat conservation.

### IUCN RED LIST OF SPECIES POSSIBLY IN THE VICINITY OF OPERATIONS

IUCN Red List Designation	Number of Species	Type of Species
<b>Phosphate Operations (Florida)</b>		
<b>Endangered</b>	0	Florida bonneted bat*
<b>Vulnerable</b>	4	Florida mouse, gopher tortoise, Florida scrub jay, West Indian manatee
<b>Near Threatened</b>	2	Gopher frog, short-tailed snake
<b>Least Concern</b>	18	Burrowing owl, Florida black bear, sandhill crane, Florida pine snake, least tern, limpkin, little blue heron, osprey, Southeast American kestrel, Sherman's fox squirrel, snowy egret, tricolored heron, white ibis, wood stork, Eastern indigo snake, Northern crested caracara, American alligator, bald eagle
<b>U.S Potash Operations (New Mexico)</b>		
<b>Endangered</b>	0	
<b>Vulnerable</b>	0	
<b>Near Threatened</b>	1	Snowy plover
<b>Least Concern</b>	18	American kestrel, Cooper's hawk, dunlin, great horned owl, greater yellowlegs, Harris's hawk, killdeer, least sandpiper, lesser yellowlegs, loggerhead shrike, merlin, Northern harrier, Northern pintail, Northern shoveler, red-tailed hawk, sanderling, sandhill crane, Western sandpiper
<b>Canada Potash Operations (Saskatchewan)</b>		
<b>Endangered</b>	0	
<b>Vulnerable</b>	1	Horned grebe
<b>Near Threatened</b>	1	Olive-sided flycatcher

IUCN Red List Designation	Number of Species	Type of Species
Least Concern	160	<p>Alder flycatcher, American avocet, American bittern, American coot, American crow, American goldfinch, American kestrel, American robin, American white pelican, American wigeon, bald eagle, barn swallow, Baltimore oriole, black-and-white warbler, black-billed magpie, black-capped chickadee, black-crowned night heron, black-necked grebe, black tern, blue jay, blue-winged teal, bobolink, Brewer's blackbird, brown-headed cowbird, bufflehead, California gull, Canada goose, canvasback, cedar waxwing, chestnut-sided warbler, chipping sparrow, clay-colored sparrow, common goldeneye, common grackle, common nighthawk, common raven, common yellowthroat, dark-eyed junco, double crested cormorant, downy woodpecker, eastern kingbird, eastern phoebe, European starling, Franklin's gull, gadwall, grasshopper sparrow, gray catbird, gray partridge, great blue heron, great crested flycatcher, great horned owl, green-winged teal, hairy woodpecker, hermit thrush, horned lark, house sparrow, house wren, killdeer, lark sparrow, least flycatcher, Le Conte's sparrow, lesser scaup, lesser yellowlegs, loggerhead shrike, mallard, marbled godwit, marsh wren, merlin, mourning dove, Nelson's sparrow, northern harrier, northern long-eared owl, northern pintail, northern shoveler, orchard oriole, ovenbird, pied-billed grebe, purple martin, redhead, red-breasted nuthatch, red-eyed vireo, red-necked grebe, red-tailed hawk, red-winged blackbird, ring-billed gull, ring-necked duck, rock dove, rose-breasted grosbeak, ruby-throated hummingbird, ruddy duck, ruffed grouse, sandhill crane, savannah sparrow, Say's phoebe, sedge wren, sharp-tailed grouse, snow goose, song sparrow, solitary sandpiper, sora, spotted sandpiper, Swainson's hawk, swamp sparrow, tree swallow, turkey vulture, upland sandpiper, veery, vesper sparrow, Virginia rail, warbling vireo, Western grebe, Western meadowlark, Western wood peewee, white-breasted nuthatch, white-crowned sparrow, white-</p>

IUCN Red List Designation	Number of Species	Type of Species
		throated sparrow, willet, willow flycatcher, Wilson’s phalarope, Wilson’s snipe, Wilson’s warbler, yellow-bellied flycatcher, yellow-bellied sapsucker, yellow-headed blackbird, yellow-shafted flicker, yellow warbler, boreal chorus frog, Canadian toad, northern leopard frog, plains garter snake, red-bellied snake, tiger salamander, wood frog, American badger, American beaver, coyote, eastern cottontail, moose, mule deer, muskrat, North American deer mouse, North American otter, red fox, red squirrel, snowshoe hare, striped skunk, thirteen-lined ground squirrel, white-tailed deer, black sided darter, common shiner, creek chub, fathead minnow, johnny darter, log perch, longnose dace, northern pearl dace, northern pike, walleye, white sucker, yellow perch
<b>Louisiana Operations</b>		
<b>Endangered</b>	2	Pallid sturgeon, Alabama heelsplitter
<b>Vulnerable</b>	4	Alligator, snapping turtle, paddlefish, West Indian manatee
<b>Near Threatened</b>	2	Gulf sturgeon, Southern creek mussel
<b>Least Concern</b>	2	Bald eagle, long-tailed weasel

