



## Environment

**G4-DMA: Respect for the natural environment is paramount and essential to the sustainability of our business. From our potash mines in Saskatchewan to our Florida phosphate operations and blending facilities in Brazil, we strive to optimize our production processes and reduce our environmental footprint.**

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. 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.

This year, we have 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.

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**View Our Sustainability Targets** 

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## 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 footprint.**

### Water Withdrawals

(G4-EN8) The primary sources of water for our operations are surface water, rainwater and groundwater. Secondary sources of water include water supplied by local authorities and partially treated industrial and domestic reclaimed water, also supplied by local authorities. Surface water withdrawals include once-through cooling water used by our Louisiana operations.

Mosaic operations capture rainfall, a portion of which is used in the various production processes and eventually discharged through permitted outfalls. Traditionally, Mosaic has considered captured rainfall use as an "alternative water supply." Captured rainfall is used in part to estimate recycle/reuse water usage rates at Florida concentrate and minerals operations.

### Global Water Withdrawals

,000m<sup>3</sup>

	2011	2012	2013	2014	2015
<b>Groundwater</b>	58,746	71,218	67,277	64,380	68,270
<b>Municipal</b>	94	118	133	781	730
<b>Reclaimed Water</b>	971	1,084	1,167	3,429	7,515
<b>Surface Water</b>	208,952	215,854	250,427	240,780	224,168
<b>Total</b>	<b>268,763</b>	<b>288,274</b>	<b>319,004</b>	<b>309,370</b>	<b>300,683</b>

Notes: Surface water figure includes once-through cooling water. Approximately 47% of Phosphates business segment surface water withdrawals are used for once-through cooling. The increase in use of reclaimed water in 2014 was largely 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

	2010	2011	2012	2013	2014	2015
<b>Mosaic</b>	4.38	4.37	5.43	5.07	4.59	4.86

Notes: "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 and once-through cooling and process water withdrawn from the Mississippi River in Louisiana.



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

(G4-EN9) Mosaic's Central Florida fertilizer production facilities operate on approximately 90% recycled or reused water. Deep well pumping from the Floridan Aquifer, which underlies approximately 100,000 square miles including the entire state of Florida and portions of Georgia, Alabama and South Carolina, is strictly regulated, and is used by Mosaic as a supplemental water supply on an as-needed basis. 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 2015 at an average rate of 5.2 million gallons per day (MGD). Please see [G4-EN8](#) and [G4-EN10](#) for additional context.

Mosaic regularly evaluates and reports to the Southwest Florida Water Management District (SWFWMD) on efforts to minimize groundwater use for processing needs on an annual basis. To demonstrate the substantial results achieved through water conservation efforts over time, in 1991, Mosaic's predecessors used approximately 1,000 gallons of water to process one ton of phosphate rock; currently water use has been reduced by approximately 50% to about 500 gallons of water per ton of phosphate rock. Mosaic's water use permit quantities have been reduced to reflect this decrease in demand.

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 continuously under our SWFWMD permits to verify no impact to our adjacent properties and water resources.



**Today phosphate rock is processed using approximately half the amount of water that was used more than 20 years ago**

**Water Recycling**

(G4-EN10) Our facilities continuously monitor and evaluate water use to ensure it is minimized, and water recycling and reuse are maximized. Recycle and reuse percentage rates for Mosaic's Potash and Phosphate business segments are presented here. Rates and volume 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	667,284
Potash	189,385

Notes: Carlsbad, N.M., South Pasture, Plant City, and South Pierce, Fla., and Faustina and Uncle Sam, La., are not included in respective business segment calculations. Belle Plaine is not included since it 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.

## 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). The limitations are based on the water quality standards that protect the designated uses of the receiving water body. None of the points of discharge releases water directly into a designated protected area, although discharges occur in two riverine basins upstream of Outstanding Florida Water (segment of Little Manatee River) and Florida Wild and Scenic River (segment of Myakka River) designations. As an overarching principle, water that falls within the active, operational footprint of Mosaic's phosphate mining and fertilizer production facilities is actively managed, treated if necessary and discharged only through outfalls, whose locations are permitted through the NPDES program. Discharges are monitored, sampled and analyzed regularly by Mosaic, and reported to regulatory agencies to demonstrate ongoing compliance with the permit limitations. By maintaining compliance with all NPDES permits, Mosaic ensures that its discharges meet existing regulations and do not adversely affect water quality.

In 2015, 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. In certain circumstances of 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 was one such instance in 2015.

A significant percentage of the total outfall discharge from our Florida phosphate operations is collected rainwater. The discharge pattern tends to follow the rainfall pattern (e.g., more discharges occurring immediately following 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

	2011	2012	2013	2014	2015
<b>Phosphates Annual Outfall Discharges</b> ,000m <sup>3</sup>	287,978	321,318	444,035	304,569	401,242
<b>Phosphates Outfall Discharge Annual Phosphorous Loadings</b> Tonnes	1,785	2,465	2,691	2,680	2,025
<b>Phosphates Outfall Discharge Annual Nitrogen Loadings</b> Tonnes	123	115	210	278	388

Note: Outfall discharge totals include once-through cooling water.

## Water Discharges are:



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

## Riverine Basins Where Mosaic Operates

Water Body/Basin	Basin Size hectares	River Length km
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

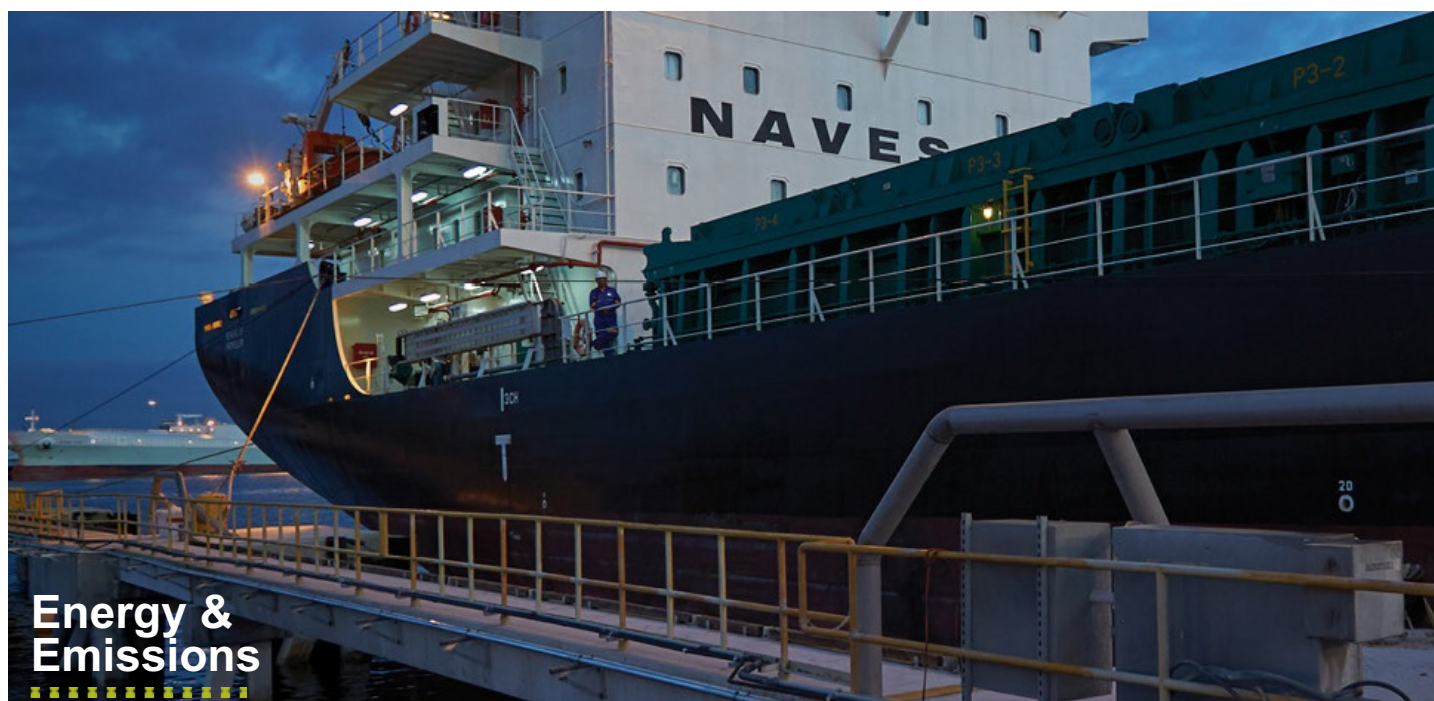
Note:

<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.

