

# Argus White Paper: Russia – Production growth signals higher exports

## Introduction

Fertilizer exports from Russia, a leading producer and already a top-five supplier to the international market, are set to accelerate as production capacity expansions over the next eight years outpace growth in domestic consumption.

Leading the way will be exports of urea and NPKs, with plant upgrades and expansions driving up production to meet international demand, and with Russian producers' direct access to phosphate rock leaving them well positioned to tap the growing global market for NPKs.

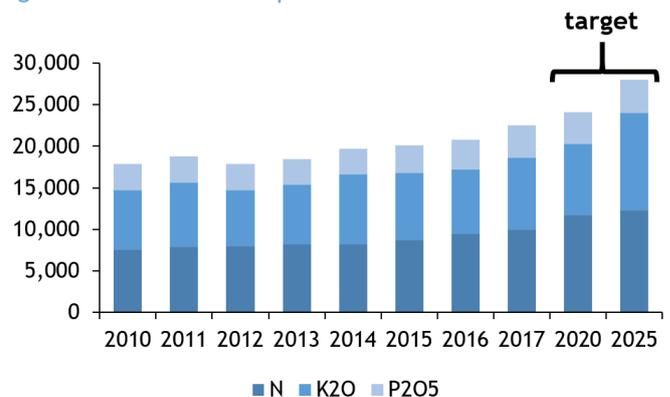
Overall fertilizer production posted a 3.35pc compound annual growth rate (CAGR) in Russia in the seven years to 2017, leaving it at 22.5mn t on a nutrient basis last year, according to Russia's Federal State Statistics Service, with the bulk of this already exported.

A fertilizer industry development plan adopted by the Russian government in late March calls for a 5.5mn t increase (2.76pc CAGR) in output by 2025 compared with 2017, signaling further export growth.

The government expects nitrogen fertilizer production to hit 12.3mn t by 2025 from 10mn t last year. Phosphates (P2O5) and potash (K2O) production are expected to total 4mn t and 11.7mn t in 2025, up from 3.9mn t and 8.6mn t in 2017, respectively.

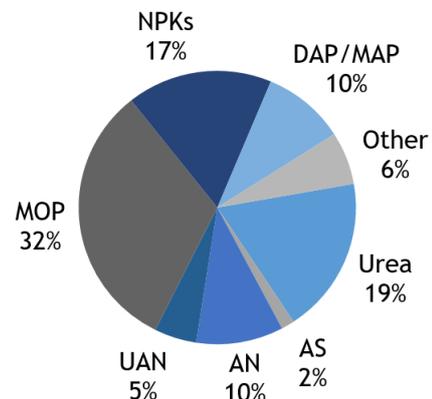
Growing output over the past seven years has led to higher exports by Russian companies. Chemical fertilizer exports rose by 3.02pc CAGR in 2010-17 to 34.3mn t. MOP accounted for 32pc of Russia's exports last year. The share of urea and AN in total exports was 19pc and 10pc, respectively. NPKs and DAP/ MAP made up 17pc and 10pc of exports.

Figure 1: Russian fertilizer production '000



Source: Russia's Federal State Statistics Service, Fertilizer Industry Development Plan to 2025

Figure 2: Russian fertilizer exports 2017



Source: GTIS

### Urea: Substantial expansion

Urea production has been growing steadily in Russia over the past seven years thanks to the modernisation of existing facilities and the start-up of new production units. Russian companies launched two prilled urea and three granular urea units in 2010-17. Eurochem commissioned its second granular urea line in Novomoskovsk in 2010. Phosagro launched a 495,000 t/yr prilled urea unit and a 500,000 t/yr granular urea unit in Cherepovets in 2012 and 2017, respectively. Acron started up a 335,000 t/yr prilled urea unit at its Veliky Novgorod facility in 2012. A new 717,000 t/yr granular urea plant, Ammoni, was commissioned at Mendeleyevsk in 2015 near the existing AN production site.

