

Potassium Chloride Supply/Demand Outlook to 2023

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THE
FERTILIZER
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Fertilizer Industry
Round Table

Agenda

- 1 – Recent spot price performance
- 2 – Record 2017 demand
- 3 – Tighter supply
- 4 – Rising industry costs
- 5 – 2018 contracts
- 6 – Potential effects of US-China trade war
- 7 – Future demand
- 8 – Future supply

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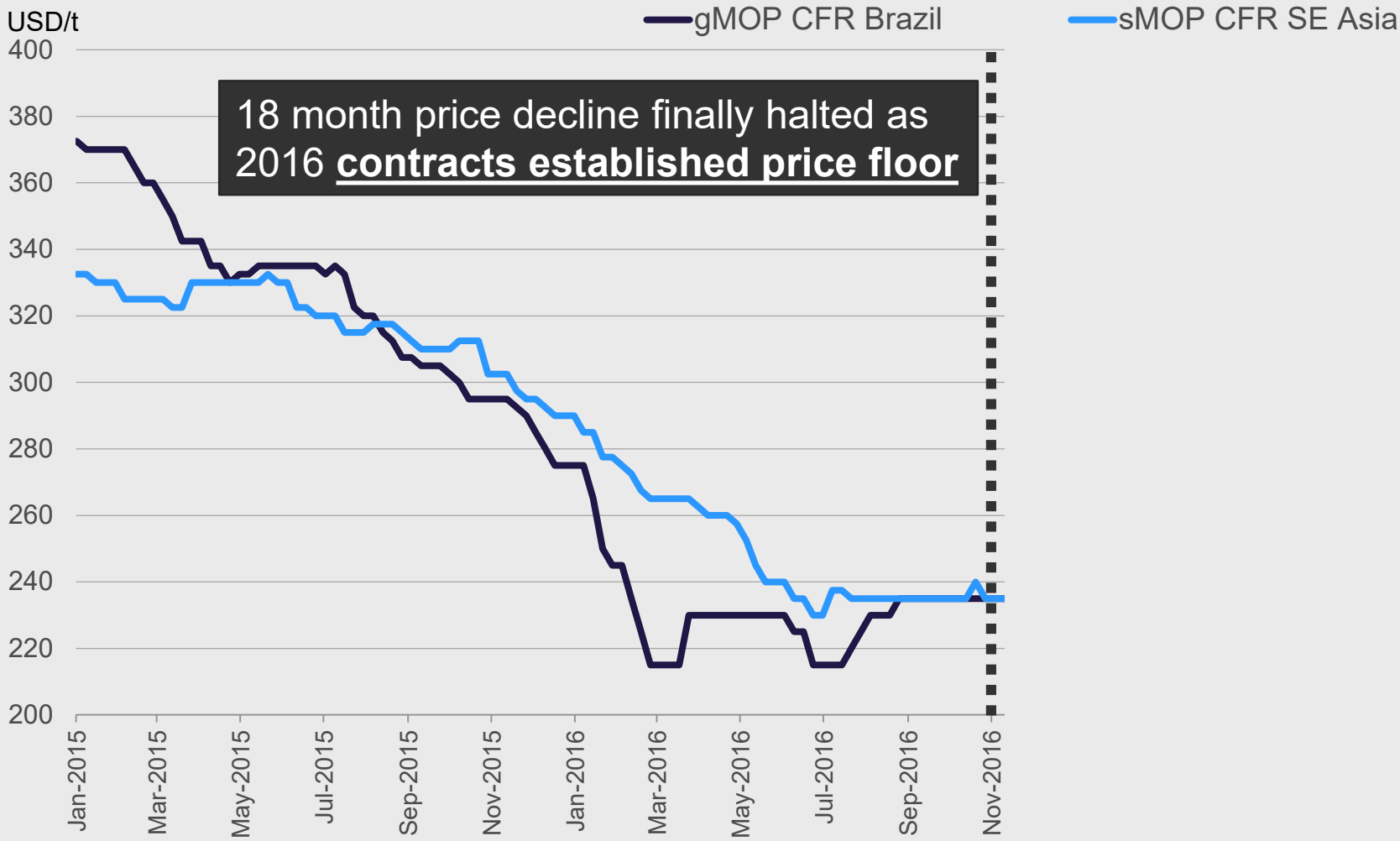
CRU – big enough to deliver, a high quality service, small enough to care about all our customers.



