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## Public Summary Short-Term Fertilizer Outlook 2021 – 2022

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This report is a public summary of IFA's Short-Term Outlook report, prepared by the Market Intelligence Service to accompany presentations given at the IFA Strategic Forum on 16 November 2021 in Dubai:

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## ECONOMIC AND POLICY CONTEXT

### ***The global economic recovery continues despite challenges and uncertainties***

According to the International Monetary Fund (IMF), the global economy is projected to grow by 5.9% in 2021 and 4.9% in 2022. This is 0.1% lower for 2021 than July's forecast.

This revision for 2021 reflects a downgrade for advanced economies - in part due to supply disruptions - and for low-income developing countries, due to the resurgence of the Covid-19 pandemic.

There are diverging dynamics that have been triggered by Covid-19 between countries, and these are likely to continue.

Advanced economies like the US and the European Union can rely on strong fundamentals and policy measures that are expected to support solid economic growth through 2022.

On the other hand, emerging markets are showing uneven profiles. Some commodity-exporting countries like Russia, Brazil, and Mexico are recovering swiftly, whereas for others the recovery will be tied to vaccine access.

As of October 2021, China was showing robust growth for 2021 and 2022, even if recent concerns have been raised about its real estate and financial sectors.

### ***Natural gas prices have surged to all-time highs***

Natural gas prices have soared in recent months, with spot prices in Europe and Asia reaching record highs driven by rebounding demand and stagnant supply.

This is due to booming demand for energy which has risen alongside the economic recovery, and has not been met by supply, driving prices upwards.

Additionally, electricity production from renewable sources did not meet expectations in several countries in the first nine months of 2021.

For example, Brazil was forced to switch from hydro to gas for power generation due to drought conditions. In northern Europe, low wind speeds caused lower electricity generation from wind turbines. In China, flooding and other adverse weather events have reduced coal production.

### ***International freight disruptions persist and inflation is rising***

Covid-19 related disruptions in the shipping industry have raised transit times and freight costs. Mismatches in supply chains because of strong demand for manufactured products have meant that some supply chains are heavily disrupted.

Shipping costs are assumed to remain elevated throughout 2021 and into 2022, which will affect commodity markets.

Consumer price inflation picked up in many countries in the months leading up to November 2021. Annual inflation has risen to over 5% in the US but remains at slightly lower rates in many other advanced economies, particularly in Europe. In Brazil, high energy and food prices have driven inflation.

### ***Government decisions that affect global trade flows***

Many countries have responded to supply chain disruptions and an inflationary economic environment with policies that may impact global trade flows of fertilizers.

In October 2021, China froze its exports of fertilizers, Turkey had set export restrictions on DAP and NPK fertilizers, and Vietnam had set a 6% import duty on DAP.

In November 2021, Russia moved ahead with a six-month export quota on N & P fertilizers, and Egypt halted N exports unless cleared by the Ministry of Agriculture.

## SHORT-TERM FERTILIZER DEMAND

### ***Global fertilizer demand jumped by 6% in 2020/21***

Global fertilizer use (N + P<sub>2</sub>O<sub>5</sub> + K<sub>2</sub>O) was estimated at 203.8 Mt of nutrients in fertilizer year 2020/21, almost 12 Mt (6.3%) higher than in 2019/20. This is the largest annual expansion in mineral fertilizer use since 2009/10.

Demand for nitrogen, which accounts for over half of global fertilizer use, increased by 5.0% (5.5 Mt) to 113.7 Mt. Demand for phosphorous rose by 6.8% (3.1 Mt), reaching 49.7 Mt. Demand for potash jumped by 9.1% (3.4 Mt) to 40.4 Mt. The growth in potash use was particularly strong after a decline in 2018/19 (-0.9%) and stagnation (-0.2%) in 2019/20.

A combination of several factors explains the substantial increase in global demand for mineral nutrients in 2020/21: higher crop prices, favorable ratios between fertilizer prices and crop prices, adequate weather in key consuming countries and increased government support to agriculture.

In addition, anecdotal evidence suggests that some farmers purchased fertilizers earlier than usual in 2020 as a precaution against potential delivery delays or further weakening of currencies. However, it is difficult to assess the extent to which these early purchases lifted sales in 2020/21, as these products may have been used in the following six months.

