



# FERTILIZER MARKET OVERVIEW

## NUTRIENT DEMAND DRIVERS

### THE GLOBAL ECONOMY

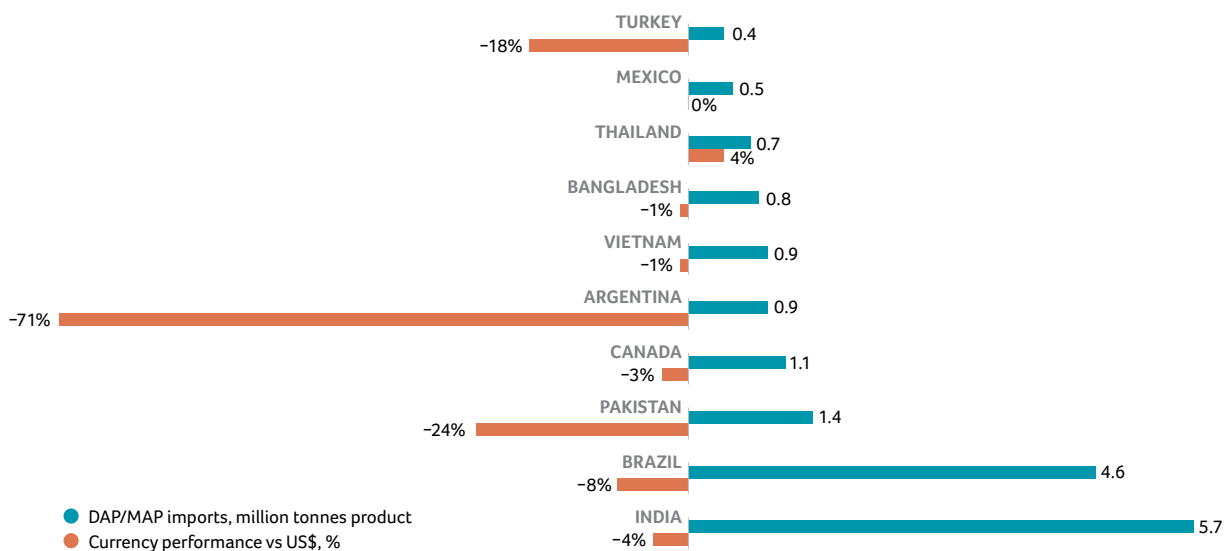
Rising international trade barriers and uncertainty about further trade war escalation and geo-political risks were a key reason for the global manufacturing downturn that prevailed in 2019. Economic growth is likely to stabilise in mid-2020, but the overall economic picture is worse than had been expected at the start of the year. The latest IMF forecast in October 2019 projected annual GDP growth of 3.0% higher year-on-year, a 0.3% downwards revision from its April 2019 forecast.

Emerging and advanced economies saw a slowing of economic growth in 2019. Political uncertainty in large emerging markets – in particular, Argentina, Iran, Turkey, and Venezuela – drove

significant distress, which weighed on growth. In India election uncertainty combined with acute funding problems in the non-bank financial sector, constrained lending to the real economy and growth. The retaliatory trade conflict between the US and China has not had much of an impact on headline growth rates of the two economies, because they have protected their economies with domestic policy easing. Instead, the trade war has adversely affected the export reliant economies of Europe.

Energy prices declined to an average of US\$61.78/bb in 2019 as record-high crude oil production in the US outweighed the impact of OPEC supply cuts. OPEC agreed some of these cuts, but involuntary cuts have played a significant role too, including US sanctions on Iran, civil unrest in Venezuela and war in Libya. Supply disruptions in Saudi Arabia, following attacks on key refining sites in September, only briefly supported a 10% increase in crude oil prices. Weaker demand prospects have also continued to weigh on energy demand – coal and natural gas prices declined through the year due to weaker demand prospects.

### Performance of selected currencies of major phosphate importers, DAP/MAP imports in 2019 (prov.)



Note: # reflects country's position against rest of the world; Data: CRU; IMF; Turkish Central Bank; Float Rates.



Policy-makers responded to the slowdown in global economic growth with additional stimulus. Most notable is the extent of monetary policy easing throughout the world, which worked to ease borrowing conditions and bolster confidence. Some of the recent cuts will continue to drive the stabilisation of growth in 2020.