CRU's office locations

Recent History: Spot prices at their highest in three years

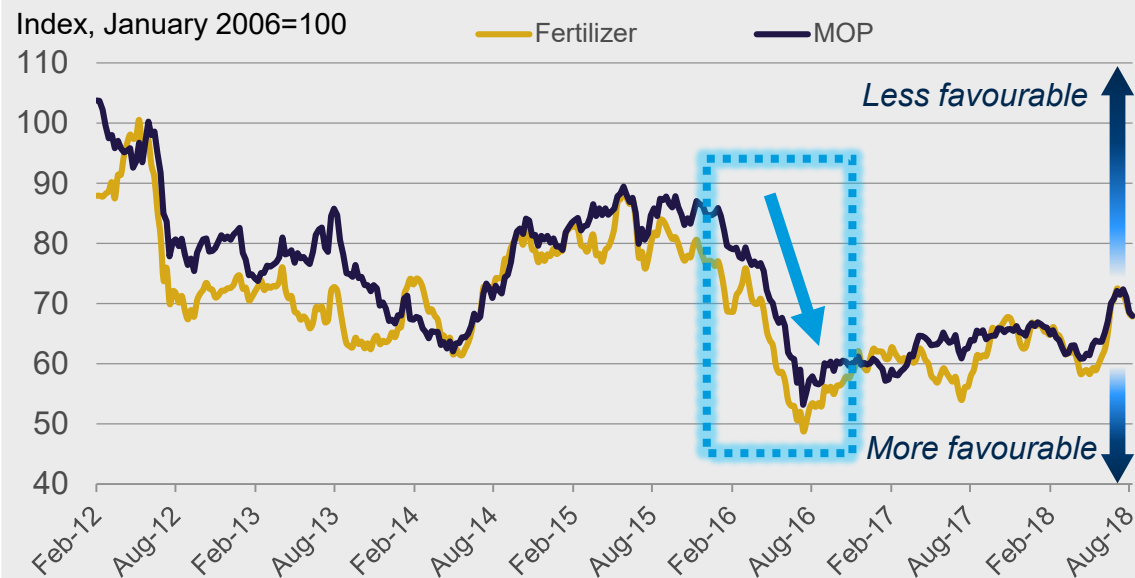
Brazil and SE Asia import benchmarks continue to recover



Drivers a combination of demand and supply factors

Demand drivers...

Global affordability tightens

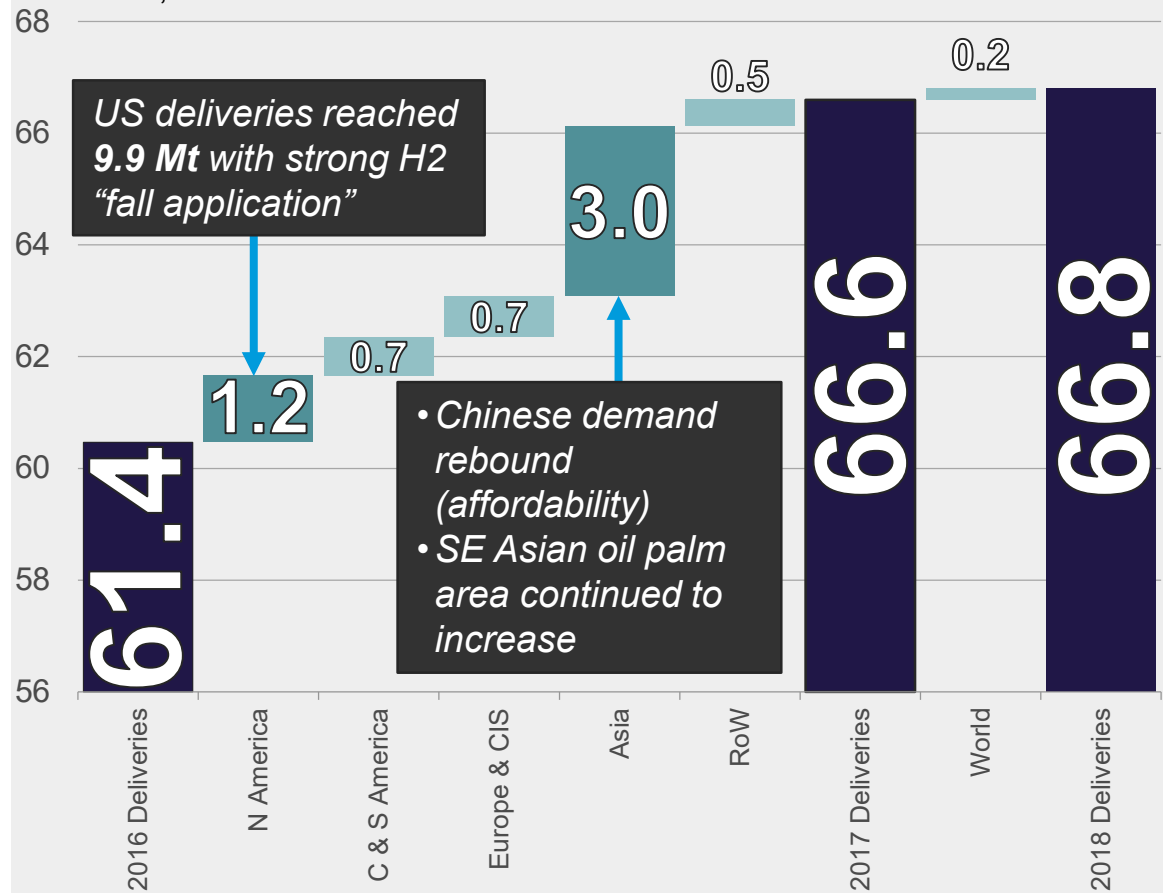


- Consistently more favourable MOP affordability since mid-2016
- Area expansion of key MOP-consuming crops:
 - Soybean & Corn (US & Brazil)
 - Oil palm (Southeast Asia)

