

# Focus on fertilizers

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Fertilizers, both mineral and organic, are widely used agricultural inputs. Their application contributes to global food security and nutrition, as well as farmers' livelihoods. Fertilizers help to nourish and sustain the world population by increasing the availability of nutrients for crop development, and they directly and indirectly contribute to 95 percent of global food production (FAO, 2019). The focus of this feature article is the primary nutrients contained in mineral fertilizers, namely nitrogen, phosphorus and potassium.

After providing background information, this feature article focuses on a comprehensive review of global fertilizer trade between 2021 and 2023 and provides a short-term market outlook for 2024/25.

In its May 2024 "[Introduction to fertilizers](#)", the Agricultural Market Information System (AMIS) defines the primary nutrients as follows:

- Nitrogen (N) enables plants to grow, develop and reach full yield potential. Over 100 million tonnes are used globally each year in the form of urea, ammonium nitrate, ammonium sulphate and other compounds.
- Phosphorus (P<sub>2</sub>O<sub>5</sub>) facilitates root development and improves resistance to drought. Close to 50 million nutrient tonnes are applied annually in the form of monoammonium phosphate (MAP), diammonium phosphate (DAP), triple superphosphates (TSP) and blends.
- Potassium (K<sub>2</sub>O) aids photosynthesis, with 40 million nutrient tonnes applied globally in the form of muriate of potash (MOP) and sulphate of potash (SOP).

## Introduction

Since 2021, fertilizer production, distribution and trade have been subject to a vast array of economic, environmental and geopolitical risks. Developments in the energy markets, the main input of the most frequently applied nitrogen fertilizer, are among the main drivers. According to the risk scenario identified in FAO's June 2022 information note on "The importance of Ukraine and the Russian Federation for global agricultural market and the risks associated with the war in Ukraine", rising prices of energy and fertilizers translated

into higher production costs and led to lower use of inputs in some regions.

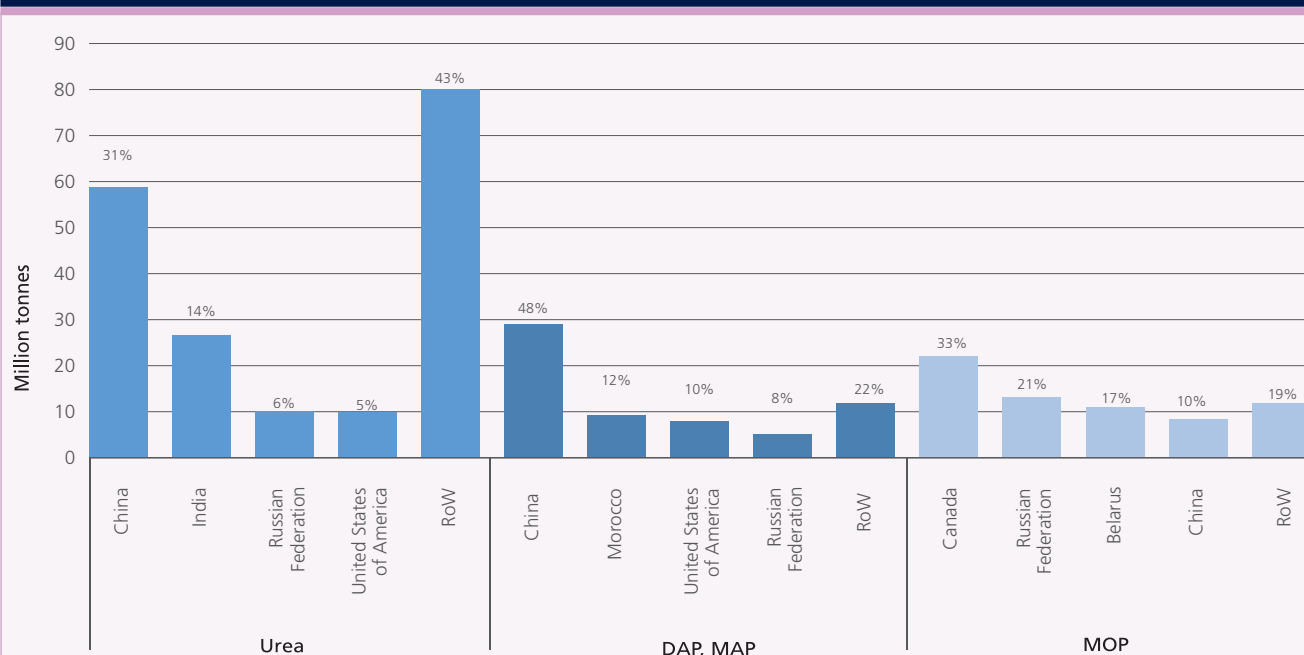
The fertilizer market landscape also underwent structural readjustments. In the second half of 2021 and in 2022, several production plants in Europe closed as a consequence of high feedstock costs. The Dutch natural gas Title Transfer Facility (TTF) index reached a historical high of above EUR 300/megawatt-hour and displayed pronounced volatility. These issues were reflected in the prices of ammonia, urea and DAP, which all exceeded USD 1 000/tonne, levels more than three times higher than historical ten-year averages.