### AGRICULTURAL MARKETS

Unprecedented weather conditions and African Swine Fever (ASF) added to the intensifying US-China trade conflict to impact agricultural commodities in 2019. Nonetheless, as of its latest report in November 2019, the International Grains Council (IGC) increased its global grains production estimate for 2019/2020 to 2,157 million tonnes to reflect marginal year-on-year growth.

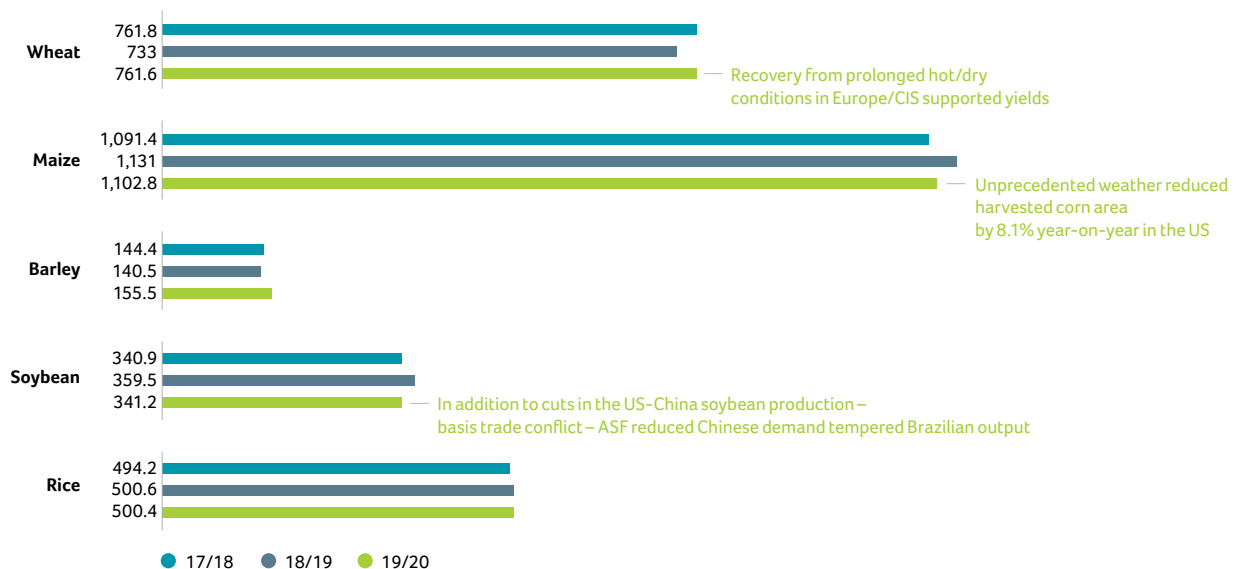
The year began with record-high stock:use ratios across multiple crops (e.g. rice; soybean; wheat), resulting from weak global demand due to trade barriers and a positive crop outlook. These factors combined to apply downwards pressure on crop prices. Favourable growing conditions in South America and a record winter crop in Europe – following a very dry 2018/19 season – further pressured crop prices.

The wettest spring season on record and resulting planting delays for corn and soybean crops in the US offered temporary price relief. Local currency depreciation (e.g. Brazil; Argentina) maintained export competitiveness and despite premiums into China, the Africa Swine Flu epidemic resulted in the culling of 55% of Chinese hog herds and tempered Brazilian soybean production. Global soybean production declined by 6% year-on-year to 341 million tonnes, whilst demand for substitute meats (e.g. broiler feed; layer feed; aquaculture feed) only partially offset the impact of ASF on animal feed grains. Further declines in soybean production failed to materialize, as the intensification of hog production across China partially offset the extensive culling of smallholder herds that use less compound feed.

US farmers planted more corn in response to low spring new-crop soybean:corn price ratios, though further unfavourable weather towards the harvest hampered production. Despite a 23% year-on-year growth in corn yields across South America, further bad weather towards the harvest reduced US output. A 21 million tonne decline in Chinese corn production – basis government policy to substitute soybean import demand with additional domestic production – tightened the corn market further and supported prices in 2019, contributing to a 2% year-on-year decline in global corn production of 1.103 billion tonnes.

