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A sustainable future

Written by
Stef Worsley, *Editor, Fertilizer Focus Magazine,*
Argus Media, UK

Welcome to the September/October 2024 edition of Fertilizer Focus! In this issue, we begin the third and final instalment from Michael Freeman on the history of modern fertilizers. In the first half of the 20th century, the most important development in fertilizer supply was the introduction of industrial processes for the large- scale manufacture of ammonia and nitrogen fertilizers, which meant that the mining and chemical industries could now meet the demand for all three primary nutrients.

We have a special focus section on "fertilizer sustainability". Firstly, Fertilizer Focus speaks with Bert Frost, Executive Vice President, Sales, Market Development and Supply Chain, at CF Industries about the strategies the company has employed to tackle the decarbonization of the fertilizer industry. He believes that, in the short-term, carbon capture and sequestration, where captured CO_2 emissions are injected into the ground as opposed to releasing it to the atmosphere, offers the quickest route to significant emissions reduction.

Meanwhile, SusPhos outlines their strategies in helping to create a sustainable future by transforming phosphate waste into a viable, alternative raw material, thereby assisting in providing alternative and sustainable phosphate products and reducing the scarcity of phosphorus.

Stamicarbon provides an insight into green ammonia. Lately, with carbon emission reduction strategies and legislations being adopted around the world, ammonia is getting a lot of attention. Ammonia can efficiently act as a green hydrogen carrier and also serve as a direct carbon-neutral fuel. Its combustion produces no CO_2 emissions, thereby eliminating the need to crack it back into hydrogen and avoiding respective energy losses.

There is also a supplement focus on the European fertilizer market. Fertilizers Europe talks about the growing risks of EU's dependency on Russian fertilizer imports. The EU is in the process of successfully decoupling its economy from Russian gas as a matter of European security and strategic autonomy. Although most of Europe managed to find new sources of gas to replace Russian supplies, Europe is deepening its dependency on Russian nitrogen fertilizers, which is gas in the solid form.

ECOFI writes about New EU Commission's focus on competitiveness and food security. With Ursula von der Leyen re- elected as President of the European Commission, the political landscape in the EU has shifted. While her 2019 agenda was heavily centred on environmental sustainability, her 2024 platform emphasizes competitiveness and food security, reflecting the evolving concerns of European citizens and policymakers.

Meanwhile, SEEFCO offers an insight into the challenges of importing fertilizers into Europe with a focus on the Port of Constanta.

Please also see the event preview for the Argus Fertilizer China 2024 conference, which returns to Shanghai, China, on 4-6 November.

I hope you enjoy the issue. ■

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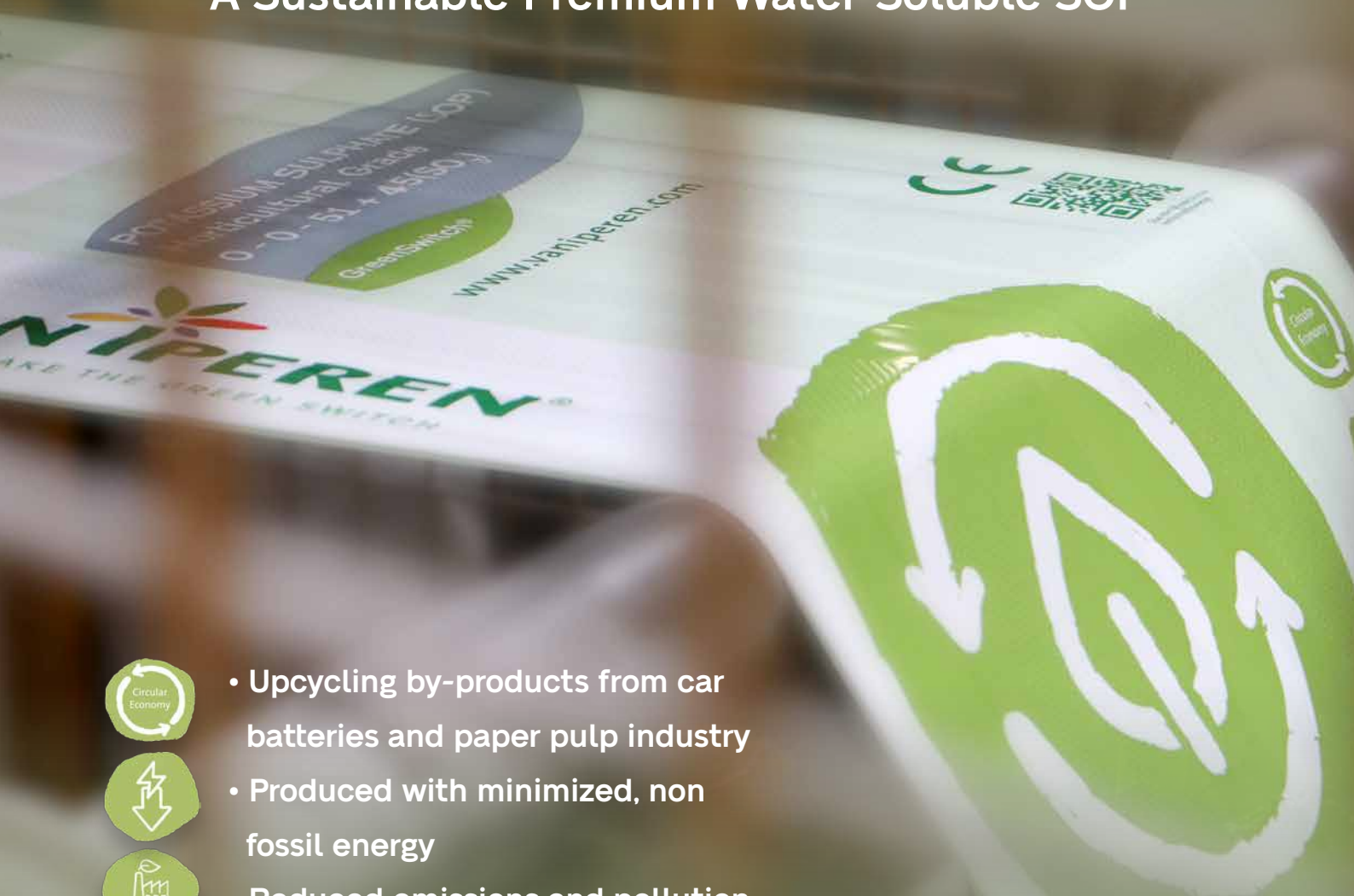

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History of the modern mineral fertilizer industry
Volume 3: 1950-2000 (Part 1)

The rise of nitrogen

This is the third and final volume of the history of the modern mineral fertilizer industry by Michael Freeman, which takes a look at the evolution of fertilizers over the past two centuries (Please refer to all editions of Fertilizer Focus in 2022 for volume 1 and editions in 2023/24 for volume 2).

The first volume of this series covered the 19th century, when the role of the nutrient elements in arable farming began to be understood. This period saw the emergence of an industry that manufactured phosphate fertilizers, in the form of single superphosphate, and of the phosphate rock mines that supplied its raw material. The creation of potash mines in Germany ensured the supply of fertilizers containing potassium. These two fertilizer nutrients were more important than nitrogen in the 19th century because there was no technology available at that time for the production of ammonia on an industrial scale.

By the end of the century the annual consumption of mineral fertilizer nutrients had climbed to reach 1.35 mn t, most of which was used in the countries of Europe and North America. This figure is a tiny fraction of today's nutrient consumption, but it does not include the substantial quantities of undocumented nutrients that were contained in natural materials such as farmyard manure, green crop residues, wastes from abattoirs and fish-processing plants, treated sewage and night soil, all of which had been significant inputs for farming.

In the first half of the 20th century, the most important development in fertilizer supply was the introduction of industrial processes for the large-scale manufacture of ammonia and nitrogen fertilizers, which meant that the mining and chemical industries could now meet the demand for all three primary nutrients. The use of mineral fertilizers in agriculture grew during the half century to reach 15 mn t in 1950, comprising 7 mn t P_2O_5 and 4 mn t each of K_2O and N. Around 80% of this total was consumed in Europe and North America; outside these regions, the two biggest fertilizer-using countries were Japan and the

USSR. The trend of growth during the five decades had been uneven, due to the impact of two world wars, and of the economic depression in the early 1930s.

Sporadic growth

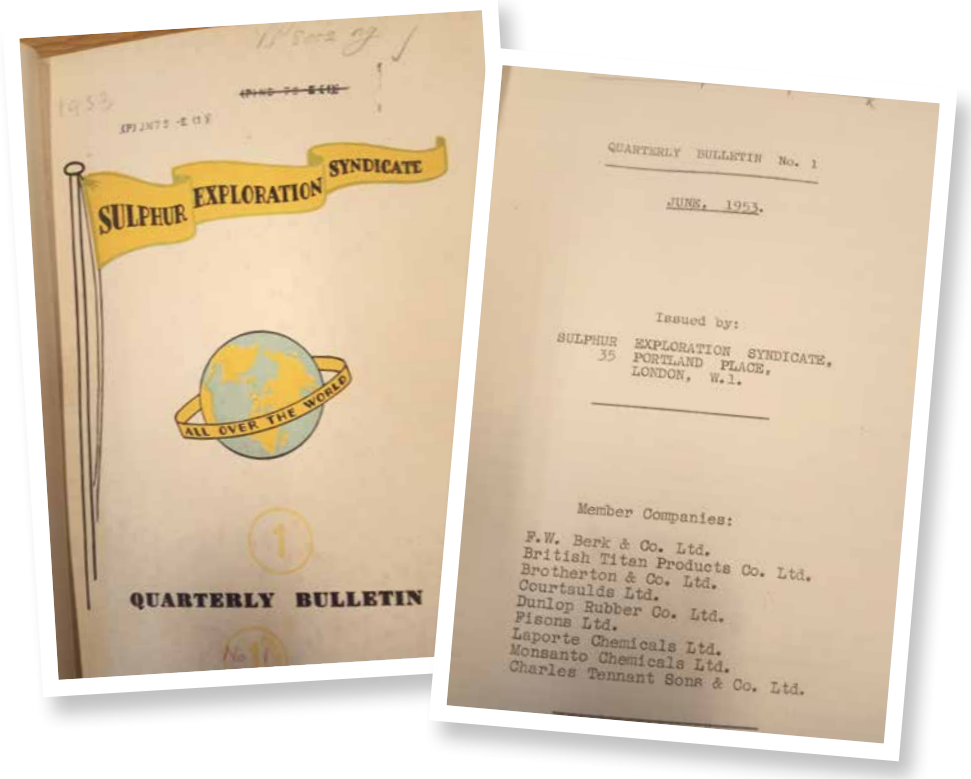
We will now look at some of the important developments that took place in the supply and use of mineral fertilizers in the five decades that made up the second half of the 20th century. Thanks to the efforts of the FAO and of ISMA (now IFA), the collection and publication of industry statistics was better organized than it had been in the earlier periods, making it possible to have an overview of the way in which nutrient demand, and hence by implication supply, grew over the fifty-year period. The table 1 provides snapshots of the consumption of mineral fertilizer nutrients at ten-year intervals between 1950 and 2000. It grew by a factor of ten over this period, equivalent to an annual compound rate of 4.5%. The biggest increase was in the use of nitrogen, both in annual growth (+6.2%) and in absolute terms (+78 mn t), to reach a position where nitrogen accounted for 60% of all primary nutrient use, displacing P_2O_5 and K_2O to 24% and 16% respectively of the world total in 2000. There was also a big change in the relative importance of the major regions as fertilizer consumers. Europe, which had been the largest consumer of nutrients in 1950, was displaced in 1980 by Asia which by 2000 was accounting for over one half (53%) of the world total. In 2000, southern global regions were consuming 65% of the nutrient total, compared with 11% in 1950, whereas the regions that had been more economically developed saw their relative share drop from 84% in 1950 to 32% in 2000. The former Soviet Union advanced its share from 5% in 1950 to 16% in 1990, but the collapse of central planning was then responsible for a sharp drop in its fertilizer use in the 1990s.

Table 1. Decennial totals for fertilizer nutrient consumption 1950-2000 (mn t)

	1950	1960	1970	1980	1990	2000
N	4.1	10.3	31.4	60.5	76.8	82.1
P_2O_5	6.6	10.1	20.9	31.9	35.9	32.8
K_2O	4.2	8.5	15.8	23.8	24.3	22.1
TOTAL	**14.9**	**28.8**	**68.1**	**116.2**	**137.0**	**136.9**
of which:						
Europe	7.2	13.3	23.6	29.8	24.9	19.5
FSU	0.7	2.6	11.0	19.6	22.3	3.9
Africa	0.3	0.8	1.6	3.3	3.6	3.9
N.America	4.8	7.8	16.4	23.4	20.7	21.3
L.America	0.3	0.8	2.9	7.4	8.0	12.8
Asia	1.0	3.3	11.1	31.0	56.0	72.3
Oceania	0.6	0.9	1.4	1.7	1.5	3.1

Source: FAO (1950, 1960), IFA (1970-2000)

Phosphate and potash used to be more important than nitrogen



In 1953 the Sulphur Exploration Syndicate (SES) began publishing a quarterly bulletin of news about sulphur

The Sulphur Exploration Syndicate was formed in 1951 to investigate new sources

Late 1940s

WWII had a negative impact on fertilizer supply and use in the countries of Europe and East Asia where the battlegrounds were, mainly because of the interruption to seaborne deliveries of raw materials, but also as a result of the diversion of ammonia to munitions manufacture. The destruction of some fertilizer factories was a contributing factor. When the war ended, the newly-founded United Nations set up the Food and Agriculture Organization (FAO) with the objective of improving the output of agriculture, forestry and fisheries to mitigate the threat of famine. The FAO started to collect data on fertilizer use and was able to identify that total world consumption of nutrients grew by 5.3 mn t over four years, a remarkable increase of 60% that took the total back up beyond the pre-war levels and set the stage for four decades of strong growth in fertilizer use around the world.

One of the consequences of the surge in fertilizer production was a shortage of sulphur, which was needed as a raw material for the sulphuric acid used in superphosphate manufacture. The US Frasch sulphur industry, which dominated world production, started to ration exports and this created problems for importers, who started to look for alternative supplies. Sulphur users in the UK formed the Sulphur Exploration Syndicate (SES) in 1951 to collect data and to investigate possible new sources. It turned out that this information was not needed at the time, as the jump in sulphur prices stimulated investment in new capacity. However, in 1953 the SES began publishing a quarterly bulletin of news about sulphur and this proved to be popular. These research activities were expanded by their new owners under the name British Sulphur Corporation Ltd (BSC) to cover nitrogen, phosphorus and potassium raw materials and products. BSC expanded into consultancy in the 1960s, a time when there was strong demand for this type of service from businesses interested in entering the fertilizer sector. Some of the BSC staff left to set up their own companies, giving rise to a clutch of fertilizer industry analysts located in and around the London area, one of which was FMB Consultants (who were responsible for starting this magazine - Fertilizer Focus) and they were acquired by Argus Media in 2011.

Borlaug, Dr Norman (1914-2009)

Born in the US state of Iowa to parents of Norwegian origin, Norman Borlaug was brought up on a farm where his experiences no doubt determined his choice of a career in agricultural science. He studied plant physiology and genetics for a doctorate at the University of Minnesota which he received in 1942. After a couple of years of research in the US, he was recruited to work at the International Maize and Wheat Improvement Center in Mexico, which was a project financed by the Rockefeller Foundation. During an extended stay in Mexico, Dr Borlaug developed improved varieties of wheat that were disease-resistant and gave better yields than the traditional ones. After some 13 years, a high-yielding variety (HYV) of wheat was distributed for planting in Mexico and was so successful that the country quickly became self-sufficient in this crop. Interest in the Institute's HYVs spread around the world and formed the basis of the Green Revolution, but Dr Borlaug insisted that it was about more than simply planting HYV seeds with plenty of fertilizer, and that other improvements to farming were necessary to get the best results. Dr Borlaug's work was recognised by the award of the Nobel Peace Prize in 1970.

Birth of the Green Revolution

Another development in the 1940s that contributed to the long-term expansion of fertilizer use was the creation by the Rockefeller Foundation of the International Wheat and Maize Improvement Center in Mexico, where the work of Dr Norman Borlaug resulted in the eventual creation of high-yielding seed varieties for these crops that responded very well to high levels of fertilizer application. Initially introduced in Mexico and over the next decades in other countries where they had a dramatic effect on yields – a development that was later described as the Green Revolution. ■

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News in brief

EUROPE

EU approves EUR122mn aid to Lithuania fertilizer project

The European Commission has approved a EUR122mn (USD132.4mn) Lithuanian state aid measure to assist fertilizer producer AB Achema to replace fossil-based hydrogen with renewable hydrogen.

The grant will support the installation of a 171MW alkaline electrolyser at the company's production facility in Lithuania's southern region of Kaunas.

The electrolyser is expected to start operating in 2026, and output will replace 30% of the hydrogen used by AB Achema which currently comes from natural gas.

Lithuania aims to achieve 1.3GW of electrolyser capacity by 2030, according to a revised hydrogen roadmap [approved by the government in April.

Poland's Azoty to import ammonia in 4Q

Grupa Azoty, Poland's largest fertilizer producer, has announced plans to expand its ammonia import capabilities, signalling intentions to reduce its natural gas consumption and potentially cutting some ammonia production in Poland.

Azoty said its interest in ammonia imports is part of a wider trend among European fertilizer manufacturers seeking to reduce their production costs and carbon footprint.

It expects to import ammonia cargoes from October after completing maintenance at its Baltic terminal at Police, where it also operates a plant producing NPK fertilizers.

Azoty has not yet said how much it plans to import, or how much production capacity it will cut. But its own ammonia output is a key cost in production of urea and fertilizers, it said. The company said its needs some 1bn m³ of natural gas to produce 1mn t of ammonia. It said Poland consumes around 3mn t/yr of ammonia, which translates into demand for 3bn m³/yr of natural gas feedstock, which could be gradually displaced if ammonia is imported. "Fertilizer producers will be gradually moving away from technologies using natural gas," Azoty said.

Azoty is Poland's largest natural gas consumer, ahead of oil and gas company Orlen, which also operates gas-fired power plants, and its Anwil fertilizer subsidiary. The EU's imports of ammonia stand at 1.9mn t this year, according to Azoty.

Azoty said it has 50,000t of ammonia storage capacity in Poland. It plans to add storage at Police as well as rail infrastructure to carry imported ammonia to plants in Poland.

Azoty is under pressure to turn around loss-making operations.

Regular import demand from Poland could trigger an upwards revision to fourth-quarter outlook for European ammonia prices. Delivered prices are at USD565/t cfr duty free/paid — the highest this year — supported by a shortage west of Suez, and a stretched fleet because of longer voyage times around the Cape of Good Hope.

Azoty has largely been out of the import market for the last 18 months. It most recently imported ammonia into Police in October 2023, buying 5,000t from Trinidad.

NORTH AMERICA

US grants USD35mn to boost fertilizer output

The US Department of Agriculture (USDA) has granted USD35mn to boost fertilizer production at seven projects, with the largest award going to chemicals producer AdvanSix.

AdvanSix will receive USD11.8mn under the Fertilizer Production Expansion Program (FPEP) to increase granular ammonium sulphate production in Hopewell, Virginia, by nearly 200,000 st/yr. The company in February said it planned to invest USD75mn to expand the plant and anticipated receiving some USDA funding.

Nitricity in Fremont, California, was awarded USD4mn to increase fossil fuel-free nitrate fertilizer production by 20,000 st/yr.

Nyrstar Tennessee Mines will receive USD9mn to help construct pelletizing plants at two zinc mining operations in the state to produce 370,000 st/yr of an agricultural lime additive.

Valley Fresh Foods in Oregon will get about USD4mn to produce 100mn st/yr of turn chicken litter into heat-pasturized fertilizer pellets.

Other projects included in the latest round of FPEP awards were located in Iowa, New York, and Wisconsin.

The FPEP has provided USD286.6mn to 64 projects throughout the country.

Chemtrade expects more ultra acid production in 2H24

Sulphuric acid producer and distributor Chemtrade expects to start up ultra-pure acid production at its Cairo, Ohio, USA, facility during the second half of 2024.

The initial volumes of production this year will be used for quality validation via the company's ultra-pure acid customers. Commercial ramp-up is expected to begin later in 2025, as further tests and quality validation will be conducted ahead of mass production.

The Cairo plant expansion is nearly complete and will increase total output at the facility by 60%, the company said during its second quarter earnings call.

Chemtrade noted that the North American acid market has normalized this year to a more balanced dynamic as consistent acid supply has largely kept pace with demand.

Lower selling prices of merchant and regen acid, which is used by refineries for gasoline alkylate production, were partially offset during the second quarter by higher sales volumes of regen acid, leading to a profit of USD14.6mn in 2024, compared with a profit of USD87.3mn the same time a year earlier.

Carolina Eastern joins ag distributor coalition

US fertilizer distributor Carolina Eastern to join Aligned Ag Distributors (AAD) ownership group in a move that the company expects will bolster its competitiveness in the nutrient space.

Carolina Eastern will join a group of about 12 other distributors in the US that work together to be cost efficient in providing crop protection products, fertilizer, and other crop inputs to customers across the country. The company will officially become an additional AAD owner on 1 October.

Joining AAD will strengthen Carolina Eastern's role as an independent agriculture retailer and make the company more competitive in the crop protection market, Carolina Eastern executive vice president Butch Rodgers said.

The distributor company offers crop nutrients and other agriculture services at 30 retail locations, largely based in South Carolina.

AAD offers combined negotiation and purchasing power to increase the success of local distributors.

Koch acquires OCI Iowa nitrogen plant

Global fertilizer producer, Koch Ag and Energy Solutions completed its USD3.6bn purchase of OCI Global's nitrogen fertilizer plant in Wever, Iowa.

Wever is a major supplier of nitrogen fertilizer across the US Corn Belt. It has the capacity to produce 1.73mn st of UAN, 973,000st of ammonia and 482,000st of urea, according to industry data from The Fertilizer Institute.

Including Wever, Koch now owns and operates six different fertilizer production facilities in North America and has invested USD2bn in fertilizer production facilities in the region in the last 15 years, the company said.

The Wever acquisition was first announced in December 2023. Wever was developed by OCI Global and began operations in 2017, and was the first greenfield nitrogen plant built in the US in 25 years, OCI said.

OCI's sale of Wever follow the company's divestment from its clean ammonia plant under construction in Beaumont, Texas, announced earlier this month.

SOUTH AMERICA

Yara and ATOME PLC sign Heads of Terms for sale of renewable Calcium Ammonium Nitrate (CAN) fertilizer

Yara, a global crop nutrition leader, and ATOME PLC, a leading developer of international green fertilizer projects, sign Heads of Terms for offtake from ATOME's renewable CAN project in Villeta, Paraguay.

The Heads of Terms covers the long-term supply of all of the Calcium Ammonium Nitrate from ATOME's renewable production facility in Villeta, Paraguay. The 145 MW fertilizer project will produce and export fertilizers derived from baseload renewable power from 2027.

The Front-End Engineering and Design (FEED) study was completed in the first half of 2024, and ATOME PLC targets to reach Final Investment Decision this year. Once completed, Villeta will produce up to 264,000t/year of Calcium Ammonium Nitrate fertilizer, expected to displace significant emissions in the sector.

Olivier Mussat, ATOME CEO, commented: "The entry into this strategic relationship with global crop nutrition leader Yara is a significant milestone for ATOME on the path to realize our flagship Villeta Project which will be one of the largest renewable fertilizer production facilities

in the Western Hemisphere. Proving significant off-taker interest for our renewable product gives a clear path to the finalisation of funding, FID and the commencement of work onsite at Villeta.

Importantly, it provides the confidence for ATOME to now accelerate the development of its project pipeline, including the 300MW Yguazu project in Paraguay and the 120MW Costa Rica projects.

“We are grateful for the work and the trust of the team at Yara and we look forward to a long and mutually beneficial relationship,” Chrystel Monthean, EVP Americas at Yara, said.

“Decarbonizing the food systems is at the forefront of our strategy. Many of the food companies active in South America have committed to decarbonization targets and our collaboration with them reveals that the decarbonization of the production of fertilizers combined with the use of agronomical best practices can significantly reduce the crops’ carbon footprint. Signing the Heads of Terms for the Villeta project is a first step to open the opportunity to further expand our portfolio with fertilizers produced with renewable energy in the Americas. The fertilizers from Villeta will become part of a new portfolio called Yara Climate Choice, including fertilizers based upon renewable energy and carbon, capture and storage. The project’s in-land location could open logistical advantages for some of our growing markets in Mercosur. We are looking forward to developing a strategic long-term relationship with ATOME.”