Water discharge examples at our major facilities:

- All releases are subject to water constituent limitations designed to be protective of downstream biological communities. This water quality protection is particularly important as segments of the Little Manatee River and the Myakka River, downstream of Mosaic's operations, are designated as Outstanding Florida Waters—with a portion of the Myakka River also being classified as a Florida Wild and Scenic River.
- In Louisiana, our Faustina and Uncle Sam plants intake and outfall to the Mississippi River. This process is highly regulated by the state to ensure that gross contaminant levels are within applicable limits.
- For our Canadian potash operations, we have no off-site releases of water or runoff as part of normal operations. See above for additional context.



## 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.

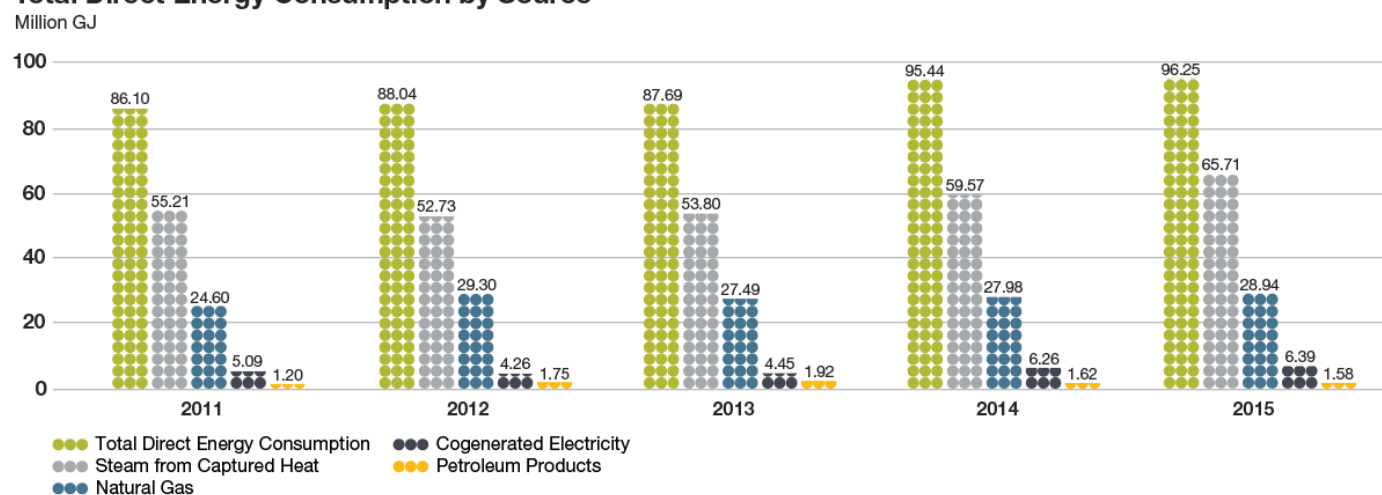
(G4-EN3) Mosaic's worldwide total direct energy consumption in 2015 was 96.25 million gigajoules (GJ).

### Energy Consumption by Source

Approximately 92% of Mosaic's worldwide total direct energy consumption in 2015 was from two sources: waste heat from sulfuric acid production and natural gas. The remaining portion was made up of petroleum products and propane.

Our phosphates operations require the production and consumption of sulfuric acid to liberate crop nutrients (phosphorous) from raw material inputs. The manufacture of sulfuric acid is an exothermic process, generating tremendous amounts of waste heat. Most of our finished phosphate crop nutrient manufacturing operations have installed systems to convert this waste heat into steam, used in the phosphate manufacturing facilities.

### Total Direct Energy Consumption by Source



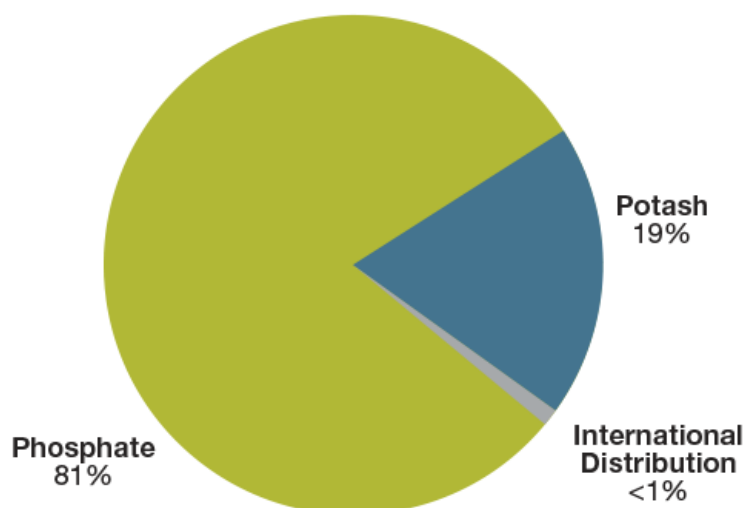
Note: Waste heat and steam from the processing of sulfur is used as a source of energy.

In 2015, our phosphates operations used a portion of this steam energy to produce 6.2 million GJ of electricity through a process called cogeneration, approximately 85% of which was used internally. We consider the waste heat from sulfuric acid production to be a direct primary energy source for our operations. Mosaic exported approximately 1,000,000 GJ of power to the local utility grid in Florida in 2015.

### Energy Consumption by Business Segment

Almost all of Mosaic's worldwide total direct energy consumption is attributable to its phosphate and potash crop nutrient manufacturing operations. Specifically, approximately 81% is consumed in the production of phosphate crop nutrients while approximately 19% is consumed in the production of potash. The remaining portion—less than 1%—is consumed within Mosaic's International Distribution business segment.