**NOTE:** \*The Florida bonneted bat was surveyed for, but not present at any of our operations. Species listed as possibly affected by Louisiana operations are from Louisiana Department of Wildlife and Fisheries database and may not have been actually observed on or near Mosaic property. Avian species listed as affected or possibly affected by New Mexico and Saskatchewan operations are migratory species with potential migration patterns proximal to our operations on those geographies. The table includes species and designations of the IUCN and not species and designations of federal or state/provincial agencies in the United States and Canada, by which Mosaic monitors threatened species.

# MATERIALS & WASTE

# Materials Used to Make Our Products

**G4-DMA: WE AIM TO EFFICIENTLY USE THE MINERAL RESOURCES AND MATERIALS NEEDED TO MAKE OUR CROP NUTRITION PRODUCTS.**

**G4-EN1** Our business mined or consumed the following raw materials in 2016:

## MATERIALS MINED OR CONSUMED

IN MILLION TONNES (UNLESS OTHERWISE NOTED)

	<b>2016</b>
<b>Ammonia</b>	<b>1.5</b>
<b>Limestone</b>	<b>0.3</b>
<b>Phosphate Rock</b>	<b>14.2</b>
<b>Potash Ore</b>	<b>25.9</b>
<b>Sulfur (Long Tons)</b>	<b>4.2</b>

**NOTE:** Ammonia purchases depicted in the table above are for production of crop nutrients in Phosphates.

Limestone is used to produce our animal feed products and for water treatment. Sulfur, a byproduct of crude oil and natural gas de-sulfurization, is used to produce steam, electricity and sulfuric acid, which is used to produce phosphoric acid. We use byproduct heat from sulfuric acid production to generate steam that we use in our operations and to generate electricity. Sulfur is also used in the production of our MicroEssentials<sup>®</sup> product line. Various micronutrients, including boron, zinc, sulfur and cupric oxide, are key ingredients in our MicroEssentials product line. Ammonia is used in our finished products, diammonium phosphate (DAP), monoammonium phosphate (MAP) and MicroEssentials, and to neutralize the pH of the stack gases at our Esterhazy potash mine.

## Products and Materials Reclaimed or Recycled

**G4-EN2** Sulfur is the most significant recycled raw material in our manufacturing processes. The sulfur used is recovered from crude oil and natural gas processing and then recycled in our plant operations to produce sulfuric acid, which we use to make phosphoric acid, steam and electricity. Our use of this product prevents an excess of sulfur that otherwise could be disposed of in landfills. In 2016, sulfur made up approximately 9.1 percent by weight of our total raw materials.

# Mining Wastes

**G4-MM3** Mining and processing of potash and phosphate generate residual materials that must be managed both during the operation of a facility and upon a facility's closure. Potash tailings, consisting primarily of salt and clay, are stored in tailings management areas. A portion of the excess salt generated from potash mining is processed and then used for commercial purposes, including road salt, water softener salt, and use in food grade products and industrial uses. Phosphate clay residuals from mining are deposited in clay settling areas (CSAs) located within the approved mine boundaries. These CSAs are eventually dewatered and reclaimed. Overburden and sand tailings produced at our phosphate mines are used in reclamation and mitigation conducted at the mines. Wet

phosphogypsum, a byproduct of our phosphate manufacturing process, is managed in permitted phosphogypsum management systems (“gypstacks”). We store the process water that separates from phosphogypsum during the dewatering process in gypstacks.



**A portion of the excess salt generated from potash mining is processed and then used for commercial purposes, including road salt, water softener salt, and use in food grade products and industrial uses.**

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Certain solid wastes generated by our phosphates operations are subject to regulation under the Resource Conservation and Recovery Act (RCRA) and related state laws. The Environmental Protection Agency (EPA) rules exempt “extraction” and “beneficiation” wastes, as well as 20 specified “mineral processing” wastes, from the hazardous waste management requirements of the RCRA. Accordingly, certain residual materials like phosphogypsum, as well as process wastewater from phosphoric acid production, are exempt from RCRA regulation. Phosphogypsum and process wastewater nonetheless still are subject to extensive regulation.