Brazil’s Parana state announces new fertilizer unit

Brazil's southern Parana state announced a new nitrogen fertilizer unit will be built in the state's northern city of Sapopema.

The project is estimated at BRL3bn (USD548mn). The state government did not disclose the origin of the funds. The unit will be managed by a company called Paranafert. Production is expected at approximately 520,000t/yr of urea. It will also have the capacity to produce 13,000t/yr of sulphur and sulphur derived products.

Paranafert kicked off the environmental licensing process with Parana state on 3 June. The initial schedule foresees the project to obtain all the environmental licenses and other legal authorizations to build the unit in around a year. After that, the construction work should take another two years to complete, according to Parana state.

The project will use coal as a feedstock to produce nitrogen fertilizers, as an alternative to natural gas.

Petrobras to invest USD159mn in fertilizer plant

Brazil's state-controlled Petrobras will invest USD159mn to restart the Araucaria Nitrogenados (Ansa) fertilizer plant, next to the 208,000 b/d Repar refinery, in southern Parana state.

Ansa can produce 475,000t/yr of ammonia, 720,000t/yr of urea and 450,000t/yr of diesel exhaust fluid (DEF), also known as Arla 32.

Petrobras halted activities at Ansa in 2020. Its reopening was approved in June and production is expected to resume in the second half of 2025.

Petrobras' five-year strategic plan reintroduced investments in fertilizer production to the company's portfolio. The company is seeking to reconfigure and consolidate viable operations in its assets.

Ansa is in the process of contracting services and acquiring materials. Operations will begin once those have been signed. Former employees of the plant have resumed work after a labour agreement was signed in June.

President Luiz Inacio Lula da Silva and Petrobras' chief executive Magda Chambriard will attend a ceremony at Ansa on Thursday marking the resumption of operations.

Norway and Brazil firms to build green ammonia unit

Norwegian renewable energy company Fuella and Brazilian port operator Prumo Logistics will assess the construction of a green ammonia plant in the Acu port, in Rio de Janeiro state.

The plant will have production capacity of 400,000t/yr. It will also have up to 520MW of capacity and will use electrolysis to produce the green ammonia, which will be transported to the domestic and international markets through Acu's liquids terminal.

Fuella will make its final investment decision by 2028, with production slated to begin by 2030.

As part of the deal, the Norwegian company secured a 1mn m² (10.7mn ft²) lot inside Prumo's renewable hydrogen hub in the port.

Prumo's low-carbon hydrogen hub received preliminary environmental clearance from the Rio de Janeiro state government in January.

This is the fifth low-carbon hydrogen agreement that Prumo has signed. The company also has letters of intent with Shell, industrial gas company Linde, renewable power company Casa dos Ventos/Comerc and Neoenergia, the Brazilian subsidiary of Spain's Iberdrola.

This is Fuella's first agreement in Brazil.

ASIA

ICL signs China distribution deal for specialty fertilizers

Israeli fertilizer producer ICL has signed a five-year deal with Chinese distributor AMP Holdings Group to supply water-soluble fertilizers in China.

The USD170mn agreement will run until 2028 and includes a minimum purchase commitment, with some exclusivity conditions based on brand and region.

The demand for specialty fertilizers is rising in China where water-soluble products are used in drip irrigation for high-value crops. China has experienced major shifts in agricultural practices in recent years because of extreme weather, varied crop types, and a shrinking agricultural workforce.

ICL makes various water-soluble and specialty products, including 12-61 technical MAP (tMAP), mono potassium phosphate (MKP), soluble NPKs and slow/controlled release fertilizers. The company has highlighted its recently launched phosphate and potassium specialty suspension solution, designed for drone application, which is a growing agricultural sector in China.

The demand for water-soluble fertilizers has been growing steadily in China. Most of the local production was previously focused on export, particularly tMAP and potassium nitrate (NOP), but now domestic demand is increasing, especially in provinces such as Xinjiang with large cotton and tomatoes plantations.

Another key market for tMAP is the industrial sector, particularly the lithium ferrous phosphate battery market for electric cars. NOP is also used in the batteries industry.

Japan's Tsubame to offer ammonia plant with new technology

Japan's ammonia technology venture Tsubame BHB plans to construct a small-scale ammonia output plant, equipped with a new manufacturing technology, with the aim of beginning operations by summer 2026.

Tsubame BHB has received an order to construct a 500t/yr ammonia production plant from an unspecified customer. The company explored the construction of its ammonia plant from 2022, started basic designs in January and then began detailed engineering designing in August.

The customer expects to use ammonia for industrial purposes such as petrochemical feedstock and denitration at thermal power generation plants, according to Tsubame.

Tsubame BHB's ammonia production plant enables small scale output under low temperatures and pressure by using an electride catalyst. The technology was developed by the Tokyo Institute of Technology.

The conventional ammonia production process called the Haber Bosch process involves combining nitrogen and hydrogen under a high temperature and pressure, which requires a large-scale production plant with a capacity of more than 100,000t/yr in general. But the technology implemented by Tsubame BHB enables small-scale output, and hence allows for onsite ammonia production and consumption.

This is the second commercial order Tsubame BHB has received. The firm is building the first plant in Niigata prefecture and demonstrating ammonia use as a fuel and hydrogen carrier.

Tsubame BHB expects its small-scale ammonia plants to help enhance the supply chain of ammonia amid declining domestic output and rising import prices, the company announced.

Japan has offered funding for studies to achieve cheaper production of fuel-use ammonia, with the country targeting to supply ammonia at a range of JPY15-19/nm³ (10-13¢/nm³) by 2030.

AUSTRALASIA

Australia's Orica to cut GHG emissions at nitric acid plant

Australian chemicals and explosives firm Orica are finalising the commissioning of a second tertiary abatement reactor at its Yarwun facility near the Queensland state city of Gladstone, which it said will cut the site's greenhouse gas (GHG) emissions by half.

Installation of the initial reactor at one of Yarwun's two nitric acid plants was achieved earlier this year, with the second to be operational by late September, Orica said.

The reactors will reduce GHG emissions by about 200,000t/yr of carbon dioxide equivalent (CO_2e), and follows the same systems being installed at its Kooragang Island ammonia plant in New South Wales state last year. Yarwun reported CO_2e emissions of 384,417t in the fiscal year to 30 June 2023.

The Kooragang Island project's completion led Orica to increase its CO_2e reduction target for scope 1 and 2 emissions to at least 45% by 2030 from 2019 levels of 2.09mn t CO_2e and 242,000t CO_2e respectively, up from 40% previously.

The tertiary catalyst abatement technology utilises catalytic decomposition to destroy nitrous oxide emissions, Orica

said, with the firm claiming to have already cut its GHG emissions by 22% from 2019 levels.

Yarwun has capacity to produce 530,000 t/yr of ammonium nitrate and 95,000 t/yr sodium cyanide for the resource sector, exporting more than 50% of this output. Yarwun can also produce around 420,000 t/yr of nitric acid.

Australia's Province Resources halts renewable H2 plans

Australia's Province Resources has paused plans for a 550,000 t/yr renewable hydrogen project in Western Australia, citing a lack of support from the state government.

The decision to put the HyEnergy project on hold was because the Western Australia state government "has failed to offer tenure for the project on terms which would be acceptable" to the company and partners "or in the best interests" of its shareholders, Province said.

The "excessive amount of time" taken by state authorities to consider land tenure for the project has caused "significant reduction in investor interest in the sector" and "resulted in many companies deferring their plans to develop their green energy projects", it added.

According to a description of the project filed with the state government's Environmental Protection Authority (EPA), the venture would require 945 hectares for a wind farm and "up to 10,000 ha of solar arrays", in addition to space for the hydrogen and ammonia production facilities, a new port facility and battery energy storage.

In its most recent update from late January, the EPA said the project required further detailed assessment because "several preliminary key environmental factors are complex" and it needed to determine the extent of direct and indirect impacts of its implementation.

"It is disappointing that the state government would be the sole stakeholder who was not supportive of the project," Province's chief executive David Frances said. "This is in direct contrast with the government's public statements of support for the industry."

The Western Australia government was not immediately available to comment.

The HyEnergy project was due to use 12GW of solar and wind power to produce 600,000 t/yr of hydrogen for domestic consumption and exports. The project was first announced in April 2021 in a joint initiative by Province and French renewables firm Total Eren. The French firm exited the venture in March 2023, with Province saying at the time that the two companies' objectives were not "fully aligned".

Province said it "remains positive" about long-term prospects for renewable hydrogen and will continue to pursue "enhanced government support". The company intends "to maintain the HyEnergy project in a state of readiness for when support from a state government and the market for green hydrogen returns," Frances said.

This is the second renewable hydrogen project in Australia to be put on hold in just two days, after compatriot Woodside Energy paused the H2TAS project in Tasmania. Meanwhile in neighbouring New Zealand, utility Meridian Energy has frozen plans for a 600MW renewable hydrogen and ammonia project.

Woodside to buy OCI's Texan CCS ammonia plant

Australian oil and gas producer Woodside has agreed to buy an ammonia plant in Beaumont, Texas that is being developed by fertilizer producer OCI. The plant will use hydrogen made from natural gas with carbon capture and storage (CCS).

Woodside was selected as the buyer in a "competitive process" and will pay USD2.35bn for the 1.1mn t/yr plant and supporting infrastructure. The deal also covers established agreements for feedstock and the transfer of personnel for operating the facility.

The plant has been under construction since 2022 and OCI will complete the process before handing the plant over to Woodside following its commissioning, expected next year.

The plant will still use hydrogen made with unabated emissions initially. This will come from industrial gas firm Linde and other suppliers on the US Gulf Coast.

Woodside expects the plant to receive hydrogen made with CCS from 2026 onwards from a facility that Linde is building on the same site. Linde's complex will use autothermal reforming (ATR) technology, allowing for over 95% of CO_2 captured, according to Woodside. The CO_2 will be stored at sites currently under development by ExxonMobil.

Once the lower-carbon feedstock is available, ammonia could be produced with an emissions intensity of 0.8t of CO_2 equivalent per tonne, Woodside said. Overall, around 1.6mn t/yr of CO_2 equivalent could be abated, the firm said. This could double in a second phase which would add another 1.1mn t/yr of ammonia production capacity.

Phase 2 could be ready for a final investment decision in 2026 and require capital investment of USD1.2bn-1.4bn, Woodside said.

Provided Woodside goes ahead with the second phase of the plant, the project could alone account for over two-thirds of the firm's targeted investment of USD5bn in low-carbon energy projects by 2030. ■

MARKET ANALYSIS ›

Commodity updates • Shipping news • Price watch

Soft commodities: Russian wheat prices fall on market shift

Information from **Agritel** – ***An Argus Media company***

Wheat summary

Russia's spot 12.5% wheat contract changed direction and declined recently, likely as market participants reacted to volumes traded in Egypt's buy tender. Sellers lowered their offers of Russia's flagship 12.5% protein content wheat, pushing the spot price down.

Supply of the product may be more abundant in the coming months than expected last week because Egypt's GASC booked a mere 280,000t of milling wheat in its tender - none of it loading at Russian ports - compared to the maximum of 3.8mn t originally mentioned in the tender announcement. This could leave sellers of Russian wheat under pressure to find other buyers, market participants said, but demand in Russia's FOB Black Sea wheat market has not matched supply. That said, Egypt could still enter into private negotiations with trading houses, as it has done previously. If the buyer secures significant volumes of Russian milling wheat this way, support for the spot 12.5% price could return.

Meanwhile, wheat exports from Romania and the Baltics (Estonia, Latvia, and Lithuania) to non-EU destinations hit their highest cumulative level in over a decade since the start of the season in July, according to EU data. For the Baltics, the increase could be coming both from expectations of a larger harvest than in 2023-24 and lower supplies in France and Germany for the Moroccan wheat import market.

Elsewhere, US spring wheat harvest progress lagged behind last year and the previous four-year average. But conditions were favourable, with 72% of the crop rated good-to-excellent, compared with 42% a year earlier, and record yields are forecast for US spring wheat in the US Department of Agriculture's August World Agricultural Supply and Demand Estimates (WASDE) report.

Meanwhile, wheat demand for shipments to Brazil this season could decline from the previous season, when unfavourable weather pressured Brazilian production and the country looked to Argentina to source the product. If Brazil's import demand shrinks on the year, while Argentina's wheat exports increase in 2024-25, the latter could take a larger market share this year in Southeast Asia's wheat import market, posing stiffer competition to sellers of Black Sea wheat than it did for much of 2023-24.

Corn Summary

Sellers in Brazil dropped their offers for corn cargoes delivered to Spanish Mediterranean ports, undercutting competing offers for Ukrainian feed-grade wheat into the region. Brazilian corn was valued in the low-to-mid USD210s/t CIF Spanish Mediterranean ports, according to market participants, compared with Ukrainian feed wheat pricing around USD10/t higher on the same basis. Brazil typically exports its greatest volume of corn to Spain between August and October, when supplies of competing Ukrainian corn wane ahead of the new crop's arrival at the market, and exportable supply of Brazilian corn remains firm on the safrinha harvest. Ukrainian feed wheat may also price in as an alternative, but typically carries a premium to the most competitive origin of corn.

Meanwhile, the USDA's World Agricultural Supply and Demand Estimates (WASDE) report revised Ukraine's 2023-24 (October-September) exports 1.5mn t higher to 29.5mn t. Ukraine's corn exports in the year to date totaled 28.4mn t, meaning some 106,000t of corn will have to be exported on average per week for the remainder of the season to meet the

Figure 1. Wheat price (USD/t)

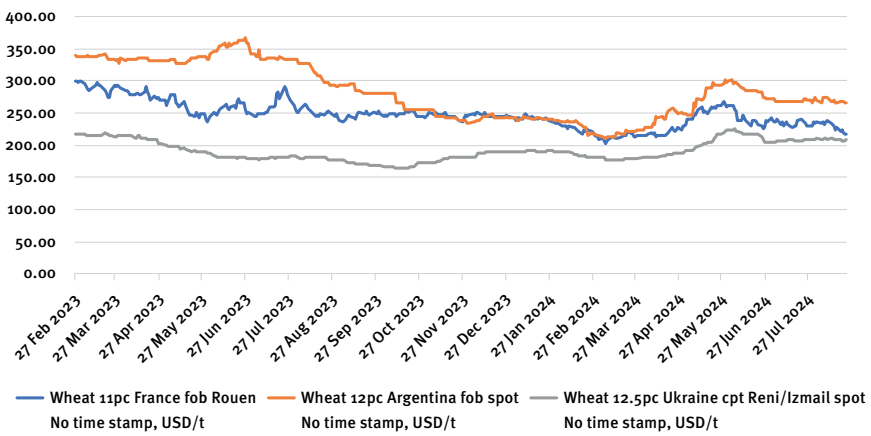


Figure 2. Corn price (USD/t)

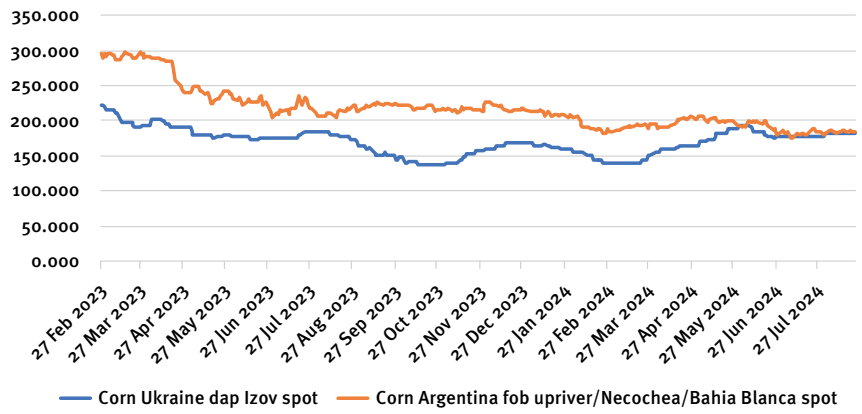
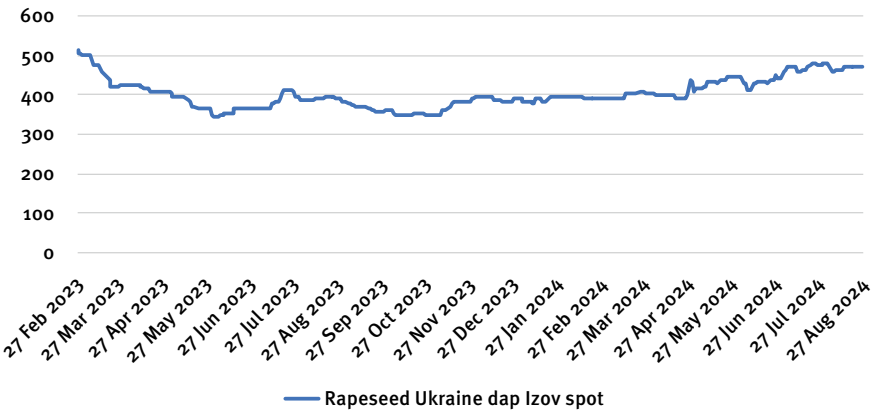


Figure 3. Rapeseed price (USD/t)



USDA's estimate. Although this is well below the previous four-week average of 293,500t of corn exported from Ukraine, the remaining old-crop supply is running thin, according to market participants. But a limited number of sellers at Ukraine's deep-sea Pivdennyi/Odesa/Chornomorsk (POC) ports continued to offer volumes of old-crop corn at USD210/t FOB POC. As for Ukraine's new-crop corn, the USDA's 500,000t reduction in its forecast to 27.2mn t was widely considered to be above market expectations, traders said.

In Argentina, the cessation of last week's port strike action saw port activity focused on clearing backlogs, market participants said.

Elsewhere, buyers have booked more US-origin new-crop corn, with the USDA reporting on Tuesday that 137,160t has been booked for shipment to Mexico during the 2024-25 (September-August) marketing year. This was on top of Monday's news of 165,000t sold to unknown destinations.

Oilseeds summary

There was one confirmed deal in the Paranagua soybean paper market recently, but offers and bids remain scarce amid muted demand and falling international prices. Market participants confirmed that a deal for the March settlement took place at a premium of 22¢/bu to the CBOT. This occurred despite Chinese interest shifting predominantly to US shipments for September-December due to lower railroad costs.

This marked the sixth consecutive session of losses for CBOT contracts, which also discouraged sellers from negotiating. The March and May 2025 settlements now accumulate 75.25¢/bu and 70¢/bu decreases from closing levels of 5 August, respectively, pressured by the outlook of a large US 2024-25 crop, adding further pressure to an already oversupplied global market.

The range of offers and bids for February 2025 ended at a premium of 43-28¢/bu to the CBOT, compared with a premium of 45-30¢/bu recently. For March 2025, the range closed at a premium of 22-15¢/bu to the CBOT, from a premium of 25-15¢/bu.

Meanwhile, prices for US Pacific Northwest (PNW)-origin products fell due to lower railroad costs, boosting trade flows to China. China booked one October-loading PNW cargo at 220¢/bu CFR premiums over the November Chicago Board of Trade (CBOT) contract. The state-owned firm also bid for shipments in late-September to October and the whole of October, but transaction details were unconfirmed at the time of writing.

PNW-origin soybeans were offered at lower prices than other sources, with October-loading product at premiums of 224¢/bu CFR over CBOT, while US Gulf (USG) soybeans were indicated at premiums of 239-240¢/bu for October shipment. Given the similar arrival period, Chinese buyers raised interest in cargoes from the former. Brazilian soybeans for September-loading were offered at 5-10¢/bu premiums to the USG products.

Falling railroad costs contributed to PNW price reductions, with the average indicator for shuttle transport costs falling to 249 from 254, according to the US Department of Agriculture (USDA). Some railroad carriers have also offered discounts for PNW-bound soybean transportation, further weighing on CFR premiums to China. Furthermore, the US is projected to see record soybean yields in the 2024-25 cycle, leading to greater output combined with rising acreage, the USDA reported. This curbed PNW premiums to China on a CFR basis as well. ■

Hard commodities: Is China now past peak commodity import growth?

Written by

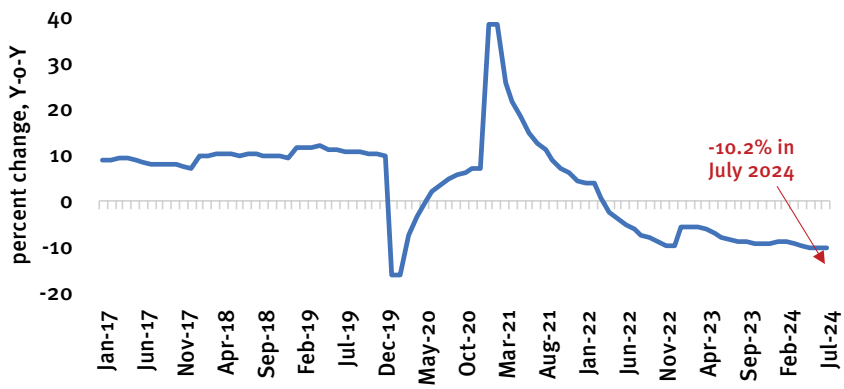
David Fyfe, *Chief Economist,* ***Argus Media, UK***

China represents around one-third of all global trade in major commodities. While the country will continue to underpin overall commodity market trends for the foreseeable future, a slowing pace of economic growth and a shift in economic focus towards less commodity-intensive local consumption will likely entail a less voracious appetite for more raw materials. South and Southeast Asia will likely increasingly take the commodity demand growth baton from China.

Anaemic growth in Chinese oil demand and broader macro-economic slowdown are warning lights for OPEC+ producers who envisaged their supply management plan would keep global oil market fundamentals tight, and crude prices well supported, in the second half of 2024. ICE Brent crude, which has averaged USD83 for 2024-to-date, fell closer to USD76 in early-August, a low point last seen in January. While the benchmark seemed by mid-August to have levelled out once more near USD80, with something of a floor provided by geopolitical instability in the Middle East, a renewed batch of anaemic Chinese macro data has equally limited the upside potential for prices.

The importance of China in underpinning recent historical oil demand strength cannot be over-stated: last year apparent Chinese refined products demand grew by over 1.3 mb/d, some two-thirds of total world oil demand growth. And while 2023 was a unique, post-pandemic year for the Chinese economy, historical data show that incremental Chinese oil imports near +7 mb/d for 2013-2023 are also equivalent to 65% of global oil demand growth for the same period.

Figure 1. China Y-o-Y change in real estate investment



Source: NBS, Argus Media

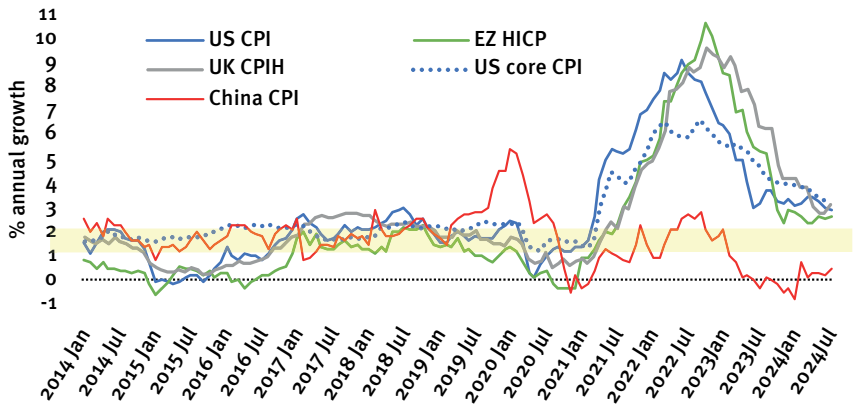
Lower crude imports

This report assumes 2024 Chinese oil demand growth slows to less than 500 kb/d, with healthy gains for petrochemical feedstock demand offset by weaker growth in fuel products. However, January-July data imply growth may struggle to attain even these reduced rates for calendar 2024. Crude oil imports are lower year-on-year by nearly 300 kb/d, while the supply of finished products through June – a proxy for oil demand – is down by 70 kb/d year-on-year, with diesel supply a steeper -100kb/d in arrears. Analysts now expect the government to issue a third batch of refined products export quotas in September to aid a beleaguered domestic refining sector.