## Mosaic Direct Energy Consumption by Business Segment 2015



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

# 6.2 MILLION GJ

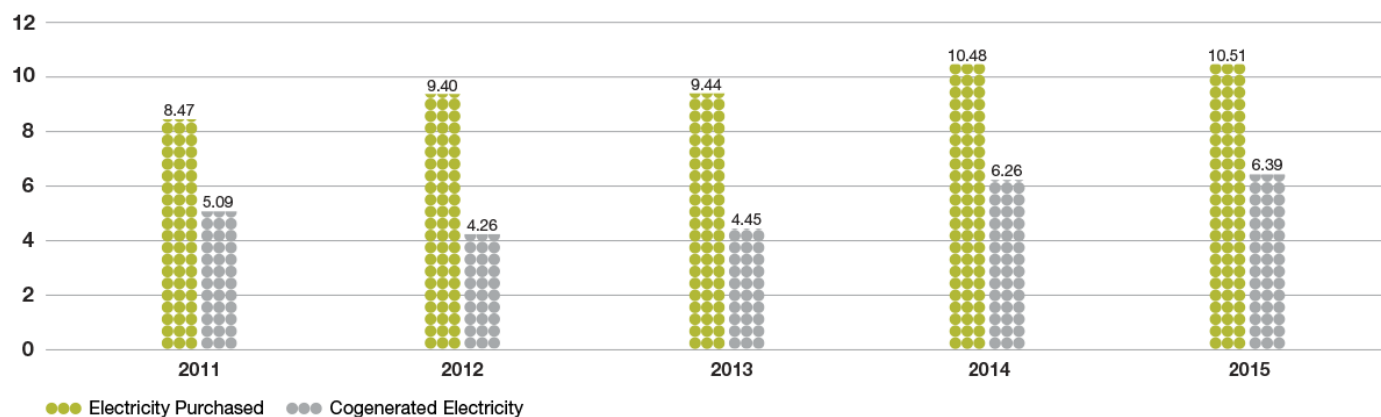
of electricity produced by our phosphate operations in 2015

# 85%

used internally

## Indirect Energy Consumption by Primary Energy Source

Million GJ



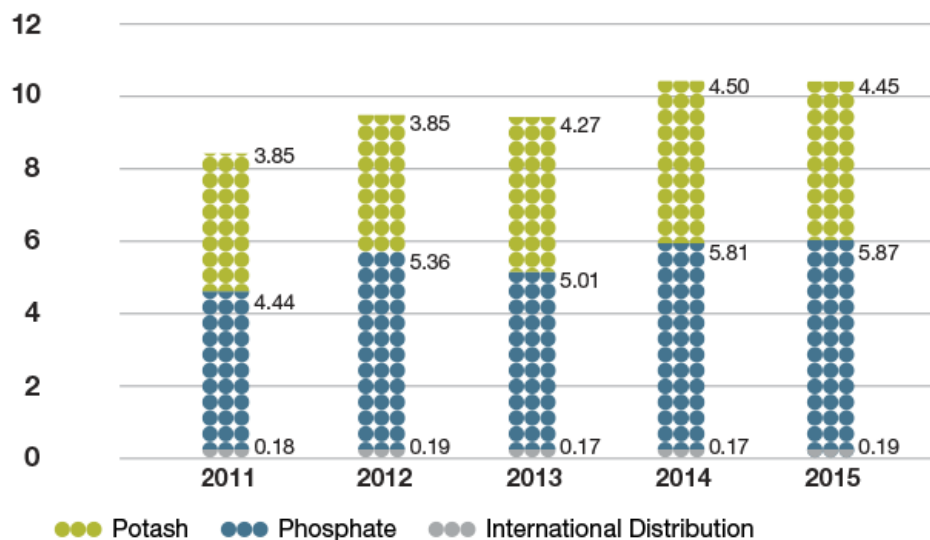
## Indirect Energy Consumption by Business Segment

Mosaic consumes indirect energy solely through the purchase of electricity produced by third parties. Mosaic's worldwide indirect energy consumption was 10.51 million GJ for 2015.



## Indirect Energy Consumption by Business Segment

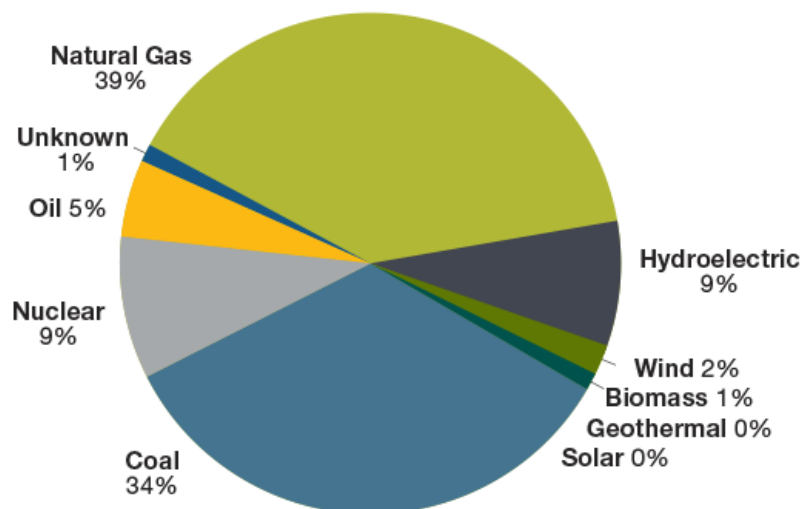
Million GJ



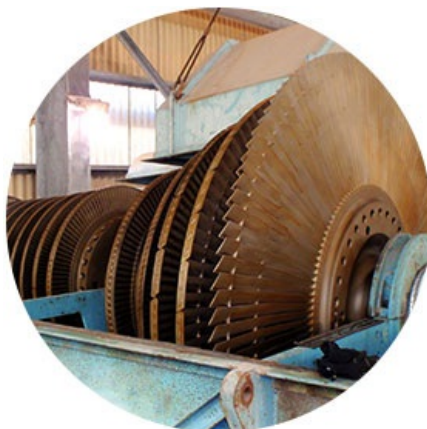
## Indirect Energy Consumption by Fuel Source

Approximately 12% of Mosaic's worldwide indirect energy consumption is from renewable sources, including hydroelectric, biomass sources and wind power. Since 2009, almost 100% of the electricity used in our Brazilian operations has come from hydroelectric sources.

## Mosaic Indirect Energy Consumption by Generation Source 2015



Note: Purchased electricity sources for facilities in the United States are based on the U.S. Department of Energy 2012 Emissions & Generation Resource Integrated Database (eGRID) regional. Canada-purchased electricity sources are based on Saskpower 2011 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 1,241,701 GJ and 12%. The remaining 9,266,580 GJ of purchased electricity is from non-renewable sources.



## Mosaic looks for opportunities to improve the efficiency and output of our cogeneration assets

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In 2015, Mosaic's phosphate operations produced 6.2 million GJ of electricity through the process of cogeneration. Of this 6.2 million GJ, Mosaic consumed approximately 5.3 million GJ internally, offsetting the purchase of electricity from third-party utilities. Mosaic continuously looks for opportunities to improve the efficiency and expand the electricity output of our cogeneration assets. In 2016, Mosaic plans to bring another turbo generator online that is expected to provide an additional 15 megawatts of low-GHG electrical generation capacity.

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By 2020, we aim to reduce our  
total energy use by

**10% PER TONNE  
OF FINISHED  
PRODUCT**

.....

### Energy Consumed Outside the Organization

(G4-EN4) Mosaic has engaged upstream and downstream stakeholders in our supply chain to better quantify the impacts of our business. We report GHG emissions associated with various sources in [G4-EN17](#) and continue to collaborate with vendors and contractors to quantify impacts that occur outside the organization. We anticipate expanding the scope of our reporting for this indicator in the near future.

### Energy Intensity

(G4-EN5) 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. We are committed to evaluating alternative energy sources to satisfy our energy requirements. By 2020 we aim to reduce our total energy use by 10% per tonne of finished product.