Conversely, global wheat production increased by nearly 4% year-on-year to 762 million tonnes. Wheat prices remained under pressure for much of 2019 as large producers – notably China and India – accumulated inventories that combined, might carry into 2020 as the largest in history.

### Selected Global wheat and grains production, mt





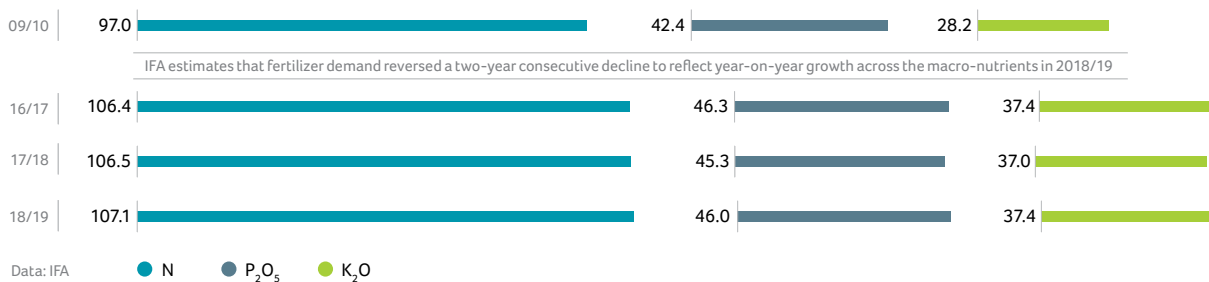
## HIGH LEVEL NUTRIENT DEMAND REVIEW

Preliminary International Fertilizer Association (IFA) figures, published in November 2019, estimate combined nitrogen (N), phosphate (P) and potassium (K) fertilizer demand at 190.5 million tonnes nutrient for the 2018/19 season. This reflects 0.9% year-on-year growth in fertilizer nutrient demand – N demand by 0.6%, P<sub>2</sub>O<sub>5</sub> demand 1.4% and K<sub>2</sub>O demand

by 0.9% – reversing a two-year consecutive decline in fertilizer nutrient demand globally.

Local currency depreciation for agricultural exporters in Latin America and Russia, an election year in India where farmer votes weigh heavily on politics, and a recovery in European markets were major demand drivers. Combined, these factors offset reduced demand in China – where government continues to support improved fertilizer efficiency – and the US, where persistent adverse weather condition hampered consecutive sowing/harvest seasons.

### N, P and K fertilizer demand developments, mt (global demand)



## HIGH LEVEL NUTRIENT SUPPLY REVIEW

Growth in combined fertilizer and industrial demand for macronutrients (N, P and K) supported a 1.2% year-on-year increase in 2019 production at 254 million tonnes nutrient. Fertilizer demand accounted for 183 million tonnes nutrient in 2019 equivalent to 78% of global macronutrient output, marginally lower (-0.3%) than in 2018.

Mixed supply trends categorized major fertilizer raw materials. Ammonia production increased by 2.1% year-on-year, with increased output from Russia, the US, Indonesia, and China. Following a year of negative growth in 2018, rock phosphate supply remained flat year-on-year at 207 million tonnes. Potash production declined by 5% year-on-year, totalling 40.9 million tonnes K<sub>2</sub>O, following two-consecutive years of growth.

Urea production increased by 2.4% year-on-year to 176 million tonnes. Continued supply growth from Russia, the United States and across south/south-eastern Asia largely supported operating rates averaging 85% globally. Despite tightening environmental restrictions that

mostly contributed to three consecutive years of declining output in China, domestic urea supply recovered.

Processed phosphates (i.e. DAP/MAP/NPS/TSP) production increased to 74 million tonnes product (35.6 million tonnes P<sub>2</sub>O<sub>5</sub>), mostly driven by growth in MAP output and a 9% year-on-year recovery in DAP production, notably from the ramping up of new low-cost supply in Morocco and Saudi Arabia.

Muriate of Potash (MOP) production declined by 6% year-on-year to 65 million tonnes product, following two consecutive years of growth and weak demand fundamentals, driven by reduced imports demand and consequently lower export-focused supply.