### ***A 3% reduction in global fertilizer demand is expected in 2021/22***

Based on IFA's network of country correspondents, global fertilizer demand is expected to contract by 3% (5.5 Mt nutrients) to 198.2 Mt in 2021/22. Demand is expected to drop for all three nutrients, with nitrogen (-2.1%) relatively less affected than phosphorous (-3.3%) and potash (-3.9%).

The main factor behind this expectation for lower demand is reduced fertilizer affordability. International prices of urea, DAP and MOP rose sharply between late 2020/early 2021 and October 2021, much faster than crop prices.

While prices of palm oil, wheat, cotton and sugar increased until September-October 2021, cereal and soybean prices peaked earlier, in mid-2021. As a result, affordability of urea and DAP relative to grains, and MOP relative to soybeans decreased. Affordability of MOP relative to palm oil did not decrease as significantly due to continued growth in palm oil prices.

Despite lower fertilizer affordability, as of late October 2021 crop prices remained much higher than in previous years. In addition, grain profitability from the previous harvest was projected significantly up in many countries.

Furthermore, some governments had provided additional subsidies to farmers to support purchases in the face of higher fertilizer prices.

Preliminary estimates from the USDA suggest that global area planted to maize, wheat and rice continued to increase in the 2021/22 crop market year, albeit at a slower rate than in the previous year. However, area planted to other cereals (mostly barley, sorghum, millet, oats and rye) contracted by 6% after an 8% jump in 2020/21. Global soybean area was estimated 3% higher over the same period.

Significant uncertainty regarding trends in fertilizer affordability, fertilizer availability, and government policies in late 2021 and the first half of 2022 have the potential to alter the 2021/22 global fertilizer demand expectations.

### ***Global fertilizer demand to recover in 2022/23***

IFA's short-term fertilizer demand outlook is based on a survey of country correspondents, conducted in September-October 2021. Most correspondents highlighted the difficulty in forecasting 2022/23 fertilizer demand given the current uncertainty regarding crop prices, fertilizer affordability and fertilizer availability.

Fears of nitrogen shortages in the second half of 2021 were driven by production cuts at some plants, related to soaring gas prices, and other factors disrupting fertilizer supply.

Many country correspondents assumed that after the expected drop in fertilizer year 2021/22, demand fundamentals would improve in 2022/23. Accordingly, a 3% recovery in global fertilizer demand is forecast, rebounding from a 3% decline. Global demand is forecast to rise to 203.6 Mt, broadly equal to the 2020/21 level. Nutrient demand for nitrogen is expected to rise by 2% to 114 Mt, demand for phosphorous by 3% to 49.5 Mt and potash demand by 4% to 40.3 Mt.

IFA's fertilizer demand outlook for 2021/22 and 2022/23 has changed significantly since July 2021 (see IFA Medium-Term Fertilizer Outlook 2021-2025). This change is directly linked to the increase in fertilizer prices between forecasts, coupled with rising fears about fertilizer shortages. In July 2021, slight increases in fertilizer use were expected in both 2021/22 and 2022/23.

Among the various uncertainties that surround short-term fertilizer demand expectations, fertilizer affordability and fertilizer availability were cited by correspondents as the most significant ones at the time this report was written in November 2021.

However, crop price variations, government policies, and unexpected weather issues will also influence the 2022/23 fertilizer demand outlook. One important question is whether established fertilizer subsidies to farmers will continue under the same conditions.

#### ***IFA's methodology to develop fertilizer demand forecasts***

IFA's fertilizer demand outlook is primarily based on a survey of country correspondents, combined with an analysis of preliminary supply and use data, and expert judgement. The correspondents who answered this survey represent 40 countries, accounting for 90% of global consumption.

#### **Global Mineral Fertilizer Demand (Mt nutrients)**

	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	Total
2018/19	105.6	45.5	37.1	188.2
2019/20	108.2	46.5	37.0	191.8
2020/21 (f)	113.7	49.7	40.4	203.8
<i>Change</i>	<i>+5.0%</i>	<i>+6.8%</i>	<i>+9.1%</i>	<i>+6.3%</i>
2021/22 (f)	111.3	48.0	38.9	198.2
<i>Change</i>	<i>-2.1%</i>	<i>-3.3%</i>	<i>-3.9%</i>	<i>-2.7%</i>
2022/23 (f)	114.0	49.5	40.3	203.9
<i>Change</i>	<i>+2.4%</i>	<i>+3.1%</i>	<i>+3.8%</i>	<i>+2.9%</i>

(f) Forecast

## FERTILIZER SUPPLY

### ***Raw material price increases and physical disruptions impact fertilizer supply in 2021***

The supply of fertilizers in 2021 can be characterized by availability concerns, on the back of physical disruptions and high raw material prices.