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## Mosaic's three-pronged approach to energy management:



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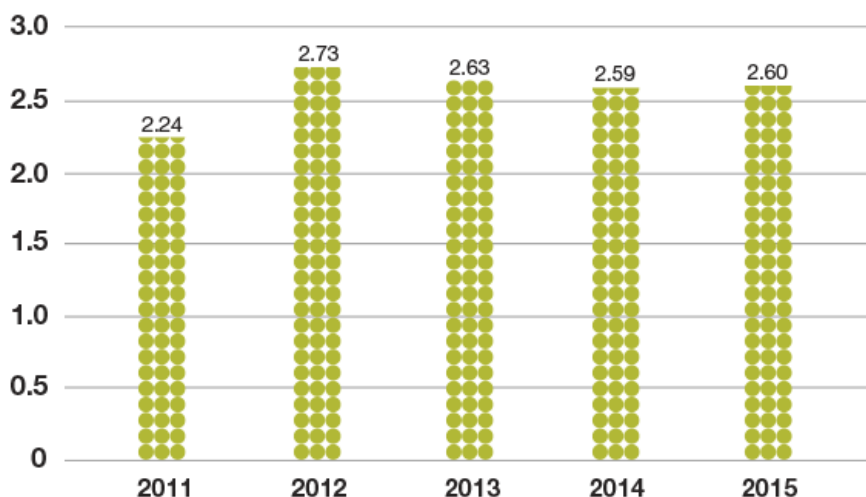
A portion of the electricity required in Mosaic's operations is satisfied through internal generation of electricity. This process of waste heat recovery, called cogeneration, allows several of our plants and mines to significantly reduce the amount of third-party electricity required from utilities. In 2015, Mosaic produced enough electricity across its Phosphates and Potash business segments—approximately 7.3 million GJ through cogeneration—to satisfy approximately 37% of our companywide electrical demand. Over 800,000 GJ of this cogenerated electricity was used at our mines.

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.

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## Total Energy Per Tonne Finished Product

GJ/Finished Product Tonnes



Notes: Total energy includes electricity, fuels 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 the K3 shaft mine and the operation of our Streamsong resort are included since 2012 only.



## 1.1 million GJ of energy saved through energy improvements companywide

### Reducing Our Energy Consumption

(G4-EN6) Our continuous energy improvement and sustainability process is part of a broader strategic business plan designed to help Mosaic meet or exceed production and profitability requirements. This plan includes strategies for lowering purchased energy consumption through more efficient processes and maximizing use of energy generated through the crop nutrient manufacturing process.

To identify and capture potential energy opportunities, we have teams of energy representatives at our sites that investigate a number of issues, such as improvements in natural gas use (e.g., efficiencies in boilers, dryers, mine air heating and cogeneration) and improvements in electrical systems (e.g., efficiencies in cogeneration systems and slurry pumping, including extensive use of variable speed drives, air compression, and heating and lighting systems). We also pursue energy savings by improving equipment use efficiency. For example, in 2015, operating crews at our Florida mining facilities participated in 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 are recognized with a meal at the end of the contest.

In addition, Mosaic regularly conducts energy reviews to help identify potential efficiency projects and assess major manufacturing processes such as combustion, general electrical, electric motor systems, compressed air systems and heating. We also have engineers assigned to individual facilities to help identify and execute energy efficiency initiatives. Projects are monitored and audited, and the resulting metrics are used to establish key performance indicators. These efforts reduce Mosaic's overall energy profile, operational costs and use of indirect natural resources.

Mosaic also emphasizes 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 forecast savings of approximately 1.1 million GJ due to conservation and efficiency improvement projects that were executed in 2015. Several examples of energy efficiency efforts by our operations are outlined below.

## Sustainability Initiatives in Action

2015 Activity & Outcome	Estimated Annual Energy Savings Gigajoules	Estimated Annual CO <sub>2</sub> e Savings Metric Tonnes CO <sub>2</sub> e
<b>Phosphates Business Segment</b>		
South Fort Meade implemented a revised equipment use strategy that reduced washer energy use by nearly 40% compared to 2014, saving approximately \$240,000	9,408	1,581
Our Phosphates business segment transported approximately 4.5 million tonnes of product by compressed natural gas fleet, resulting in fewer transportation emissions	-	183,104
Our Riverview facility redesigned a turbine generator's nozzle block, resulting in production of 5% more cogenerated power, and saving costs and emissions associated with the purchase of power from the local grid	48,600	8,165
Our Phosphates business segment replaced more than 1,500 lights with LED fixtures, resulting in energy and GHG emissions savings	5,234	879
Our Central Florida mines replaced several diesel pumps with electric pumps, saving energy costs and associated GHG emissions	41,667	7,000
Our Central Florida mines replaced halogen lighting on draglines with LED lights to improve energy use and reduce maintenance costs	518	87
Our Four Corners mining facility eliminated the use of a central screening station plant (CSS) by sending matrix directly to the washer and bypassing the CSS; this reduced the total distance matrix travels by electric pump, saving energy and costs to operate and maintain the plant	37,318	6,269
Our New Wales concentrates facility added infrastructure to transfer additional power to our Four Corners mine to run existing clay, matrix and tailing pumps; this enables the use of more cogenerated power internally and offsets the amount of fossil fuel-based power that Four Corners	85,781	14,411

the amount of renewable-based power that our centers would otherwise have to purchase		
<b>2015 Activity &amp; Outcome</b>	<b>Estimated Annual Energy Savings</b>	<b>Estimated Annual CO<sub>2</sub>e Savings</b>
Our Central Florida mines purchased smaller, more efficient sealing water pumps to decrease the amount of power required to seal matrix pumps	Gigajoules 854	Metric Tonnes CO <sub>2</sub> e 143
<b>Phosphates Business Segment</b>		
Our Wingate mine improved energy use through process efficiency improvements, including pump efficiency initiatives and a redesign of their flotation plant	41,567	6,983
<b>Potash Segment</b>		
Approximately 50 employees participate in a carpool program at our Esterhazy facility, saving fuel and avoiding GHG emissions	-	1,845
Our Belle Plaine facility's agreement with an industrial partner in Saskatchewan sends water to be used in a cooling process at a nearby plant; the heated water returns to our facility for use in potash production—allowing Mosaic to reduce the amount of energy that would have otherwise been spent on heating water while allowing the industrial partner to avoid cooling costs	657,000	35,600
Our Belle Plaine facility replaced nearly 200 lights with LED fixtures, resulting in energy and GHG emissions savings	562	97
Our Potash business segment's power factor correction projects increased the efficiency of the Esterhazy power distribution system	115,531	19,607
Our Esterhazy K2 mine implemented ventilation improvements, resulting in improved air circulation and decreased horsepower required to operate the fans, saving energy and costs	7,322	1,262
Our Carlsbad facility installed a variable frequency drive control on a groundwater pump, saving energy	4,320	726
<b>International Distribution</b>		
Our YMF bulk blending plant in China replaced high-pressure sodium lights with LED lights, saving energy and reducing maintenance costs	72	15
Our QMF bulk blending plant in China saved 3,000 liters of diesel by completing preventive forklift maintenance and rearranging warehouse materials	108	23

(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.

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 2015, energy efficient or renewable energy-based initiatives resulted in approximately 85,000 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

We strive to continuously improve GHG emissions intensities in our manufacturing facilities and support functions year over year.