The market has also been spooked by a below-expectation second quarter GDP growth reading of +4.7%, implying China's official 2024 target of +5% may be missed. Consumer demand is also weak, despite July's YoY retail sales growth recovering from

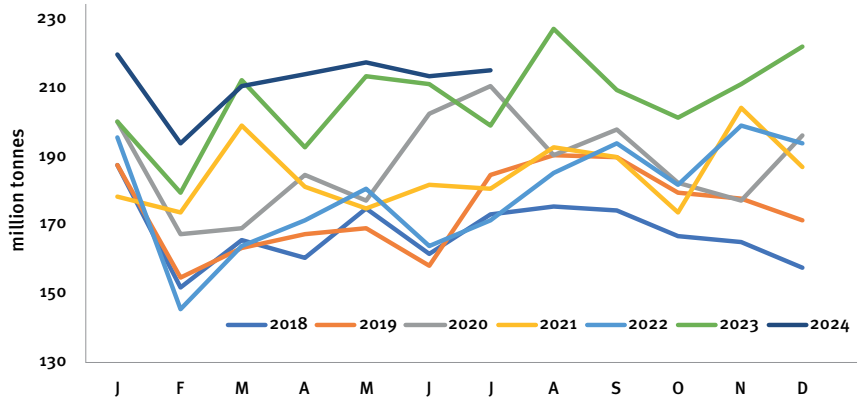
June's modest 2% to 2.7%. Consumer reticence is not unrelated to real-estate sector woes after a three-year squeeze on credit. July real estate investment declined by -10.2% year-on-year, representing three straight months of double-digit contraction and with year-on-year decline evident since April 2022. The impact of property sector weakness permeates deep and wide, real-estate accounting for around 25% of Chinese GDP. Contraction is depressing banking sector profitability, local government finances, consumer sentiment and broader construction sector commodity demand. More generally, weak Chinese end-user demand is also weighing on commodity prices across the spectrum, from iron ore to soybeans and from copper to plastics.

Figure 2. Consumer price inflation



Source: US BLS, Eurostat, ONS, CEIC, Argus Media

Figure 3. China 7-month commodity* imports +5%



**iron ore, copper, crude oil, nat.gas, coal, soybean, pork meat*

Source: GACC, CEIC, Argus Media

Fuel demand recovery

As the Chinese economy - unlike its western counterparts - flirts with deflation, the People's Bank of China in late-July surprised observers with a series of modest interest rate cuts. This is despite the Yuan now trading around -8% lower Vs the US dollar compared with a peak 18 months ago. The authorities are apparently prepared to sacrifice further currency weakening in order to prop up growth at acceptable levels – a policy that may come into renewed international focus were President Trump to win a second term in November's US election.

Last year, Chinese key commodity imports rebounded to grow by an aggregate +16% YoY as buyers exploited cheaper international prices to replenish stocks, with recovering domestic fuel demand also playing a role. In January-July 2024, equivalent growth has slowed to +5% YoY, albeit double-digit growth in coal and natural gas imports partly offset much weaker trends for crude oil, industrial metals and agricultural products. Weaker year-on-year international prices, stock replenishment and a summer heatwave underpin the healthy growth in China's demand for gas and coal imports.

Structurally, both Chinese GDP growth and commodity import growth have likely peaked. Argus Consulting projections show combined India and Southeast Asia oil demand growth exceeding that for China by 2026. Chinese commodity imports will remain substantial for the foreseeable future, but high tech. manufacturing and widespread electrification will increasingly replace commodity-intensive heavy manufacturing and exports. Single-digit GDP and commodity import growth will become the norm. More immediately, China has to reinvigorate its ailing property sector without reinflating the kind of financial bubble that underpinned prior expansion. And central to Beijing's goal of achieving sustainable growth in future will be stimulating local, as distinct from export, demand, an objective that was restated at recent Politburo meetings. Household consumption in China fell from 47% of GDP in 2000 to 39% in 2023, well below the levels of its developed world and BRICS peers. Unlocking that tranche of spending power will be central to China's economic growth and commodity import demand prospects in the decades ahead. ■

Shipping and trade news

IMO 2040 CO_2 goals unmet under base case: ABS

The shipping industry will not meet the International Maritime Organization (IMO) goal for reducing CO_2 emissions by 2040 without hastening the expected pace of vessel replacements, a study by vessel classification organization American Bureau of Shipping (ABS) concluded.

IMO calls for the reduction of greenhouse gas emissions by at least 20% by 2030, by at least 70% by 2040, and to net zero by 2050, compared with 2008 base levels. Under a base case scenario, a 20% reduction in CO_2-equivalent emissions by 2030 is achievable on a full lifecycle basis, but a 70% percent reduction by 2040 is not, ABS said.

Under the best case scenario examined by ABS, achieving IMO's 70% target would require a significantly faster renewal of the vessel fleet to replace oil-fuelled vessels or a higher degree of vessel retrofitting.

The three biggest categories of bunker consuming vessels — tankers, dry bulk carriers and container ships — are expected to follow a similar trajectory for marine fuel demand under the base case scenario, with conventional marine fuel accounting for more than 60% of demand through 2035, ABS said.

Conventional fuel demand would decline to 38-44% of marine fuel demand in the first half of the 2040s in the base case, ABS predicted. Methanol in that period would grow to about 35% of marine fuel demand for tankers and container ships and about 22% for dry bulk carriers.

Ammonia and hydrogen demand would grow to about 13% of tankers' marine fuel demand, 18% of dry bulk carriers' demand and about 14% of container ships' demand. LNG across the three vessel categories is expected at 4-6% of bunkering demand in the early 2040s, with biodiesel at 5-9% of demand.

FREIGHT RATES

POTASH	Price type	Units	Timing	Low	High	Date
Dry potash Vancouver - China 60-65kt	outright	USD/t	prompt	24	26	22-Aug-24
Dry potash Red Sea - WC India 25-30kt	outright	USD/t	prompt	25	29	22-Aug-24
Dry potash Baltic Sea - Brazil 30-40kt	outright	USD/t	prompt	33	50	22-Aug-24
Dry potash Baltic Sea - SE Asia 25-30kt	outright	USD/t	prompt	70	95	22-Aug-24
Dry potash Vancouver - SE Asia 25-30kt	outright	USD/t	prompt	59	61	22-Aug-24
Dry potash Baltic Sea - China 60-65kt	outright	USD/t	prompt	65	80	22-Aug-24
Dry potash Baltic Sea - US Nola 50-55kt	outright	USD/t	prompt	32	35	22-Aug-24
Dry potash Vancouver - Brazil 30-35kt	outright	USD/t	prompt	49	51	22-Aug-24
Dry potash Hamburg - Brazil 30-35kt	outright	USD/t	prompt	20	22	22-Aug-24

SULPHUR	Units	Low	High	Date
50-60kt – Vancouver-China	USD/t	28	29	22-Aug-24
Below all 30-35kt				
Mid East – EC India	USD/t	25	26	22-Aug-24
Mid east – North/River China	USD/t	30	32	22-Aug-24
Mid East – South China	USD/t	26	28	22-Aug-24
Mid East – Brazil	USD/t	29	31	22-Aug-24
Mid East – North Africa	USD/t	36	39	22-Aug-24
Mid East – South Africa	USD/t	26	27	22-Aug-24
Black Sea – North Africa	USD/t	45	65	22-Aug-24
Black Sea – Brazil	USD/t	65	70	22-Aug-24
Baltic – Brazil	USD/t	65	80	22-Aug-24
Baltic – North Africa	USD/t	45	65	22-Aug-24
35-40kt – US Gulf - Brazil	USD/t	26	27	22-Aug-24

Goltens teams up with Greener Process Systems for carbon capture in ports and power plants

Manasquan, New Jersey, USA: Goltens, a global leader in marine and energy services, and South Florida-based Greener Process Systems (GPS), a specialist in carbon capture technology, have signed a Memorandum of Understanding (MOU) to collaborate on developing and deploying carbon capture solutions for maritime ports and industrial/power applications.

GPS has developed a patented, revolutionary modular system to capture maritime and industrial emissions, as well as CO_2. Their ship emissions capture technology, SETH, reduces air pollution to near zero from oceangoing tonnage such as tankers, freighters, cruise ships, and ferries docked in ports close to urban areas. Air pollution is currently estimated to cost society hundreds of billions of dollars per year. SETH offers a standardized solution for ports that does not require retrofitting or costly modifications to either port infrastructure or ships in general.

Applications for GPS' Industrial Emissions Management (IEM) systems include glass, paint, cement, steel, aluminum, food, incinerators and kilns, power generation, and chemicals processing factories. The company's solutions are capable of capturing gasesous pollutants including CO_2 (thus providing principals with Carbon Credits) and producing significant energy (and revenue) from waste heat recovery (WHR).

By leveraging Goltens' engine, engineering, and retrofit expertise and GPS' innovative and patented technology, the fledgling partners intend to provide sustainable solutions for ports and power plants to meet stringent environmental regulations.

"This move towards a strategic partnership underscores our combined commitment to environmental sustainability and a proactive approach to supporting the transition to greener practices in the maritime and power generation industries," said Goltens' Chief Operating Officer, Roy Strand.

GPS Chief Executive Officer, Matt Sweetwood, added: "Pollution mitigation is one of core necessities of our time and we look forward to cooperating with Goltens to drive more sustainable operations for our customers. Our combined expertise will be a strong force in the market creating new opportunities to lower the emissions footprint of key industries globally."

Note: SETH® is a trademark of GPS

Singapore shortlists consortia for NH_3 power, bunkering

The Maritime and Port Authority of Singapore (MPA) and the Energy Market Authority (EMA) selected two consortia, with one of them likely to lead the project to develop ammonia as a low or zero-carbon solution for power generation and bunkering in the island nation.

MPA and EMA selected the two consortia from a total of six firms that were shortlisted in 2023, after a request for proposal (RFP) was launched. The final selection from the chosen two will be made in the first quarter of 2025.

This project, which is part of Singapore's national hydrogen strategy, is looking at developing end-to-end ammonia solution that can generate 55-65MW of electricity via direct combustion in combined cycle gas turbines. Low- to zero-carbon ammonia would be imported and used for this purpose.

The project is aiming for 100,000 t/yr of ammonia bunkering, starting with shore-to-ship bunkering followed by ship-to-ship bunkering.

The two consortium leads are Singaporean conglomerate Keppel's arm Keppel Infrastructure, as well as Singaporean-based Sembcorp-

SLNG. The consortia also include the following bunkering participants - Japan's shipping firm NYK Line, as well as Japanese trading firms Sumitomo and Itochu.

ICCT identifies three Chinese green shipping corridors

The International Council on Clean Transportation (ICCT) has explored options for establishing green coastal shipping corridors off the coast of China and has identified three with most potential: Shanghai–Tianjin, Shenzhen–Tianjin and Shanghai–Ningbo/Zhoushan.

Green routes are under consideration by different countries to speed up marine decarbonization. Compared with international green routes, domestic green routes could have the advantage of more stakeholder homogeneity. In some cases, a route could be operated by a single entity that owns the cargo as well as the vessels, says the study by the ICCT, a non-profit think tank.

For each of the three green corridors ICCT identified, ICCT estimated fuel demand for the first hypothetically deployed zero-emission vessel running on either renewable liquid hydrogen, renewable methanol, or renewable ammonia.

On the Shanghai–Tianjin route, a 700 nautical miles (nm) distance, the study considers a 57,000 deadweight tonnes bulk carrier. The bulk carrier would burn about 475t of conventional marine fuel which translates into 1,000t of methanol, 1,070t of ammonia or 153t of hydrogen. On the Shenzhen–Tianjin, a 1,400 nm distance, the study considers a 2,000 TEU container ship. It would burn about 2,270t of conventional marine fuel which can be displaced by 4,790t of methanol, 5,130t of ammonia or 732t of hydrogen. Lastly, on the Shanghai–Ningbo/Zhoushan route, a 75 nm distance, a 3,000 gross tonnes oil tanker would burn 49t of conventional marine fuel, or the equivalent of 103t of methanol, 111t of ammonia or 16t of hydrogen.

From ICCT's example, the ship operators on the three routes would need to source a total of 901t of renewable liquid hydrogen, or an equivalent 5,890t of renewable methanol or 6,310t of renewable ammonia, which implies a demand for 44-60 GWh of renewable electricity. China has set a goal to produce 100,000–200,000t of renewable hydrogen and 3,300 TWh of renewable electricity annually by 2025, says the study. Only a very small share of these volumes would be needed to support the first zero-emissions vessels on the proposed Chinese green coastal corridors.

The port of Tianjin has built the first zero-emission terminal in China, the study notes. The terminal is fully automated, with all operations powered by clean electricity generated from an on-site onshore wind farm and solar farm. The port of Shanghai completed its first ship-to-ship renewable methanol bunkering in April 2024.

A major challenge for these hypothetical Chinese coastal green corridors is the fuel cost. ICCT estimates the at-the-pump cost of renewable hydrogen produced on site at the selected ports could be $7.60/kg by 2030, more than three times the cost of conventional marine fuels on an energy-equivalent basis. Stakeholders willing to share the costs and associated risks could launch the first zero-emissions vessels on these green shipping corridors. But "significant" policy interventions will be needed to speed the deployment of more ships, concludes the study. ■

NITROGEN/UREA		Units	Low	High	Date
Middle East - US Gulf	45kt	USD/t	30	32	22-Aug-24
Middle East - Thailand	30kt	USD/t	28	31	22-Aug-24
Middle East - Brazil	40kt	USD/t	21	23	22-Aug-24
Baltic - Brazil	30kt	USD/t	30	40	22-Aug-24
China - India	60kt	USD/t	17	20	22-Aug-24
Algeria - Brazil	30kt	USD/t	17	20	22-Aug-24
Algeria - French bay	12kt	USD/t	17	19	22-Aug-24
Baltic - EC Mexico	30kt	USD/t	33	39	22-Aug-24
Baltic - WC Mexico	25kt	USD/t	53	60	22-Aug-24

PHOSPHATES		Units	Low	High	Date
Morocco – Brazil	30kt	USD/t	19	21	22-Aug-24
Tampa – Brazil	30kt	USD/t	31	33	22-Aug-24
Saudi Arabia – EC India	30kt	USD/t	21	23	22-Aug-24

AMMONIA	Units	Latest	Date
Ras al Khair - Ulsan, 23kt	USD/t	79	27-Aug-24
Ras al Khair - Kakinda, 23kt	USD/t	44	27-Aug-24
Ras al Khair - Kandla, 23kt	USD/t	22	27-Aug-24
Point Lisas - Ulsan, 23kt	USD/t	126	27-Aug-24
Point Lisas - Houston, 23kt	USD/t	33	27-Aug-24
Point Lisas - NW Europe, 23kt	USD/t	54	27-Aug-24
Bontang - Ulsan, 23kt	USD/t	35	27-Aug-24

Price watch

*These market insights are provided by **Argus Fertilizer Analytics team***

AMMONIA

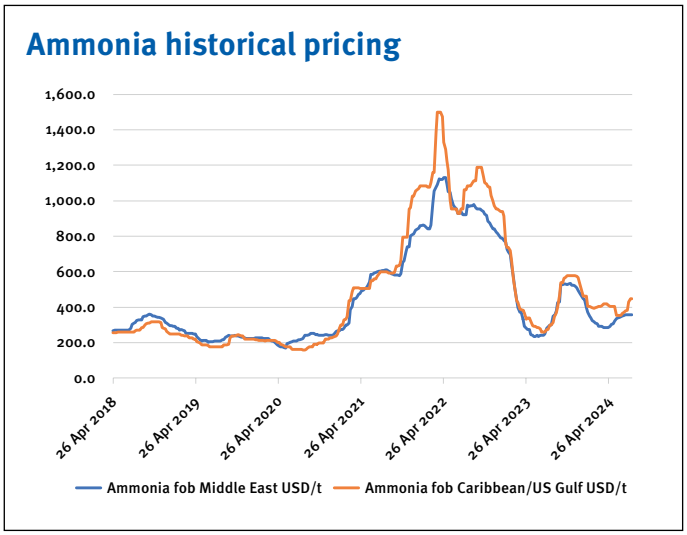
Firmer pricing in the near-term

There is markedly different sentiment between markets to the east and west of Suez because of differing producers' fortunes in the two regions. To the west, severe gas restrictions in Trinidad from June to August and output cuts in Algeria and Egypt – driven by power and gas shortages respectively – have drastically reduced merchant availability, with many buyers unable to secure cargoes even far in excess of previous fob prices.

Prices have responded; the August Tampa contract was settled USD60/t higher at USD475/t cfr at a time when seasonal demand west of Suez usually bottoms out, and prices tend to hit their lowest point for the year. And delivered prices to northwest Europe rose by USD50/t in both June and July on a midpoint basis.

The situation has been complicated further by queries from US domestic customers for pre-pay purchases ahead of the autumn application season. It is unseasonably early for this interest to emerge; many have likely been spooked by the recent rise in prices and are trying to hedge against even steeper prices in the third quarter. The build-up of an unexpected demand source at a time when supply is already limited will only add to the tightness, and builds a strong case for further price rises in the coming quarter.

The announcement of yet another cut to Trinidadian gas supply will only exacerbate the current tightness. Argus therefore forecasts another round of price firming when the September Tampa contract price is announced. Much of the short-term price outlook in the US, Europe and north Africa will depend on the ability of Trinidad's producers' output to recover.



In contrast, the picture to the east of Suez is one of balance. Ma'aden restarted its MWSPC plant in July, the only major outage in the region, and the recovery of this supply has been met with a ramp-up in India's import demand ahead of the rabi crop season. Other major production hubs in Indonesia and Malaysia are operating well, and non-Indian demand in Asia is ticking along at a constant rate.

The difference in sentiment is so strong that Argus is forecasting a dislocation of USD90-100/t between the fob Caribbean and fob Middle East benchmarks for much of the rest of the year. While fob Middle East has typically priced at a discount to fob Caribbean over the last few years, the discount for Middle Eastern tonnage has settled at around USD50/t since the near-total closure of the Suez Canal, but has been larger when tightness has built in the west.

Although the arbitrage in prices from east to west are approaching the point where we have historically seen long-distance east-west shipments, the ongoing risks to shipping through the Suez Canal posed by the Houthi rebels make the freight for this trade unaffordable at current prices. But the opportunity may present itself in the current months if western prices continue to firm while those in the east remain steady, though this is currently not what the market assumes.

There is hope that Gulf Coast Ammonia can begin production in October to relieve some of the tightness in the region. This would coincide with the period of highest demand in the US as the autumn application season peaks. But once this recedes from November, prices will start to soften into December and the new year, and fundamental support for pricing will continue to fade throughout the first quarter.

The start of 2025 will see soft pricing globally as the balance shifts back to surplus after months of deficits. There is a risk to this forecast – the surplus forecast relies on the successful start-up of both GCA and Uralchem's Taman terminal, and if either of these sources of extra supply fail to materialize on time, then the market will once more be finely balanced and susceptible to price shocks with spikes of demand or production outages we saw at the start of 2024.

PHOSPHATES

Indian market crucial to pricing

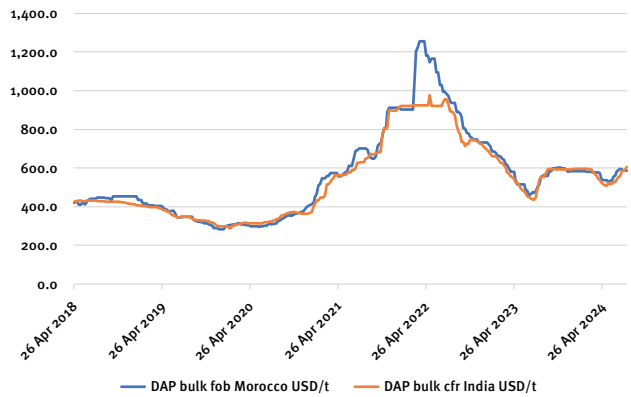
The global phosphate market is waiting in anticipation of how the Indian season plays out in the near-term. The import requirement remaining for India and uncertainty over Chinese supply sets a cloudy outlook on the phosphate market east of Suez. India's need for DAP imports has weakened its position on pricing power, and so ultimately importers will have to accept higher supplier prices, with a recent sale into India achieving USD619/t cfr DAP and already highlighting this point. But this is well above the breakeven level for Indian importers, despite additional subsidy support being confirmed. So firming will be limited by affordability hurdles and softening DAP prices are expected to return in November as demand wanes in the offseason.

The potential Indian-OCP deal indicates a sort of compromise, with the supplier forward selling substantial volumes until the end of the year at USD620/t cfr, even though India's import conditions could set the stage for even higher levels. But with Pakistan slowing its buying, and the key MAP import season in Brazil starting to close, there will be more pressure to pivot to Indian buyers, and poor import economics are risking import demand destruction if prices rise much beyond the USD620/t cfr level. Additionally, Bangladesh is struggling to secure credit for 270,000 t of DAP imports, reflecting 60% of its private sector tender. So Chinese exporters may have spare cargoes in the coming weeks but will find few alternative outlets other than India, adding support to a price ceiling forming. Combined these factors generate notable risks to prices and will create material resistance to push for higher levels. Nonetheless, Indian supply is at significant risk of falling below optimum levels, even with elevated domestic production from now profitable units importing phosphoric acid, following the new subsidy package. If imports do not pick up soon and fast, the country's inventory levels will be depleted to historical lows, exposing the country to future price shocks.

Meanwhile, Chinese export volumes in the final quarter also need to be factored in, but there is currently little firm information to act on. Our base case assumes Chinese exports will remain constrained but, combined with other major suppliers, should be sufficient to balance the subcontinent's needs if importers pay up. In summary, if these fob levels are underachieved, suppliers will remain patient. But as mentioned, higher levels are expected to be met with buyer resistance thus building out our base case forecast that establishes this equilibrium.

Looking west of Suez, markets are largely in the offseason. Argus anticipates slight firming in US and European markets, given tight availability, but this will return to softening by November once other major markets pull back. Brazil is expected to attract further tonnes supporting prices in the near term ahead of Safrah, but there is some uncertainty creeping in on whether product will arrive in time, which is creating buyer hesitancy and limiting upside firming. And once the window for application closes in the coming weeks, prices will begin to dip as demand pulls back given poor barter rates, discouraging purchases in the offseason. But constrained supply as China returns to the domestic market will add some support, making a sharp fall unlikely.

Phosphates historical pricing



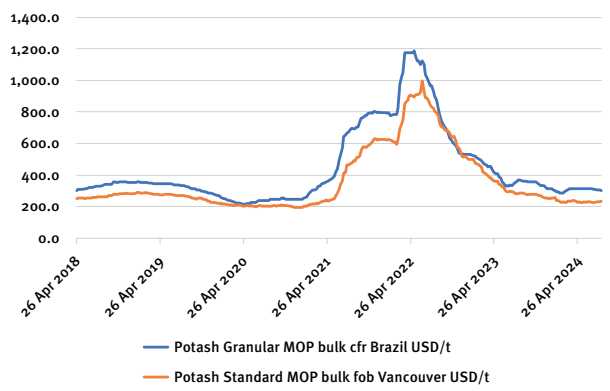
POTASH

Pricing supported by demand from key markets

The Canadian labour board ruled that any potential strikes by Canadian rail workers would not seriously threaten public safety. Canada is the largest potash supplier globally and any stoppage to the rail network would impact potash shipments. Most buyers are keeping a close eye on the situation and expect delays to fourth quarter deliveries if the strike takes place, but there is so far no major panic. The extent of the impact would also depend on the length of the strike. In terms of trade this week, there were some granular MOP sales reported in Brazil and Central America. In the East, Chinese domestic MOP prices have continued to soften but more demand should begin to emerge in the coming weeks. Overall, there is low global trading activity which has kept the majority of MOP prices flat this week.

Prices are likely to remain fairly flat in the near term and will be supported by more demand emerging in September from Europe, Brazil, and the US, while Southeast Asian plantation and NPK tenders are also

Potash historical pricing



likely to emerge. But a potential Canadian rail strike next week could disrupt potash supply, which may encourage buyers to step in earlier or enquire for product from other suppliers.

SULPHUR

New Chinese supply-side capacity to bring down imports

Spot prices in the global market have been rapidly firming, with the general view that they will reach a ceiling in September, and then stabilise coming into the fourth quarter. The main price driver has been Indonesia's intake of up to 370,000t of product in the latest round of spot business, significantly limiting spot availability for other markets, and leading buyers into accepting higher prices. The rising price will be supported by other firming factors including supply-side tightness in the Middle East, strong demand from main offtakers, the domestic autumn application season in key markets, and the firming trend driving up pricing sentiment in other key markets. Argus then expects pricing to peak and soften into October and November, before stabilising through the end of the fourth quarter and into the first half of next year. This is largely driven by robust stocks, new supply coming online in some importing regions, the uncertain outcome of Chinese DAP export restrictions, and subsiding seasonal demand.