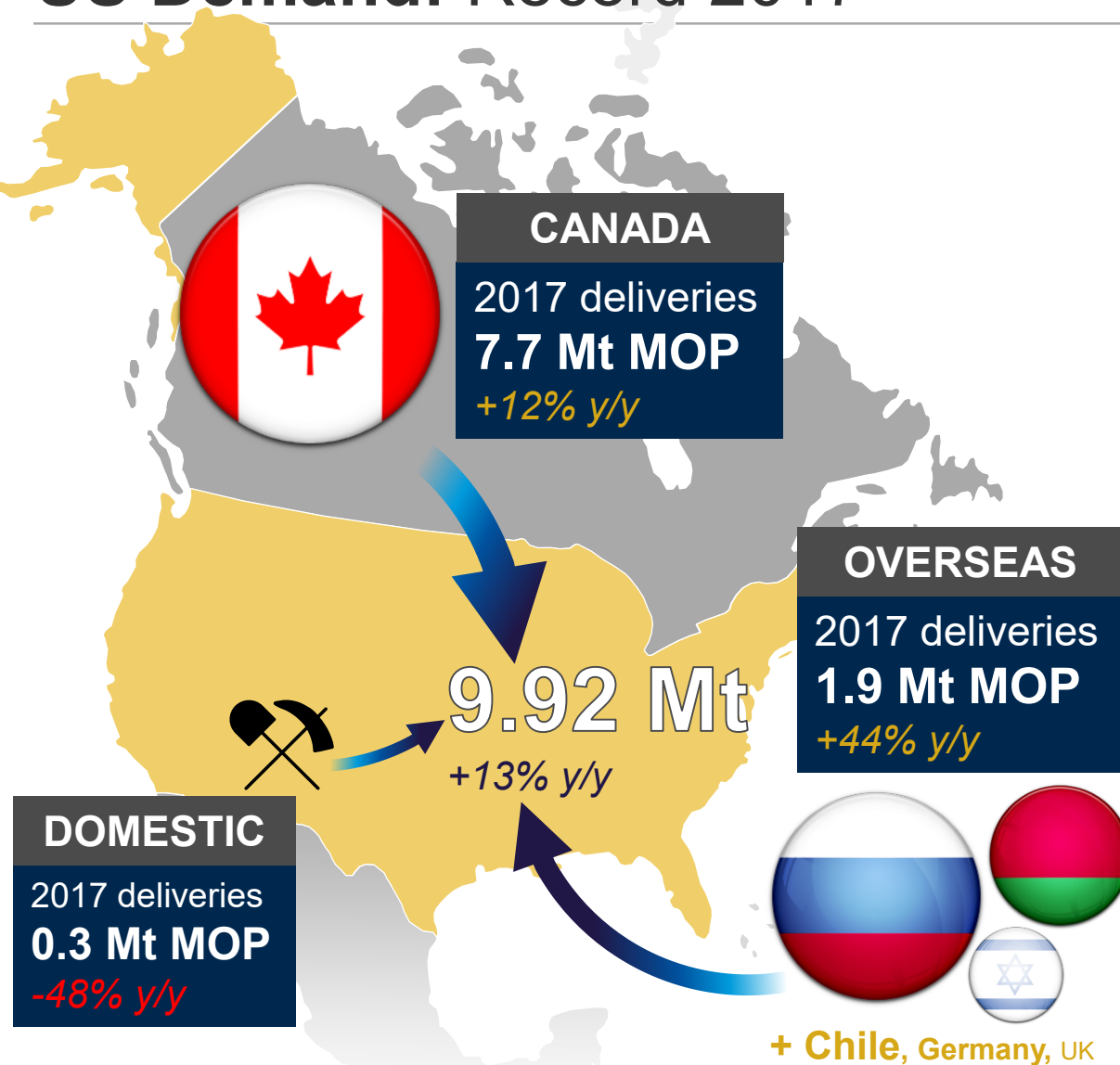
...led to record 2017 demand

Asia and North America strongest performing regions

Deliveries, Mt MOP



US Demand: Record 2017

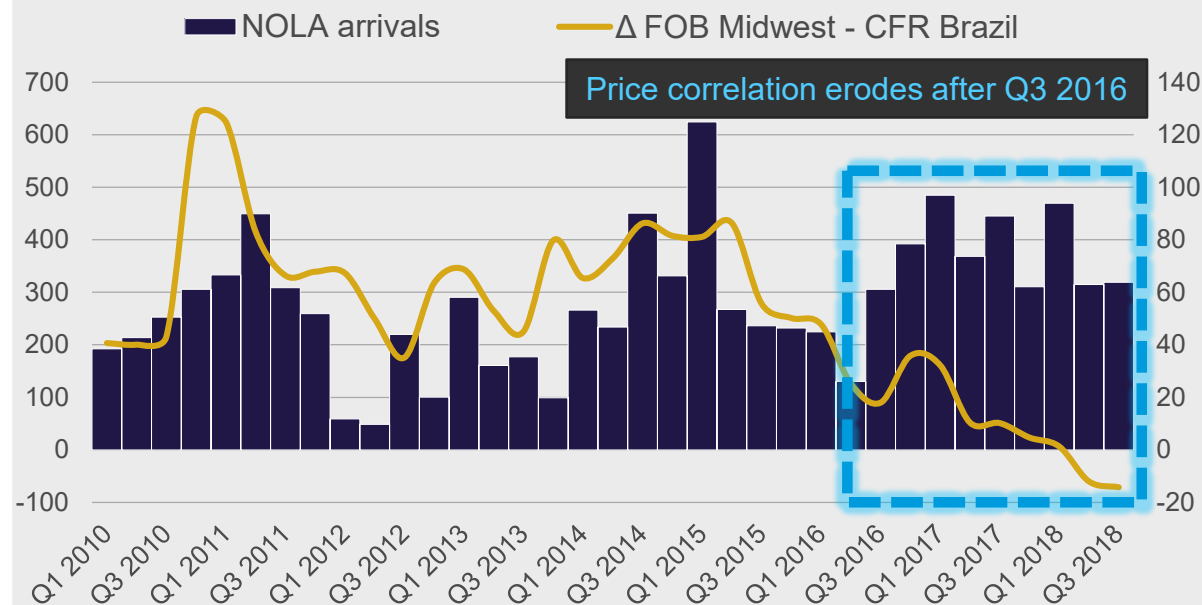


Data: CRU; IHS-Markit