Most Russian urea plants have been operating at close to capacity or slightly above over the past seven years. But Togliattiazot used only one of its two 480,000 t/yr prilled urea units up to 2017. The company resumed production on the second production line last year. As a result, output reached 720,200t, the highest in the past six years, up from 552,200t in 2016.

Russian companies plan to substantially expand urea capacities in the coming years. Acron expects to finalise the construction of a 600 t/d sixth urea unit at the Veliky Novgorod site in summer 2018 and is upgrading its existing production lines. The overall capacity of the plant is set to reach 3,650 t/d as a result. Methanol producer Metafrax this year started to build an ammonia-urea-melamine complex with the capacity to produce 562,000 t/yr of urea at Gubakha, in Perm Krai. Togliattiazot has attracted a loan this year to build a third urea unit with a capacity of 2,200 t/d; the plant is scheduled to be commissioned in 2020. Uralchem aims to complete the modernisation of its Perm plant in 2019, adding 254,000 t/yr to its capacity. Eurochem is also expanding urea production at its Nevinnomyssk plant. New units and the upgrades at existing plants are expected to add over 1.8mn t/yr to Russia's urea capacity by 2025.

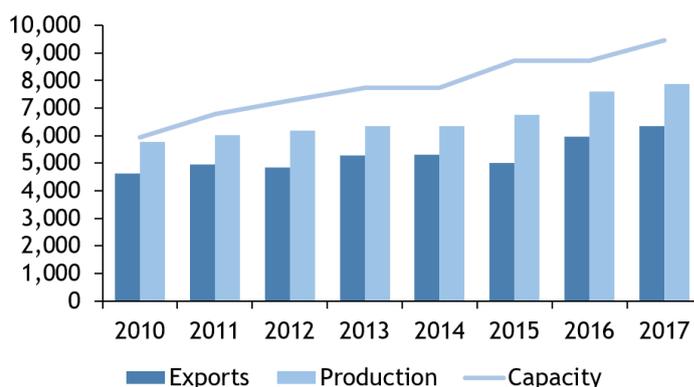
Table 1: Russian urea projects

Company	Target start-up date	Capacity, mn t/yr
Acron	2018	0.2
Metafrax	2020	0.6
Togliattiazot	2020	0.8

A number of other urea projects have been floated in Russia in recent years, but financing arrangements have not been completed yet. For example, Kuibyshevazot announced a joint venture with Maire Tecnimont for the development of a 1,500 t/d greenfield urea project in Togliatti in July 2017. Ammoni is also considering a second-phase project, Ammoni-2, with an initial agreement signed in February 2016 with various participants including Russian oil company Tatneft.

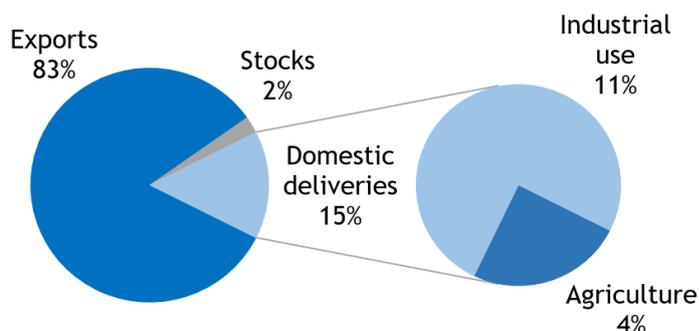
Higher production following capacity additions will boost Russian urea exports. Farmer demand for urea is growing in Russia, but remains very low compared with AN: shipments of urea to local farmers amounted to just 293,500t last year against 223,700t in 2016, according to the Russian Fertilizer Producers Association (RAPU). Deliveries to industrial buyers have also demonstrated slow growth: shipments increased to 895,500t in 2017 from 887,300t in 2016.