**Figure 1. TTF daily price movement, 2021-2023**



The succession of additional disruptors reshaped global fertilizer trade to varying extents. Governments imposed several measures pertaining to fertilizers, including export controls and import duties. In addition, various foreign currency controls and conservative lending policies, reflected by high interest rates, impacted global and regional fertilizer trade over the 2021-23 period by limiting import capacity for some low- and middle-income countries.

Other actors along the fertilizer supply chains, such as shipowners, operators, freight and insurance, also responded to the rising geopolitical risks by commanding higher freights and insurance premiums to transport fertilizers, altering trade routes and patterns and adding additional voyage days. Consequently, the average

**Figure 2. Production quantities and share of total by country, 2021**

Source: AMIS

transportation cost increased by USD 25-50/tonne globally and up to USD 70/tonne in sub-Saharan Africa in 2022 (IFDC, 2022).

Production of fertilizers was also reshaped by new paradigms following the energy cost rally of 2021-2022. The graph above illustrates the production and share by country of the main fertilizer types across nitrogen, phosphorus and potassium, which are urea, DAP, MAP and MOP (AMIS, 2024).

A survey conducted by the International Fertilizer Association (IFA) (2024) revealed that, in 2023, nitrogen production increased (up 3 percent for ammonia and 7 percent for urea), and the increase was mainly driven by China, India and the Russian Federation. Phosphate production was up 5 percent in 2023; lower production in Africa, especially Morocco, was offset by increases in the Near East and East Asia. Potash production rebounded by 10 percent in 2023, largely on account of increases in the Russian Federation and Belarus, as well as ramping up of capacity in the Lao People's Democratic Republic.

On the demand side, the European Union, Brazil and Türkiye increased their urea imports in 2023, while India's purchases decreased significantly, down by 15 percent, as the country continues to pursue boosting domestic production. For phosphate, the United States of America, the European Union and Brazil increased their MAP and DAP imports, encouraged by more favorable pricing.

India once again decreased its imports by 8 percent compared to 2022, due to the reduced subsidy support for distributing phosphates to farmers. For potash, China and Brazil exhibited the highest increases in imports between 2022 and 2023, at 47.0 percent to 12 million tonnes and 14.0 percent to 13.5 million tonnes, respectively.

As showcased earlier, the reduction in energy prices spurred fertilizer production and led to an increase in available fertilizer supplies that helped to ease prices, which in turn fuelled a rebound in demand and traded volumes. In April 2024, fertilizer prices, as presented by a basket of nitrogen, phosphorus and potassium price series, averaged USD 327/tonne, compared to USD 815/tonne in April 2022.