NOLA imports no longer correlate with FOB Midwest price premium

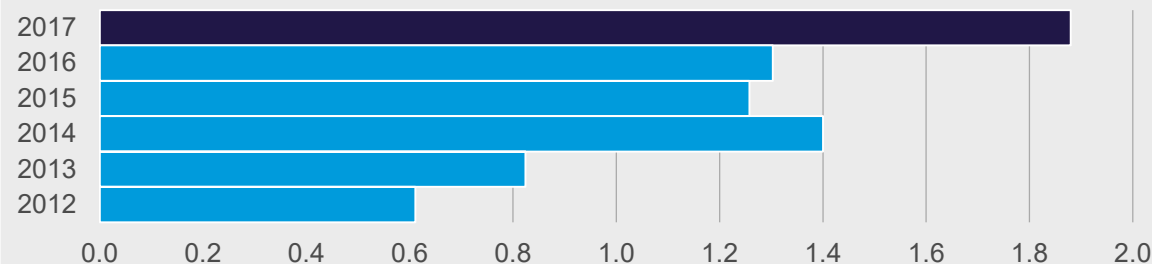
Imports, kt MOP

FOB Midwest premium, USD/t



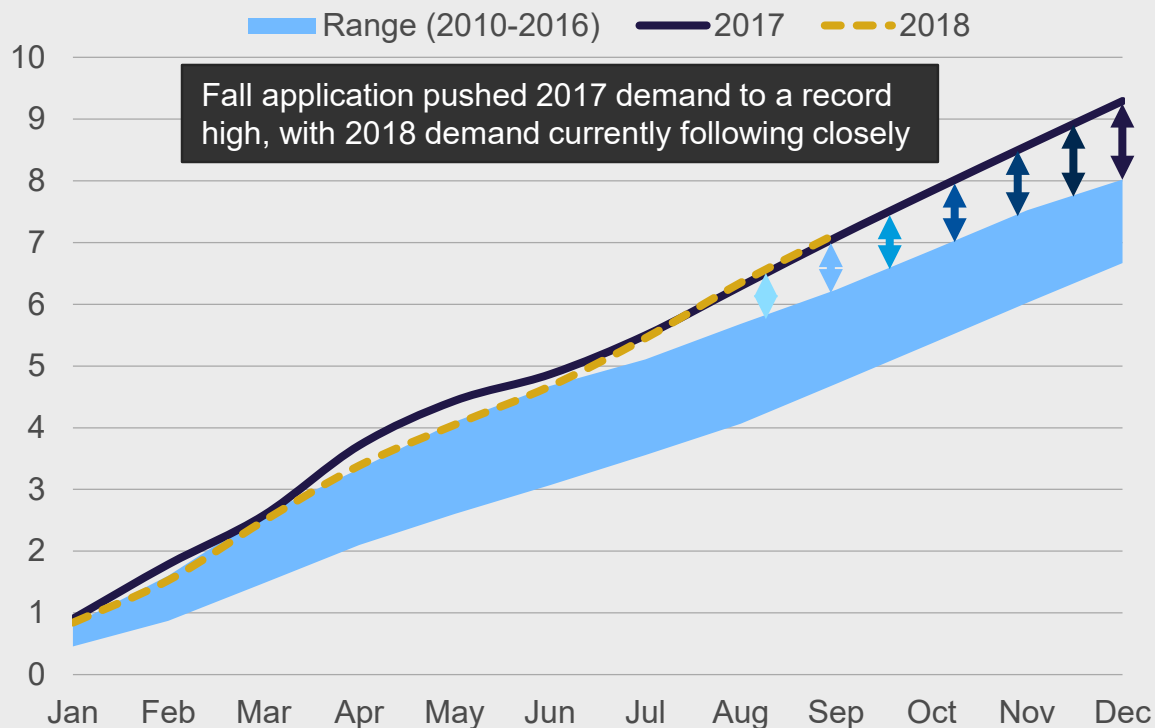
Overseas imports to the US continue to increase