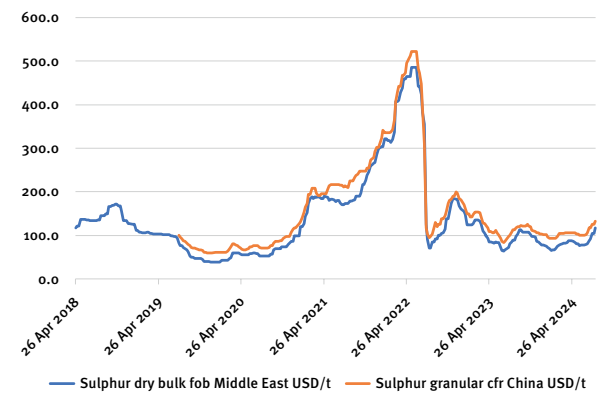
Supply-side tightness in the Middle East from Indonesia importing significant tonnes with a heavy August-loading lineup of bookings has pushed up offers from all supply sources. The elevated Middle East fob price has driven the China cfr and Brazil cfr prices up to align with the global trend. In Africa, there is outstanding demand left from the lack of August spot tonnes, and buyers are keen to fill the gap. When North African buyers re-enter the market, they will likely do so at a price premium to the recent range to align with global market sentiment.

Strong demand is expected to continue from Asia, with Indonesian metals-driven demand rising because of continued Chinese investment into the nickel and EV industry. Indonesia is more recently mainly in the market for sulphur tonnes over merchant sulphuric acid because new sulphur burner capacity has come online this year, with more sulphur-based acid capacity due to start up in the fourth quarter. There is also strong demand from eastern and southern Africa to meet phosphoric acid and copper-based requirements. East of Suez, there is firm DAP and MAP demand, driven by low DAP stocks in India and falling DAP availability on a global scale, which is pushing DAP prices up, generating sulphur demand, and supporting the firming sulphur pricing trend.

Demand is also firm in Brazil, as more cargoes enter the region to make up for lost tonnes after the Tiplam port maintenance limited arrivals over the past few months. Another key price driver is the domestic application season, mainly in China and the US. In China, end-users are expected to return to the market before the season, which will support prices, probably for product originating from the Middle East where prices will remain on the high end when offers are made or deals concluded. In the US, the application season for DAP will also generate demand.

Argus expects softening prices later in the year, driven by robust supply from port stocks in China limiting import tonnes, alongside new supply coming online in the region, elevating production capacity. Seasonal demand in the US and China will also subside, and as the weather cools, the risk of Canadian wildfires will drop, bringing more security of supply to the region. In China, DAP export restriction talks are due to take place, which could dampen price sentiment if the restrictions are tightened, as sulphur demand for phosphate producers could ease.

Sulphur historical pricing



Overall, Argus expects a peak in pricing in September after the recent price elevation has been absorbed, with previous firming factors subsiding into October, and stabilising to softening throughout November and December, which aligns with cyclical market trends. In the first half of 2025, Argus expects further softening, in line with the DAP price outlook, the crude price forecast, and a surplus of sulphur tonnes in the trade balance.

NITROGEN/UREA

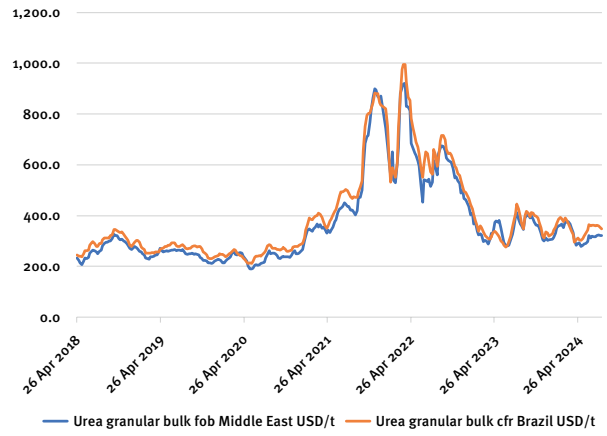
Seasonal demand expected from Brazil

Urea prices remained flat in July, failing to benefit from Indian buying and tighter supply, owing to restricted exports from Egypt and China. One supplier's actions saw prices fall by about USD15/t in the Indian tender, while low demand from markets in the west balanced firmer conditions east of Suez. A similar scenario is evident for the near-term. Tight conditions east of Suez owing to minimal exports from China, and tender business in Pakistan and India, but there are concerns about affordability depressing offtake in the west. The lack of Chinese and Egyptian urea in the export market has reduced liquidity, both countries being major supply sources for traders, and increased the level of price uncertainty, encouraging buyers to delay.

Prices for Middle East urea are about USD340/t fob, a level workable for markets in Asia but difficult to achieve in Latin America or the US. This is leading to a softer tone, which is likely to persist until the next Indian tender is issued, which could be in the next 10-14 days. India has so far secured only 800,000t of urea through tenders this year. Assuming that demand remains constant, Argus estimates that the Department of Fertilizer needs to buy another 3mn-3.5mn t in 2024-25.

There is little clarity around pricing from Egypt, with producers still busy executing old sales, but prices are likely to have to fall to USD340-350/t fob or lower to prompt new sales, given the scant demand from Europe. Argus' trade balance for August suggests flat pricing before a seasonal rise in demand for September-October leads to firmer conditions and higher prices into the fourth quarter. Our forecast trade balance for September is based on a partial resumption of exports from China, which might not occur. In which case, the supply shortage for the month will be exacerbated.

Urea historical pricing



Chinese supply will be a key factor in the fourth quarter. Opinion is divided as to whether the country will export any significant quantity of urea at all in 2024. The apparent stance of the government so far suggests it will not, but on the other hand, production has remained high – close to 180,000 t/day – and stocks are building. The price of urea is more than 400 yuan/t (USD60/t) lower than at the same time last year in the domestic market. However, at current levels close to Yn2,100/t ex-works, it is USD40-50/t lower than the international market, so permitting exports could have an inflationary impact on domestic prices.

China exported 2.6mn t of urea in September-December. Removing an average of 650,000 t/month from the international market cannot fail to have an impact on price. Elsewhere, the main macro trend is weak prices for corn and wheat, which appear to be delaying or reducing demand for urea in several countries, notably in Europe and Latin America. European buyers have several months in which to decide, with the next application season 6-7 months away. But Brazil and Argentina are approaching their peak seasons and September-October will show whether buying has been delayed or reduced. Summer plant turnarounds in Russia will increase supply from September, and Egyptian exports should start to recover after the gas-related cuts in July. ■

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Special focus

FERTILIZER SUSTAINABILITY ›

Decarbonization progression

Fertilizer Focus speaks with Bert Frost, Executive Vice President, Sales, Market Development and Supply Chain, at CF Industries about the strategies the company has employed to tackle the decarbonization of the fertilizer industry.

Fertilizer Focus (FF): How would you characterize the state of sustainability in the fertilizer industry?

Bert Frost (BF): The entire agriculture value chain are stewards of the natural resources we work with, and I believe are always looking to operate in a more sustainable way. We see progress every year, and the fertilizer industry is no different. In fact, we have a unique role to play as the manufacturing of fertilizers, which are essential to crop yields, is a significant contributor to the lifecycle carbon footprint of global food production. We think the fertilizer industry is going to drive dramatic progress in the next few years as decarbonization projects come online and we can offer fertilizers with a lower carbon intensity to our customers.

(FF): How is CF Industries helping to accelerate decarbonization and where do you see it going in the next several years?

We are very pleased with the progress we're making. We're investing in decarbonization projects today and have mapped out our long-term plan to reach our net zero emissions by 2050 goal.

For example, our landmark carbon capture and sequestration (CCS) project at our Donaldsonville, Louisiana, Complex continues to advance and is expected to start up in 2025. Once operational, our partner ExxonMobil will sequester 2 mn t of CO_2 annually from our facility that would otherwise be emitted to the atmosphere. We also recently announced a CCS project at our Yazoo City, Mississippi, facility that will sequester up to 500,000 t of CO_2 annually once the project is completed. ExxonMobil will also transport and sequester those tons.

We also established a roadmap to achieving our 2030 Scope 1 emissions intensity goal as well as a path forward to reach net-zero carbon by 2050. It demonstrates that our path to achieving our net zero emissions target by 2050 will require addressing multiple sources of greenhouse gas emissions.

(FF): What technologies is the industry focused on using to help reduce carbon emissions?

BF: We believe that, in the short-term, carbon capture and sequestration, where we capture CO_2 emissions and inject them in the ground as opposed to releasing it to the atmosphere, offers the quickest route to significant emissions reduction. CF Industries has nitrous oxide (N_2O) abatement in place at approximately one-third of our nitric acid plants. We believe that N_2O abatement on our remaining nitric acid plants is an important pathway to substantially reduce our Scope 1 emissions.

In-progress dehydration and compression unit at CF Industries flagship Donaldsonville Complex that is necessary to prepare captured CO_2 to be transported and sequestered in permanent geologic storage. Start-up of the project, which will annually sequester up to 2 mn t of CO_2 that would otherwise by emitted, is expected in 2025

CF Industries is also investing in new technologies for the production of ammonia, including electrolysis of water to generate hydrogen. A few months ago, we announced that our 20MW electrolyzer at our Donaldsonville Complex in Louisiana is mechanically complete, and commissioning activities are underway. Once operational, the unit will generate hydrogen from water through an electrolysis process that produces no CO_2 emissions.

We are also conducting a front-end engineering and design study to evaluate the technical feasibility and cost of an autothermal reforming (ATR) ammonia production facility. An ATR ammonia facility would eliminate the necessity for external heat sources, which is the source of flue gas CO_2 emissions in a conventional steam methane reforming ammonia plant. The combination of ATR and CCS for ammonia production is expected to decrease emissions from the manufacturing process by more than 90% compared to conventional ammonia plants.

(FF): Can you explain CCS technology and how it will help other industries lower their carbon footprint?

BF: Carbon capture and sequestration, or CCS, is the process of capturing CO_2 before it is emitted to the atmosphere to safely sequester it in secure and permanent storage areas deep underground. There are decades of commercial experience safely storing CO_2 geologically at large scale. With CCS, CF Industries can supply agricultural, mining and industrial customers with lower carbon intensity products that will reduce the carbon footprint of their supply chain, thus lowering their Scope 3, or indirect, emissions that are associated with their upstream and downstream supply chain.

(FF): From CF Industries' perspective, what is the demand outlook of the low-carbon ammonia industry and how do you plan to capitalize on future opportunities?

BF: We've had a growing number of conversations with current customers who want low-carbon versions of the products they buy today. This is because the consumers of agricultural and industrial products, including ethanol producers such as POET, are increasingly focused on reducing the carbon footprint of their supply chain, which lower carbon fertilizers will do in a quantifiable and certifiable manner. We expect even greater interest as we bring low-carbon ammonia and fertilizers to the global market.

There are also new sources of demand for low-carbon ammonia that are emerging globally, such as power generation and marine shipping. These customers view ammonia as an opportunity to reduce their Scope 1, or direct, emissions by replacing the fossil fuels they use today with low-carbon ammonia.

(FF): Are there other industries where you see decarbonized ammonia being effective?

BF: We are collaborating globally. We have potential partners in Japan who are looking to co-fire ammonia into coal power plants to reduce emissions. We are evaluating greenfield low-carbon ammonia capacity in the United States with them as well as offering expertise on safe transportation and storage of ammonia. We are also working closely with maritime shipping industry leaders on the use of ammonia as a replacement for the emissions-heavy bunker fuel currently used by international shipping vessels. This includes serving as a strategic partner with the Mærsk Mc-Kinney Møller Center for Zero Carbon Shipping, which is exploring the development of zero-carbon technologies for the maritime industry worldwide.

Bert Frost, CF Industries

(FF): Outside of selling a low-carbon fertilizer to customers, what other benefits come with decarbonizing your production network?

BF: By decarbonizing our production network, we can serve as responsible stewards of the environment. Beginning in 2020, CF Industries established a series of GHG reduction goals that align with our long-standing commitment to environmental stewardship, as well as with our stakeholders' and society's interests in reducing GHG emissions.

In 2023, the company established a new goal to develop a strategic plan to address our impact on nature and biodiversity. This new goal will help formalize our approach to protecting nature, which focuses our actions in four areas that we believe are most relevant to our operations: biodiversity, climate, soil health, and water.

FF: What kind of support is needed to make these decarbonization solutions work at scale?

BF: CF Industries put forward both a long-term vision of getting to net-zero by 2050, and an intermediate goal of reducing our carbon intensity by 25% by 2030. We are on track to achieving our 2030 goal, and we understand the initiatives necessary to reach our 2050 goal. To get us there, we will need to see continued advancements in technology, development of partnerships, and government incentives and regulations that propel decarbonization efforts forward. ■

Transforming phosphate recovery for a sustainable future

Written by

M.A. De Boer, *CEO and Founder,* and **R. Serfontein,** *Marketing Manager,* ***SusPhos, The Netherlands***

The scale-up company SusPhos has won the tender for the largest European sludge incinerator with N.V. Slibverwerking Noord-Brabant (SNB) and is going to build a full scale plant to produce sustainable phosphate products in Moerdijk, the Netherlands. This marks a significant leap into more sustainable agriculture and resource management in Europe.

SusPhos is helping to create a sustainable future by transforming phosphate waste into a viable, alternative raw material, thereby assisting in providing alternative and sustainable phosphate products and reducing the scarcity of phosphorus. As one of few companies in this field, the plant will only produce valuable products and there will be no waste.

The birth of SusPhos

SusPhos was founded in 2019 after in-depth research at the University of Amsterdam, by Marissa de Boer, the company's founder and CEO, while she was pursuing her doctorate. De Boer quickly saw that the rapid loss in phosphorus resources required a long-term solution. Her research laid the scientific foundation for what would become a company dedicated to finding a circular phosphate solution. It also inspired the company name,

Mono-sludge incinerators can be turned into so called 'urban mines'

SusPhos - short for "sustainable phosphate". The company's process evolved over time to become a multi-patented, zero-waste process of upcycling phosphate from several waste streams as sewage sludge ash in a sustainable and responsible manner and with a sound financial basis.

Phosphorus and phosphate: A geopolitical concern

As one of the three key plant nutrients, together with nitrogen and potassium, phosphate is vital for human life and is a major component of fertilizers used all over the world. Currently, the most common method of obtaining phosphate is through fossil rock mining, which is a finite source and is not available globally. Like many other regions, the European Union is highly dependent on imports from countries such as Morocco, the Western Sahara area, and China. This reliance on imports makes the market vulnerable to geo-political instability and supply concerns, making it even more critical to create an alternative solution.

The fact that a lot of phosphorus is currently wasted in a diffuse way, made it obvious that the solution should be found in transforming these waste streams into a recycled product and by doing so closing the 'P-Loop'.

A zero-waste process using less energy

With the use of the SusPhos technology, mono-sludge incinerators can be turned into so called 'urban mines' substituting the traditional fossil mines. The SusPhos process is a truly zero-waste process, the by-product of the process can be used in the cement industry, amongst others, for which it has qualified in various tests. Approximately 100,000 tonnes of sludge ash is produced in the Netherlands annually, of which a fifth is P_2O_5. Even larger amounts are available in Germany, with around 400,000 tonnes of sewage sludge ash per year. And new legislations predict this number to increase to around 800,000 tonnes. Another advantage of the SusPhos technology is that the process can use waste heat from the incinerator located next to the unit. This creates an energy-

(left) SusPhos pilot plant in Leeuwarden, the Netherlands; *(right)* Sewage sludge ash (left) and SusPhos products

efficient process eliminating many CO_2 emissions associated with transporting product between facilities. End result: a much lower carbon footprint.

Validated from laboratory to pilot to vendor scale

The process has already proven successful on pilot and laboratory scale, with tests happening in the pilot factory located at the wastewater treatment plant in Leeuwarden, the Netherlands. The joint venture with SNB will see SusPhos build a unique and first-of-its-kind phosphate recovery plant. The 'SusPhos One' plant will be strategically located adjacent to SNB's facility in Moerdijk, Noord-Brabant, The Netherlands, where road, rail and water connections are ideal to supply the customer base anywhere in Europe.

Regulatory approval, classification and benefits

Their main product, Phoenix Emerald, will be in liquid form, and has already received regulatory approval under the Component Material Category (CMC) 13 (Thermal oxidation materials and derivatives) and is well within the Fertilising Products Regulation (FPR). The product is a perfect replacement for the raw material used in the fertilizer industry as it contains phosphoric acid, sulfuric acid, and salts from iron and aluminium. Among its many benefits, it has an extremely low cadmium level, a low carbon footprint, and an ability to improve granulation. Finally, the extremely low content of fluorine, uranium, and heavy metals makes the product more attractive in the current market and even more so in the future. Beyond its use as a fertilizer, the product can also be used to capture ammonia in strippers in stables and manure storage facilities. Additionally, it can be used in fire retardants and alumina treatments facilities. The by-product is also a tested sustainable substitute for Portland cement.

These many uses demonstrate the adaptability and promise of SusPhos's invention across multiple industries, resulting in more environmental advantages.

Support and prospects

SusPhos received acknowledgment as a leader in sustainable technology when they won one of the CES 2024 Innovation Award Honoree in Las Vegas, Nevada, in January 2024.

In addition, SusPhos's efforts have gained substantial support from the Dutch government and European authorities who understand the urgent need for sustainable phosphorus management and who have generously supported SusPhos's work with grants and subsidies. With the company's factory set to be built in Moerdijk and expected to be operational in 2027, it will serve as a large-scale model for other facilities and will produce substantial amounts of raw material for phosphate fertilizers. ■

Having **SusPhos One** as a demonstration plant up and running, the company's approach is to license and support their relatively simple, innovative, and robust technology globally.

For anyone interested in the phosphate product and discussing cooperation and investment opportunities pertaining to this future-proof solution please contact: ***info@susphos.com***

Marissa de Boer will be present at the Argus Fertilizer Europe conference 22-24 October in Athens.

Reducing carbon intensity in ammonia plants

Written by

Dr MP Sukumaran Nair, *Director,* ***Centre for Green Technology & Management, India***

Globally, around 180 mn t of ammonia are produced annually, and this figure is projected to grow at a compound annual growth rate (CAGR) of 1.2% until 2050. Currently, the primary feedstock for ammonia production is natural gas (72%), followed by coal (26%). By 2050, the share of natural gas is expected to increase to 85%.

Since the inception of ammonia production plants using the Haber-Bosch process, which initially had a capacity of 20 tons per day, the industry has seen significant growth. Today, single-stream plants can produce over 4,000 metric tonnes per day (MTPD). Over the past century, energy consumption in ammonia production has decreased to less than one-tenth of what it was in earlier generations. This reduction has led to lower production costs, improved reliability, enhanced safety, and better environmental performance. These improvements have been driven by innovations in design, operations, maintenance, as well as advancements in processes, equipment, and catalysts.

Steam Methane Reforming (SMR) is the most commonly employed technology for ammonia production. Approximately 80% of the ammonia produced globally is used in fertilizer manufacturing, with 50% of this amount being converted into urea.

SMR is the most commonly employed technology for ammonia production

Potential benefits

The generation of CO_2 per ton of ammonia produced varies between 1.9 to 2.6 tons, depending on the feedstock and technology (such as Steam Methane Reforming or Gasification) used. Approximately 70% of the CO2 produced in an ammonia plant originates from the gasification of the feedstock (Scope 1 emissions), while the remainder comes from the use of fuel in the primary reformer, fired heaters, electrical supplies, and auxiliary boilers (Scope 2 emissions). At current production rates, the total CO_2 emissions from these plants amount to 420 mn t annually.

Decarbonizing ammonia production presents two key avenues for CO_2 reduction: addressing the process gas emissions (70%) and the flue gas emissions (30%). Additionally, if the plant relies on grid electricity, the CO_2 emissions associated with thermal power generation must also be considered. Most of the energy derived from fossil feedstock is used to separate hydrogen from steam (water) and to add nitrogen to the hydrogen to produce synthesis gas. Primary reforming with steam followed by secondary reforming with air addition followed by conversion and removal of carbon oxides is one approach to produce 'syngas'. Alternatively, hydrogen can be washed with liquid nitrogen at the front end to stoichiometrically adjust the hydrogen and nitrogen composition suitable for ammonia synthesis.

For a given feedstock and plant capacity, CO_2 generation is fixed. Therefore, fully decarbonizing an ammonia plant requires considering the following strategies:

- Producing hydrogen through water electrolysis and generating nitrogen from the liquefaction and fractionation of air, both powered by renewable energy.
- Using renewable energy for synthesis, refrigeration, ammonia storage, and associated utilities.

However, given the current capital expenditure (Capex) and operational expenditure (Opex), this approach is very costly, and downstream industries may struggle to use the ammonia produced in this manner while maintaining financial viability. Additionally, many existing grey hydrogen/ammonia plants still have considerable operational life remaining.

According to the International Fertilizer Association (IFA) in 2020, the global

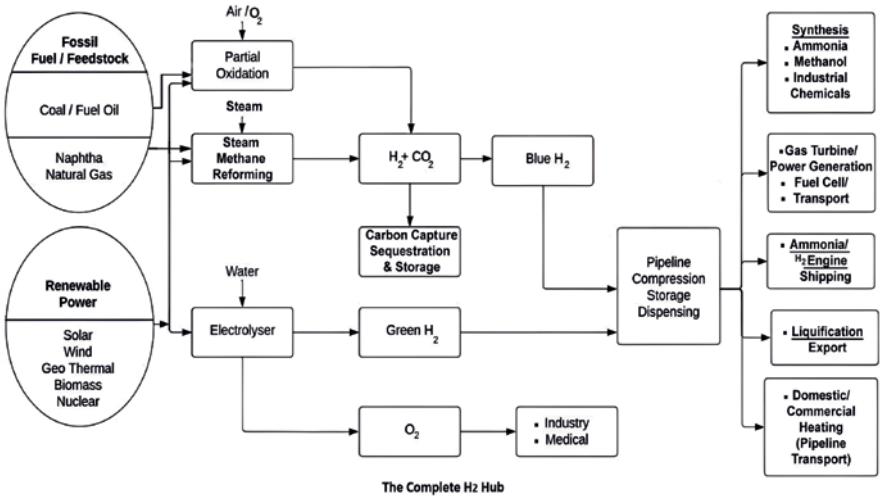
average age of ammonia plants was around 24 years. In China, which accounts for 30% of global ammonia capacity, facilities are younger, averaging 12 years, with 85% of them using coal gasification. Excluding China, the global average age of ammonia plants was about 29 years in 2020, with significant regional variation. While energy efficiency in these plants can be improved through retrofits and technology upgrades, more efforts are needed to transition them to near-zero-emission technologies, either by fully or partially decarbonizing these valuable assets.

To achieve this, capturing and sequestering the CO_2 produced in these plants and associated utilities is essential, along with using renewable energy to power equipment. Mature, efficient, and cost-effective technologies for CO_2 and flue gas CO_2 recovery are available. If an adjacent urea plant exists, CO_2 disposal becomes easier. For merchant ammonia plants, a reliable and economical carbon capture, storage, and sequestration (CCSS) facility needs to be developed. According to the Global CCS Institute, there were 41 CCS projects in operation and 351 under development globally as of 2023.

By 2050, it is expected that around 65% of natural gas-based ammonia plants worldwide will be equipped with either Carbon Capture and Storage (CCS) or Carbon Capture and Utilization (CCU) systems. This addition will increase capital costs by 20%, raise energy consumption by 7%, and result in a 2-3% increase in production costs.

Numerous projects are being announced globally, supported by national governments through initiatives such as the 45Q Tax Credit in the USA, Japan's Advanced CCS Projects initiative, and the EU Net-Zero Industry Act. Given the capital intensity and policy-related factors involved, the Global CCS Institute (GCI) notes that supportive policies are crucial to making CCUS business cases viable and attracting investors.

Figure 1. Typical hydrogen hub



Commercialization of technologies

For successful decarbonization in the future, technology providers in various fields - such as renewable power, water treatment, electrolysis, fuel cells, combustion engines, hydrogen burners, pipeline transport, and hydrogen safety - must collaborate closely and innovate new approaches in their respective areas. Over the past decade, major technology companies in the ammonia industry have focused their research and innovation in this direction, achieving significant success. However, it may still take some time before commercial-scale units that leverage economies of scale become a reality.

KBR has developed the green ammonia technology 'K-GreeN', which uses renewable power to separate nitrogen from the air and extract hydrogen from water through electrolysis. OCIOR Energy recently selected this process for its plant located in the Gopalpur region of Odisha, India. This will be the 10th KBR-licensed green ammonia plant globally. Key features of the K-GreeN process include a low-cost electrolyzer, ease of retrofitting existing ammonia plants with minimal equipment additions, no need for a cryogenic air separation unit, low operational and capital expenditures, and lower energy consumption. The process also incorporates digital solutions for optimized design, increased plant reliability, and capacities ranging from 200 to 6,000 MTPD.