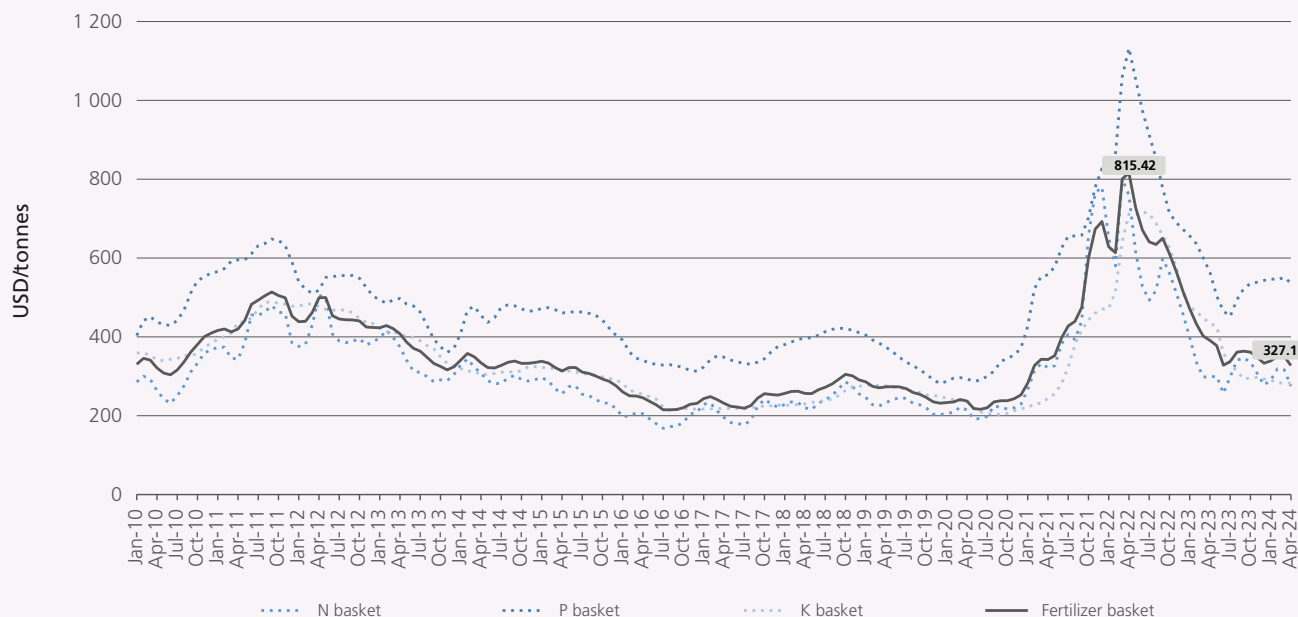
The fertilizer basket includes 26 price series under the nitrogen, phosphorus and potassium umbrellas. These include 10 benchmark prices for nitrogen fertilizers, 11 benchmark prices for phosphorus fertilizers and 5 benchmark prices for potassium fertilizers.

### Global fertilizer trade

Elevated prices triggered an affordability crisis that led to global fertilizer trade contracting by 18 million tonnes between 2021 and 2022.

According to the Global Trade Tracker (2024), in 2023 mineral fertilizer trade increased by 7 percent year on year in volume terms but did not return to the 2019–2021

Figure 3. Fertilizer basket price

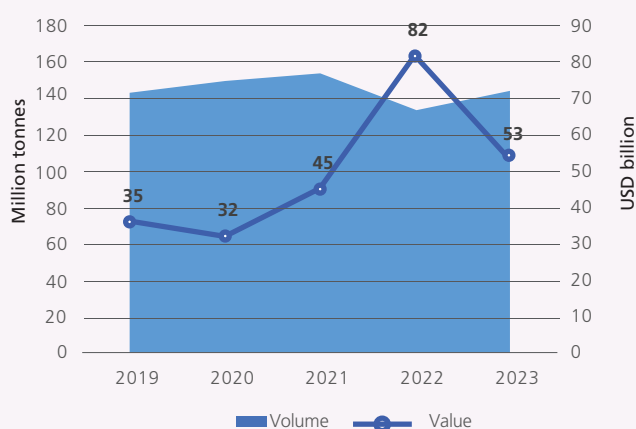


Source: Own elaboration basis CRU Fertilizer Week

levels. Fertilizer trade totalled 162 million tonnes in 2023, up from the prior year but still below the 2019–2021 average of 167 million tonnes.

In 2023, the value of total fertilizer trade declined by 35 percent compared to 2022 to USD 53 billion. The decrease happened on account of lower world prices of all fertilizer products and feedstocks compared to 2022, which was the peak year. The growth in trade volumes was driven by a demand rebound in key importing markets

Figure 4. Global fertilizer trade (2019-2023)



Source: Global Trade Tracker

such as Türkiye, mid-sized Latin American markets – such as Mexico, Colombia and Chile, where import demand increased between 14.0 and 53.0 percent – and mid-sized Southeast Asian countries – such as the Philippines, Thailand and Viet Nam, where rebound growth was between 9 and 17 percent. These Asian countries had been the hardest hit by the high prices and unfavorable exchange rates that resulted from domestic currency depreciation.