Imports, Mt MOP



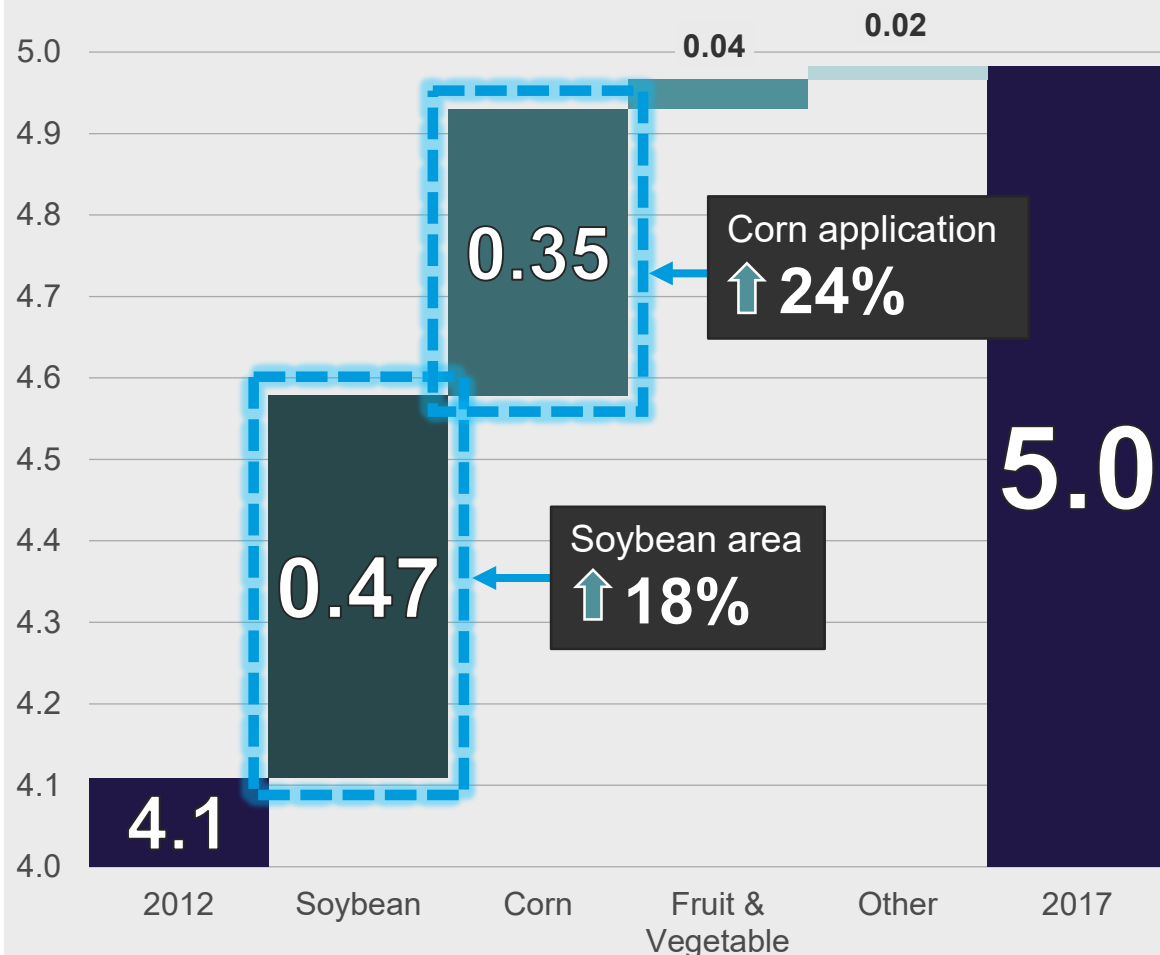
US Demand: Record 2017

US MOP imports surged in 2017, with 2018 on course for a repeat
Net imports, Mt MOP



- Fall application particularly high in 2017
- Soybean and corn driving US demand growth
 - Application rates higher (K-intensive crops)
 - Despite declining total cultivated area