Haldor Topsoe, which has built over 60 ammonia plants worldwide, has developed the Solid Oxide Electrolysis Cell (SOEC) for producing a mixture of hydrogen and nitrogen suitable for ammonia synthesis. This technology is optimally integrated with Topsoe's conventional ammonia synthesis process to produce green ammonia. The nitrogen required for ammonia synthesis is obtained by removing oxygen from the air, using steam generated by burning some of the hydrogen produced in the cell. The energy requirements of the SOEC can be met through either electricity or heat, ensuring the system's energy efficiency. Additionally, steam from the ammonia loop is utilized in the SOEC. By eliminating the need for a costly Air Separation Unit (ASU), the SOEC system becomes more energy-efficient and cost-effective.

The thyssenkrupp Uhde green ammonia process employs Alkaline Water Electrolysis (AWE), based on the proven chlor-alkali electrode technology developed by

Blue ammonia is likely to be more economically attractive

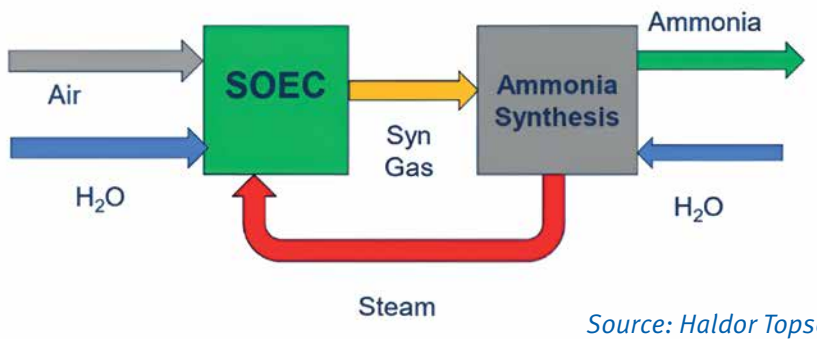
thyssenkrupp nucera, pioneers in electrolysis technology with over 500 projects worldwide. The nitrogen required for this process is typically sourced from an Air Separation Unit.

Scaling up

Only 'economy of scale' green ammonia plants can achieve price parity with conventional ammonia. thyssenkrupp is currently executing a world-scale Green Hydrogen project in NEOM, Saudi Arabia, featuring 2 GW of water electrolyzers, along with Clean Ammonia projects in Qatar and the USA, expected to come online in the coming years. Additionally, upcoming projects in developed regions like the EU and USA are also focusing on larger-scale green ammonia plants. thyssenkrupp Uhde offers a range of green ammonia plant capacities, from 300 to 5,000 MTPD, and also provides carbon capture technology that can be applied to conventional ammonia plants to reduce carbon emissions and produce blue ammonia.

The Linde Ammonia Concept (LAC) is a versatile innovation over the conventional Steam Methane Reforming (SMR) process, eliminating some of the catalytic steps; secondary reformer, low-temperature shift, and methanation, along with the need for solution-based CO_2 removal and a purge gas recovery unit. Linde's green ammonia technology uses a newly developed 24-megawatt electrolyzer to produce green hydrogen. The electrolyzer, built by ITM Linde Electrolysis GmbH, a joint venture between Linde and ITM Power, utilizes high-efficiency Proton Exchange Membrane (PEM) technology.

Figure 2. Solid oxide electrolysis cell



Source: Haldor Topsoe

Stamicarbon's Green Ammonia technology is based on a modular concept, offering improved reliability by eliminating multiple compressors and incorporating digital solutions such as a dedicated operator training simulator and process monitoring tools. Since no inert gases are present in the synthesis gas, there is no need for loop purging or an ammonia recovery section, resulting in higher conversion per pass. Recognizing that first-generation green ammonia plants lack the benefit of economies of scale, Stamicarbon has reduced CAPEX by implementing single-step water condensation for produced ammonia, using ammonia as a cooling medium to enhance plant reliability, and employing a multi-service compressor that replaces individual compressors for syngas, makeup gas, and refrigeration. Stamicarbon is also collaborating with ENEA, the Italian National Agency for New Technologies, Energy, and Sustainable Economic Development, which leads an interdisciplinary consortium of nine European partners to develop an innovative high-temperature electrolysis prototype using renewable solar heat and power to produce green hydrogen.

Moving forward

Green ammonia is rapidly emerging as a promising alternative to traditional fossil fuels across various sectors, including long-distance marine transportation, fertilizer manufacturing, hydrogen (as cracked gas), and its downstream derivatives.

Blue ammonia, produced using hydrocarbon feedstocks coupled with carbon capture and storage, is likely to be more economically attractive in the near term, especially before 2030, due to carbon emissions penalties and production subsidies. However, green ammonia will require additional policy support beyond the incentives already announced to become cost-competitive in most markets. Decarbonization policies, such as those in the U.S. Inflation Reduction Act and the EU's Carbon Border Adjustment Mechanism, Emissions Trading Scheme (ETS), and Renewable Energy Directive (RED III), are reshaping the economic fundamentals of low-carbon ammonia. The International Maritime Organization (IMO) has introduced net-zero mandates for marine fuels, with green ammonia expected to play a significant role in the low-carbon fuel market.

In the near term, converting grey ammonia units into blue ones with the support of CCS is of paramount importance. As most governments aim for net-zero emissions between 2050 and 2070, it would be prudent for major ammonia-producing countries to establish adequate CCS facilities with policy and financial support from their respective governments to advance the decarbonization agenda.

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Fast-tracking green ammonia production

Written by

Deepak Shetty, *Business Development Manager,* **Rolf Postma,** *Process Engineer,* and **Nikolay Ketov,** *Public Relations Officer,* ***Stamicarbon, the Netherlands***

For over a century, ammonia has been a crucial component of the global economy, enabling the production of artificial nitrogen fertilizers essential for sustaining the world's growing population. Moreover, ammonia is increasingly significant in various industrial applications, particularly as efforts towards decarbonization intensify. Lately, with carbon emission reduction strategies and legislations being adopted around the world, ammonia is getting a lot of attention. Ammonia can efficiently act as a green hydrogen carrier and also serve as a direct carbon-neutral fuel. Its combustion produces no CO_2 emissions, thereby eliminating the need to crack it back into hydrogen and avoiding respective energy losses.

As the industry shifts toward a zero-carbon economy, it faces a few bottlenecks

The existing global supply chain infrastructure and extensive experience in ammonia production and handling make it one of the most practical ways to decarbonize industries. For many locations around the world, green ammonia offers an optimal investment cycle, opening the door to more environmentally friendly production of nitrogen-based fertilizers and/or serving as an efficient energy carrier and fuel. However, while ammonia synthesis is a well-established technology, adapting it to use green hydrogen as feedstock may present significant challenges. Specifically, managing the fluctuations in supply caused by renewable energy sources is essential to fully realizing the potential of green ammonia in a sustainable energy future.

Stamicarbon, the nitrogen licensor of the MAIRE S.p.A., offers a proven way of solving the energy transition challenge with its high-pressure NX Stami Green Ammonia technology (see figure 1). Making it possible to produce ammonia from renewable energy resources, NX Stami Green Ammonia is the first step towards realizing a carbon-free future. In today's context, small-scale sustainable ammonia production can be an effective first step toward carbon-free operations. This approach not only reduces the environmental footprint of fertilizer facilities but also helps create new local value chains.

Making the first step

As the industry shifts toward a zero-carbon economy, it faces a few bottlenecks in quickly implementing large-scale green ammonia projects. These challenges include the availability of renewable energy, limitations on electrolyzer production capacity, and the modular nature of electrolyzers, which hampers the achievement of a significant economy of scale.

Stamicarbon's technology is based on a high-pressure ammonia loop designed for minimal investment cost and process simplicity and reliability on smaller scales, particularly when using green feedstock. This design benefits from the high purity of its synthesis gas feedstock, leading to greater reactant partial pressure, enhancing the reactivity inside the reactor. Consequently, the process can operate using minimal recycle of unreacted hydrogen and nitrogen, reducing the need for purging.

Compact and efficient

NX Stami Green Ammonia technology distinguishes itself from conventional ammonia methods mainly due to its high synthesis gas pressure. The make-up gas containing hydrogen and nitrogen is produced from the upstream electrolyzer and nitrogen

Figure 1. NX Stami Green Ammonia concept plant 3D drawing

generation unit, then compressed to a pressure of over 300 bar. The recycle stream containing the unconverted gas is recompressed in the electrically-driven multi-service reciprocating compressor to synthesis pressure. The typical process diagram of this technology is shown in figure 2.

Due to the high pressure, the reactor size can be reduced. The ammonia converter used in the NX Stami Green Ammonia process is a single-bed axial-flow converter with a tubular design, where the feed is pre-heated using the exothermal reaction on the catalyst side to a temperature necessary for ammonia synthesis. The start-up heater is integrated into the ammonia converter.

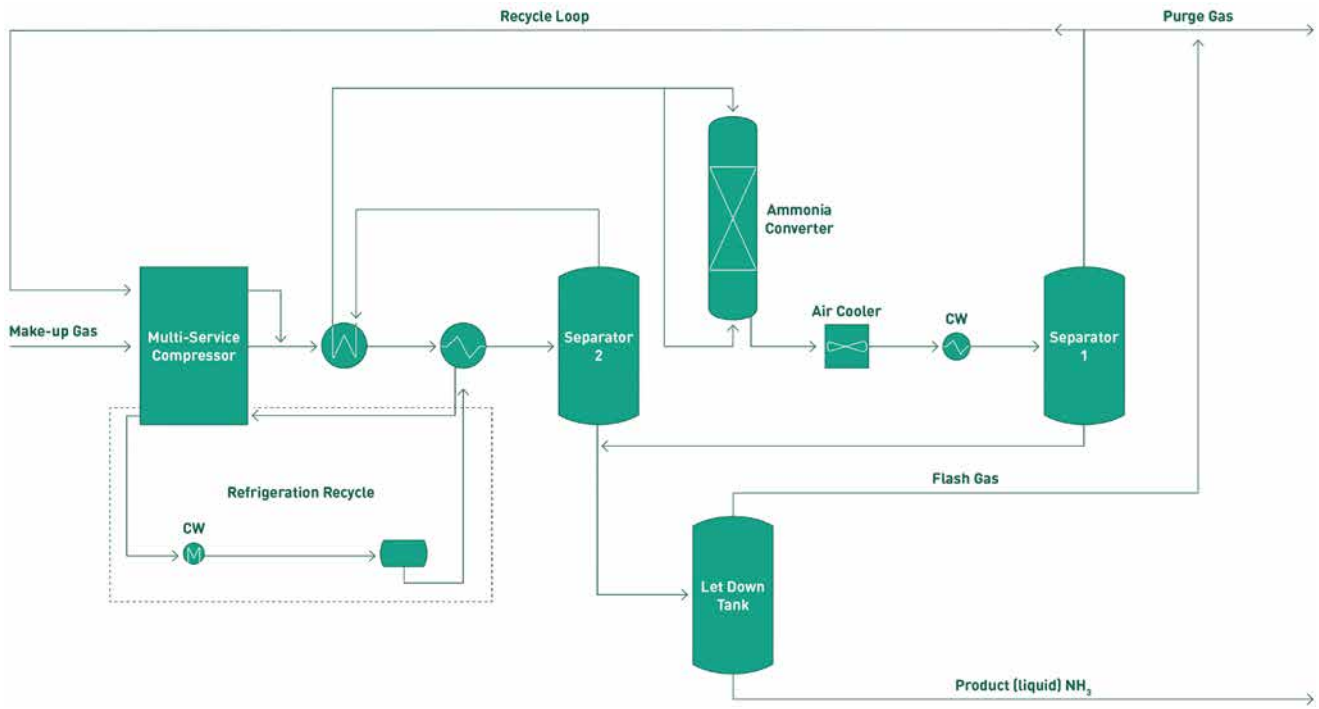
Ammonia can efficiently act as a green hydrogen carrier and also serve as a direct carbon-neutral fuel

The high pressure of the synthesis loop allows for single-stage ammonia condensation using cooling water. This eliminates the need for a refrigerating compressor, thus minimizing equipment count, leading to about 30% CAPEX savings. Over 80% of ammonia is recovered in separator 1, and part of the uncondensed ammonia is condensed in separator 2, as safeguard to remove low levels of potentials catalyst poisons upstream of the converter.

Ammonia can be produced at a pressurized condition (i.e. 16-18 bar) and ambient temperature to be stored in bullets or used directly in a downstream plant, or at ambient pressure and -33 °C to be stored in atmospheric ammonia storage, or any intermediate pressure level as required.

Depending on the plant's location, plot space available and various local factors affecting the overall cost of the plant, a stick-built or fully modular design can be applied.

Figure 2. NX Stami Green Ammonia process



Pioneering the energy transition

NX Stami Green Ammonia has already been adopted in several projects worldwide to contribute to industry decarbonization and drive the energy transition in the fertilizer sector.

As an example of recent developments, Stamicarbon announced that it will provide NS Stami Green Ammonia and NX Stami Nitrates technologies for a low-carbon fertilizer plant in France. Together with NextChem Tech, Stamicarbon has been awarded a feasibility study and a pre-FEED contract from FertigHy.

FertigHy is a consortium composed of European industrial players aimed at tackling the challenges of the global food security with low-carbon fertilizers solutions. The plant, which is scheduled to start construction in 2027, will produce half a million tons per year of low-carbon nitrogen-based fertilizers, from hydrogen obtained by renewable and low carbon electricity.

The conditioning of steel gases will be integrated with ammonia synthesis

Hard-to-abate industries

Green ammonia also offers opportunities for collaboration between the fertilizer market and other high energy-consuming sectors. This collaboration is already being explored by Stamicarbon in the EU-funded INITIATE project, where carbon-rich off-gases from steel mills will be used as feedstock for fertilizer production. The conditioning of steel gases will be integrated with ammonia synthesis using modular carbon capture, utilization and storage technology. The unique design of the NX Stami Green Ammonia converter incorporates the capability to deal with the intermittency of feedstock from steel mill off-gases and on-site hydrogen produced by electrolysis.

Small footprint, big impact

Stamicarbon's technology package offers a competitive solution for small-scale, local production of high-value products with significant potential in a carbon-free economy. Green ammonia production can be integrated into a sustainable fertilizer complex, serving as a ready-to-ship energy carrier or an immediate fuel source. This approach facilitates faster transition from traditional fossil-based processes, ultimately enabling the production of green ammonia precisely where it's needed most.

Note: NS Stami Green Ammonia™ and *NX Stami Green Ammonia™ are trademarks of Stamicarbon* ■

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Conference preview:

Argus Fertilizer China 2024

4-6 November 2024 • Shanghai, China

The Argus Fertilizer China Conference returns to China after four years. We are delighted to be returning to Shanghai on 4-6 November to bring together key international and regional players across the Chinese fertilizer value chain.

Join over 300 decision makers from global producers, major Chinese suppliers, buyers, end users and distributers across Asia and beyond in Shanghai for a three-day-market-leading trade event. This gathering will provide unparalleled opportunities to network, negotiate, and explore new trends and opportunities in the fertilizer value chain, fostering stronger trade links and supply chain cooperation between China and the rest of the world.

China is one of the largest producers, consumers, exporters, and importers of fertilizers in the world. Join a senior line-up of experts, C-suites and decision makers as they delve into the changing economic climate in China and the wider Asia-Pacific. Hear about bright spots in the region and the movement towards sustainability, efficiency, and technological innovation.

The Argus Fertilizer China Conference provides unrivalled networking opportunities, with an expanded exhibition hall that includes networking meeting zones with different amenities (food, drink, charging points, etc...). These zones ensure your experience is as smooth and comfortable as possible, offering plenty of areas to host meetings with clients. There will be more opportunities than ever to meet old and new contacts, and discuss and make deals for the business year ahead.

Conference highlights - Main conference

Presentations and panels will feature C-level speakers from companies including HSCC, Monband, Omnia International, Argus, Inner Mongolia Talent Fertilizer Corporation Ltd. and many more. This is your opportunity to hear about the latest trends and gain insights of Asia's major fertilizer export markets – where are the bright spots? Learn how China is capturing value from innovation by balancing efficiency, sustainability and affordability through its investment in next-generation fertilizers, including: water-soluble fertilizers, micronutrients, slow and controlled-release fertilizers and biostimulants. Knowledge and information sharing are central to the conference; our industry-led content will equip you for today's deal making and give insight into the products of tomorrow.

Main conference featured speakers:

- **Gerry Song Manjun,** *General Manager,* ***Highsun International Chemical Trade Center***
- **Lintao Cong,** *Vice Chairman,* ***Inner Mongolia Talent Fertilizer Corporation Ltd.***
- **Will Li,** *Vice President & Strategy Director,* ***Monband***
- **Mike Nash,** *Senior Editor – Fertilizers,* ***Argus***
- **Jan De Jager,** *Managing Director,* ***Omnia International Australia***

Low Carbon Market Focus Forum

This year features a new Low Carbon Market Focus Forum, including speakers from Tsingshan, BASF, Lygend, and Mintal Hydrogen Energy. This forum will help you capitalise on China's booming low carbon market fertilizers industry and its decarbonization strategy. The Low Carbon Market Focus Forum will put a spotlight on the battery supply chain and the impact it is having on fertilizer availability and price as we explore the overlap with sulphur and phosphates. Key topics also include China's potential for clean ammonia production, its latest technology developments and how clean ammonia applications will open additional markets for the fertilizer industry. Join these interactive discussions to understand how the fertilizer industry is evolving in emerging markets.

Low Carbon Market Focus Forum featured speakers include:

- **Li Chong,** *Secretary General,* ***China Sulphuric Acid Industry Association***
- **Hugh Chen,** *Jakarta Commercial Department,* ***Tsingshan***
- **Markus Schmil,** *Head of Business Management – Nitrogen,* ***BASF***
- **Rhett Wang,** *Raw Material Procurement Department Purchasing Manager,* ***Lygend Resources & Technology Co., Ltd***
- **Kai Tang,** *Hydrogen Deputy Director,* ***Mintal Hydrogen Energy Technology***

Revamped Argus fertilizer fundamentals workshop

New to the market or looking for a refresher? The Argus fertilizer fundamentals workshop will provide you with all the market basics and an overview of the primary dynamics from Argus market experts. This year's fast-track will focus on the key products for Asia-Pacific:

Nitrogen • Phosphates • Sulphur – Sulphuric Acid • Potash • Specialty Fertilizers • Water Soluble Fertilizers • TGU • Low-carbon products

Whether you are new to the market or need a refresher, this is the perfect opportunity to sharpen your product knowledge and identify new opportunities. Benefit from face-to-face interaction with seven Argus experts who will answer your most pressing questions.

Networking

This year's agenda has been tailored to ensure multiple networking touchpoints, with coffee breaks, lunches, and evening cocktail receptions. The conference floorplan includes "networking meeting zones" to make meeting up with clients easier. These will feature lounges and meeting tables, as well as food, drink and charging points.

Access to our drink's receptions will enable you to continue to network in an informal setting on day one and day two of the conference.

We would like to thank our speakers, sponsors and exhibitors for their support and look forward to seeing everyone at the conference.

Want to be involved? Discover our delegate and sponsorship packages

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New CFO for Nutrien

Nutrien has announced the appointment of Mark Thompson as Executive Vice President and Chief Financial Officer, effective 26 August 2024. In alignment with Nutrien's succession plan, Mr. Thompson succeeds Pedro Farah, who will remain with Nutrien in an advisory capacity until his departure on 31 December 2024.

“Mark’s impressive track record of execution, along with his proven financial and strategic acumen provides the unique ability to succeed in this position on day one. He brings in-depth knowledge of our business that will support the advancement of our strategic actions to enhance quality of earnings and cash flow,” said Mr. Seitz. “On behalf of the Nutrien team, I would also like to thank Pedro for his service and commitment to Nutrien over the last five years.”

“I’ve had the privilege to serve in leadership roles across the company and firmly believe in the opportunities afforded by Nutrien’s strong competitive advantages and world-class asset base to deliver long-term shareholder value,” said Mr. Thompson. “I look forward to continuing to partner with Ken and our executive leadership team on the disciplined execution of our strategy and drive a focused approach to capital allocation.

Mr. Thompson has been with the Company since 2011, currently serving as Executive Vice President and Chief Commercial Officer. Prior to his current position he held numerous executive and senior leadership roles across the company, including Chief Strategy & Sustainability Officer, Chief Corporate Development & Strategy Officer, and Vice President of Business Development for Nutrien’s Retail business. He earned his Bachelor of Commerce (Finance) and Bachelor of Arts degrees from the University of Saskatchewan and holds the Chartered Financial Analyst (CFA) designation.

Leo Alders re-elected as President of Fertilizers Europe

At the recent Fertilizers Europe General Assembly, Leo Alders (LAT Nitrogen) was re-elected as its President for a two-years term. Since 2021, he has been CEO of LAT Nitrogen.

Monica Andres Enriquez (Yara) and Hubert Kamola (Grupa Azoty) have been elected as Vice- Presidents.

The President commented on the re-election: “I am honoured by the re-appointment as President of Fertilizers Europe, and I would like to thank the Fertilizers Europe for the trust. The appointment of the Association’s President, Vice-Presidents and Board comes at a crucial time, the beginning of a new institutional cycle and new strategic agenda for Europe. The industry competitiveness, strategic autonomy and industry’s ability to transition to low-carbon economy will be among our key priorities in coming years.”

Mosaic chief executive to resign

North American fertilizer producer Mosaic said its chief executive, Joc O'Rourke, will retire and will be replaced by a senior vice president at the company.

O'Rourke will resign as chief executive and as a member of the Mosaic board of directors effective 31 December.

The board voted unanimously to appoint Bruce Bodine, Mosaic's senior vice president of North America, as its next chief executive.

Bodine will begin as chief executive effective 1 January 2024. O'Rourke will serve as a senior advisor until mid-2024.

"Joc's leadership over the past eight years strengthened Mosaic," said Greg Ebel, chairman of Mosaic's board. "The company today is larger, more geographically diverse, more resilient and in excellent financial condition."

Bodine has held a number of executive roles, including senior vice president of potash, senior vice president of phosphates and vice president of supply chain.

O'Rourke was named chief executive in 2015 after working as Mosaic's chief operating officer and as executive vice president of operations.

Vipul Singhal Appointed as Director, Traffic Transportation (Freight & Fertilizer) on Indian Railway Board

The Ministry of Railways in India has announced the appointment of Vipul Singhal, a senior officer from the 2007 batch of the Indian Railway Traffic Service (IRTS), as the new Director of Traffic Transportation (Freight & Fertilizer) on the Railway Board.

Mr. Singhal, who is currently serving as the Director of Corporate Coordination on the Railway Board, will now oversee the transportation of freight and fertilizer, a crucial sector within the railway’s operations. ■

Supplement
EUROPE ›

The looming import-addiction crisis

The growing risks of EU's dependency on Russian fertilizer imports

Written by

Lukasz Pasterski, *Head of Communications* and **Marcia Pulcherio,** *Senior Trade & Economic Manager,* ***Fertilizers Europe, Belgium***

Russia's unprovoked and unjustified aggression against Ukraine and its use of energy as a political weapon has been having devastating impact on energy markets and, in turn, on energy-intensive sectors such as fertilizers. In 2022, the price of fuels in the EU increased dramatically. Russia's decision to suspend gas deliveries to several EU Member States further increased concerns related to the security of energy supply. With the Versailles Declaration agreed in March 2022, the EU Heads of State and Governments agreed to phase out the EU's dependence on Russian fossil fuels as soon as possible.

The share of Russia's pipeline gas in EU imports dropped from over 40% in 2021 to about 8% in 2023. Today, for pipeline gas and LNG combined, Russia provides less than 15% of total EU gas imports.

Addressing Europe's new addiction

The EU is in the process of successfully decoupling its economy from Russian gas as a matter of European security and strategic autonomy.

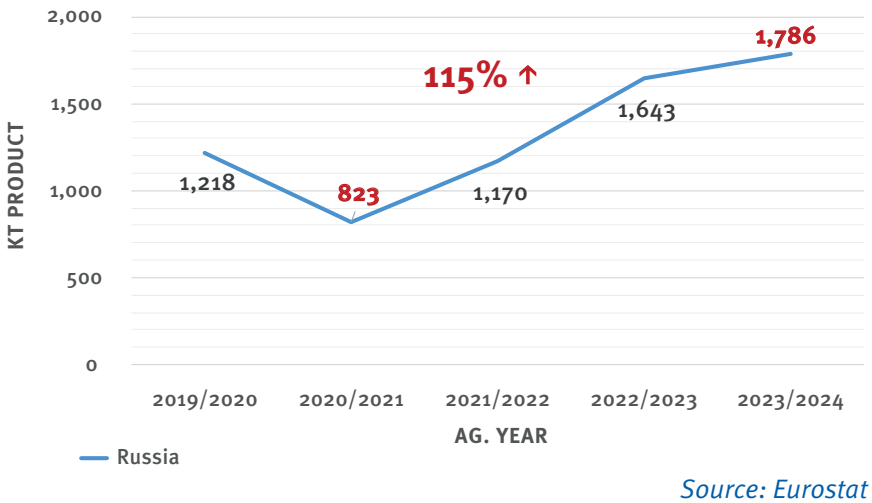
Although most of Europe managed to find new sources of gas to replace Russian supplies, Europe is deepening its dependency on Russian nitrogen fertilizers, which is gas in the solid form.