Figure 3: Russian urea production and exports '000t



Source: GTIS, Azotecon

Figure 4: Export share of urea production 2017



Source: RAPU

### AN: Domestic demand

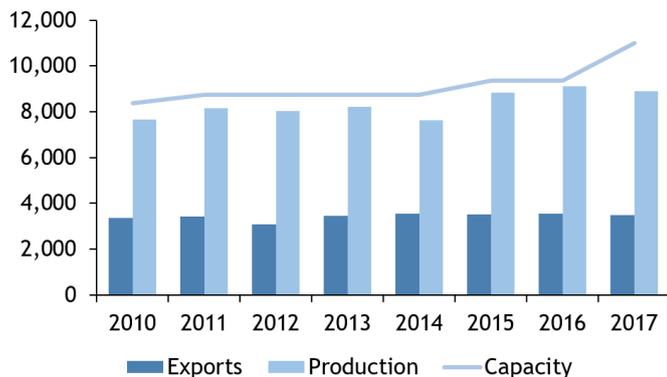
AN production has been relatively stable in Russia in recent years because of a lack of spare capacities. Most plants have been running at close to full capacity or above. But output has been slightly lower than nominal capacities, as production lines at some facilities are used both for making straight AN, and AN modifications, including CAN and SAN. In 2015, AN capacities grew by 7pc to 9.4mn t following upgrades at several Russian plants. As a result, production increased to 8.8mn t in 2015 and 9.1mn t in 2016.

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There are few greenfield AN projects in Russia as producers prefer to expand urea capacities because of better export opportunities. Caprolactam producer Shchekinoazot announced that it would commission a 340,000 t/yr AN plant at Shchekino, Tula region, in 2021. Other companies aim to expand AN capacities by upgrading existing units. Acron, for example, plans to add 500,000 t/yr to its AN capacity at Veliky Novgorod by building three nitric acid units and upgrading AN units.

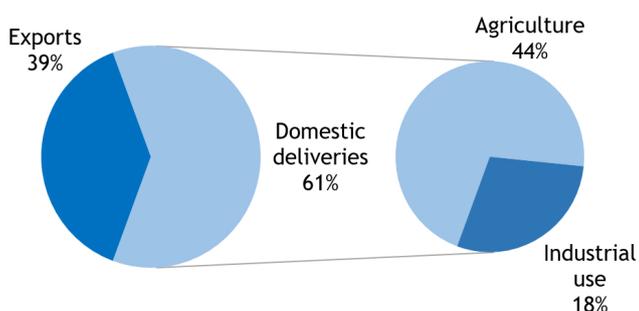
Unlike other nitrogen fertilizers, AN produced in Russia is used mainly domestically. Domestic consumption accounted for 61pc of AN output in 2017, according to RAPU, while exports totalled only 39pc. Farmer demand fell to 3.8mn t last year after reaching a record high of 4.2mn t in 2016. Industrial buyers purchased 1.6mn t of AN, mainly for producing commercial explosives, in 2017, up from 1.4mn t in 2016. Domestic AN shipments are expected to remain relatively stable in the medium term, as farmers will be diversifying nitrogen fertilizer consumption by using other products, particularly UAN and ammonium sulphate (amsul).

Figure 5: Russian AN production and exports '000t



Source: GTIS, Azotecon

Figure 6: Export share of AN production 2017



Source: RAPU

### UAN: Past its peak?

Eurochem and Acron are major UAN producers and exporters in Russia with a capacity to make 1.48mn t/yr and 1.29mn t/yr of product, respectively. UAN capacities grew by over 600,000t in 2010-17 through upgrades at existing facilities. Acron aims to further increase UAN capacity at its Veliky Novgorod site to 1.4mn t/yr by the end of 2018 following the commissioning of a sixth urea unit at the plant.

Russian UAN production has also been growing steadily thanks to increasing demand from overseas buyers. UAN output peaked at 2.4mn t in 2016, but fell to 2.1mn t last year as producers cut back production amid less favourable market conditions.