### FOCUS ON PHOSPHATE FERTILIZER MARKETS IN 2019

#### Phosphate Fertilizer supply

Global phosphate nutrient demand was marginally lower (0.2%) at 46.2 million tonnes P<sub>2</sub>O<sub>5</sub> in 2019. Supply growth slowed to 0.4% year-on-year to 49.3 million tonnes P<sub>2</sub>O<sub>5</sub> over the same period.

Phosphates production across North America continued its chronic decline, in 2019 by around 16% lower year-on-year to an estimated 11.6 million tonnes (DAP/MAP/NPS). The idling of Plant City (United States) and the closure of Redwater (Canada) resulted in larger and competitive traded volumes from suppliers that hoped to benefit from premiums into North America. However, low demand, basis from erratic weather and resulting skipped applications and logistical constraints, pushed



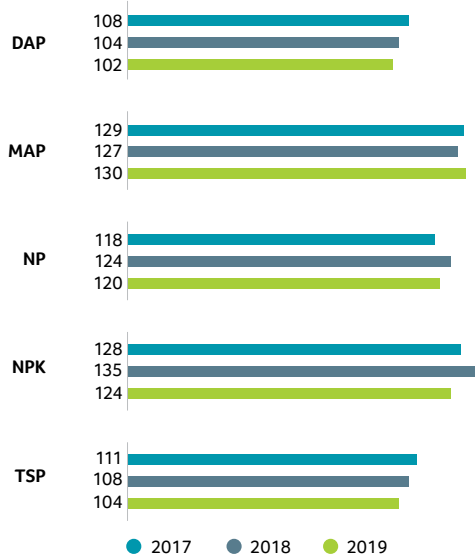
inventories higher and pressured the market. By year-end, further supply curtailments – this time in Faustina (United States) – were necessary to attempt to balance the market to halt price declines approaching 2020. Morocco and China also contributed to such production curtailments over this period.

Following some of the highest DAP imports in recent history in 2018, DAP imports to India declined by 9% year-on-year to an estimated 5.7 million tonnes. These volumes, comfortably above 2017 levels, combined with a 31% year-on-year increase in domestic DAP production at 3.4 million tonnes, pushed inventories to nearly 7.0 million tonnes by August 2019. Competitive DAP pricing in particular supported very attractive margins for retailers, but low phosphoric acid prices also encouraged domestic supply and (less so, but still) healthy margins.

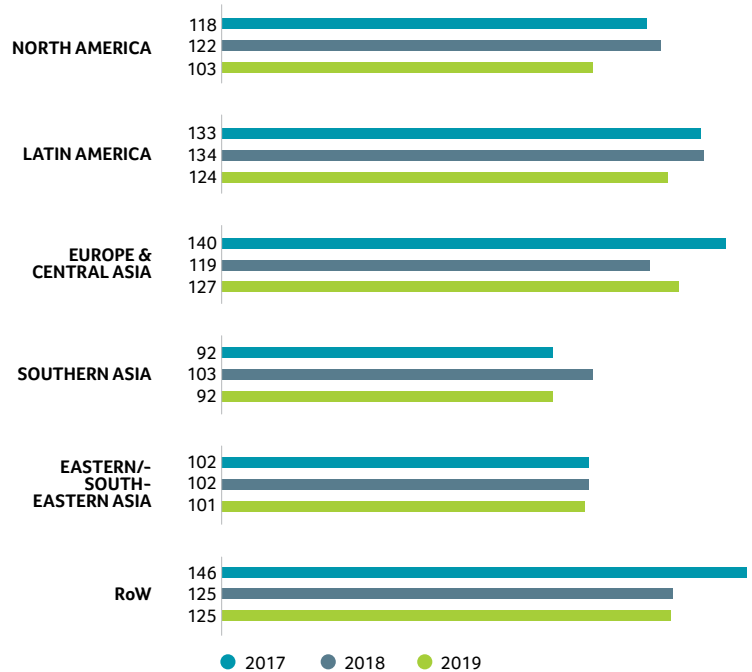
Despite issues from 2018 passing into early 2019, commercial operating rates in Saudi Arabia steadily ramped up through the year, supporting a 36% year-on-year growth in production to an estimated 4.6 million tonnes (DAP/ MAP). India remained the largest sink for traded Saudi phosphates, reflected in a 20% year-on-year increase in exports at 2.4 million tonnes. However, a low-cost position supported exports into deep-sea markets like the United States (from 90,000 tonnes to 230,000 tonnes) and Brazil, (from 650,000 tonnes to 900,000 tonnes) respectively.