As a result, a number of countries increased their self-sufficiency efforts in the second half of the year and placed trade restrictions on agricultural inputs in anticipation of potential shortages. For example, China, Russia, Egypt and Turkey have all recently placed export restrictions on fertilizers in order to secure enough supply for the domestic market.

### ***Recap on 2020: An exceptional year***

Every major fertilizer product saw higher levels of production and trade in 2020. This was supported by governments designating fertilizers as essential goods throughout Covid-19 lockdowns, but it was also in response to strong fertilizer demand amid buoyant crop markets.

### ***Despite improved capability, global availability has been constrained in 2021***

In 2021 a number of supply disruptors emerged across the major fertilizer markets.



As a result, the sum total of urea, ammoniated phosphates and potash production in 2021 is estimated to be lower than in 2020.

The same trend applies to trade, with the exception of potash which is expected to reach record levels in 2021 on the back of strong demand and as a function of the potash market's heavy reliance on traded supply.

As a result, it is not just fertilizer affordability which has posed a challenge to farmers in 2021. Fertilizer availability has also caused concern, given the widespread nature of supply disruptions.

These various disruptions to fertilizer supply, across all of the major product groups and in a variety of locations, have prompted fertilizer prices to increase rapidly in the last six months.

These supply disruptions can be split into three main categories: physical, economic, and geopolitical.

#### ***Physical disruptions hit US nitrogen and phosphates production***

A number of weather-related events in the late summer caused temporary outages at fertilizer plants. This was concentrated in the US Gulf region, where a series of strong hurricanes caused nitrogen and phosphate producers to shut their plants for several weeks.

#### ***Economic disruptions impact nitrogen production in Europe***

Economic disruption has been most severe in the nitrogen market. A tight energy market has led to soaring energy prices, with the situation being particularly challenging in Europe where prices reached all-time highs in Q3 2021.

Compared to the annual average European gas price in 2020, which was \$3.2 per MMBtu, regional production costs have increased exponentially, rising above \$20 per MMBtu in recent months.

Nitrogen production costs have also rapidly increased in China, where coal is the major feedstock.

Producers in both parts of the world have been forced to reduce production on economic grounds.

For nitrogen fertilizers, this has a direct impact on production costs given the energy-intensive nature of production, but the severity of the situation has also begun to spread to other fertilizer markets such as phosphates, which use energy-derived products - ammonia and sulphur - as raw materials.

#### ***Geopolitical disruption looms over the potash market***

The fertilizer market has also been impacted by geopolitical disruptions in 2021. In general, global trade of agricultural commodities remains far more liberalized than in the past.

However, several recent government decisions have affected fertilizer trade, from countries limiting exports to protect domestic supplies (such as in China, Russia and Turkey), to political tensions leading to trade measures.

One of the most significant geopolitical disruptions in the fertilizer market in 2021 has been sanctions on Belarus. In June 2021, the European Union agreed to impose sanctions on specific sectors of the Belarusian economy, namely, oil, tobacco and potash.

Around 10% of Belarus' MOP exports have been sent directly to EU countries in recent years, although the sanctions have wider implications because most non-EU exports from Belarus transit through the port of Klaipeda in Lithuania to reach the Baltic Sea.

Tighter sanctions from the US also pose a risk to Belarusian potash supply, especially if they impact the ability to accept financial payments in US dollars from other countries.

There is a risk that any escalation of the sanctions could threaten global supply of potash and in turn, food security.

## Nitrogen Outlook

### ***Nitrogen availability hampered by high energy prices and export restrictions***

Global ammonia production is estimated to fall to 180 Mt in 2021, a 3% decrease on 2020 production. This is driven by a number of supply disruptions in 2021 as outlined above. These supply challenges in 2021 are estimated to push global production below 2019 levels. The same trend applies to urea, with production falling to 176.8 Mt in 2021.

Nitrogen trade is also forecast to be impacted, with global urea trade expected to contract by almost 1.5 Mt in 2021.

Ammonia trade, which is more heavily influenced by industrial consumption, is forecast to recover to almost 19 Mt in 2021 but will stay below the previous peak in 2018 (20 Mt).

### ***An additional 4.0 Mt N nitrogen capacity is forecast in 2022***

Ammonia capacity is forecast to approach 190 million nutrient tonnes by 2022. This is driven by capacity additions in two core groups of countries.