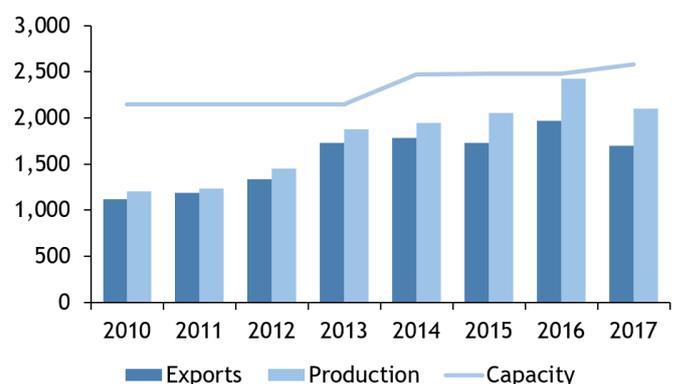
Until recently, UAN has been an export-oriented product, with exports accounting for over 90pc of production. The US has traditionally been the biggest recipient of Russian UAN. Shipments to the US accounted for 76pc of exports in 2017, followed by Ukraine and France with 9pc and 8pc, respectively.

But distributors and farmers in Russia began to invest in infrastructure for UAN transportation, storage and application in the past 2-3 years. This has led to an increase in domestic consumption. Deliveries of UAN to Russian farmers totalled 420,000t in 2017, up from around 350,000t in 2016.

Eurochem accounted for 91.6pc of domestic UAN sales in 2017, which reflects the company's marketing strategy aimed at developing UAN consumption in Russia. The producer's 1.02mn t/yr Nevinnomysk plant is located in the south of the country, which is a major agricultural area, and UAN from this facility is shipped to local farmers mainly on trucks.

Some fertilizer producers in Russia make UAN exclusively for the domestic market. Kuibyshevazot has been producing small quantities of UAN at its 200,000 t/yr unit for local farmers. SBU Azot also launched a 150,000 t/yr UAN facility in Kemerovo late last year to meet demand from Russian consumers.

Figure 7: Russian UAN production and exports '000t



Source: GTIS, Azotecon

### Amsul: Neighbouring markets

Amsul is made as a by-product of caprolactam and steel production in Russia. Caprolactam producers, Kuibyshevazot, SBU Azot and Shchekinoazot, make 850,000-950,000 t/yr of capro-grade amsul. Local steel mills and coke plants produce smaller quantities of steel-grade amsul. Fertilizer producer Phosagro will commission the first-ever synthetic amsul unit in Russia with a capacity of 300,000 t/yr by the end of 2019 to cover its requirements in raw material.

Amsul has traditionally been an export-oriented product in Russia, but this has changed over the past six years. Only 37pc (346,000t) of capro-grade amsul output was shipped abroad in 2017, while exports accounted for 83pc (783,000t) of production in 2011. Similarly, steel-grade amsul exports declined to 81,000t in 2017 from 269,000t in 2011.

Russian amsul producers have replaced offshore exports by shipments to neighbouring markets over the past five years. Turkey and Brazil used to be major export destinations for Russian capro-grade product. Shipments to these countries reached 486,000t in 2012 and accounted for 93pc of total exports. By 2017, Ukraine was the biggest recipient of Russian capro-grade amsul, with 232,000t (98pc of total exports) delivered from Russia both for direct application and as a raw material for local compaction units. But Russian producers might have to increase offshore exports in 2018 as the Ukrainian government introduced a ban on imports of amsul from Russia, effective 1 March 2018. The ban will remain in force until the end of the year but might be extended.

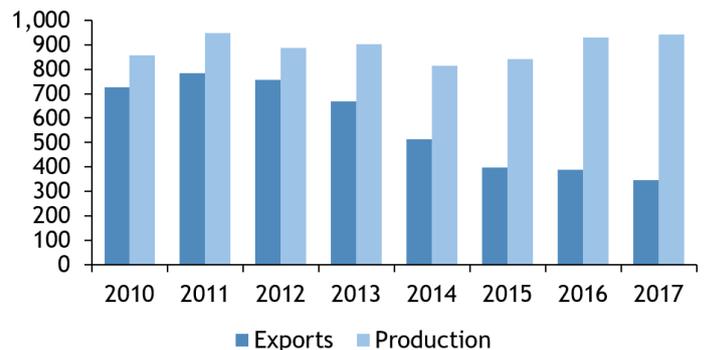
Domestic amsul consumption has been growing in Russia thanks to higher demand from local farmers and NPK producers that use amsul as a raw material. Phosagro is the biggest industrial buyer of both capro-grade and steel-grade amsul in Russia. The company uses amsul for NPK production at its Cherepovets and Volkhov plants.