Reduced DAP exports to India and lower MAP exports to Latin America – during continued decline in domestic demand, set up a difficult year for Chinese producers. Nonetheless, the domestic spring season proceeded better than previous expectations – in part aided by improved logistical reach owing to efficient implementation of new railways/roads to reduce traffic and improve delivery times of commodities. Inventory build and a switch towards greater NP production in place of declining DAP sales resulted in Chinese phosphates production flat year-on-year at an estimated 12.6 million tonnes (DAP/MAP/NPS). Despite implementing regular cuts through the year, most of which were never fully implemented, the consolidation of Kailin and Wengfu in the 6+2 producer group did result in more discipline towards the end of the year.

### Phosphate fertilizer production growth – index, 2010 = 100



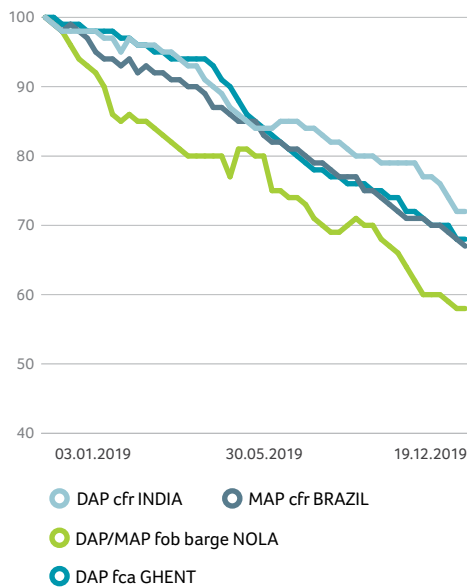
### P<sub>2</sub>O<sub>5</sub> demand growth – regional index, 2010 = 100



Data: Ferteccon.



### Phosphate Fertilizer demand and pricing, *January 3rd 2020 = 100*



Data: Argus, CRU Fertilizer Week, Fertecon, ICIS, Infofert, Profercy

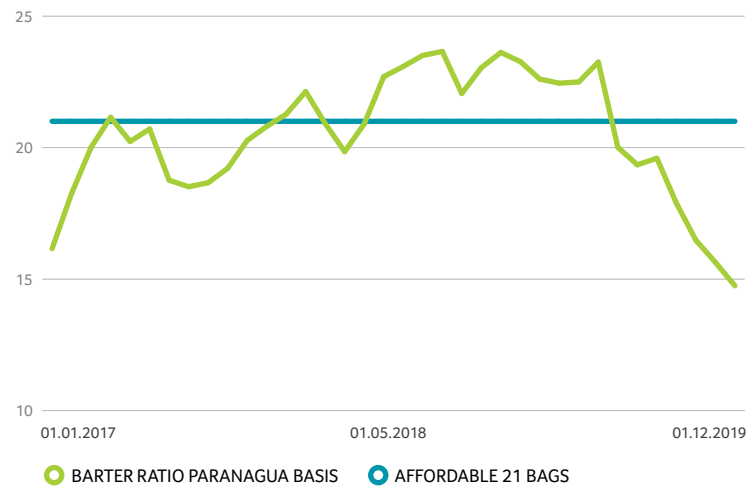
European markets already showed signs of weakness towards the end of 2018 and this trend continued – though muted – into early 2019, demonstrated through hesitance from traders booking volumes for spring application. Poor harvests, regulatory changes (notably in Germany) and logistical constraints all combined to pressure prices, but volumes continued moving, even though in increasingly smaller quantities. Annual  $P_2O_5$  demand recorded a marginal year-on-year decline of 1% to an estimated 3.9 million tonnes and it was competition for market share by suppliers already facing oversupply in other markets.

Erratic weather during both spring and autumn application periods significantly reduced phosphate demand in North America, particularly the United States where  $P_2O_5$  demand declined by an estimated 18% year-on-year to just below 4.4 million tonnes. Skipped application, whether because of delayed fieldwork or restricted logistics opportunities, and competitive import line-ups resulted in an oversupplied market. This eroded

the strong premiums DAP fob Tampa enjoyed over all other benchmarks in 2018 as it fell from its highest levels of USD418/t in January down to USD268/t by year-end.

