

# Operational performance



2022 was a new record year for PhosAgro in terms of output and sales. Compared to 2021, agrochemical output increased by 4.6% to 11.1 mt, while shipments to customers expanded by 6.8% to 11 mt.

In our key segment of phosphate-based fertilizers, we demonstrated annual production growth of above 4% for the third year running. The market environment caused us to make serious changes to our product mix. In our key DAP/MAP grades and NPS, we improved the 2021 performance by 16.1% and 78.6% respectively, while NPK and APP output was down by 17.9% and 45.3% respectively.

This production flexibility is the result of a number of successful investment projects, including MAP production at the Volkhov site reaching its full capacity.

In 2022, nitrogen-based fertilizer output grew by 5.6% y-o-y, outpacing production of phosphate-based fertilizers. The granulated ammonium sulphate segment demonstrated the most impressive growth of more than two times thanks to expanded capacities to produce this very popular product. Production of urea, the nitrogen segment's core product, went up by 2.7% to 1.7 mt.

In 2022, we allocated a record RUB 63 bln (including capitalised repairs) to upgrading and expanding

our production capacities. In 2023, these investments will hit RUB 67 bln.

Safety at our production sites remains our absolute priority. We reduced LTIFR from 0.81 in 2021 to 0.38 in the reporting year, with the Cherepovets site team delivering the best LTIFR of 0.12, more than three times lower than the Company's overall result.

**Alexander Gilgenberg,**  
General Director of Apatit

## Product portfolio

PhosAgro is the largest producer of liquid nitrogen-phosphorus fertilizers in Russia



### Concentrates

- High-grade phosphate rock
- Syenite alkali aluminium concentrate
- Nepheline concentrate

### Industrial products

## OUR CUSTOMERS

are at the heart of our business

In 2022, our portfolio was expanded to **57 agrochemical grades**, including all types of fertilizers and feeds.

Two of these grades were registered in 2022. A significant portion of our offering consists of newest fertilizer grades developed over the past five years, including two in the reporting year.

### Mineral fertilizers

**APAVIVA®**  
Nitrogen-phosphorus and complex fertilizers

**APAVIVA+®**  
Nitrogen-phosphorus and complex fertilizers with micronutrients

**NITRIVA®**  
Nitrogen-based fertilizers

**APALIQUA®**  
Liquid complex fertilizers

### Feed additives

**NITRIVA® Feed**  
Feed grade urea

**APAFEED®**  
Feed grade monocalcium phosphate

### Industrial phosphates

Sodium triphosphate



### Phosphogypsum

- Phosphogypsum for road construction
- Phosphogypsum for farming



## Upstream and downstream

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### Upstream

Kirovsk Branch of Apatit mines apatite-nepheline ore at six fields of the Khibiny deposits in Russia's Murmansk region using both underground and open-pit mining methods. PhosAgro Group's feedstock reserves are of igneous origin, which means that they do not have concentrations of toxic heavy metals. The Company's phosphate rock is extremely rich in P<sub>2</sub>O<sub>5</sub>. The mineral resource base (including off-balance reserves) at one of the world's richest deposits is expected to last for about 60 years.

The slight y-o-y decrease in balance reserves corresponds to the volume of ore mined.

Currently, the Company is shifting its resource base emphasis from reserves for open-pit mining to a higher share of underground mining reserves. In the reporting year, the share of open-pit mining came in at 78.3%.

In 2022, total apatite-nepheline ore production rose by 3% to 39.51 mt (compared to 38.45 mt in 2021). This increase was due to the commissioning of new capacities at the Kirovsky mine (+10 m level of the Kukisvumchorr deposit) and the Rasvumchorrsky mine (CDU-4).

**39.51<sup>mt</sup>**

total apatite-nepheline ore production in 2022

### PhosAgro Group's ore reserves as at 1 January 2023

Deposit	Balance reserves, kt (A+B+C1+C2)	Average P <sub>2</sub> O <sub>5</sub> content, %
Kukisvumchorr	347,146	14.14
Yukspor	456,620	13.81
Apatitovy Cirque	86,565	13.69
Rasvumchorr Plateau	85,878	10.67
Koashva	254,963	17.24
Njorkpahk	55,979	14.11
<b>Total</b>	<b>1,287,151</b>	<b>14.37</b>



In 2022, the Company **also proceeded with its investment project to develop +10 m level at the Kirovsky mine.**

The project envisages the construction of two

crushing and delivery units for ore drawing, a haulage level and a water drainage, enhancement of the Kirovsky mine's ventilation system, as well as further level development until 2035.