Russian capro-grade amsul producers started to invest in compaction facilities from the early 2010s to meet demand for granular product from local farmers. Kuibyshevazot launched the first-ever amsul compaction unit in Russia with a capacity of 90,000 t/yr in 2012. In 2015, the producer set up a joint venture with Trammo to build Granifert — a 140,000 t/yr amsul compaction facility at its production complex in Togliatti. The start-up of Granifert was scheduled for 2017, but was delayed until February this year. Another Russian capro-grade amsul supplier, Shchekinoazot, started up a 160,000 t/yr compaction unit in June 2017.

Russian companies that do not have their own supply of amsul also launched a number of compaction units in 2016-17. Many of them produce granular amsul during the high season in

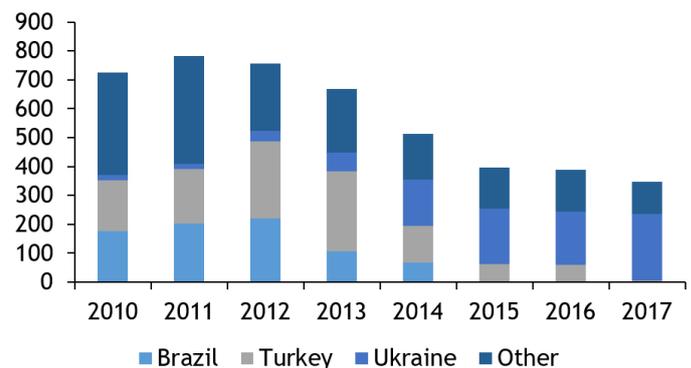
the domestic market and switch to MOP and NPK compaction when demand is low. Ultramar, which operates a 150,000 t/yr compaction unit in Shushary close to the port of St Petersburg, is the only active exporter of granular amsul.

Figure 8: Russian capro-grade amsul production and exports '000t



Source: GTIS, Azotecon

Figure 9: Capro-grade amsul exports by destination '000t



Source: GTIS

### MAP/DAP: Growing again

The Russian finished phosphates industry is characterised by a high degree of concentration, with a limited number of companies accounting for the majority of production and exports. Suppliers with direct access to raw material, Phosagro and Eurochem, dominate the market. Uralchem's Voskresensk plant has to buy in phosphate rock and produces only small quantities of MAP.

MAP/DAP production has been growing in Russia over the past three years, following a decline in 2012-14 driven mainly by Phosagro's exit from the Indian DAP market because of low returns. MAP/DAP output totalled 4.3mn t in 2017, up from 4mn t in 2016. Phosagro accounted for 70pc of output last year,

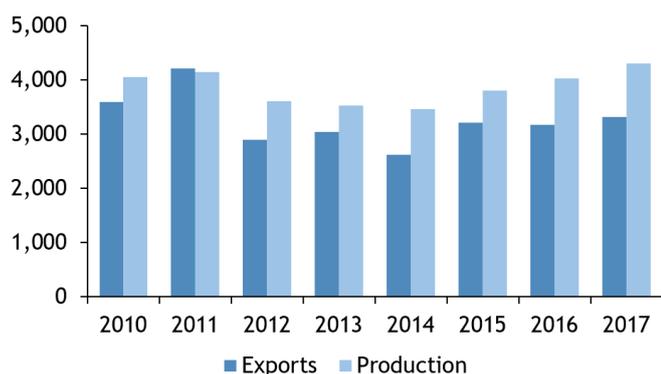
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followed by Eurochem with 28pc. MAP made up 72pc of phosphates production in 2017, while the share of DAP was 28pc.