Since Russia's full-scale invasion of Ukraine, the EU's food system has developed a new and dangerous reliance on imports of Russian fertilizers.

Total imports of finished nitrogen fertilizers have been increasing since the 2021/2022 season. Total imports of urea fertilizers, which account for the largest share of nitrogen imports, have also increased between agricultural years 2021/22 and 2022/23. This is particularly concerning as regards urea.

Imports of urea from Russia between 2020/21 and 2022/23 doubled

Figure 1. Increase in Russian urea imports into the EU



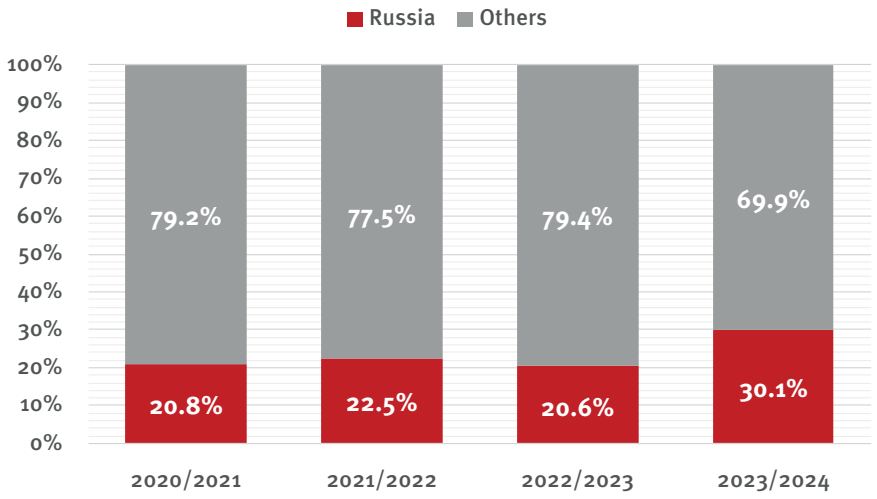
Source: Eurostat

The EU needs to take urgent action to stop imports of Russian fertilizers financing its war against Ukraine

(see figure 1), reaching 1643 kt. And imports continued to increase, amounting to 1776 kt in 2023/24 - resulting in a significant increase of 115% compared with 2020/21.

For the current agricultural year (July 2023-June 2024), imports from Russia represent over 30% of total urea imports. This is an increase of almost 10 p.p. from 20.6% for the previous agricultural year.

Figure 2. The EU's Growing dependency on Russian imports of urea



Source: Eurostat/European Commission

EU imports of Russian fertilizer finance the war

Every tonne of fertilizer imported to the EU from Russia is contributing directly to financing the war in Ukraine.

On 1 October 2023, Russia introduced an export duty for fertilizers of up to 10% with the specific aim of financing the war effort.

Moreover, on 1 January 2024, the law on tax on excess profits in the Russian Federation entered into force. The Ministry of Finance of the Russian Federation announced that for 2023 the budget received nearly EUR3.15 bn from excess profits, of which around EUR600 million (20%) was generated by imports of fertilizers.

By restricting its purchases of Russian fertilizers, the EU would deprive Russia of access to hard currency, a strong currency in the international market. This would jeopardize Russia's access to war supplies that need to be paid in strong currencies.

Moreover, it would force Russia to sell higher volumes of fertilizers to third countries in need, which could generate a downward pressure on prices, similar to the outcome when the oil price cap was imposed.

Russian producers undercut EU manufacturers – risk of structural dependency

By boosting fertilizer exports, Russia is able to continue exporting gas to Europe – only in another form – at the time when the EU is committed to breaking this dependency.

At the same time, benefitting from very low, state-regulated gas prices, Russian fertilizer producers have adopted an aggressive price undercutting strategy resulting in pushing domestic fertilizer producers out of business. Currently, around 15-20% of the EU's production capacity is temporarily halted.

Moreover, Russia is heavily investing in new fertilizer capacities, which clearly demonstrates its strategy to substitute the falling gas exports with finished fertilizers exports.

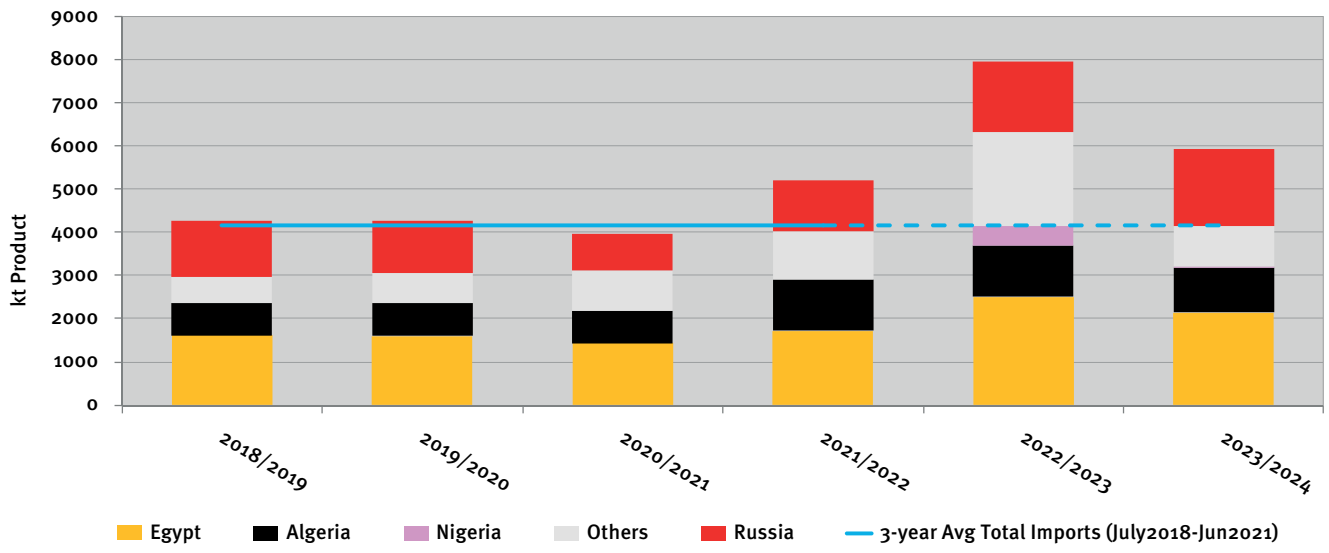
The EU needs to take strong action to reduce EU's dependency on Russian fertilizers

Russian fertilizer barons are evading EU sanctions by transferring assets to non-sanctioned individuals. As imports of fertilizers from Russia into the EU are financing Putin's war and are threatening EU's autonomy on food and fertilizers, Europe must explore other possible restrictive measures.

One possibility is to impose tariffs on imports of finished fertilizers into the EU from Russia. These measures, while applicable only to the EU and severe enough to suppress such imports into the EU in practice, would not affect exports to third countries or ancillary services, ensuring that food security challenges elsewhere are not exacerbated.

Such tariffs should be designed to prevent EU market destabilization as well as to stop Russia from using revenues from exports to the EU to fund its war against Ukraine. Any revenues generated by the tariffs could be used for remediating damage caused by the conflict, such as supporting farmers for example.

Figure 3. UREA Imports to EU-27 (extra trade) - Agricultural year (Jul-Jun)



Moving away from Russian fertilizer – the impact on the EU market

Currently, Russian producers place fertilizers minimally below EU fertilizer market price, in order to undercut EU producers while maximizing their own profit. In case of tariffs on Russian fertilizers, the immediate impact on prices is expected to be mild.

As a precautionary measure, the EU could introduce a phase-out period between the announcement of measures and their enforcement. This would allow time for any market adjustments, including the resuming of full domestic production. The EU market would also remain open for imports from other exporters.

Restarting idled EU capacity

The EU fertilizer industry has the necessary capacity to supply nitrogen fertilizers to EU farmers. In 2022, the total EU- 27 consumption of nutrients was 16 mn t, of which around 9.5 mn t was attributed to nitrogen fertilizers. The EU's total production capacity is around 14.8 mn t. The European market is an open market and the imported products' share of EU consumption is historically around 32% of the EU's demand.

Given recent market dynamics and the undercutting strategy of Russian fertilizer producers, around 20% of the EU capacity is temporary idled. Since the EU industry has unused capacity, potential restriction against Russian fertilizers is unlikely to have a major effect over the EU's market.

Decisive action of the EU would not only reverse the negative trend; it would also help avoid the situation where temporary production suspensions become irreversible, resulting in permanent shutdowns.

Diversification of supplies

In addition to the unused capacity of the domestic industry, other suppliers also have the capacity to export to the EU. The historical average of imports can still be supplied in the total absence of Russian urea. In the long term, the EU will benefit from a diversified source of suppliers, rather than deepening the dependency on Russia for fertilizers, which are strategic for food security.

There is an additional benefit to stopping imports of Russian urea: Russian fertilizers have a much higher environmental footprint than EU fertilizers. EU ammonium nitrate-based fertilizers have around 60% less greenhouse-gas emissions compared to Russian made fertilizers. If EU farmers become more dependent on imports from Russia, European agriculture will struggle to decarbonise.

Recent developments threaten the EU fertilizer sector's competitiveness, and thus, its ability to finance green investments to reach climate neutrality by 2050.

Imposing tariffs on Russian fertilizer is a way for the EU to achieve several of its policy goals at the same time. It deprives Russia of revenue to fund its war machine, helps support EU farmers avert the risks of becoming dependent on Russian exports and prevents the destabilisation of the EU's fertilizer market. This would enable EU producers to continue the green transformation of their plants. ■

The EU fertilizer industry calls for support

Dafydd ab lago, *Brussels Correspondent,* ***Argus Media,*** *speaks with* **Leo Alders,** *CEO,* ***LAT Nitrogen***

As the EU gears up to install a new European Commission for 2024-2029, LAT Nitrogen's chief executive officer Leo Alders suggests political support remains necessary to tackle a range of challenges threatening EU industry, including subsidised US ammonia production with carbon capture, use and storage (CCUS), and the EU's 'unrealistic' goal of cutting net greenhouse gas (GHG) emissions by 90% by 2040. But Alders sees growing political "goodwill" to help EU industry against cheap fertilizer imports from Russia, which are used to fund the country's war against Ukraine.

Dafydd ab lago (DAB): What does the fertilizer industry want from the next European Commission?

Leo Alders (LA): Clear points are effectively releasing emissions trading system (ETS) funds for converting the industry to green fertilizers. We also want carbon sequestration to be allowed as it is in the US. And we need a policy on nutrient efficiency, which has never really happened. For us, too, spillage is not the desired objective.

Leo Alders

The international context, too, is important. Grey ammonia produced in Europe could move to the same cost levels as US blue ammonia with subsidised CO_2 sequestration. If or when that happens, then Europe will see massive imports of US blue ammonia. We think that by 2027 or 2028, volumes coming out of the US will grow exponentially. That's a trend that we think is unstoppable. The underlying issue, of course, is that energy in Europe is at higher price levels than on any other continent. We need to stay in Europe with our production capacity. But the threat is there.

DAB: Are 90% GHG cuts by 2040 feasible for you?

LA: When discussing the ETS measures, the carbon border adjustment mechanism, and so on, we took a positive approach as an industry. And we go along with the zero [carbon] target for 2050. That's all right. But now the [2040] target is not official, more a desired milestone that emissions will be cut by 90% by 2040. As an industry, we think that target is totally unrealistic and cannot support it. That's a clear point of view. Converting to a green industry will require massive capital. Technologically, it takes time to do all of this.

DAB: Is the ETS working well for the fertilizer industry?

LA: Proceeds from ETS certificates go partly to national budgets and partly to the EU budget. That's all nice. But our industry needs to invest massively to complete the transition. We pay significant amounts of money for CO_2 certificates. There was the promise that national and EU levels would subsidise decarbonisation projects from the ETS. In reality, we've seen very few subsidies materialising. So we actually have a counter-proposal: why not allow the industry to park the money for green investments? In theory, the national level is obliged to reinvest 50% of ETS income back into the industry. The reality is different.

DAB: Isn't the EU still wary of prohibitive EUR100-150/t tariffs on Russian fertilizers?

LA: A ban on Russian fertilizer imports would require unanimity. Tariffs, though, require majority support among EU states. That seems feasible. At least 15 states appear to support the idea. There is actually no supply issue. We don't have any issues replacing Russian volumes. There may be a possible time element and rebalancing in the first three or four months. But after that, the European industry would be fully capable of supplying our farms.

DAB: So political support is growing?

LA: More and more people understand how Russian gas is being transformed into fertilizer. They've understood that routing gas to Europe is becoming more and more difficult. The EU has been totally unsuccessful in pushing back against Russian urea, so Russia is building some 650,000 t/yr in extra capacity, expected on line next year or thereafter.

As an industry, we don't want to be shutting down units in Europe because of cheap subsidised Russian fertilizers. And then, what happens if one day Russia decides to cut or weaponise fertilizer supplies? ■

New EU Commission's focus on competitiveness and food security

A boost for the organic-based fertilizer industry

Written by

Aoife Áine Bracken, *Consultant,* and **Jessica Fitch,** *Senior Consultant,* ***ECOFI/Prospero & Partners, Belgium***

With Ursula von der Leyen re-elected as President of the European Commission, the political landscape in the EU has shifted. While her 2019 agenda was heavily centred on environmental sustainability, her 2024 platform emphasizes competitiveness and food security, reflecting the evolving concerns of European citizens and policymakers.

This renewed focus presents a significant opportunity for the European Consortium of the Organic-Based Fertilizers Industry (ECOFI) and its members. Organic-Based Fertilizers (OBFs) are uniquely positioned to support European farmers, enhance soil fertility, and contribute to the EU's strategic goals of circularity and food security while minimizing nutrient pollution.

Organic-based fertilizers enhance the biological diversity, chemical composition, and physical structure of soils and enhance farmer competitiveness. ©*Creative Commons*

Von der Leyen's shift towards circularity and competitiveness

In 2019, von der Leyen introduced the European Green Deal, aiming to make Europe the first climate-neutral continent by 2050. While this goal remains, her rhetoric in 2024 has pivoted towards ensuring security, stability, and growth. Policies are now geared towards supporting farmer livelihoods, food security, and the sustainable competitiveness of European businesses. Proposed initiatives like the Circular Economy Act and the European Prosperity Plan reflect this shift.

For ECOFI members, this is a crucial moment. OBFs exemplify the principles of a circular economy by recycling nutrients which would otherwise be discarded and improving soil health. ECOFI members revalorise waste streams and by-products from a wide range of value chains. However,

In 2019, von der Leyen introduced the European Green Deal

President of the European Commission Ursula von der Leyen pitches her vision for a more competitive and sustainable future for Europe to the EU Parliament.
© European Union 2024. Source: European Parliament

current regulations hinder the full potential of OBFs in the market. The EU must translate its emphasis on the circular economy and innovation into actionable policies that facilitate the use and development of OBFs. A revived Integrated Nutrient Management Action Plan (INMAP) could be instrumental in promoting sustainable nutrient application and stimulating markets for recycled nutrients.

Organic-based fertilizers: Enhancing soil health and competitive sustainability

Despite challenges to the Green Deal, certain legislative efforts continue to advance, such as the Directive on Soil Monitoring and Resilience, part of the EU Soil Strategy 2030. The Soil Monitoring Law, approved by the Council of the EU in June 2024, acknowledges the vital role of healthy soils in reversing biodiversity loss, ensuring food production, and safeguarding human health.

For OBF producers, this legislation is critical. The Soil Strategy aims to make sustainable soil management the norm, promoting actions to restore degraded soils and improve soil health. OBFs are key to achieving these goals. They provide essential

Cultivating sustainability: ECOFI's manifesto

As the EU embarks on a new legislative term, it is time to renew our approach to agriculture and food security. The EU must prioritize agricultural innovation, support the circular economy, and ensure farmers have access to high-quality fertilizers such as Organic-based Fertilizers (OBFs). By doing so, we can create a sustainable, resilient, and competitive agricultural future that aligns with the EU's strategic goals.

OBFs can help the EU in three critical ways by assisting the EU to:

1. Achieve its political vision of a circular economy by preventing unnecessary nutrient loss, thus bolstering the EU's strategic autonomy
2. Improve European soil health, which is vital to building a sustainable and climate-resilient future for agriculture
3. Build a more sustainable food system

The EU must do more to support farmers' access to these high-quality fertilizing products by:

1. Putting agricultural innovation at the heart of the new European legislative term
2. Placing innovation in circularity at the heart of their ambitions for 2024–2029 and ensuring policy coherence to support the circular economy
3. Ensuring high-quality OBFs are given equal access to the European single market
4. Providing farmers with an enabling framework and concrete policy incentives to ensure access to and uptake of OBFs

Download ECOFI's manifesto in full: ***https://ecofi.info/wp-content/uploads/2024/07/ECOFI-Manifesto-2024to2029.pdf***

To promote soil health and farmer competitiveness, the EU must emphasize the complementarity in plant nutrition

organic matter and recycled nutrients, which are crucial for maintaining soil fertility. By enhancing the biological diversity, chemical composition, and physical structure of soils, OBFs support the principles outlined in the Soil Monitoring Law, including reducing nutrient losses and optimizing water use by crops.

As more OBFs gain access to the EU single market, they are well-positioned to be integrated into future EU policies, including potential revisions to the Soil Monitoring Law or the Soil Strategy.

Navigating regulatory challenges

To promote soil health and farmer competitiveness, the EU must emphasize the complementarity in plant nutrition. OBFs, while beneficial, are not a standalone solution. When combined with mineral fertilizers, whether through separate applications or as part of an organo-mineral product, they can help farmers achieve the yields needed to remain competitive while improving soil health.

The circular economy is the nature of organic-based fertilizers, which transform what would otherwise be discarded into new products for farmers.

The EU should promote the benefits of this integrated approach to plant nutrition, which can optimize nutrient application, enhance crop yields, and support the EU's sustainability targets. This strategy aligns with the EU's broader goals of food security and efficient land use.

Despite their potential, current regulatory barriers limit farmers' access to OBFs. The EU must address these obstacles to allow farmers to benefit fully from high-quality fertilizers that support a sustainable agricultural future. The workability of the circular economy and the single market is now a priority for the EU Commission, as von der Leyen recognizes the importance of these issues in enhancing European competitiveness and food security.

Supply chain disruptions in recent years have heightened the importance of Open Strategic Autonomy (OSA) and food security in EU discourse. OSA emphasizes the need for Europe to build a competitive and resilient economy while establishing rules-based trading relationships. Essential plant nutrients have been designated as critical raw materials by the EU. To reduce dependency on imports from unstable sources, particularly for these critical nutrients, the EU must improve farmers' access to OBFs and incentivize their use as part of a comprehensive plant nutrition programme.

The path forward: Supporting farmers and enhancing food security through circularity

ECOFI plays a crucial role in representing the interests of its members on regulatory and policy issues within the EU. In July 2024, ECOFI launched a new manifesto

outlining key requests for the 2024-2029 legislative term, emphasizing how OBFs can support soil health and the EU's circular economy goals.

While the EU has begun to recognize the importance of soil health, ECOFI continues to advocate for balanced plant nutrition as a key component of sustainable agriculture. ECOFI also highlights the strategic significance of circular products like OBFs. The organization has worked to include missing component materials, such as Animal By-Products, in the EU Fertilising Products Regulation and has called for a review of the revalorization of materials of animal origin.

The Commission must ensure that the links between the Animal By-Products Regulation and the new EU Fertilising Products Regulation are coherent and workable. Clear and consistent policies are essential to provide manufacturers with the legal certainty needed to invest in this innovative industry.

With agriculture and farmers central to the EU's political agenda, the next five years will be crucial for agri-businesses in the EU market, particularly those focused on revalorizing waste streams and by-products into sustainable products. OBF producers can play a vital role in supporting Europe's goals of food security, competitive sustainability, and environmental protection. ■

About ECOFI

ECOFI, the European Consortium of the Organic-Based Fertilizer Industry, represents producers active, or who intend to be active, in the European market of organic fertilisers, organo-mineral fertilisers, and organic soil improvers.

You can find out more about integrated plant nutrition in the joint plant nutrition brochure ECOFI has developed along with the European Biostimulants Industry Council (EBIC) and Fertilizers Europe.

ECOFI invites fertilizer companies to join its efforts in promoting the benefits of organic-based fertilizers. Membership in ECOFI offers access to valuable market insights, regulatory updates, and networking opportunities. By working together, we can help shape a sustainable and competitive future for European agriculture.

For more information visit: ***www.ecofi.info***

Strategic procurement in focus

Adapting UK fertilizer exports after the EU CBAM transition

Written by

Simon Thompson, *VP Sales Northern Europe,* ***Jaggaer***

December 31st 2025 represents a significant date for any businesses exporting fertilizers into the EU. This is the scheduled end of the EU Carbon Border Adjustment Mechanism (CBAM) transition period, the EU's tool to put a fair price on the carbon emitted during the production of carbon intensive goods that are entering the EU, and to encourage cleaner industrial production in non-EU countries.

Simon Thompson, VP Sales Northern Europe, Jaggaer

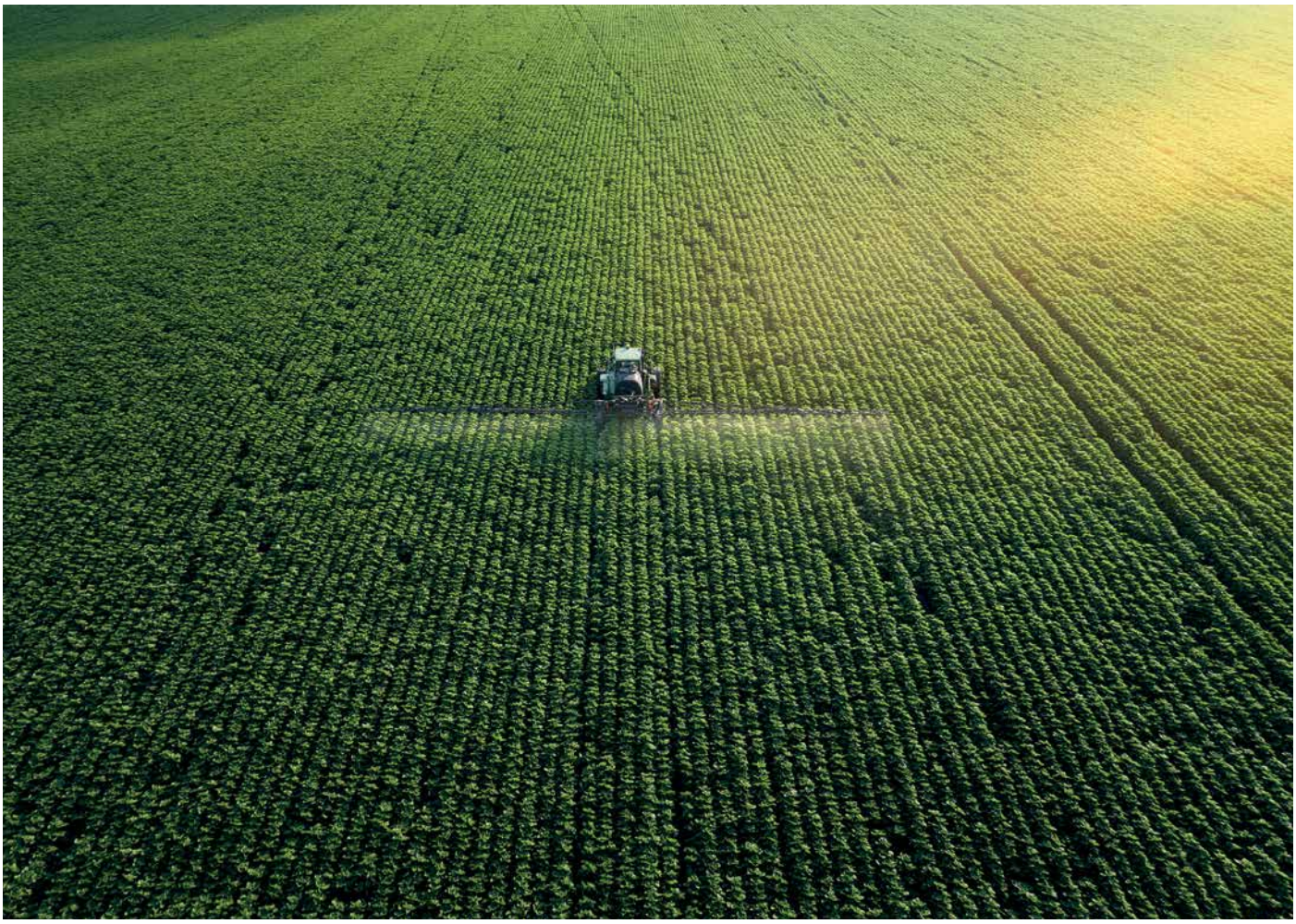
The EU CBAM's main objective is to reduce 'carbon leakage' and incentivise the EU's global trading partners to decarbonise their heavy emitting sectors. Carbon leakage undermines efforts to combat climate change by shifting emissions rather than reducing them. Therefore, effective global coordination and the implementation of policies such as CBAM are crucial to address this challenge and ensure that environmental benefits are not lost due to regulatory disparities.