**RUB 36.1<sup>bln</sup>**

the project's budget

**1Q 2022**

First start-up facility commissioned

**1.5<sup>mt of ore</sup>**

production volume in 2022

**4Q 2023**

Second start-up facility expected to be launched

Company profile



Strategic report



PERFORMANCE REVIEW

Corporate governance



Share capital



Appendices





Furthermore, the Company proceeded with its Vostochny mine development project seeking to intensify open-pit mining. The investment project focuses on purchases of self-propelled machinery, including dump trucks, excavators and auxiliary machinery, with fleet renewal helping to increase the equipment's technical availability and utilisation ratios. Additionally, the project involves relocation of infrastructure facilities and expansion of the beneficiation plant's production capacity.

**4.5 mtpa of ore**  
ore output achieved at the Njorkpahk open pit

**7 mtpa of ore**  
ore output scheduled to be reached at the Koashvinsky open pit by 2030

**RUB 33.4 bln**  
project CAPEX

**8.5 mtpa of ore**  
total ore production at the Vostochny mine

On top of that, we remain committed to the active implementation of our sustainable development strategy. For example, in 2022 the mining and processing plant of Apatit continued sourcing energy generated by the hydroelectric power

plants of TGC-1. In the reporting year, green electricity supplies to the plant totalled 300 million kWh. Thus, about 17.8% of the plant's output is covered by green electricity.

**12 mt** +2% y-o-y vs 2021  
production of phosphate rock and nepheline concentrate

### Ore processing

#### Production volume, kt

Item	2020	2021	2022	Δ 2022/2021, %
Phosphate rock	10,541.4	10,675.5	10,855.7	1.7
Nepheline concentrate (incl. syenite concentrate)	1,159.4	1,123.1	1,175.8	4.7
<b>Total</b>	<b>11,700.8</b>	<b>11,798.6</b>	<b>12,031.5</b>	<b>2.0</b>

## Chemical production

### Feedstock

#### Production volume, kt

Item	2020	2021	2022	Δ 2022/2021, %
Ammonia	1,970.3	1,931.1	1,985.3	2.8
Phosphoric acid	2,716.8	2,952.0	3,199.4	8.4
Sulphuric acid	6,815.6	7,352.2	7,920.2	7.7
Ammonium sulphate	293.9	259.0	322.6	24.6
<b>Total</b>	<b>11,796.6</b>	<b>12,494.3</b>	<b>13,427.6</b>	<b>7.5</b>

#### In 2022, the production of phosphoric acid

as the key feedstock used in phosphate fertilizers grew by 8.4% y-o-y and reached

**3.2 mt**

on the back of earlier production unit upgrades and increased equipment utilisation efficiency.

#### In 2022, sulphuric acid production

was up by 7.7% year-on-year to

**7.9 mt**

driven by the ramp-up to full capacity of the new unit in Cherepovets and the commissioning and reaching the design capacity of a new unit at the Volkhov site.

#### Ammonia output

also rose by 2.8% y-o-y to

**1,985.3 kt**

driven by the completion of the capacity expansion project at ammonia production unit No. 3 of the Cherepovets site. This project helped increase daily output to 2,350 t.



## Phosphate-based fertilizers

In 2022, the production of phosphate fertilizers and feed phosphates grew by 4.2% y-o-y to 8.2 mt helped by increased output of phosphoric acid.

The output of DAP/MAP fertilizers increased by 16.1% to 4.2 mt. The rapid growth rates of DAP/MAP fertilizers was due to the launching and ramp-up to full capacity

of MAP production at the Volkhov site, and the higher demand for bicomponent fertilizers in 2022.

NPS production in 2022 surged by 78.6% y-o-y to 1 mt, while the output of NPS and APP dropped by 17.9% and 45.3% respectively due to the interchangeability of phosphate fertilizer grades available in the product mix and considering the overall market requirements.