Furthermore, trade flows were influenced by policies. In 2023, these policies included the resumption of the European Union’s import duties on ammonia and urea, the implementation of the United States’s countervailing duties on phosphates imports from Morocco and the Russian Federation, and the enforcement of temporary and seasonal export control measures in China, the Russian Federation, Türkiye and Indonesia. Freight increases and logistical disruptions in the Black Sea and Near East also impacted trade flows.

**Global Nitrogen trade** (including urea and nitrates) showed a 1.3 percent year-on-year increase to 75.7 million tonnes in 2023.

This soft rebound can be attributed to the fact that nitrogen trade contraction in 2022 was less than those of phosphorus and potassium. Nitrogen is a key yield-enhancing input that, depending on soil conditions, usually needs to be applied annually. Additionally, the prices of cereals decreased, meaning farmers had less disposable

income to purchase agricultural inputs such as fertilizers.

On a regional basis, in 2023, lower European natural gas prices were more favorable to domestic fertilizer production, particularly nitrates, which lowered the region's import bill compared to the record year 2022 when nitrogenous imports into Europe displayed a triple digit percentage growth rate.

In 2023, Qatar and the Russian Federation topped the exporters' list for urea, with Egypt and China also showing a rebound in comparison to 2022. On the import front, India drastically reduced its imports by 2 million tonnes in 2023 on account of a robust domestic production. A recovery of over 1.2 million tonnes was registered in Southeast Asia and was buoyed by currency appreciation vis-à-vis the United States dollar, especially for the Indonesian rupiah, the Philippine peso and the Vietnamese dong, all of which appreciated by an average of 6 percent in 2023 (ADB, 2023).

**Global Phosphate trade** rebounded by 1 million tonne in 2023, representing a 3 percent year-on-year increase to 30.4 million tonnes; however, it remained more than 4 million tonnes below the 2021 levels. Key exporting countries, apart from China, saw little change to their export volumes, largely due to a muted global demand because of high prices.

China experienced a rebound in phosphate exports in 2023, though they remained well below prior peaks, with the government using export restrictions to safeguard the domestic market. On the import side, India imported less in 2023, due to lower subsidies and a subsidy policy more favorable to nitrogen.

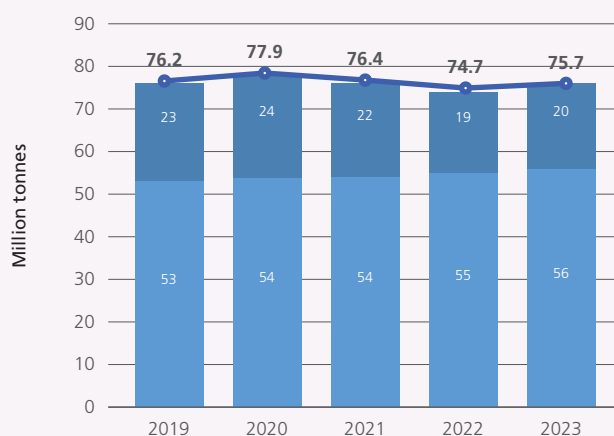
**Global Potash trade** increased to 55.7 million in 2023, up 17 percent from 2022, due to an increase in imports by major markets like China, Brazil, the United States and India.

In 2022, potash trade declined from 2021 levels, mainly due to a supply shortfall brought about by reductions in Belarusian and Russian exports, as well as reduced demand induced by increased potash prices.

Together, Canada, the Russian Federation and Belarus account for more than 60 percent of the global primary potash capacity. As such, Canada's share of global potash trade increased significantly in 2021-2022, while Belarus's and Russian Federation's shares declined.