Exports of DAP/MAP were little changed in 2017 at 3.3mn t, compared with 3.2mn t in 2016. Almost the entire output of DAP was exported from Russia while domestic consumers have been traditionally applying MAP.

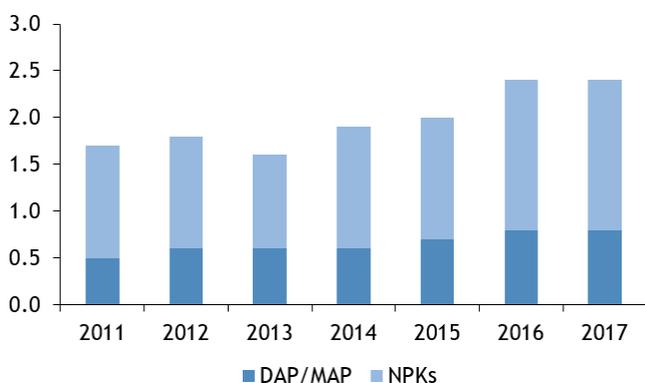
MAP is the second most popular fertilizer in Russia after AN. Domestic consumption increased significantly to 836,000t in 2016 from 656,000t in 2015 and stabilised at 839,000t last year. Deliveries to Russian farmers constituted 19pc of total MAP/DAP production in 2017. Phosagro remained the largest supplier of phosphates to the domestic market, with the market share estimated at 80pc in 2017 against 75pc in 2016.

Figure 10: MAP/DAP production and exports '000t



Source: GTIS/Azotecon

Figure 11: Domestic demand for phosphates mn t



Source: RAPU

### NPKs: Dramatic growth

Most NPK suppliers in Russia produce not only NPKs, but also straight fertilizers. Some companies, such as Phosagro, have flexible production lines that enable them to be used for making NPKs and other phosphate fertilizers depending on the market environment. Major producers manufacture NPKs through chemical granulation, using either sulphuric acid or nitric acid to treat phosphate rock.

Russian plants have a relatively simple product range, with 16-16-16, 15-15-15 and 10-26-26 remaining the most popular products. The Russian industry has built up global demand for its 16-16-16, much of which is used by purchasers as raw material for making other NPK products to sell in local markets.

Major NPK producers in Russia have direct access to raw material. Acron built its own apatite mine in the Kola peninsula to become self-sufficient in phosphate rock, and three of the country's big NPK producers, Phosagro, Eurochem and Acron, now control sources of phosphate raw material. Rossosh and Uralchem have to buy in phosphate rock.

As capacity additions depend on phosphate rock availability, companies with growing phosphate rock production, Phosagro and Acron, have been expanding NPK capacities over recent years. Phosagro, which is in the best position for apatite supplies, increased its NPK capacities at the Cherepovets site to 2.6mn t in 2017 from 1.2mn t in 2010. Acron started the overhaul at its NPK units at Veliky Novgorod and Dorogobuzh in 2016, which will boost the company's NPK capacity to over 2.3mn t/yr from 1.8mn t/yr by the fourth quarter of 2019. Acron has also announced plans to build a 1mn t/yr NPK/DAP/MAP plant at its Dorogobuzh site in 2017-21. Eurochem is also expected to expand NPK production at its Nevinnomyssk site in the coming years.

Production of NPKs in Russia rose by 14pc to 7.1mn t last year from 6.3mn t in 2016. Dramatic growth in NPK production is attributed to capacity expansions through debottlenecking at existing facilities. Production of bulk blends increased to 675,000t last year from 75,000t in 2016 as Acron started to make 33-1-1 blend to supply Ukraine as a substitute for straight AN, which is subject to anti-dumping duties.