**8.2<sup>mt</sup>**  
production of phosphate-based fertilizers and feed phosphates

### Phosphate-based fertilizer and feed phosphates production, kt

Item	2020	2021	2022	Δ 2022/2021, %
DAP/MAP	3,164.4	3,610.7	4,191.9	16.1
NPK	2,840.3	3,111.3	2,553.8	(17.9)
NPS	928.9	561.6	1,003.1	78.6
APP	205.8	208.6	114.0	(45.3)
MCP	392.1	390.6	361.6	(7.4)
PKS	46.4	10.8	-	-
<b>Total</b>	<b>7,577.9</b>	<b>7,893.6</b>	<b>8,224.4</b>	<b>4.2</b>

## Nitrogen-based fertilizers

In 2022, production in the nitrogen segment went up by 5.6% y-o-y to 2.55 mt. As the Company completed its investment project to ramp up granulated ammonium sulphate capacities, the output

of this unwaveringly popular fertilizer more than doubled y-o-y to reach 165.4 kt. The production of urea grew by 2.7% to 1,688.2 kt, while the output of ammonium nitrate in 2022 saw a slight planned decrease to 693 mt.

**2.55<sup>mt</sup>**  
production in the nitrogen segment

### Nitrogen-based fertilizers production, kt

Item	2020	2021	2022	Δ 2022/2021, %
Ammonium nitrate	691.5	694.8	693.0	(0.3)
Urea	1,679.1	1,643.2	1,688.2	2.7
Ammonium sulphate	31.7	74.1	165.4	123.2
<b>Total</b>	<b>2,402.3</b>	<b>2,412.1</b>	<b>2,546.6</b>	<b>5.6</b>

## Sales

In 2022, PhosAgro increased total fertilizer sales by 6.8% y-o-y to hit an all-time high of 11 mt.

Sales of phosphate fertilizers and feed phosphates in 2022 amounted to 8.4 mt, up 8.2% y-o-y. The increases came on the back of strong demand for these fertilizers in the Asian markets. We were able

to meet the growth in demand by boosting the production of MAP in 2022 after launching a new facility at the Volkhov site.

In the nitrogen segment, sales were up by 2.3% year-on-year, primarily due to a high seasonal demand and the availability of fertilizers for end users.

**8.4<sup>mt</sup>**  
sales of phosphate-based fertilizers and feed phosphates

### Sales by key product, kt

Item	2020	2021	2022	Δ 2022/2021, %
Phosphate rock	3,151.8	2,677.6	2,041.2	(23.8)
Nepheline concentrate	1,159.0	1,125.2	1,176.4	4.6
<b>Total</b>	<b>4,310.8</b>	<b>3,802.8</b>	<b>3,217.6</b>	<b>(15.4)</b>
<b>PHOSPHATE-BASED FERTILIZERS</b>				
DAP/MAP	3,203.4	3,564.5	4,272.2	19.9
NPK	2,924.6	3,011.1	2,660.7	(11.6)
NPS	912.2	566.8	1,008.8	78.0
APP	200.3	206.3	111.6	(45.9)
MCP	378.6	405.2	349.1	(13.8)
PKS	49.8	8.5	-	-
<b>Total</b>	<b>7,668.9</b>	<b>7,762.4</b>	<b>8,402.4</b>	<b>8.2</b>
<b>NITROGEN-BASED FERTILIZERS</b>				
Ammonium nitrate	618.6	798.0	661.6	(17.1)
Urea	1,649.0	1,616.3	1,741.8	7.8
Ammonium sulphate	18.1	80.2	147.4	83.8
<b>Total</b>	<b>2,285.7</b>	<b>2,494.5</b>	<b>2,550.8</b>	<b>2.3</b>
<b>OTHER PRODUCTS</b>				
STPP	93.3	94.4	48.6	(48.5)
Other	90.4	82.9	95.4	(15.1)
<b>Total other products</b>	<b>183.7</b>	<b>177.3</b>	<b>144.0</b>	<b>(18.8)</b>

## Market outlook

In 1Q 2023, the nitrogen-based fertilizer market faced an oversupply as a result of high carry-over stocks (in Europe, North and South America). This continues to pile downward pressure on prices.

The prices of phosphate-based fertilizers have plateaued for now. Higher seasonal activity in South America (primarily in Brazil) in 1Q 2023 coupled with revival in the domestic US market after

a significant import drop in 2022 are expected to provide support for the pricing environment.