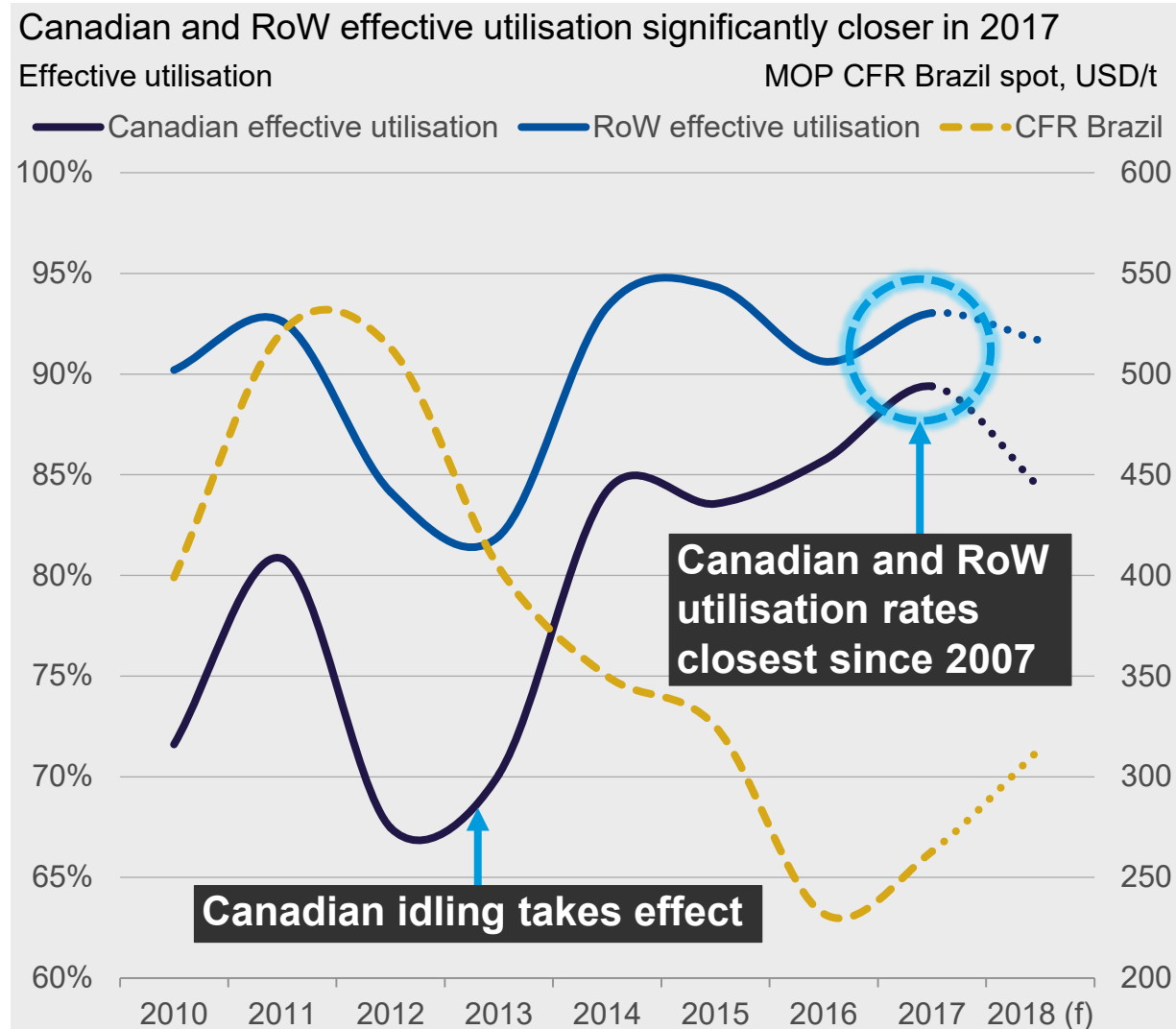
Soybean and corn drive US K₂O demand growth
Demand, Mt K₂O



Drivers a combination of demand and supply factors

Supply drivers

- Nameplate and effective capacity have diverged since 2013
 - Mostly due to Canadian voluntary idling
 - Until 2017, lower capacity did not improve price performance
-
- Canadian producers maintained supply discipline in 2017:
 - Utilisation closest to RoW in 10 years
 - Prices appear to be responding



New capacity: supply slow to start



EUROCHEM

Usolsky (2.3 Mt/y) September 2018 start

- First export dispatched in September to Southeast Asia

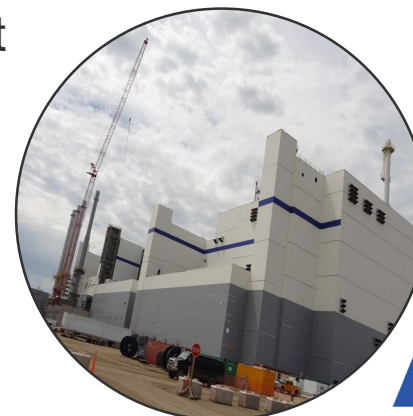
Volgakaliy (4.6 Mt/y) H1 2019 start

- Service shaft flooded



Turkmenhimiya Garlyk (1.4 Mt/y)
started March 2017

- Reported early problems with production
- Believed to be flooded and not operational
- Almost no recorded exports



Wachstum erleben.