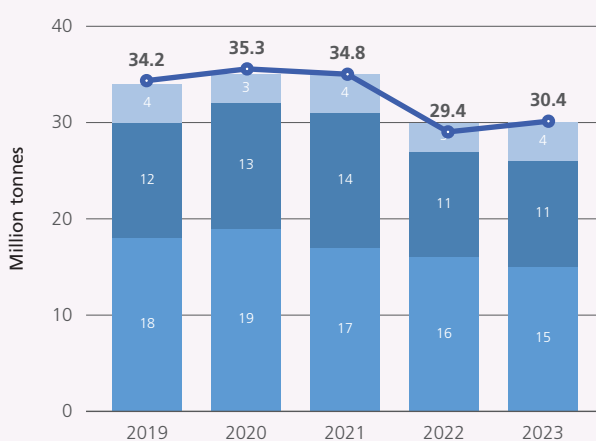
In 2023, the Russian Federation and Belarus exported more potash via new rail trade routes (to China and India). Higher exports from Canada, Jordan and Lao People's Democratic Republic also contributed to an ample supply, which in turn allowed for improved affordability. Consequently, in 2023, imports increased in key countries such as China, Brazil and Indonesia, Malaysia and Thailand.

Figure 5. Global nitrogen trade (gross product)



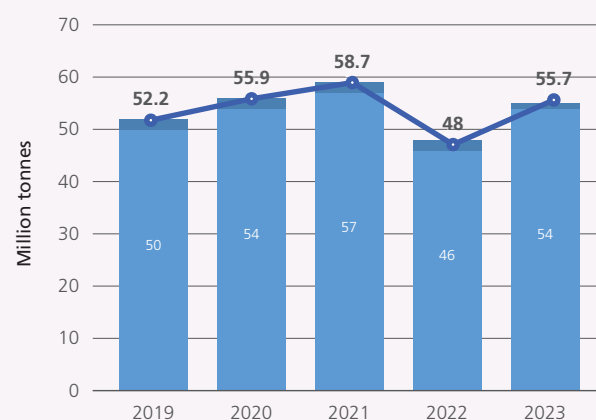
Source: Global Trade Tracker

Figure 6. Global phosphate trade (gross product)



Source: Global Trade Tracker

Figure 7. Global potash trade (gross product)



Source: Global Trade Tracker

In conclusion, during the price hike in 2022, fertilizer trade volumes declined by close to 11 percent. This contraction, while driven by high prices and reduced affordability, was also exacerbated by regional logistical challenges, such as those in the Black Sea and the Gulf of Aden. Additionally, countries responded by enforcing protectionist trade policies that sought to safeguard domestic supplies on the one hand and, on the other, to ban products based on origin, such as potash from Belarus.

While trade rebounded in 2023 with the easing of global prices, it has not yet returned to pre-2021 levels, and access to fertilizer continues to remain a challenge that disproportionately affects regions that already suffer from low agricultural productivity.

## Short-term outlook

Overall, the short-term outlook for fertilizers suggests stability over the next six months, with improved availability and affordability across nitrogen, phosphorus and potassium. However, geopolitical and weather risks, combined with macroeconomic and trade policies imposed by governments, will continue to play a role, possibly introducing temporary price and volume volatility. Still, the amplitude and geographical scope of any such shocks are likely to be determined by the presence or absence of shocks to energy markets and costs.

Focusing on specific nutrients, the Russian Federation's new ammonia export terminal at Taman on the Black Sea is expected to become operational in the latter half of the year. It will facilitate the return to the global market of over 1 million tonnes of ammonia, which was previously exported via pipeline through Ukraine, and will provide ample feedstock to nitrogen and phosphate production.

Urea prices are expected to remain soft as the peak demand in the northern hemisphere for the spring season has passed and India is unlikely to tender for urea before July, as it relies on robust domestic production. Weather risks can also affect urea demand. For example, the recent flooding in the south of Brazil had devastating effects on both arable land and infrastructure and could hamper planting and demand. It could also pose difficulties for input deliveries, thus affecting supply availability for the 2024/25 season in the region.

Phosphate prices are expected to decline in the coming months with increased seasonal supply from China. However, the United States's countervailing duties on Russian and Moroccan DAP and MAP are likely to result in higher prices in the United States, while they may boost availability in nearby markets, such as Brazil, as exporters redirect trade flows. Stocks in Brazil are reported lower than prior years, which is

likely to keep some upward pressure on prices. Indian import demand is expected to improve under the Kharif-season subsidy following the recent slump.

Potash availability is robust, and prices are expected to remain flat to soft because of weakening palm oil prices that may suppress demand in Southeast Asia. China delayed the settlement of its new potash contract until July on account of high in-country stocks, which could further add to the downward price momentum.

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