Russian NPK production is largely oriented towards export markets. Producers ship far more NPKs abroad than they supply to their domestic market. Domestic consumption of NPKs remained flat at 1.579mn t in 2017 and accounted for 22pc of total output. Russian farmers buy mainly compound NPKs, especially 16-16-16 and 15-15-15, bulk blends are not widely used. Phosagro remained the biggest supplier of NPKs to Russian buyers in 2017 with a market share of 61pc, followed by Acron with 14pc and Rossosh with 12pc.

### MOP: Turbulent times

The past 10 years have been a turbulent time for the Russian potash industry, with the loss of two mines, changes of ownership, the break-up of a marketing alliance with Belaruskali, and the emergence of two new potential producers.

Despite global market conditions that strongly favoured expansion, the Russian industry barely managed to achieve a net capacity addition in 2005-17. The loss of two mines in Russia, the closure of Berezniki-1 in October 2006 and the partial flooding of Solikamsk-2 in November 2014 disguise the fact that there were some additions to capacity at the remaining sites.

Uralkali has been Russia's sole producer of MOP since 2011, when it completed the purchase of its competitor Silvinit. The company now controls five mines and seven refineries located at Berezniki and Solikamsk, in Perm Krai, where it exploits the Upper Kama potash mineral deposit. Production reached a high of 12.1mn t in 2014 but fell in 2015 and 2016. It was Uralkali's avowed intent some years ago to secure volume rather than price. In 2017, production grew to 12mn t again.

The various projects under construction in Russia will add a total of 9mn t/yr to the country's MOP capacity by 2025 and bring two new names into the international potash industry. Eurochem, a major producer of N and P fertilizers in Russia, is developing two potash projects, Usolsky and Volgakali, with an initial capacity of 4.6mn t/yr of MOP. Test MOP production at the Usolsky mine started in March 2018, merchant MOP production was expected to begin in the second quarter and production is forecast at 500,000t in 2018. First production of marketable potash at Eurochem's second mine, Volgakali, is scheduled for the summer of 2018, with output expected to total 140,000t in 2018. Acron is preparing to develop the Talitsky sector of the Upper Kama reserves with a 2mn t/yr MOP project, which could eventually be expanded to 2.6mn t/yr.

Russia exports over 80pc of domestically produced MOP. In 2017, exports reached 9.8mn t, while domestic deliveries totalled around 2.4mn t. NPK producers account for over 90pc of MOP consumption in Russia. The biggest buyers are Phosagro, Acron, Rossosh, Eurochem and Uralchem. The main supplier to industrial buyers in Russia is Uralkali, which shipped 2.39mn t of MOP last year. Additionally, Belaruskali supplied 94,000t of MOP to Phosagro's Cherepovets plant in 2017 and smaller volumes to buyers in other industries.

Sales of MOP for direct application in Russia are estimated to have reached 260,000-270,000t in 2017, up from around 210,000t in 2016. Belaruskali became the biggest supplier

of MOP to Russian farmers in 2017, with 200,000-210,000t of granular product shipped there. Deliveries from Uralkali totalled only 46,400t because of the limited availability of granular product, and competitive prices offered by Belaruskali thanks to a tariff advantage in the Central Federal District. The remaining tonnes were supplied to farmers by local compaction units. Farmer demand for MOP is expected to stabilise in the medium term, although a small downward correction might take place this year.

### Outlook

Russian fertilizer production will keep growing in the coming eight years against a backdrop of capacity expansions in all market segments. Domestic fertilizer consumption is also expected to grow, but to a lesser extent than production. This points to increased exports, particularly of urea, MOP and NPKs. Urea capacities are forecast to grow by over 1.8mn t/year in Russia by 2025 following the start-up of new units and the upgrades of existing plants. Potash projects under construction in Russia will add around 9mn t/year to MOP capacities. NPK capacities will increase thanks to debottlenecking and the projected launch of a new 1mn t/year NPK/DAP/MAP plant.

As for domestic demand, AN will continue to dominate the consumption structure in Russia in the coming years, although buying interest in other products, particularly UAN, amsul, and NPKs, will keep growing.

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