The first is export-orientated projects in countries such as Nigeria and Brunei. The second is import-replacement projects, for which India is the leader with 1.8 million nutrient tonnes of capacity forecast to commission in 2022.

In 2020, ammonia capacity totaled 181.5 Mt N, which reflected a 0.5 Mt N decrease on 2019 capacity. This was driven by closures in China more than offsetting limited new capacity elsewhere.

In 2021, ammonia capacity is estimated to reach 185.2 Mt N, as a number of new plants commission, primarily in India, Nigeria and Russia.

A further 3.9 Mt N ammonia capacity is forecast to start up in 2022, taking the total to 189.1 Mt N. The majority of this ammonia will be upgraded to urea, with total capacity estimated to increase from 201.2 Mt in 2020 to 217.9 Mt in 2021 and forecast to grow to 224.5 Mt in 2022.

There are 18 nitrogen projects forecast to commission in 2021 and 2022, which represents a significant volume of new capacity following a quiet year for plant startups in 2020. New capacity in 2021 and 2022 is forecast to total 9.3 Mt ammonia and 14.3 Mt urea.

## Phosphate Outlook

### ***Phosphate production stable while traded markets diverge***

Global phosphate rock production is forecast to increase by 4 Mt in 2021, a 2% year-on-year growth. This follows the five-year period starting in 2017 when global production hovered between 205 and 208 Mt per year.

Global phosphoric acid production is forecast to increase modestly to 47 Mt in 2021, up by ~300 kt from 2020. The largest growth in production is expected in China which had lower output in 2020 due to Covid-19. This offsets lower production expected in the Americas.

Global MAP and DAP production are both expected to remain flat year-on-year in 2021, however, trade volumes of each product will be dictated by the major end markets.

MAP trade is forecast to increase in 2021, driven primarily by Brazilian import demand. DAP trade is forecast to contract in 2021, driven primarily by lower imports in India.

### ***An additional 1.4 Mt P<sub>2</sub>O<sub>5</sub> PA capacity is forecast in 2022***

In 2020, phosphoric acid capacity totaled 59.3 Mt P<sub>2</sub>O<sub>5</sub>. This was broadly stable in 2021, increasing modestly to 59.5 Mt P<sub>2</sub>O<sub>5</sub>.

The 0.2 Mt growth in 2021 is a function of small expansions, but a lack of significant project startups.

An additional 1.5 million nutrient tonnes of phosphoric acid capacity is forecast to commission between 2020 and 2022. This new capacity comes from expansions in Russia and Kazakhstan, as well as in Tunisia and China.

Most of the new projects forecast to commission in the short-term outlook are forecast to start in 2022. Three projects, in Russia, Morocco and Tunisia, are forecast to add 805 kt of new phosphoric acid capacity in P<sub>2</sub>O<sub>5</sub>. The same projects are forecast to add 3.8 Mt of processed phosphates capacity in product tonnes.

As a result, global phosphoric acid capacity is forecast to grow to 60.9 Mt P<sub>2</sub>O<sub>5</sub> in 2022. This remains below the levels seen in 2018 prior to Chinese capacity closures.

## Potash Outlook

### ***Record potash volumes led by demand growth in Americas and Southeast Asia***

The potash market is an exception to the trend of lower fertilizer supply in 2021.

Production and trade are both forecast to grow year-on-year in 2021 to meet record fertilizer demand.

However, the introduction of sanctions on Belarus poses a significant risk to the potash market going forwards, as outlined earlier.

### ***An additional 1.6 Mt K<sub>2</sub>O potash capacity is forecast in 2022***

Potash capacity additions are forecast to total 3.1 million nutrient tonnes between 2020 and 2022, primarily stemming from expansions in the Eastern Europe and Central Asia region. These projects will increase global potash capacity to almost 66 million nutrient tonnes.

Global potash capacity totaled 62.6 Mt K<sub>2</sub>O in 2020 and is expected to reach 64.1 Mt K<sub>2</sub>O by the end of 2021. The growth in 2021 is driven by new capacity in Belarus, Russia, Laos and China. This offsets a small decline in potash capacity in Germany.

Further expansions are forecast in 2022, centered in Russia - which is home to the largest project in the forecast - with smaller expansions in Canada and Jordan.

These projects are forecast to take global potash capacity to 65.7 Mt K<sub>2</sub>O in 2022, representing total growth of 3.1 Mt K<sub>2</sub>O between 2020 and 2022.





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