In 2026, after its transition period, the EU CBAM will be fully implemented. As this date looms, and with the rules governing import and export into the region set to tighten, businesses falling under the scope of EU CBAM are positioning to navigate this new operational framework successfully – with strategic procurement emerging as a key play.

What post-transition means for UK exporters to the EU

According to a briefing document prepared by the Centre for Inclusive Trade Policy (CITP), the UK exports around GBP208 mn worth of fertilizers into the EU. When fully implemented, the EU's CBAM tool will have significant impact for these exporters, and for their EU customers.

Under EU CBAM, importers are responsible for purchasing CBAM certificates to account for the carbon emissions associated with the production of goods imported into the EU, including fertilizers. However, while UK fertilizer exporters are not directly responsible for buying CBAM certificates, the cost implications could still impact them. EU importers will factor in the cost of these certificates when purchasing from UK exporters, potentially leading to price negotiations or influencing market competitiveness. As a consequence, while the legal obligation falls on the EU importers to purchase the certificates, the economic burden might be shared indirectly between importers and exporters through pricing and trade terms.



Growing pains: new EU regulation will impact the fertilizers sector and the whole agricultural supply chain

Accurate reporting is crucial, as the cost of CBAM certificates is tied to the carbon emissions embedded in the products. Companies will have to gather and submit detailed information about their production processes and emissions, and buyers and suppliers throughout the chain will need to work in partnership to ensure compliance.

The need for supply-chain transparency

There is an obvious and far-reaching knock-on effect from this reporting requirement. The only way businesses can accurately calculate the embodied emissions of imported goods is through greater supply-chain transparency. The onus is on businesses to create better relationships with those suppliers that are providing the data necessary to accurately calculate emissions.

The EU CBAM's main objective is to reduce 'carbon leakage'

Procurement must take the lead in working with suppliers to understand their emission reduction strategies, to explore ways to jointly minimize the carbon footprint of sourced materials, and to collect and verify the data required to achieve compliance.

There are certainly areas to tighten up and better understand, such as the accurate measurement and reporting of scope 3 emissions. These are the emissions that result from activities related to assets not owned or controlled by the reporting organisation, but that the organisation indirectly affects in its value chain both upstream and downstream.

Some commentators suggest the implementation of incentive programmes for suppliers who provide

Full implementation of EU CBAM will arrive quickly, delivering significant operational challenges to both European importers and British exporters of fertilizers

accurate and detailed emissions data, such as preferred supplier status, long-term contracts, or financial incentives. Certainly, there is a need for importers and manufacturers alike to clearly communicate the expectations for transparency and reporting to suppliers.

Technology and automation

Regular and detailed reporting under the full implementation of EU CBAM adds significantly to the administrative burden for importers and exporters. The good news is that technology is available to assist in this compliance journey.

Automated systems can expedite the collection of data from suppliers, identify areas where improvements are needed and evaluate suppliers' sustainability practices. From smooth data ingestion derived from ERP, customs, and eProcurement systems to extracting data from supplier contracts and ensuring their certifications are always up to date, automation can help businesses reduce the manual burden, freeing up staff to focus on more value-add tasks as well as reducing the risk of human error.

Ensuring accurate and compliant emissions calculation that adhere to the EU Commission guidelines is a complex task that technology can expedite significantly right through to the creating of compliant quarterly CBAM reports that are ready for submission to the EU regulator.

Automated procurement systems can also trigger alerts and messages to suppliers reminding them to send updated certificates or missing information so manual intervention is only ever needed in particularly complex cases. The automatic identification and resolution of missing data also eliminates the need for questionnaires that can prove time-consuming on both the supplier and purchaser side.

Collecting primary data is critical for CBAM compliance and achieving this relies heavily on transparent and open supplier collaboration. Enabling a process of streamlined communication with suppliers can help identify emission hotspots within the supply chain, gathering all information in a single repository for easy revision and speedy resolution of issues. In fact, by tackling the data collection challenge through automated sophistication, and by creating an environment in which information is easily shared, it is possible to foster a more engaging and constructive relationship between clients and suppliers, eliminating points of delay and process friction while benefitting from the ability to address potential disruptions ahead of time.

Of course, this is not a once-and-done exercise. UK businesses will need to stay informed about EU regulations and carbon pricing developments to remain competitive. Technology can help suppliers and purchasers to monitor performance over time, benchmarking against industry best-practices and continuously seeking ways to improve and tighten-up processes.

Remaining compliant and competitive within the EU CBAM framework

Full implementation of EU CBAM will arrive quickly, delivering significant operational challenges to both European importers and British exporters of fertilizers. The critical role of procurement throughout the supply-chain has emerged as a key factor in maintaining competitiveness and navigating complex international trade dynamics. Effective procurement strategies are essential for managing costs, ensuring compliance with environmental regulations, and securing a reliable supply of raw materials.

EU CBAM brings with it a challenging administrative burden. Procurement solutions that improve transparency, foster open communications with suppliers and automate accurate calculation and data analysis are critical.

Ultimately, UK exporters and EU importers are looking for every advantage to remain competitive against a changing and challenging regulatory backdrop. Through automated and accurate reporting and continuous benchmarking, businesses in the fertilizer sector can play a major role in contributing towards global sustainability efforts. ■

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The challenges of importing fertilizers: The Port of Constanta

Written by

Emanuel Claudiu Roman, *Logistics Manager,* ***SEEFCO, Romania***

One of the most important ports in the region, the Port of Constanta is situated on the western coast of the Black Sea, 179 nautical miles from the Bosphorus Strait and 85 nautical miles from the Sulina Branch, where the Danube flows into the sea. The port covers 3,926 hectares, with 1,313 hectares of land and 2,613 hectares of water. The port is protected by two breakwaters, one to the north and one to the south, providing safe conditions for all activities. The North breakwater is 9,400 metres long, while the South breakwater extends 5,560 metres.

Constanta Port has 156 berths, of which 140 are operational. The total quay length is 32,000 metres, with depths ranging from 7 to 19 metres. These features are comparable to those of the most important European and international ports, allowing access to tankers with a capacity of 165,000 DWT and bulk carriers with a capacity of 220,000 DWT.

Several projects are currently underway to construct new facilities for cargo handling and to improve transport connections between Constanta Port and its hinterland. The Port of Constanta, which includes both Constanta North and Constanta South, benefits from an advantageous geographical position on the pan-European Rhine-Danube transport corridor. It plays a major role in the European intermodal transport network, being strategically located at the intersection of trade routes that connect the markets of landlocked countries in Central and Eastern Europe with the Transcaucasia region, Central Asia, and the Far East.

(left) 1909 official inauguration; *(right)* Port of Constanta beginning of 20th century

Fast connections

The Port of Constanta is one of the main distribution centres for Central and Eastern Europe, offering numerous advantages, including:

- A multi-purpose port with modern facilities and sufficient water depths in the port basins to accommodate the largest vessels passing through the Suez Canal
- Direct access to Central and Eastern European countries via the Pan-European Rhine-Danube Corridor
- One of the most modern and efficient hubs for container traffic in the Black Sea
- Ro-Ro terminals providing fast connections with other ports in the Black Sea and the Mediterranean Sea
- Excellent connections with all modes of transport: railway, road, river, air, and pipelines
- Customs facilities for commercial operations conducted through the Port of Constanta
- Modern facilities for passenger vessels
- Available land for future expansion
- The status of a Free Zone, which facilitates foreign trade and the transit of goods to and from Central and Eastern Europe

Constanta Port serves as both a maritime and river port, with facilities that can accommodate any type of river vessel. The port's connection to the Danube River via the Danube-Black Sea Canal is one of its key strengths. The Danube offers a cost-effective and efficient alternative to congested European rail and road transport, thanks to the large cargo volumes it can carry.

Constanta Port has 156 berths, of which 140 are operational

Significant quantities of cargo are transported by river between Constanta and Central and Eastern European countries such as Moldova, Serbia, Austria, Slovakia, and Germany. To handle future growth in river traffic, a barge terminal has been completed in the southern part of the port. This investment will improve sailing conditions and enhance facilities for accommodating river vessels.

Ancient foundations

Historically, Constanta Port has been closely linked with the City of Constanta. While the first recorded mention of Constanta dates back to the 2nd century B.C., archaeological evidence of the ancient city of Tomis has been found as early as the 6th century B.C.

The construction of the modern Port of Constanta began after the War of Independence in 1877, when Dobrogea was reunited with Romania. King Carol I foresaw the port's significance, stating that it would become "one of the most important ports of the Orient and a source of wealth for the entire nation."

On 16 October 1896, the official launch of construction and modernization of Constanta Port took place. During the foundation-laying ceremony, King Carol I inscribed a document that proclaimed "the establishment of a port on the shores of the old Pontus Euxinus, where trade has found shelter for centuries, where numerous historical monuments remind us of our Roman ancestors' dominance, and where the poet Ovidius ended his life."

Until the official inauguration of Constanta Port in 1909, extensive dredging work was carried out, and breakwaters and quays were constructed. Additionally, six basins and storage tanks for oil were developed, along with cereal silos that are still in use today. With

Port of Constanta today

these facilities in place, the Port of Constanta recorded a total traffic of 1.4 mn t in 1911.

Between the World Wars, further infrastructure was added, including a corn drying facility, administrative headquarters, a stock exchange, and a floating dock. By 1937, the port's traffic had reached 6.2 mn t, placing it among the leading European ports.

The southward expansion of the port began only in 1967, delayed by the damages inflicted during World War II. A significant milestone in the port's development was the inauguration of the Black Sea–Danube Canal in 1984.

Constanta Port's highest traffic volumes were recorded at 62.3 mn t in 1988, 66.6 mn t in 2019, 67.5 mn t in 2021, and 75.5 mn t in 2022. In 2023, the port achieved a record level of 92.7 mn t, including approximately 4.98 mn t of fertilizers. There was a notable increase in the number of bulk carriers, from 589 in 2015 to over 1,000 in 2023, as well as a rise in vessel capacity - from 218 vessels larger than 45,000 DWT in 2015 to 586 vessels in 2023. Since 2022, the port has accommodated vessels larger than 180,000 DWT, with seven vessels in 2022 and nine in 2023, primarily for loading grains.

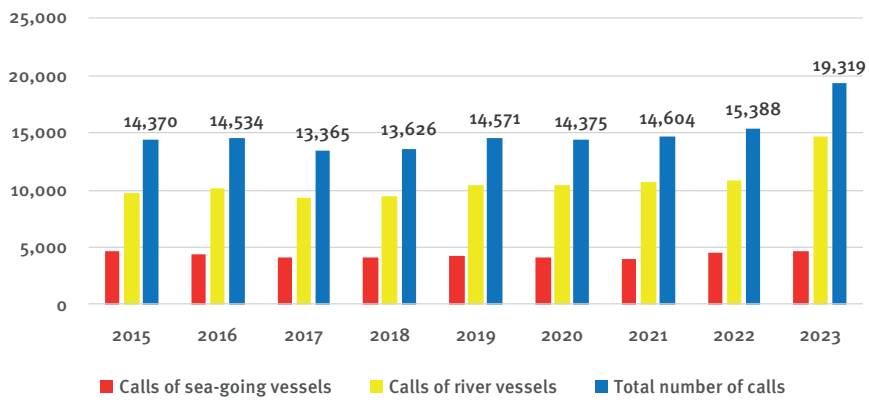
There are five terminals at the port that can accommodate large vessels

Big bag storage

Currently, there are five terminals at Constanta Port that can accommodate large vessels (over 45,000 t deadweight) carrying fertilizers. These terminals offer direct transhipment operations with a capacity of 2,000-4,000 t per 24 hours, SSHEX (Sundays and Holidays excluded). Typically, cargo arriving in Constanta destined for Serbia, Ukraine, Hungary, or Austria is transhipped into barges for bulk delivery to the final clients.

Access to the port area is highly congested between May and November

Figure 1. Port calls 2015-2023



Only three terminals provide bagging services for quantities exceeding 15,000 t, which is essential since clients in Romania prefer purchasing bagged products. These terminals also offer storage facilities, where the bags are stored for 15 to 30 days before being delivered to the final client. Overall, Constanta's big bag (BB) storage facilities can hold between 250,000 and 300,000 t, while the loading capacity for trucks is capped at 12,000 t per 24 hours. The primary bottlenecks for importing and delivering these quantities include:

Securing a laycan: Finding an available time slot for accepting a vessel at the terminal can be challenging. The terminals capable of accommodating such large vessels are often occupied with cereal operations for major traders, making berths quite busy.

Barge availability: This is critical for both direct and indirect transhipments. In 2023, this issue was particularly severe, with 90% of barge transport capacity tied up with Ukrainian-origin cereals between Constanta and the ports of Reni or Ismail.

Truck availability: About 60-70% of clients use their own truck fleets, which transport cereals to Constanta and load fertilizers for the return trip, optimizing their logistics flow. However, access to the port area is highly congested from May to November. Long queues form at the port's access gates each morning, sometimes stretching 10-20 kilometres and causing delays of up to 2-3 days for trucks to unload and reload.

Transportation network: The quality of transportation infrastructure (roads, railways, ports) is crucial for efficient fertilizer distribution. Poor infrastructure leads to higher transportation costs, particularly in remote or rural areas, making fertilizers less accessible to farmers. Although investments have been made since February 2022, the 'Rail2Sea' corridor is not yet completed, and its capacity has not reached the intended levels.

Storage facilities: Adequate storage facilities are essential to maintaining the quality of fertilizers during distribution. A lack of proper storage can lead to wastage and reduced effectiveness.

Supply chain dynamics: The efficiency and competitiveness of the supply chain - including wholesalers, retailers, and distributors - affect product availability and pricing. Monopolies or limited competition can result in higher prices and restricted distribution.

Customs clearance delays: The customs clearance process can be time-consuming, especially if there are inefficiencies such as bureaucratic red tape, poor coordination among agencies, or insufficient staffing. Delays in customs clearance can hold up fertilizer shipments, leading to missed planting seasons.

Regulatory and compliance issues: Romania, like other EU countries, has strict regulations on fertilizer imports, including safety standards, chemical composition, and environmental impact. Ensuring compliance can cause delays if there are discrepancies or if the paperwork is not properly managed. Fertilizers often undergo rigorous quality control checks upon arrival, which can be time-consuming, particularly if further testing or documentation is required.

Security concerns: Fertilizers, especially those containing ammonium nitrate, are closely monitored due to their potential use in explosives. Enhanced security protocols can result in additional checks and delays in processing shipments.

These bottlenecks can lead to delays, increased costs, and logistical challenges in getting fertilizers from Constanta Port to farmers across Romania, potentially impacting agricultural productivity, especially during critical planting seasons. Addressing these challenges requires coordinated efforts from the government, port authorities, and private sector stakeholders. ■

Argus Market Insight Paper:

The European AdBlue landscape

Growing competitiveness amid weaker demand in Europe is putting new pressure on the AdBlue market. How is the market adapting to these changes and what lies ahead for AdBlue in Europe?

After the upheaval of the crisis years 2021 and 2022, the AdBlue market remains in a state of constant change. New manufacturers, using both domestic and imported urea in their production, have entered the market.

Manufacturers using imported urea, especially, drew customers with lower prices. But the increased supply comes at a time when demand for AdBlue is lagging traders' expectations, weakened by Europe's struggling economy, reduced industrial output and weak diesel consumption. The combination of slow demand growth and increased availability put unprecedented pressure on the market.

This new level of competitiveness brought to the forefront the importance of reliable price reporting and market analysis. The Argus AdBlue price index and news reporting bring a greater level of transparency to the European market. The Argus price index reflects the market for AdBlue at the point of truck loading. As such, it is subject to European production costs and competition for the finished product, showing its real market value before shipment to end users. Using it as a reference in term contracts ensures security of supply at competitive market rates.

The AdBlue market remains in a state of constant change

The AdBlue market has become more competitive

According to the Argus AdBlue-DEF and TGU Analytics service, European production of automotive-grade urea (AGU) totalled 1.72 mn t in 2023, with most of these volumes used to produce AdBlue for the European market, but a small share expected to have been exported. There are 17 urea plants in the region that are capable of producing AGU and/or AdBlue, with OCI in Geleen, the Netherlands being the latest addition. The recently-opened plant has an annual production capacity of 300,000t of AdBlue, and aims to service the Dutch and German markets, primarily.

AdBlue can also be produced at a growing number of dissolving and dilution plants where AGU is combined with deionized water. These units can source AGU from European producers or through imports from other regions. An estimated 2.5% of European AdBlue demand comes from imported sources of AGU, Currently, Argus estimates that around 60% of European imported AGU is sourced from China, 27% from Russia and 10% from Saudi Arabia. Urea imports from Asia into Europe had become very competitive when European natural gas prices hit record highs. Previously, until the end of 2021, we estimated that over 80% of European urea imports were coming from Russia.

The peaks in gas prices observed in 2021 and 2022 led to increased production costs for AdBlue producers sourcing European AGU in their manufacturing process, and allowing product made from imported urea to be sold at a discount. However, these are exposed to higher risks involving import costs. In early 2024, when imports via the Suez canal became unreliable and more expensive, some AdBlue producers had to resort to European urea to continue production at competitive prices.

What is the current demand in Europe?

Annual Adblue consumption data (see figure 1), published in the Argus AdBlue and DEF weekly, depicts AdBlue consumption in Europe forecast at 5.32 bn litres/year (l/yr) in 2024, increasing 8.4% on the year. The number of vehicles in Europe equipped with selective catalytic reduction (SCR) systems, also known

Figure 1. Annual AdBlue consumption

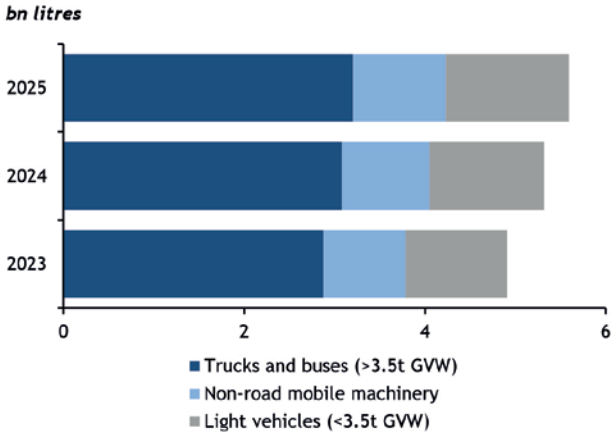
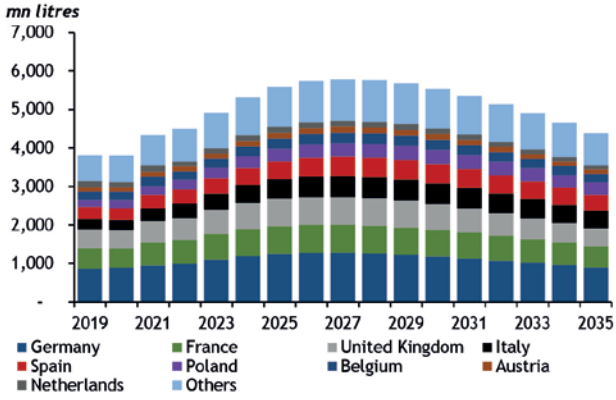


Figure 2. European AdBlue consumption by country



as the SCR-equipped vehicle fleet, is reaching maturity. All new diesel medium-duty and heavy-duty vehicles sold in Europe are now equipped with SCR systems. When these vehicles replace older vehicles not equipped with SCR systems, demand will increase. This fleet is slowly reaching maturity - getting to a point where all diesel heavy-duty vehicles will be equipped with SCR systems, reducing the room for growth in the AdBlue market over time.

AdBlue consumption from light vehicles (passenger cars, pick-up trucks and vans) makes up around 24% of total European demand and is currently growing at the fastest rate - forecast to increase 13% and 7% in 2024 and 2025, respectively. But consumption from light vehicles will begin to decline from 2028 as light vehicles move faster towards electrification and alternative powertrain.

Actual AdBlue consumption is lower than the potential AdBlue consumption in Europe (the theoretical maximum AdBlue consumption if all SCR-equipped vehicles operate normally by consuming AdBlue). However, some vehicles, particularly in eastern Europe, may be equipped with 'defeat devices' whereby the SCR system is bypassed and AdBlue consumption is not required during driving. These market adjustments are accounted for by Argus in our demand forecasts.

As Europe is the most mature market globally, AdBlue demand is expected to peak at 5.79 bn l/yr in 2027.

What does the future hold for AdBlue?

Long-term trends in global AGU markets are covered in the Argus AdBlue-DEF and TGU Analytics publication where long-term European supply and demand are forecast up to 2035. Argus estimates that around half of total AdBlue consumption comes from three countries: Germany, France, and the United Kingdom. The German AdBlue market is forecast at 1.2 bn l/yr in 2024, which represents around 22% of all European AdBlue consumption. German AdBlue demand is forecast to grow by 8% in 2024, with this rate slowing each year over the next decade. Demand is expected to decline starting from 2028 in Germany, and this is the case for most other countries in the region.

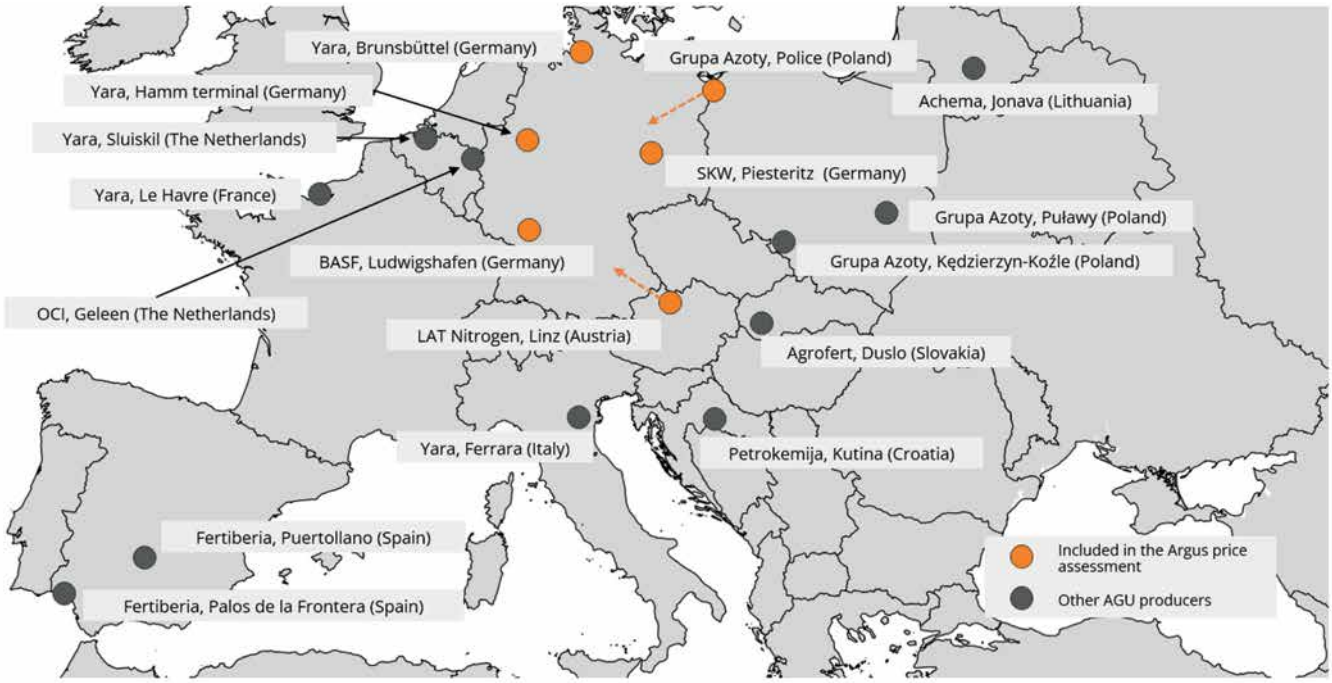
The top 10 consumers of AdBlue in Europe are estimated to account for 83% of the entire European market. Growth in demand is slowing in western European countries as fleets consuming AdBlue are maturing. There is a larger consumption growth rate in eastern Europe in 2024 as some markets are still replacing an older truck fleet. The largest consumer of AdBlue in eastern Europe in Poland, forecast to consume around 305 mn l/yr of AdBlue in 2024.