## MINING AND MINERAL PROCESSING SOLID WASTE GENERATED AND DISPOSAL METHOD

IN TONNES

Material	2012	2013	2014	2015	2016
<b>Phosphates</b>					
Overburden	162,012,906	146,522,396	154,240,684	139,197,603	142,792,323
Sand Tailings	37,459,212	34,442,381	37,078,556	40,007,843	41,395,971
Clay	14,315,162	15,786,278	15,588,902	19,544,716	19,289,687
Phospho-gypsum	21,543,380	20,602,936	23,992,856	23,556,918	22,864,328
<b>Potash</b>					
Tailings (Salt)	12,868,386	12,166,694	11,285,000	9,511,314	9,987,260
Brine	4,775,705	4,408,041	4,237,000	4,502,953	4,992,673

**NOTE:** Overburden is stored in piles until used for reclamation. Clay is pumped wet to surface impoundments. The drying process for clay takes many years, but our clay settling areas eventually will be reclaimed for beneficial use.

## Other Wastes

**G4-EN23** Mosaic's operations generate a variety of nonhazardous solid wastes, including domestic refuse, construction and demolition debris, and waste lubricants. Mosaic has placed an emphasis on reducing or eliminating waste, and our recycling program seeks to identify materials that can be diverted from landfills and recycled or reused.

Mosaic's waste management program provides assurance that all of our locations have a process in place to minimize waste generation and that waste management practices do not adversely affect the environment or health and safety of employees and the public. We continue to improve our comprehensive waste management strategy, which complies with federal, state and local requirements and aligns to the Mosaic environmental health and safety management system. Below are hazardous and nonhazardous wastes generated by disposal methods across the company. As our tracking of waste continues to improve, we anticipate further expanding the boundary of our sustainability reporting for this indicator to include data for all facilities in the near future.

Mosaic has placed an emphasis on reducing and/or eliminating waste and our recycling program seeks to identify materials that can be diverted from landfills and recycled or reused

### WASTE GENERATED BY DISPOSAL METHOD

IN TONNES

	Incineration	Landfill	Treatment	Recycle	Other	Total
<b>Phosphates</b>						
<b>Hazardous</b>	10.42	320.99	384.61	64.36	0.0	<b>760.38</b>
<b>Nonhazardous</b>	2,069.05	18,273.07	467.00	59,690.10	0.0	<b>80,499.22</b>
<b>Potash</b>						
<b>Hazardous</b>	28.15	151.64	387.37	242.92	564.28	<b>1,374.36</b>
<b>Nonhazardous</b>	1.09	2,672.65	0.0	5,536.96	0.0	<b>8,210.70</b>
<b>International Distribution</b>						
<b>Hazardous</b>	0.0	119.07	18.50	5.12	26.18	<b>168.87</b>
<b>Nonhazardous</b>	24.62	4,661.32	159.96	1,137.28	3.63	<b>5,986.81</b>
<b>Total</b>	<b>2,133.33</b>	<b>26,198.74</b>	<b>1,417.44</b>	<b>66,676.74</b>	<b>594.09</b>	<b>97,020.34</b>

**NOTE:** "Other" disposal method includes combinations of co-processing, retort, treatment, incineration and/or deep well injection. Subtotals may not always add up to totals due to rounding. Our tracking of wastes across our business continues to improve. This year we accounted for additional waste sources, including our distribution facilities, which represents a significant portion of the total waste increase over last year's totals. Recycling totals also increased, largely due to special projects including the continued demolition of our Hookers Prairie facility following its 2015 closure.

**G4-EN25** We endeavor to choose on-site process chemicals that are the least hazardous, thereby seeking to lower risk to occupational health and safety and minimizing waste management implications. Mosaic facilities generate hazardous waste during production and maintenance operations. In the United States, Mosaic's phosphate

mines and potash facilities are typically either categorized as Small Quantity or Conditionally Exempt Small Quantity Generators (which generate less than 2,200 pounds of hazardous waste per month or less than 220 pounds of hazardous waste per month, respectively). The five concentrate facilities in the Phosphates business segment are designated as Large Quantity Generators due to episodic generation of more than 2,200 pounds of hazardous waste in a month.