### Direct and Indirect Emissions (G4-EN15, G4-EN16)

#### Worldwide Greenhouse Gas Emissions

Million Tonnes CO<sub>2</sub>e

Business Segment / Emission Type	2011	2012	2013	2014	2015
<b>Phosphates</b>	<b>1.91</b>	<b>2.67</b>	<b>2.54</b>	<b>2.87</b>	<b>2.83</b>
Direct Emissions	1.18	1.79	1.80	1.91	1.97
Indirect Emissions	0.73	0.88	0.73	0.96	0.86
<b>Potash</b>	<b>1.65</b>	<b>1.74</b>	<b>1.80</b>	<b>1.80</b>	<b>1.90</b>
Direct Emissions	0.94	1.04	0.93	0.95	0.95
Indirect Emissions	0.71	0.70	0.87	0.85	0.95
<b>International Distribution</b>	<b>0.03</b>	<b>0.10</b>	<b>0.07</b>	<b>0.06</b>	<b>0.05</b>
Direct Emissions	0.02	0.08	0.06	0.04	0.04
Indirect Emissions	0.01	0.02	0.01	0.01	0.02
<b>Total</b>	<b>3.59</b>	<b>4.51</b>	<b>4.41</b>	<b>4.73</b>	<b>4.78</b>

Notes: 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). Please see Mosaic's [CDP Climate Change response](#) for more information on our greenhouse gas emissions performance.

(G4-EN17) Mosaic has engaged upstream and downstream stakeholders in our supply chain to better quantify the impacts of our business. In 2015, 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	2011	2012	2013	2014	2015
Ammonia Purchases	2.88	2.13	2.12	2.20	2.31
Truck Transport (Florida)	-	-	-	0.01	0.03
Rail Transport (Florida)	0.01	0.01	0.01	0.01	0.01
Business Travel	5,557	5,335	5,140	4,652	4,328
Marine Transport	-	-	-	-	0.20
<b>Total</b>	<b>2.89</b>	<b>2.15</b>	<b>2.14</b>	<b>2.23</b>	<b>2.44</b>

Note: Ammonia purchases depicted in the table above are for production of crop nutrients in the Phosphates business segment only. Factor for purchased ammonia revised for 2013 and prior years per IPPC 2013 guidance for ammonia production with modern, natural gas ammonia plants. In 2014, we captured emissions totals from one of our trucking partners. These figures represent a portion of our total trucking emissions. These figures are not available for 2011-2013. Business Travel is presented in 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 for more information.

In 2016, we began working with a third party to evaluate the materiality significance of additional sources of Scope 3 emissions. We anticipate reporting the outcome of that exercise next year, and, if appropriate, expanding the scope of our reporting to include additional sources in the near future.

## Emissions Intensity

(G4-EN18) By 2020, we aim to reduce GHG intensity by 10% per tonne of finished product. Mosaic's historical GHG emissions per tonne of dry product crop nutrient and animal feed production are as follows:

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By 2020, we aim to reduce  
GHG intensity by  
**10% PER TONNE  
OF PRODUCT**

.....

## 2015 Direct and Indirect Greenhouse Gas Emissions Intensity

Per Tonne of Finished Product

	2011	2012	2013	2014	2015
<b>Mosaic</b>	0.21	0.28	0.27	0.26	0.26

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.



(G4-EN19) Mosaic is taking a proactive approach to reductions in emissions, with particular emphasis on improving energy efficiency and waste management.

GHG emission reductions resulting from the initiatives reported in [G4-EN6](#) equal approximately 288,000 tonnes of CO<sub>2</sub>e, the equivalent of taking more than 60,000 average U.S. 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 [2015 CDP Response](#).

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 production, distribution and use activities. 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 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.



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## **We are proactively reducing our GHG emissions by improving energy efficiency and waste management**

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### **Other Emissions**

(G4-EN20) Mosaic does not produce CFCs, HCFCs, halon or methyl bromide in any of our operations. Refrigerants used in air conditioning units at our offices and production facilities represent a nominal quantity and only appropriate outside firms or certified internal technicians maintain these units. Air conditioning systems on some vehicles and equipment are maintained by Mosaic personnel. Ozone-depleting substances are phased out as required when units are replaced. Potential GHGs from refrigerants, expressed in CO<sub>2</sub>e, are included in [G4-EN16](#).

(G4-EN21) Mosaic recognizes the importance of careful air emissions management and proactive reduction of these emissions from our operations. We use published emission factors and engineering estimates, as well as analytical stack sampling results, to calculate criteria air and other pollutants emissions, shown below, for phosphates and potash operations. Due to regulatory reporting timelines, 2015 data was unavailable at the time of this publication's release; we expect to publish 2015 data here in the third quarter of 2016.

### **Criteria Air and Other Pollutants**

in ,000 Tonnes

	2010	2011	2012	2013	2014	Normalized 2014
<b>NOx</b>	2.7	3.54	4.56	3.06	3.55	0.2
<b>CO</b>	0.85	0.94	1.77	4.02	2.26	0.13
<b>PM</b>	3.73	3.96	3.66	3.87	5.09	0.28
<b>SO2</b>	22.7	16.94	13.11	13.65	17.04	0.95
<b>VOC</b>	1.29	1.32	2.61	0.25	0.66	0.04
<b>NH3</b>	0.77	0.63	1.1	1.4	1.86	0.1
<b>FL</b>	0.15	0.16	0.15	0.14	0.15	0.01
<b>H2S</b>	0.014	0.015	0.11	0.0	0.0	0.0
<b>SAM</b>	0.14	0.14	0.12	0.13	0.15	0.01
<b>HF</b>	0.38	0.47	0.45	0.07	0.39	0.0

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.

## 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) A breakdown of our transport of materials and products in 2015 is as follows:

### Transportation Mode and Weight

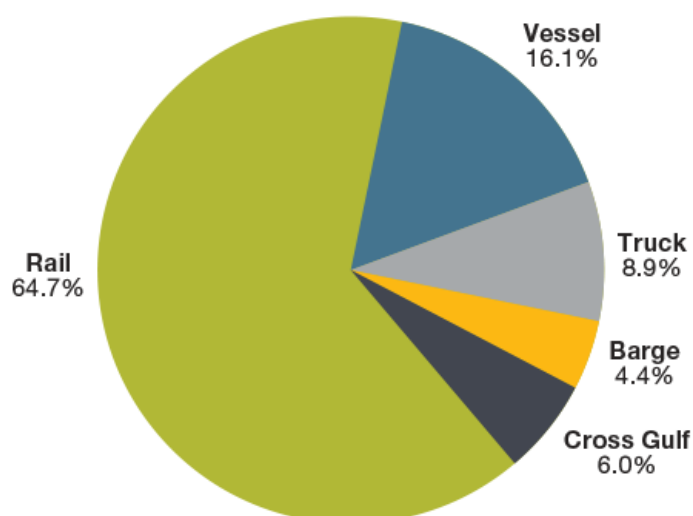
Mode	Materials Shipped	Fuel Efficiency (tons/miles/gallon)	Tons Shipped	Percentage by Weight
<b>Vessels and Cross-gulf Barge</b>	Raw Materials	Vessel - 1,400; Cross-gulf Barge - 793	17,798,628	28%
<b>River Barge</b>	Finished Product	514	4,904,460	8%
<b>Rail (Cars)</b>	In-process Goods	471	28,544,041	44%
<b>Truck</b>	Raw Materials, Finished Product	130	13,047,997	20%
<b>Total</b>			<b>64,295,126</b>	<b>100%</b>

Methodology for marine emissions based on calculating and comparing emissions from Global Maritime Fleet, RightShip 2013. Marine efficiencies based on actual fuel consumption as provided by supply chain partners and/or RightShip EVDI data. River barge movement efficiency based on Fuel Efficiency in Freight Transportation, American Waterway Operators, 2013. Mosaic aims to use actual barge/tug fuel data in 2017 report. Methodology for truck and rail transport based on Technical Guidance for Calculating Scope 3 Emissions, version 1.0, GHG Protocol 2013. Fuel data supplied by supply chain partners and/or estimated using methodologies consistent with EPA GHG Emissions and GHG Protocol. Two-way mileage used for shipments with an empty backhaul; one-way mileage used for shipments as appropriate. Trucking includes diesel and natural gas combustion engines. Rail based on actual fuel consumption as provided by supply chain partners.