The regulatory landscape in European exhaust emissions

The Council of the European Union on 13 May 2024 ratified legislation to cut CO_2 emissions from heavy-duty vehicles in the EU, with primary changes being further vehicle category additions. The final agreement did not change the previously-agreed 2025 target of 15% GHG emissions reduction compared with 2019 levels, but raised the 2030 target from 30% to 45%, and introduced new targets of 65% by 2035 and 90% by 2040 (all compared with the 2019 baseline).

The original proposal applied to vehicles with a gross vehicle weight (GVW) of over 16 t with either a 4x2 or 6x2 axle configuration. However, the revised standard widens the scope covering additional truck categories, buses, coaches, vocational vehicles and trailers. The ultimate result that comes from this regulation is a further reduction in diesel penetration in European heavy-duty truck and bus sales, thus accelerating the phase-out of diesel internal combustion engines

Figure 3. European AGU producers and Argus price region



(ICEs). This will affect the way that the vehicle fleets equipped with SCR systems will renew, which will cause a further decrease in AdBlue demand in the region.

For the remaining diesel truck models sold from 2030 onwards, tighter GHG standards required to reach fleet-wide targets should result in increased AdBlue dosing rates - truck manufacturers will be inclined to change engine calibration to lower the use of engine gas recirculation (EGR), which in turn may produce more NOx emissions to be abated in the SCR systems.

Additionally, the European Parliament on 14 March 2024 approved new Euro 7 type-approval standards aimed at cutting exhaust, tyre and brake emissions from passenger cars, vans, buses, trucks and trailers. The rule also sets minimum performance requirements for battery durability in electric and hybrid cars. Euro 7 for heavy-duty vehicles, buses, and coaches sets the NOx emissions limits at 200mg/kWh, halving the Euro VI limits of 400mg/kWh (-50%) and 460mg/kWh (-56%) for testing cycles 'world harmonised stationary cycle' (WHSC) and 'world harmonised transient cycle' (WHTC), respectively.

Tighter GHG standards should result in increased AdBlue dosing rates

Euro 7 will be required for new type-approvals from 28 November 2026 for the M1 and N1 categories (30 months after the rule implementation), and from 28 May 2028 for the M2, M3, N2 and N3 categories (48 months after the rule implementation). For all categories, Euro 7 standards for all registrations will be required 12 months after the type- approval date, so from November 2027 and May 2029, respectively.

Both mandates combined - the CO_2 mandate and Euro 7 - are expected to decrease diesel penetration over time and increase AdBlue dosing rates for new diesel trucks in Europe. Argus estimates that for a new Euro 7 heavy-duty truck, AdBlue dosing rates will be 20-30% higher than its equivalent Euro VI diesel truck. Although the European SCR-equipped commercial fleet in Europe is forecast to peak in 2027, new diesel vehicles that get sold after this point will be consuming more AdBlue than older models still in the fleet. AdBlue demand is driven by the number of active vehicles in the SCR-equipped fleet, and although diesel sales are on the decline in Europe following regulation becoming more strict, the decline in AdBlue consumption will be more mild since regulation only applies to new vehicle registrations and the SCR-equipped fleet will still be there. ■

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illuminating the markets®

Group discounts available

Argus Fertilizer China Conference

4-6 November 2024 | Shanghai, China

Bringing together international and regional key players across the Chinese fertilizer value chain

The Argus Fertilizer China Conference returns to Shanghai after four years. By bringing together global producers, major Chinese suppliers, buyers and end users as well as distributors from across southeast Asia, this event serves as a key platform to support the ever-closer fertilizer trade links and supply chain cooperation between China and the rest of the world.

Join the following companies who have secured their passes:
BASF, Bestwin Trade, BHP, CPCC, Tianjin Crown Champion Industrial, Datai Group, Etherchem International, Fibrant Shanghai Chemical, Guizhou Chanhen, Hebei Hengji Agricultral Materials Group Co, Indagro, Jiangsu Andefu Energy, LianYunGang Grace, Lucky Grace, Merrycorn, Midgulf International, Monband, Nabta, OCP, Omnia, Samsung C&T, Shanghai Keyu New Material Technology, Sinomagchem, Wuzhoufeng Agricultural, Xing Hua, Yunnan Yingfu and many more...

300+
Attendees

150+
Companies

40+
Countries

Sponsorship and exhibition opportunities:

Promote your brand or services to 300+ attendees, including the industry's biggest producers, distributors and traders from across the supply chain. Argus Fertilizer China gives you a unique platform to raise the profile of your company.

Contact George Ade-onojobi

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E: **sponsorship@argusmedia.com**
for more information

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Associate sponsor: BASF We create chemistry

www.argusmedia.com/fertilizer-china-conference

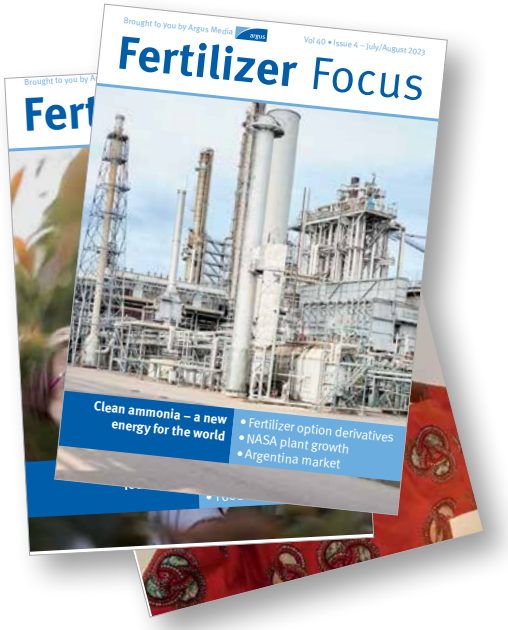
Fertilizer Focus

Media pack 2024

Fertilizer Focus heritage

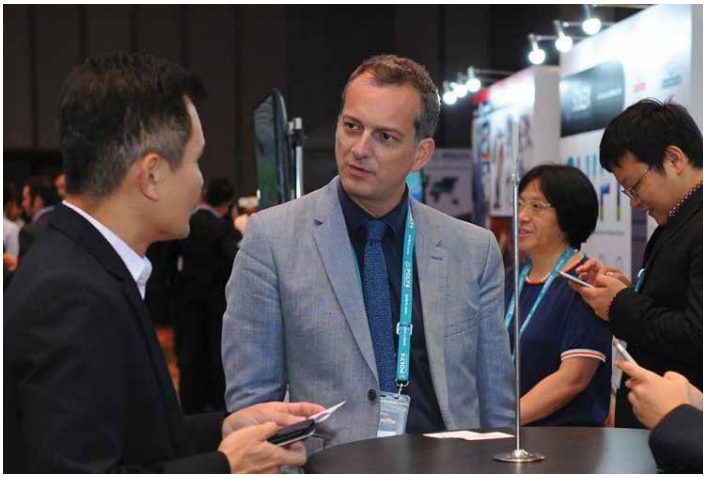
Argus produces the most comprehensive suite of pricing and market intelligence services available to the fertilizer industry

First published in February 1984 by FMB Consultants, Argus' Fertilizer Focus is the world's leading bi-monthly journal serving the international fertilizer industry. It covers the key developments influencing fertilizer and related markets, such as production economics, technology, plant and project news, and product logistics.



Drawing on Argus's unrivalled expertise and wealth of contacts from our market reporting, consulting and conferences, the editorial content in Fertilizer Focus covers the issues which are top-of-mind for senior executives in the industry. As an advertiser, your message reaches decision makers throughout the world and positions you as a thought-leader on the cutting edge topics which will define the future of the industry. The magazine features a unique blend of news, features, interviews and analysis of all aspects of the fertilizer industry, including:

- Spotlight on hot new trends and growth areas - including clean ammonia and low carbon/ sustainable fertilizers
- New product developments – fertilizer blends, enhanced efficiency ingredients, micronutrients, liquid fertilizers
- Fertilizer production technology across all products
- Port logistics and shipping
- Company strategy, industry developments and emerging markets
- Agronomic analysis and changes in agricultural practice impacting fertilizers



Editorial schedule

January/February issue

Advertising due date - **8 December 2023**

Special Focus - CLEAN AMMONIA

- Key global clean ammonia production hubs
- Market expansion
- Unlocking the hydrogen economy

SUPPLEMENT - LATIN AMERICA

- Infrastructure & logistics in Brazil
- Policies and regulations in Latin America
- The impact of El Nino

March/April issue

Advertising due date - **9 February 2024**

Special Focus - Added Value fertilizers

- Micronutrients as adjusters for plant growth
- Investments in biostimulants
- Adapting strategies to adopt AVFs

SUPPLEMENT - Asia

- Future growth in India
- Phosphate protectionalism policies in Asia
- Laos' emergence as a potash power in southeast Asia.
- What happened to Australia's SOP wave?

May/June issue

Advertising due date - **12 April 2024**

Special Focus - Technological advancements

- Innovations in packing and material handling
- Next generation of plant nutrition
- Digital applications for the fertilizer industry

SUPPLEMENT - AFRICA

- Infrastructure investments
- Copper demand supporting sulphur imports to S Africa
- North Africa: the new price driver for sulphur
- The growth prospects for specialty fertilizers in East Africa

July/August issue

Advertising due date - **7 June 2024**

Special Focus - The fertilizer economy

- Funding new projects
- Hedging tools to de-risk project development
- Fertilizer affordability
- Market opportunities for investors

SUPPLEMENT - Middle-East

- The changing nature of regional nitrogen investment
- Market impact from conflicts
- Rising sulphur production fin the Middle-East

September/October issue

Advertising due date - **9 August 2024**

Special Focus - Fertilizer sustainability

- Decarbonisation progression
- Sustainability investments in Africa
- Revitalizing soil fertility

SUPPLEMENT - Europe

- East Europe capacities
- Importing fertilizers
- European policy update

November/December issue

Advertising due date - **11 October 2024**

Special Focus - Enhanced efficiency fertilizers

- Advancements for additives and coatings
- NPK processing technology
- New methods for increasing yields

SUPPLEMENT - North America

- Mexico: market overview
- Canada's rail network and the risk of bottlenecks
- Lithium and the increasing in sulphur consumption in North America
- US Inflation Reduction Act impact on nitrogen plant investments

Distribution

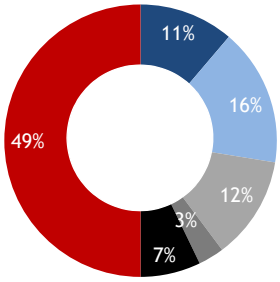
Sector leading digital and hard copy distribution

Published six times a year, the magazine is read by subscribers in over 90 countries. Fertilizer Focus has a unique, best in class distribution, benefiting from Argus' unrivaled presence in the fertilizer sector - **the digital circulation of the magazine in late 2023 was nearly 15,000 - and is growing substantially each month.** Around two thirds of our digital recipients are paying subscribers of Argus fertilizer price reporting and outlook services. This encompasses executives and decision makers in all of the major fertilizer producers, traders, importers and buyers, as well as sector focused financial institutions, shippers, engineering companies, plant contractors, government agencies and trade associations. Our key magazine features are promoted on leading social media platforms (LinkedIn, Twitter, Facebook)

Reader profile

Our unique and unrivaled circulation means your messages reach the industry's most important decision makers.

% of all Fertilizer Focus recipients with the following in their job title



- Executive, President, Director, Vice President
- Manager, Head, Consultant, Advisor
- Sales, Commercial, Marketing, Supply
- Procurement, Buyer, Purchaser, Sourcing, Business Development
- Analyst, Intelligence, Strategy, Accountant, Finance, Investor Relations, Economics
- Other

Unique event distribution

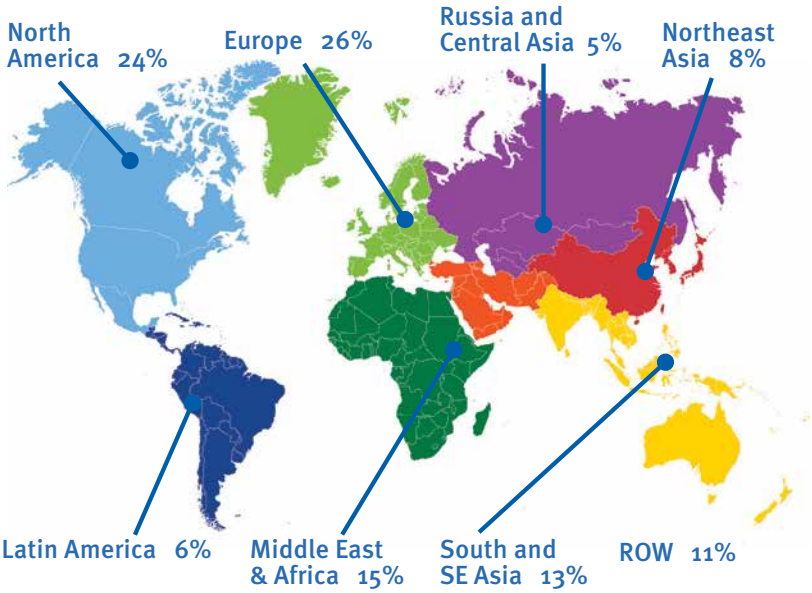
Fertilizer Focus is distributed to every one of the thousands of delegates attending Argus' fertilizer conferences around the world, and available at all of the major global and regional industry events.

Fertilizer Focus will continue to give you unrivaled events positioning. The pandemic temporarily restricted the ability of Argus and other events organizers to deliver physical events, but this is changing. Argus' industry leading conferences are returning in their traditional physical format and our magazine will be delivered to registrants at both physical and digital conferences.

Global distribution breakdown

Our geographic distribution is aligned with the broader Argus fertilizer customer base.

Regional distribution of Fertilizer Focus recipients



Argus events

- Fertilizer Latino Americano (FLA)
- Argus Asia Fertilizer
- Argus East Europe Fertilizer
- Argus Europe Fertilizer
- Argus Clean Ammonia
- Argus Vehicle Emissions and DEF Summit USA
- Argus Paris Grain Conference
- Argus Green Marine Fuels Conference

Global and regional industry events

- AFA Annual Fertilizer Forum & Exhibition, Egypt
- FAI Annual Seminar, India
- IFA Annual Conference
- IFA Crossroads
- Southwest Fertilizer, USA
- TFI Annual Meeting, USA
- TFI World Fertilizer, USA

Advertising rates 2024

Cover rates	
	USD
Outside front package	6,000
Inside front cover	3,740
Inside back cover	3,530
Outside back cover	4,080

Run of press rates	1 Issue	2 Issues (10% discount)	3 -5 Issues (20% discount)	6 Issues (30% discount)
	USD	USD	USD	USD
Double page	6,460	5,748	5,100	4,464
Full page	3,120	2,808	2,496	2,184
Half page	2,640	2,376	2,112	1,848
Third page	1,860	1,674	1,488	1,302
Quarter page	1,740	1,566	1,392	1,218

For more details or to discuss our requirements please contact Stefan Worsley: stefan.worsley@argusmedia.com

Advertising specifications

Editorial & advertising schedule 2024	
Edition	**Due date**
January/February	8 December
March/April	9 February
May/June	12 April
July/August	7 June
September/October	9 August
November/December	11 October

SIZE & POSITION

Once you have booked your advertisement please ensure you supply the artwork at the correct size, as below. Please note: 'Trim size' is the actual size that the advertisement will appear in the publication. 'Bleed size' is the size your advertisement needs to be supplied to us including the required 3mm bleed (if full page). 'Type area' is the suggested area that any text or important information should sit within to ensure details have some clear space around them for clarity.

TECHNICAL SPECIFICATION

Please ensure your advertisement is produced professionally, and in accordance with the following criteria:

- All artwork should be CMYK colour (No Pantone/Spot colours)
- All fonts should be embedded or outlined
- All images within the artwork must be at least 300dpi resolution and in CMYK colour
- For Full Page adverts please include 3mm bleed and crop marks

FILE FORMAT & SUPPLY

Our preferred file type is a high resolution PDF to the the following specification when exported from Adobe InDesign:

- Adobe PDF Preset: PDF/X-4:2008
- Colour Profile: Coated FOGRA39 (ISO 12647-2:2004)

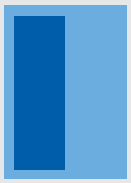
The above will ensure your advertisement appears in the best possible quality, however if you are unable to supply as a PDF we will accept a 300dpi JPEG or TIFF file in CMYK colour format.

Full page

Trim size:
297mm(h) x 210mm(w)
Bleed size:
303mm(h) x 216mm(w)
Type area:
275mm(h) x 185mm(w)

HALF PAGE (Horizontal)

Trim size:
128mm(h) x 180mm(w)
Type area:
118mm(h) x 170mm(w)



HALF PAGE (Vertical)

Trim size:
250mm(h) x 86mm(w)
Type area:
240mm(h) x 76mm(w)

THIRD PAGE (Horizontal)

Trim size:
62mm(h) x 180mm(w)
Type area:
54mm(h) x 172mm(w)

THIRD PAGE (Vertical)

Trim size:
122mm(h) x 112mm(w)
Type area:
114mm(h) x 104mm(w)

Please note: Bleed is not required for Half Page and Third Page advertisements as these formats sit within the page, however we do recommend your advertisement includes a keyline/border if it has a white background.

If you have any queries regarding our specifications or to send us your files, please contact: Kate.Shanley@argusmedia.com

Fertilizer Focus

For advertising and editorial information please contact:
stefan.worsley@argusmedia.com

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Fertilizer Focus

INDEX TO ADVERTISERS

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IN THE NEXT ISSUE...

SPECIAL FOCUS:
ENHANCED EFFICIENCY FERTILIZERS

- Advancements for additives and coatings
- NPK processing technology
- New methods for increasing yields

SUPPLEMENT: NORTH AMERICA

- Mexico: market overview
- Canada's rail network and the risk of bottlenecks
- Lithium and the increasing in sulphur consumption in North America
- US Inflation Reduction Act impact on nitrogen plant investments

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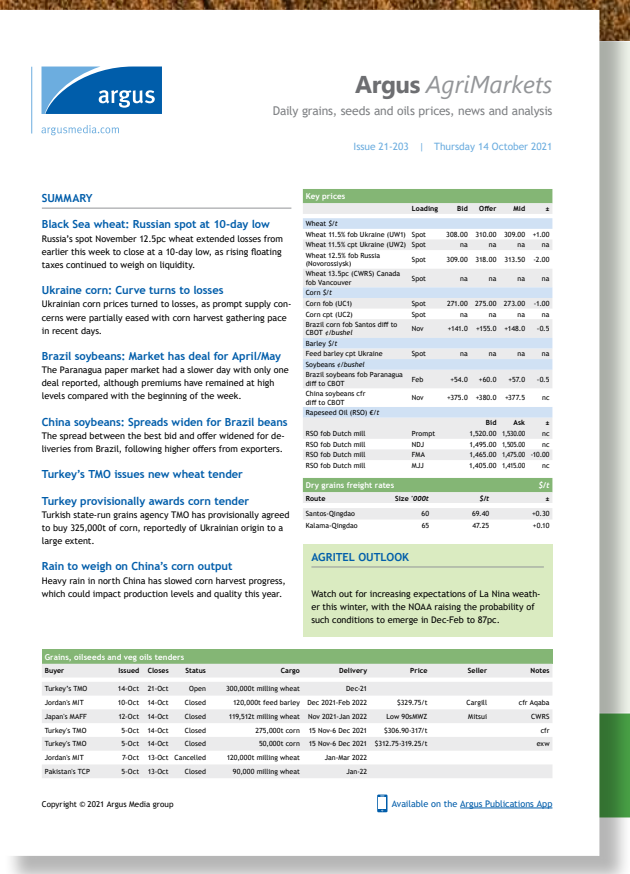
Timely, accurate and dependable price assessments, news and analysis for the agriculture markets

Key features of Argus Agrimarkets:

- **Executive summary**
- **Current and historical prices**
- **Grains, oilseeds and veg oils tenders**
- **Black Sea market - news, insight, current and forward prices**
  - Ukraine wheat market
  - Ukraine corn market
  - Ukraine Barley Market
  - Russia wheat market (spot prices only)
- **Brazil soybean and corn - news, insights and prices**
- **China soybeans market**
- **Global news and key market developments**



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Argus *AgriMarkets*

Daily grains, seeds and oils prices, news and analysis

Issue 21-203 | Thursday 14 October 2021

SUMMARY

Black Sea wheat: Russian spot at 10-day low
Russia's spot November 12.5pc wheat extended losses from earlier this week to close at a 10-day low, as rising floating taxes continued to weigh on liquidity.

Ukraine corn: Curve turns to losses
Ukrainian corn prices turned to losses, as prompt supply concerns were partially eased with corn harvest gathering pace in recent days.

Brazil soybeans: Market has deal for April/May
The Paranagua paper market had a slower day with only one deal reported, although premiums have remained at high levels compared with the beginning of the week.

China soybeans: Spreads widen for Brazil beans
The spread between the best bid and offer widened for deliveries from Brazil, following higher offers from exporters.

Turkey's TMO issues new wheat tender

Turkey provisionally awards corn tender
Turkish state-run grains agency TMO has provisionally agreed to buy 325,000t of corn, reportedly of Ukrainian origin to a large extent.

Rain to weigh on China's corn output
Heavy rain in north China has slowed corn harvest progress, which could impact production levels and quality this year.

Key prices

	Loading	Bid	Offer	Mid	±
Wheat $/t					
Wheat 11.5% fob Ukraine (UW1)	Spot	308.00	310.00	309.00	+1.00
Wheat 11.5% cpt Ukraine (UW2)	Spot	na	na	na	na
Wheat 12.5% fob Russia (Novorossiysk)	Spot	309.00	318.00	313.50	-2.00
Wheat 13.5pc (CWRS) Canada fob Vancouver	Spot	na	na	na	na
Corn $/t					
Corn fob (UC1)	Spot	271.00	275.00	273.00	-1.00
Corn cpt (UC2)	Spot	na	na	na	na
Brazil corn fob Santos diff to CBOT ¢/bushel	Nov	+141.0	+155.0	+148.0	-0.5
Barley $/t					
Feed barley cpt Ukraine	Spot	na	na	na	na
Soybeans ¢/bushel					
Brazil soybeans fob Paranagua diff to CBOT	Feb	+54.0	+60.0	+57.0	-0.5
China soybeans cfr diff to CBOT	Nov	+375.0	+380.0	+377.5	nc
Rapeseed Oil (RSO) €/t					
			Bid	Ask	±
RSO fob Dutch mill	Prompt		1,520.00	1,530.00	nc
RSO fob Dutch mill	NDJ		1,495.00	1,505.00	nc
RSO fob Dutch mill	FMA		1,465.00	1,475.00	-10.00
RSO fob Dutch mill	MJJ		1,405.00	1,415.00	nc

Dry grains freight rates $/t

Route	Size '000t	$/t	±
Santos-Qingdao	60	69.40	+0.30
Kalama-Qingdao	65	47.25	+0.10

AGRITEL OUTLOOK

Watch out for increasing expectations of La Nina weather this winter, with the NOAA raising the probability of such conditions to emerge in Dec-Feb to 87pc.

Grains, oilseeds and veg oils tenders

Buyer	Issued	Closes	Status	Cargo	Delivery	Price	Seller	Notes
Turkey's TMO	14-Oct	21-Oct	Open	300,000t milling wheat	Dec-21			
Jordan's MIT	10-Oct	14-Oct	Closed	120,000t feed barley	Dec 2021-Feb 2022	$329.75/t	Cargill	cfr Aqaba
Japan's MAFF	12-Oct	14-Oct	Closed	119,512t milling wheat	Nov 2021-Jan 2022	Low 90s/MWZ	Mitsui	CWRS
Turkey's TMO	5-Oct	14-Oct	Closed	275,000t corn	15 Nov-6 Dec 2021	$306.90-317/t		cfr
Turkey's TMO	5-Oct	14-Oct	Closed	50,000t corn	15 Nov-6 Dec 2021	$312.75-319.25/t		exw
Jordan's MIT	7-Oct	13-Oct	Cancelled	120,000t milling wheat	Jan-Mar 2022			
Pakistan's TCP	5-Oct	13-Oct	Closed	90,000 milling wheat	Jan-22			

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