The state of the US market resulted in re-directed trade flows to Latin America, in particular Brazil, where MAP imports increased by 14% to almost 4.3 million tonnes product. Declining prices on MAP from highs of USD436/t cfr Brazil in January and high crop pricing – particularly on soybean, driven by the escalating US-China trade conflict – supported attractive fertilizer affordability in Brazil. A three-year high in MAP affordability for Brazilian farmers was insufficient to balance for declining demand in the rest of Latin America, where total  $P_2O_5$  demand declined by 8% year-on-year to an estimated 6.8 million tonnes. During a period of widespread political instability – resulting in depreciating currencies and higher crop input costs – drought and low cash-crop prices reduced demand in much of Latin America. Considering this and structural oversupply, MAP cfr Brazil prices touched lows of USD280/t by year-end.

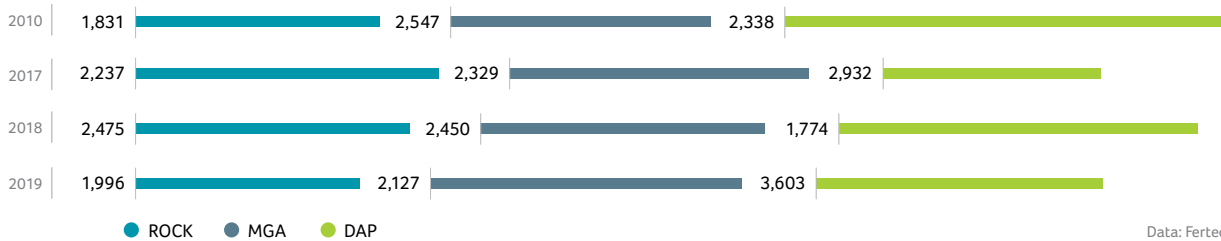
### Brazil – barter ratio, #60kg soybean bags per tonne MAP



Data: AgroLink, Argus, CRU Fertilizer Week, Fertecon, ICIS, Profercy

Inventory build across southern Asia, reaching nearly 7.0 million tonnes DAP in India during August, pressured prices from highs of USD414/t cfr India year beginning down to USD296/t cfr India by year-end. Whilst demand did not deplete stock positions across Pakistan much, an excellent monsoon season supported DAP inventory liquidation of almost 3.0Mt DAP across India from August through December. This during a period where import line-ups continued building and domestic production ramped up as phosphoric acid prices declined for a fourth consecutive quarter and supported very good margins for DAP retailers. However, in switching to DAP production for margin capture, NPK production fell considerably and resultantly across the year total  $P_2O_5$  demand in India declined by around 9% year-on-year to 6.4 million tonnes.

## India – selected phosphate imports, $P_2O_5$ share

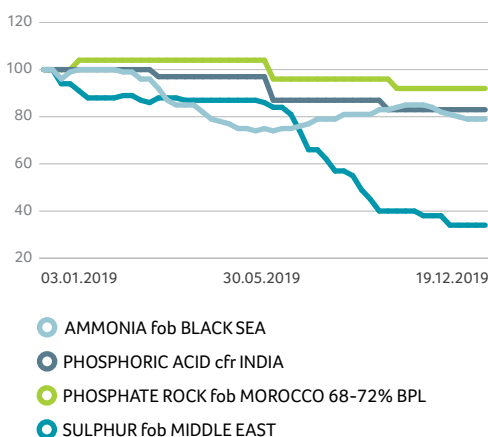


Data: Fertecon, IFA.

Elsewhere in Asia, the spring ploughing season in China performed better than expected, though still down on previous years. Generally, domestic demand continues to soften as government policy to reduce fertilizer application growth persists and farmers implement more efficient fertilizer application techniques. Whilst the easing of NPK export tariffs provided some relief to domestic suppliers, this market accounted for most of the 2% year-on-year decline in Chinese  $P_2O_5$  demand estimated at 12.3 million tonnes.

Following four consecutive years of  $P_2O_5$  demand growth in Africa, an NPK import ban in Nigeria and drought in Southern Africa resulted in reduced NPK and MAP demand respectively. Resultantly,  $P_2O_5$  demand declined by 13% year-on-year to an estimated 1.6 million tonnes.