Environmental impacts of transporting our materials are primarily related to GHG emissions resulting from combustion of fuels by transport vehicles. In 2015, we engaged approximately 20 external supply chain providers to attempt to better understand the emissions impact associated with upstream and downstream transportation. We continue to 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.

For 2015, our spending on North American transport of materials and products was divided across modes as follows:

### Transport Costs by Mode 2015



Note: Chart based on actual costs incurred by Mosaic per transport mode. Does not include transport of materials and product from all international distribution facilities.

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## Mosaic and its transportation partners use fuel and GHG emission-saving initiatives:

- Establishing partnerships with vendors to increase efficiencies and reduce cost
  - Chartering the most efficient vessels available
  - Investing in faster truck loading processes
  - Using specialized Saddleback trailers to increase backhaul usage to reduce "dead head"
- 

During 2015, Mosaic and its transportation partners used various fuel and GHG emission-saving initiatives, including:

- Mosaic continued our participation with the PhosPro Initiative to improve our handling of raw materials that travel by rail. Consisting of cross-functional teams at Mosaic and CSX, the PhosPro initiative focuses on increasing efficiencies and reducing costs for both companies. Mosaic anticipates benefits such as moving more finished products upstream by rail instead of truck, which will result in improved fuel efficiency and lower GHG emissions.
- As part of our commitment to sustainability, Mosaic uses RightShip, a vetting service that allows the supply chain team to select vessels that meet certain safety and environmental criteria. Mosaic now excludes all G-rated vessels for international shipping and uses RightShip's GHG Emissions Rating as a guide for calculating and reporting its maritime carbon footprint. By using more efficient ships, we gain cost efficiencies and further our efforts to reduce Mosaic's carbon footprint.
- Mosaic, along with our trucking partners, has implemented a number of fuel-saving initiatives, such as automatic engine shutoffs and reduced intra-company truck scaling. We have also invested in faster loading processes to reduce both fuel consumption and total trucks deployed.
- Mosaic uses specialized Saddleback trailers to increase backhaul usage to reduce "dead head," or empty loads. These unique trailers can transport molten sulfur from the Port of Tampa to our production facilities and return to the port with a load of our finished product for shipment to customers.
- An N-ViroMotive locomotive, used at our South Fort Meade mine, uses approximately 57% less fuel and emits approximately 80% fewer GHG emissions than single-engine diesel locomotives.
- Mosaic contracts a fleet of more than 50 clean-burning natural gas-powered trucks to transport raw materials and finished products in our Central Florida operations. Benefits include significantly lower emissions of particulates and nitrogen oxides (up to 50% lower) and GHGs (potentially up to 25% lower). In 2015, a second Mosaic trucking partner added four compressed natural gas (CNG) trailers to its fleet, transporting approximately 120,000 tonnes of Mosaic's finished product for the year. We continue to explore opportunities to convert additional shipping volumes to compressed natural gas (CNG).
- In 2015, Mosaic's Potash business segment completed several transportation optimization initiatives, including one to increase shipping by unit trains, which resulted in less "switching" and improved fuel efficiency. The segment also converted additional finished product tonnes to barge from less-efficient modes, which also resulted in improved fuel efficiency and fewer GHG emissions.

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**MOSAIC USES  
RIGHTSHIP**  
to select vessels that meet certain  
safety and environmental criteria

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## Mosaic uses CNG trucks to transport raw materials and finished products in our Central Florida operations

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### Waste Associated with Transportation

Mosaic has funded and promoted The Fertilizer Institute (TFI) Bulk Blend Workshops and Manual. Transporting and distributing our crop nutrient products in bulk greatly reduces the amount of packaging required to deliver our products to consumers. Most of our crop nutrient products are transported from production facilities to consumers in bulk quantities. Therefore, environmental impacts associated with packaging are eliminated. In some areas where small-scale farmers purchase our products, bulk distribution is not possible.



**In our Florida phosphates operations, we conduct effective acre-for-acre reclamation and return mined lands to productive uses for both wildlife and people. We use advanced science and technology to do this important work.**

### How & Where We Mine

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(G4-EN11) As of Dec. 31, 2015, Mosaic owned or controlled about 355,815 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 Dec. 31, 2015, Mosaic owns or controls more than 21,000 acres in Florida that are designated as non-impacted floodplain and other preservation for which Mosaic has granted conservation easements in order to ensure long-term protection of those lands and waters.

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 575,000 acres in Saskatchewan for potash mining and surface rights to approximately 30,000 acres. Mosaic's United States potash operations include a shaft mine in Carlsbad, N.M. 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 has placed about 11,000 acres in conservation easements along wildlife corridors and other ecologically significant habitats.

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## **During the permitting process, it's essential to balance the supply of phosphate against what is a temporary disturbance of ecological resources**



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(G4-EN12) During the mine permitting process, discussions regarding ecological resource preservation are held between Mosaic and applicable regulatory agencies. Environmental advocate organizations are also consulted to allow their priorities to be considered. Preservation areas can include floodplains, as well as high-quality wetland or upland habitats and buffers. Such evaluations take into consideration landscape position as well as the type and quality of the habitat. Balancing the supply of phosphate, an important natural resource, against what is generally a temporary disturbance of ecological resources, is an essential consideration in this process. To reduce the impact associated with lag time (the time period between initial land disturbance for mining and reclamation), Mosaic's pending permit applications include a "Regionally Ecologically Significant" (RES) project. A RES project involves the acquisition of land or conservation easements within the same watershed as the proposed new mine project. This land would not be mined, but rather would be restored to an improved ecological condition and then permanently preserved and managed.

External wildlife surveys are conducted as part of the permitting process. Additionally, once all permits are received, a follow-up wildlife survey is conducted prior to land clearing to determine whether protected species are present and if so, whether they need to be physically relocated. Mosaic obtains government approvals and permits to physically relocate specific species, such as the gopher tortoise, in compliance with federal and state laws. After relocation, parcels are directionally cleared in preparation for mining to allow highly mobile animals to move to adjacent undisturbed or preservation areas. Upon completion of mining activities, state law requires the land to be recontoured and planted within two years; all wetlands are replaced at a minimum of acre for acre type for type as needed to meet reclamation and mitigation requirements. When complete, many vertebrates and invertebrates repopulate the site through migration from wildlife corridors and protected riverine systems. Such habitat corridors generally receive permanent protection after mining through conveyance and recording of perpetual conservation easements. To ensure biodiversity, Mosaic may introduce certain species into reclaimed lands, such as the gopher tortoise, that may have previously resided on the parcel but moved prior to mining. All introductions and relocations of

protected species are conducted in full compliance with federal and state requirements and guidelines.

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## **We consult with Saskatchewan stakeholders about surface facility development to better protect wildlife and habitats**

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Phosphate mining in Florida, representing our largest phosphate reserve holdings, is heavily regulated by as many as 12 local, regional, state and federal permitting authorities. This robust regulatory oversight ensures the effects of our mining operations are avoided, minimized, and mitigated in accordance with all legal and regulatory requirements. This stringent regulatory oversight helps ensure: appropriate environmentally sensitive land is preserved from mining; project design that minimizes effects to the maximum extent practicable; compensatory mitigation for unavoidable minimized effects; employment of best-in-class reclamation practices; and ongoing monitoring activities such as the Horse Creek Stewardship and Peace River Monitoring programs, designed to protect against significant impact to water quality, water quantity and biodiversity on these riverine systems within or outside of our property boundaries.