The types of hazardous solid waste generated at Mosaic's United States facilities typically include spent cleaning solvents, paint-related wastes and some spent laboratory chemicals. At concentrate facilities, wastes generated during production and maintenance operations include waste that is characteristically hazardous for corrosivity and/or toxicity (e.g., low pH and/or metals content). Each location has an appropriate hazardous waste management system to ensure that the waste is properly and safely disposed. No hazardous wastes are shipped internationally for disposal.

Please see [G4-EN23](#) for a discussion of the volumes of wastes generated by disposal method.

## Environmental Releases

**G4-EN24** In 2016, we had a total of 11 releases equal to or greater than 2,000 gallons.

## ENVIRONMENTAL RELEASES

### NUMBER OF SIGNIFICANT REPORTABLE RELEASES

Mosaic Business Segment	FY2012	FY2013	2013	2014	2015	2016
Potash	8	12	10	6	3	8
Phosphates	2	3	4	1	6	3
Distribution	0	0	0	1	0	0
International	0	0	0	0	0	0
Corporate	0	0	0	1	0	0
<b>Total Significant Releases</b>	<b>10</b>	<b>15</b>	<b>14</b>	<b>9</b>	<b>9</b>	<b>11</b>

**NOTE:** Table includes environmental releases equal to or greater than 2,000 gallons. Releases meeting this criteria included: Potash – (5) brine and (3) finished product; Phosphates – (1) phosphoric acid, (1) impacted storm water and (1) process water.

We will continue to expand the scope of our engagement with suppliers in order to evaluate and report their performance, while identifying opportunities to mitigate and reduce their environmental impacts

# Compliance

**G4-EN29** In periodic reports filed with the Securities and Exchange Commission, Mosaic is required to report any environmental fine or sanction that it has identified as potentially material to investors, or if not potentially material, as potentially meeting or exceeding a significance threshold of \$100,000.

In September 2015, Mosaic reached settlements with federal and state environmental agencies in Florida and Louisiana relating to how Mosaic manages certain waste

materials at its fertilizer production facilities. Our phosphate mining facilities were not involved in the waste management practices or settlement. The settlements came into effect in August 2016, prompting Mosaic to place \$630 million into trusts as financial assurance to support the closure and long-term care of its phosphogypsum stack systems, pay an \$8 million penalty and conduct or fund two environmental projects valued at \$2.2 million. In addition, Mosaic has begun to modify certain practices and undertake new projects expected to result in capital expenditures likely to exceed \$200 million.

In August 2016, a sinkhole developed under one of the two cells of the active phosphogypsum stack at one of our fertilizer production facilities in Florida, resulting in process water from the stack draining into the sinkhole. The incident was reported to the FDEP and EPA and in October 2016 our subsidiary, Mosaic Fertilizer, LLC, entered into a consent order with the FDEP relating to the incident under which Mosaic Fertilizer agreed to, among other things: repair the sinkhole, and to perform additional groundwater monitoring and take action (including providing drinking water or water treatment services) if monitored off-site water does not comply with applicable standards as a result of the incident. We also agreed to provide \$40 million in financial assurance to support completion of those actions. Please see the Environment Page [spotlight](#) for more information on this incident.

Following the water loss incident, we offered community members free, third-party testing of their drinking water wells and free bottled water delivery. As of December 31, 2016, we had tested approximately 1,300 wells and delivered bottled water to approximately 1,400 homes.

**G4-EN33** In 2016 we worked with a third party to complete an assessment of our value chain, in part, to identify the environmental impacts associated with our top suppliers. The analysis included suppliers to which approximately 90 percent of our supply chain expenditures in North America were made, representing more than 3,500 suppliers. Through this exercise, we determined that the environmental impacts associated with our supply chain are primarily associated with the purchase of manufactured ammonia. We report those emissions in [G4-EN17](#). We will continue to expand the scope of our engagement with suppliers in order to evaluate and report their performance, while identifying opportunities to mitigate and reduce their environmental impacts.



**We are committing significant resources to advancing our efforts in water conservation, land reclamation, waste reduction, and producing clean energy.**

**G4-EN34** We support a variety of formal and informal Mosaic channels through which stakeholders can submit concerns. Please see [G4-SO1](#) for more information.

## Environmental Protection Expenditures and Investments

**G4-EN31** Mosaic has expended, and anticipates that we will continue to expend, substantial financial and managerial resources to comply with environmental health and safety standards, and continue to improve our environmental stewardship.

In the year ended December 31, 2016, we spent approximately \$310 million for environmental capital expenditures, land reclamation activities, gypstack closure and water treatment activities.

### PRINTABLE PDF 2016 ENVIRONMENTAL METRICS SUPPLEMENT