### DAP/MAP – raw material price developments, index (100 = January 3rd 2019)



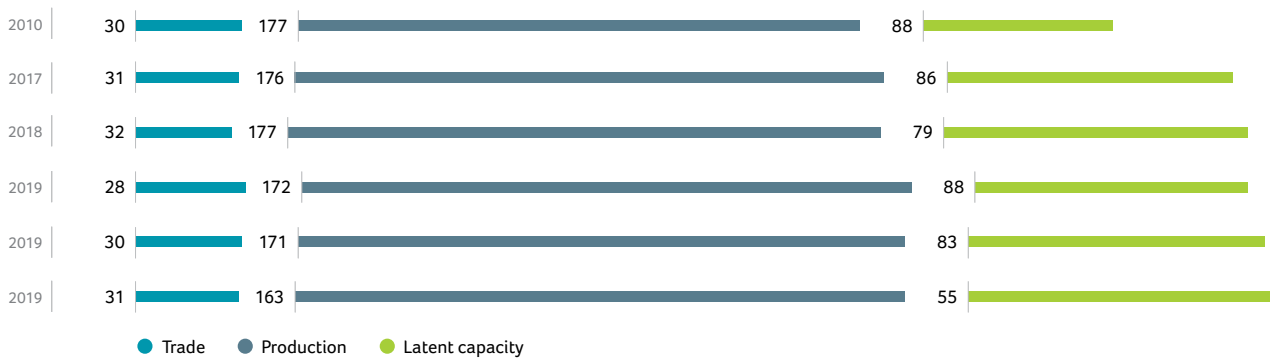
Data: CRU Fertilizer Week.

### Phosphate rock market Review

Marketable rock phosphate production remained flat year-on-year at an estimated 207 million tonnes in 2019. Generally, the ramping up of low-cost integrated downstream capacity across mostly the Middle East and North Africa balanced for lower demand from a combination of downstream capacity closures and curtailments, which weighed more heavily on traded rock phosphate volumes. There were also reductions in production from China (due to declining downstream demand and high inventory carryover), the United States (due to downstream idling) and Morocco (due to trade flow redirection). The traded market, however, declined by 3% year-on-year to an estimated 30 million tonnes, as increased availability from previously less prevalent participants (e.g. Syria; Togo; Jordan – for diverse reasons) failed to offset increased captive consumption from large exporters to drive downstream sales.

Given no significant availability restriction, rock phosphate prices typically follow phosphoric acid and fertilizer prices with some delay. This precisely occurred in Q1 as prices averaged USD90/t fob Morocco (69-72% BPL) basis, marginally higher quarter-on-quarter and unaffected by softer downstream prices. The fact that even the idling of beneficiation operations at three mines in Brazil from late Q1 – for tailings dam safety procedures following the Vale Brumadinho disaster in February 2019 – resulted in no price reaction demonstrated how oversupply in downstream markets could substitute in the form of imports instead.

It was only in Q3, by when mines in Brazil were operating at commercial utilisation rates once again, that rock phosphate prices finally corrected downwards to USD79/t fob Morocco (69-72% BPL) basis. This decline also reflected how much protection rock phosphate prices had received in the form of demand from SSP producers with exposure to significant weakness in sulphur markets provided price support. The idling of downstream capacity in the United States during Q4 – and other production curtailments in Morocco and China, as well as continued declines in downstream phosphate prices – further pressured rock phosphate pricing approaching 2020.

**Rock Phosphate – global production & trade, *mt*****OTHER FERTILIZERS****Urea**

Urea demand increased by 0.5% year-on-year to an estimated 171.2 million tonnes. Nonetheless, prices came under increasing pressure through the year as demand growth slowed and production increased, basis increased urea production cost cuts owing to natural gas surplus. Rather than supporting the market, US sanctions were deflationary as Iranian exports continue to sell at a large discount.

A recovery that began in mid-2017 and lifted urea prices to USD334/t fob Middle East in October 2018 ran out of steam in early 2019 as poor growing condition across the US Midwest hampered early spring demand. An early Indian tender announcement in January offered temporary price support, but an underwhelming 515,000 tonne award resulted in more price pressure. Demand elsewhere was piecemeal,

during a period where dry condition across much of the larger European economies – and tightening restrictions on nitrogen use efficiency – that slowed buying. Furthermore, newly commissioned capacity – in Turkmenistan and Azerbaijan – entered the market in Q1.