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 FDEP Mining and Mitigation program. As of the date of this publication's release, 2014 and 2015 figures have not been deemed complete by the agency. We provide estimates of mined and reclaimed acres for those years in the table below. Once we have satisfied all reclamation and compensatory mitigation 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 and mitigation 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
2012	2,975	4,379	(4,548)	692	4,242	3,687
2013	1,243	1,728	563	(3,115)	2,508	1,187
2014*, **	12,320	5,320	3,776	2,214	2,994	2,740
2015*	2,401	4,703	2,668	2,631	10,207	5,035

\*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 operate in compliance with 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.

Biodiversity in flora and fauna is an important part of reclamation. Our reclamation and mitigation plans have biodiversity requirements that must be monitored by qualified ecologists and reported to appropriate regulatory agencies as part of the permit conditions or regulations. In fact, self-sustaining achievement of these biodiversity standards is a requirement that must be met before regulatory agencies will deem a site successfully reclaimed.

## 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% of the total project site – are set aside for preservation and protected into



perpetuity with recorded conservation easements. Mined lands are reclaimed to land uses such as wildlife habitat (both wetlands and upland) – much of which is permanently protected through conservation easements – and agricultural lands. Much of this land is also suitable for future conventional development such as parks, housing and commercial use.

Mosaic planted approximately 1,230,100 trees in 2015, reclaiming uplands, significant upland habitats and wetlands that require, at a minimum, acre for acre and type for type per permitting requirements.

Mosaic coordinates with the Florida Department of Environmental Protection (FDEP) Mining and Mitigation program, to integrate habitat networks and wildlife corridors into reclamation planning. The FDEP created, implements and encourages permittees to participate in the development of these features to benefit the water quality and quantity in the area, facilitate wildlife habitat, and build connections between rivers and significant environmental features.

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## **As part of our reclamation efforts in Florida, we planted more than 1.2 million trees in 2015**

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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 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. 2015 marked the fourth year of this agreement. To date, approximately 245 acres have been restored as part of this initiative.

(G4-EN14) The FDEP's Mining and Mitigation program oversees mining operations for the state of Florida. The U.S. Army Corps of Engineers and U.S. Environmental Protection Agency administer the federal permitting program designed to protect wetlands, streams and other water resources. The mine permitting process includes performing extensive ecological, wildlife and hydrological surveys, leading to the establishment of preservation areas with important ecological or hydrological value. The permitting process also requires external design to minimize effects of the proposed project on ecological and water resources and compensatory mitigation to offset unavoidable, minimized impacts. In our potash facilities located in Saskatchewan, Canada, our approach to evaluating potential impacts to biodiversity includes biological assessments for projects located in new or expanded footprint areas. Such impacts, however, are rare once a facility is in operation. These 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 those recommended by the Saskatchewan Ministry of Environment. Biological assessments for all expansion areas at the potash facilities followed this approach.

Phosphates and potash operations' interaction with wildlife in the United States is regulated by state agencies such as the Florida Fish and Wildlife Conservation Commission and by the United States Fish and Wildlife Service (USFWS). These state and federal agencies maintain lists of protected species, and Mosaic develops species-specific habitat management plans to ensure they are properly protected.

We work closely with regulators to not only ensure compliance with management plans, but to fund and/or conduct research that promotes the goal of wildlife and habitat conservation. Mosaic does not specifically track wildlife species per the International Union for Conservation of Nature (IUCN) List designations, but instead tracks species as designated by regulatory

agencies with authority in the regions in which we operate.

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**We work closely with  
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**IUCN Red List of Species Possibly in the Vicinity of Operations**

IUCN Red List Designation	Phosphate Operations (Florida)	
Endangered	0	Florida bonneted bat*
Vulnerable	4	Florida mouse, gopher tortoise, Florida scrub jay, West Indian manatee
Near Threatened	2	Gopher frog, short-tailed snake
Least Concern	19	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
IUCN Red List Designation	U.S Potash Operations (New Mexico)	
Endangered	0	
Vulnerable	0	
Near Threatened	1	Snowy plover
Least Concern	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
IUCN Red List Designation	Canada Potash Operations (Saskatchewan)	
Endangered	0	

Endangered IUCN Red List Designation Vulnerable	0	Phosphate Operations (Florida)
	1	Horned grebe
Near Threatened	1	Olive-sided flycatcher
Least Concern	143	American avocet, American bittern, American coot, American crow, American goldfinch, Alder flycatcher, American kestrel, American robin, Baltimore oriole, American white pelican, American wigeon, bald eagle, barn swallow, black-and-white warbler, black tern, black-capped chickadee, black-billed magpie, black-crowned night heron, blue jay, blue-winged teal, Brewer's blackbird, bobolink, brown-headed cowbird, bufflehead, Canada goose, canvasback, chest-nut sided warbler, cedar waxwing, clay-colored sparrow, common goldeneye, common grackle, common yellowthroat, dark-eyed junco, downy woodpecker, black-necked grebe, Eastern kingbird, Eastern phoebe, Franklin's gull, gadwall, gray catbird, gray partridge, great horned owl, green-winged teal, hairy woodpecker, hermit thrush, horned lark, house sparrow, house wren, killdeer, least flycatcher, Le Conte's sparrow, lesser yellowlegs, lesser scaup, loggerhead shrike, mallard, marbled godwit, marsh wren, merlin, mourning dove, yellow-shafted flicker, circus hudsonius, Northern harrier, Northern pintail, Northern shoveler, pied-billed grebe, 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, Say's phoebe, Savannah sparrow, sharp-tailed grouse, snow goose, song sparrow, solitary sandpiper, sora, spotted sandpiper, tree swallow, Swainson's hawk, veery, vesper sparrow, warbling vireo, Western grebe, Western meadowlark, Western wood peewee, swamp sparrow, willet, willow flycatcher, Wilson's phalarope, Wilson's snipe, yellow warbler, yellow-bellied flycatcher, yellow-bellied sapsucker, yellow-headed blackbird, common nighthawk, common raven, turkey vulture, great blue heron, Northern leopard frog, red-bellied snake, wood frog, boreal chorus frog, plains garter snake, tiger salamander, Canadian toad, Eastern cottontail, snowshoe hare, mule deer, white-tailed deer, moose, coyote, Richardson's ground squirrel, thirteen-lined ground squirrel, red squirrel, striped skunk, muskrat, red fox, North American otter, North American deer mouse, American badger, American beaver, Black sided darter, Northern pike, white sucker, yellow perch, Northern pearl dace, common shiner, fathead minnow, longnose dace, creek chub, Johnny darter, log perch, walleye
IUCN Red List Designation		Louisiana Operations
Endangered	2	Pallid sturgeon, Alabama heelsplitter
Vulnerable	4	Alligator, snapping turtle, paddlefish, West Indian manatee
Near Threatened	2	Gulf sturgeon, Southern creek mussel

Notes: \*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. Our Carlsbad facility engages a third party biennially to survey species in the vicinity of our operations. This submission reflects results of the 2014 survey. Please see Additional Biodiversity Highlights for more information about Carlsbad's ongoing species protection efforts. 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.



## Our avian and bat protection plan in Carlsbad, N.M. minimizes the risk of migratory birds and bats being attracted to our operations

### Additional Biodiversity Highlights

For over 80 years, Mosaic and its legacy companies have partnered with National Audubon Society for the protection of waterbirds in Tampa Bay. Since 2012, The Mosaic Company Foundation has funded a joint effort between Audubon in Florida and Louisiana aimed at citizen involvement in habitat stewardship and citizen science, as part of a hemispheric flyaways program to reverse shorebird population declines. Mosaic leases the northern portion of the Richard T. Paul Alafia Bank Bird Sanctuary to Audubon, which includes sections of both Bird Island and Sunken Island. National Audubon manages the Alafia Bank which support up to 18,000 nesting pairs of 18 waterbird species.

Since 2013, Mosaic Belle Plaine has partnered with Wild and Cared Free, a wildlife rehabilitation organization dedicated to rehabilitating all species of animals in southern Saskatchewan. Mosaic has volunteered time and financial assistance to support the organization, and Wild and Cared Free has provided Mosaic access to training opportunities and rehabilitation services for animals around its Saskatchewan potash mines.

Our Mosaic potash operations in Carlsbad, N.M., have developed an avian and bat protection plan to minimize risks to migratory birds and bats that can be attracted to our operations. Mosaic has partnered with regulatory authorities and interested community partners, through working group activities, to evaluate possible future strategies aimed at improving our hazing activities and minimizing risks to migratory avian and bat species in our areas.







## Materials & Waste

**G4-DMA: We aim to efficiently use the mineral resources and materials needed to make our crop nutrition products.**

## Materials

(G4-EN1) Our business mined or consumed the following raw materials in 2015:

### Materials Mined or Consumed

in Million Tonnes (unless otherwise noted)

	2015
Ammonia	1.5
Limestone	0.3
Phosphate Rock	14.5
Potash Ore	27.2
Sulfur (long tons)	4.2

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 processing. 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® 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 2015, sulfur made up approximately 8.8% by weight of our total raw materials. We use recycled oil as a flotation aid in our phosphate beneficiation process.





## Mining Wastes

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**We use industry best practices to manage and reuse overburden, tailings and byproducts associated with our mining and production practices. We comply with federal, state and local regulations related to these materials.**

(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 ponds. Overburden and sand tailings produced at our phosphate mines are used in reclamation and mitigation. These ponds are eventually dewatered and reclaimed. 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.



Certain solid wastes generated by our phosphates operations may be 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. These materials (phosphogypsum and process wastewater) are subject to detailed state rules governing construction, operation, maintenance and closure.

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. When the settlements become effective, Mosaic will modify certain practices and undertake new projects expected to result in capital expenditures likely to exceed \$200 million, 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.

## Mining and Mineral Processing Solid Waste Generated and Disposal Method

in Tonnes

Material	2011	2012	2013	2014	2015	Disposal Method
<b>Phosphates</b>						
Overburden	163,931,613	162,012,906	146,522,396	154,240,684	122,645,800	Used for reclamation
Sand Tailings	30,885,900	37,459,212	34,442,381	37,078,556	28,374,790	Used for reclamation
Clay	12,798,551	14,315,162	15,786,278	15,588,902	14,402,390	Stored in surface impoundments for reclamation
Phosphogypsum	20,134,000	21,543,380	20,602,936	23,992,856	23,556,918	Monitored, stored in surface impoundments
<b>Potash</b>						
Tailings (Salt)	12,004,876	12,868,386	12,166,694	11,285,000	9,511,314.32	Stored in surface impoundments for reclamation
Brine	5,722,629	4,775,705	4,408,041	4,237,000	4,502,953.43	Discharged into environment

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 non-hazardous solid wastes, including domestic refuse, construction and demolition debris, and waste lubricants. 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. The following table summarizes materials recycled or reused in 2015.



## 2015 Recycled Wastes

in Tonnes

Material	Phosphates	Potash	International Distribution
Cardboard and Paper	13.3	14.1	35.1
Concrete	84.6	0.0	0.0
Electronic Waste and Universal Waste	15.2	28.6	2.0
Plastics	0.0	58.0	176.5
Scrap Metal	13,314.4	2,138.9	883.3
Raw Materials and Finished Product	11,302.2	0.0	0.0
Wood	0.0	0.0	30.7
Used Oil and Oil-Contaminated Items	260.3	92.4	12.8
Miscellaneous Recyclables	57.5	990.1	42.9
<b>Total</b>	<b>25,047.4</b>	<b>3,322.1</b>	<b>1,183.4</b>
<b>Grand Total</b>			<b>29,552.9</b>

.....

We recycled more than  
**29,500 TONNES**  
 of waste across business  
 segments in 2015

.....

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 examples of hazardous and non-hazardous wastes generated by disposal methods at phosphates, potash and international facilities. As our tracking of waste continues to improve, we anticipate further expanding the scope of our sustainability reporting for this indicator to include data for all facilities in the near future.

## 2015 Waste Generated by Disposal Method

in Tonnes

	Incineration	Landfill	Treatment	Recycle	Other	Total
<b>Phosphates</b>	<b>284.1</b>	<b>8,128.30</b>	<b>1,002.40</b>	<b>25,047.80</b>	<b>0</b>	<b>34,462.60</b>
Hazardous	21.8	652.7	477.5	0	0	1,152.00
Nonhazardous	262.3	7,475.60	524.9	25,047.80	0	33,310.60
<b>Potash</b>	<b>224.1</b>	<b>2,318.30</b>	<b>69.8</b>	<b>3,322.10</b>	<b>329.5</b>	<b>6263.8</b>
Hazardous	80.8	279.1	69.8	161.9	329.5	921.1
Nonhazardous	143.3	2,039.20	0	3,160.20	0	5,342.70
<b>International Distribution</b>	<b>215</b>	<b>6550</b>	<b>101.6</b>	<b>1,182.90</b>	<b>0</b>	<b>8049.5</b>
Hazardous	86.5	108.3	0.1	0	0	194.8
Nonhazardous	128.6	6,441.70	101.5	1,182.90	0	7,854.70
<b>Total</b>	<b>723.2</b>	<b>16,996.60</b>	<b>1,173.80</b>	<b>29,552.80</b>	<b>329.5</b>	<b>48,775.90</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.



**Each facility has an appropriate hazardous waste management system to ensure that waste is properly and safely disposed**

(G4-EN25) We endeavor to choose on-site process chemicals that are the least hazardous, thereby ensuring the lowest 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.

## Environmental Releases

(G4-EN24) In 2015, we had a total of nine releases equal to or greater than 2,000 gallons. None of these was significant enough to report in our financial statements.

## Environmental Releases

### Number of Significant Reportable Releases

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

Note: Table includes environmental releases equal to or greater than 2,000 gallons. Releases meeting this criteria included: Potash – (2) brine and (1) ammonia; Phosphates – (2) phosphoric acid, (1) ammonia and (3) process water.

## 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. When the settlements become effective, Mosaic will modify certain practices and undertake new projects expected to result in capital expenditures likely to exceed \$200 million, 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.

(G4-EN34) In 2015 we did not receive, address or resolve any environmental grievances filed through formal mechanisms. We support a variety of formal and informal channels through which stakeholders can submit concerns. Please see [Engaging our Stakeholders](#) 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 Dec. 31, 2015, we spent approximately \$280 million for environmental capital expenditures, land reclamation activities, gypstack closure and water treatment activities.



**GRI  
Content  
Index**

## MORE INFORMATION

[Assurance Statement](#)

[Environment Metrics Supplement](#)

[Annual Review and Archive Reports](#)

[Mosaicco.com](#)

[Contact Us](#)

[Code of Business Conduct and Ethics](#)

[Disclosure Statement](#)

[Privacy Policy](#)

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 [Print Page](#)

 [Back to Top](#)