Despite seasonal demand increments through Q2 – notably the ramping up of Indian import demand ahead of the rabi season, but also spot demand across Latin America – macroeconomic headwinds and deflationary energy markets, amid continued oversupply in natural gas markets, combined to significantly reduce production costs at the margin. Chinese exports initially pulled back, but RMB devaluation – owing mostly to the escalating US-China trade conflict – and cheaper coal amid an easing of environmental policy restrictions supported a recovery in Chinese urea production and almost doubled year-on-year by year-end exports. Most of the growth in Chinese exports were directed to India, where imports increased significantly to 8.8 million tonnes.

Sustained low gas prices on EU hubs through the summer months revitalized marginal Black Sea production, in particular from Ukraine where exports – previously absent – reached 120-150,000 tonnes per month by Q4. Sanctions barely affected Iranian export volumes, which were roughly flat year-on-year, but prices came under pressure owing to discounts of up to USD60/t – notably in Brazil and Turkey (Mediterranean).



### Ammonia

IFA estimates a 0.6% year-on-year increase in global ammonia demand at 144.8Mt for 2019, as new supply added further pressure to a market already stressed by poor United States demand. Resultantly, the balance moved further into surplus, at around 11.1Mt.

Price declines prevailed through most of the first three quarters of 2019, as global benchmarks reflected a supply surplus. This resulted in average annual prices declining by USD60-65/t across both west and east of Suez benchmarks. Advanced maintenance programs across the Middle East and North Africa, due to low pricing, halted price declines from July-August and prevented many marginal Russian producers touching the floor.

Increased competition to capture European gas demand between United States LNG suppliers and Russian pipeline exports pushed the TTF gas price down to a record low of USD3.10/MMBtu in September. These lower energy prices across most markets prevented a repeat of 2018 plant shutdowns. Despite a 15% year-on-year decrease in the Chinese anthracite coal price in 2019, the incentive to import ammonia remained strong. The arbitrage opportunity to import ammonia over domestic supply in coastal areas averaged USD150/t in 2019, which supported imports exceeding 1.0Mt in 2019, with port storage infrastructure becoming one of the main bottlenecks to even higher imports.

The commissioning of new merchant capacity at EuroChem's Kingisepp plant in Russia slightly shifted trade dynamics. More exports originated from lower-cost Baltic exporters and eroded the historical premium in fob prices, which

the Baltic Sea held over the Black Sea. Low phosphate prices resulted in ammoniated phosphate production curtailments in key ammonia import markets such as the United States, Morocco and China. Furthermore, poor weather in both direct application seasons further restricted demand in the United States, lowering ammonia imports by 14% year-on-year in 2019. United States ammonia imports declined for a fourth consecutive year, which, along with difficulties in securing gas contracts, contributed to the closure of 285ktpa of capacity in Trinidad.

### Potash

IFA estimates a 6% year-on-year decline in global MOP deliveries for 2019 at around 65Mt after two consecutive years of growth and resulting high-carryover. Demand was robust throughout much of H1 2019 - demonstrated by largely flat pricing, despite weaker crop fundamentals - before a marked slowdown during H2 2019, which accelerated spot price declines. Despite the belated settlement of the Indian supply contract in October - agreed only USD10/t lower at USD280/t cfr - the conspicuous absence of a Chinese contract left the market without a price floor approaching the close of the year. Resultantly, spot prices continued falling across key import markets.

With record high MOP port inventories in China, and little sign of an impending agreement, most major producers implemented voluntary production cuts in H2 2019, removing potentially as much as 3Mt of planned output. The one positive story throughout 2019 was the Brazilian market where high soybean exports encouraged strong MOP consumption. However, with suppliers increasingly competing for volumes, coupled with a weakening local currency, by the end of 2019 Brazilian import prices had wiped out all gains made the prior year. New supply from Russian producer EuroChem also became more prominent in 2019, compounding the intensified competition that placed more downwards pressure to pricing already falling due to the absence of signed Chinese contract volumes.