K+S Bethune

K+S Bethune started June 2017

- Delayed start-up due to process vessel collapse in late 2016
- Initial problems with product quality
- **500 kt** produced in 2017
- Production guidance of **1.4-1.5 Mt** in 2018
- **No US deliveries expected until 2019**

17%↑

Potash Costs: Site costs rising since 2016

Site cost, USD/t

23%↑

Russia & Belarus

- Rouble recovery vs USD: 67 → 58
- Energy & Labour costs ↑ ~30%

12%↑

Canada

- Higher energy and labour costs
- But capacity increasingly concentrated in lower cost mines

Europe

- Much higher energy costs
- Smaller mines, falling ore grades

250

200

150

100

0

5

10

15

20

25

30

35

40

45

50

55

60

65

70

75

80

Russia &
Belarus

Other CIS

LATAM

Middle
East

Canada

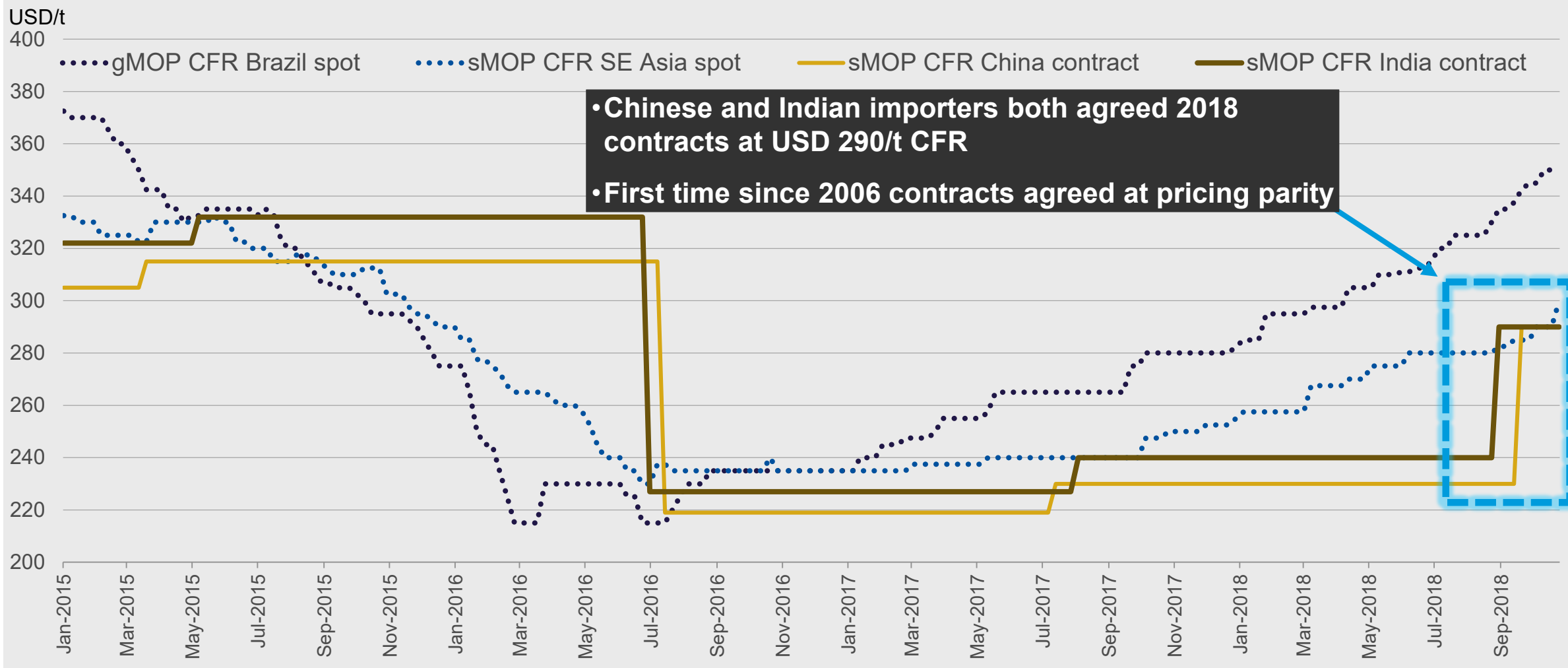
China

Europe

Effective capacity, Mt

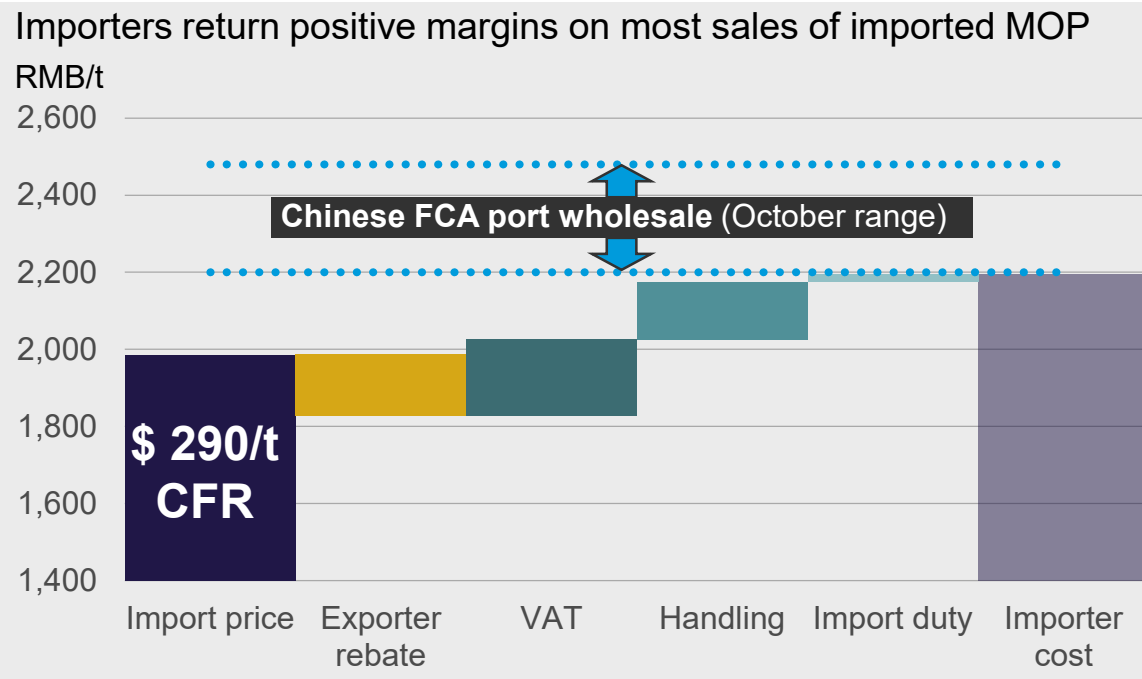
2018 Contracts: China and India – finally – settle at \$290/t CFR

Contract prices raised to reflect regional spot prices



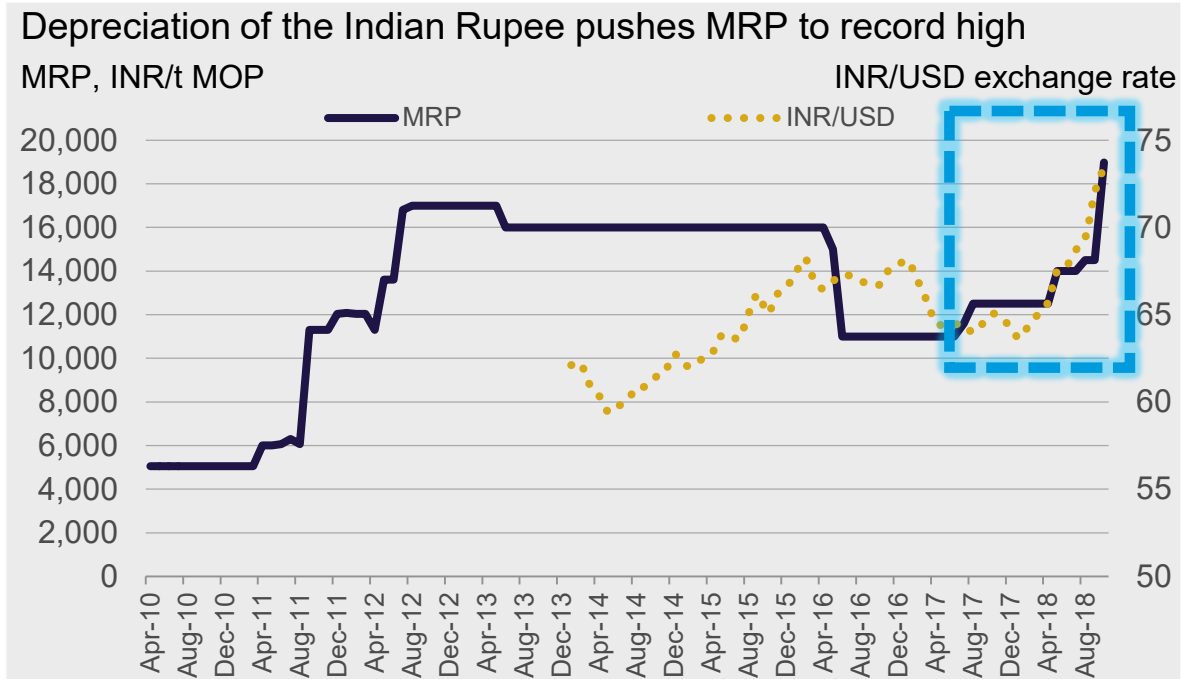
2018 Contracts: Effects of the new agreements

China



- Profitability returned to exporters
- Closes much of the USD 100/t disparity between Chinese domestic prices and import contract
- **But**, Chinese importers should still make positive margins on most sales of imported MOP

India

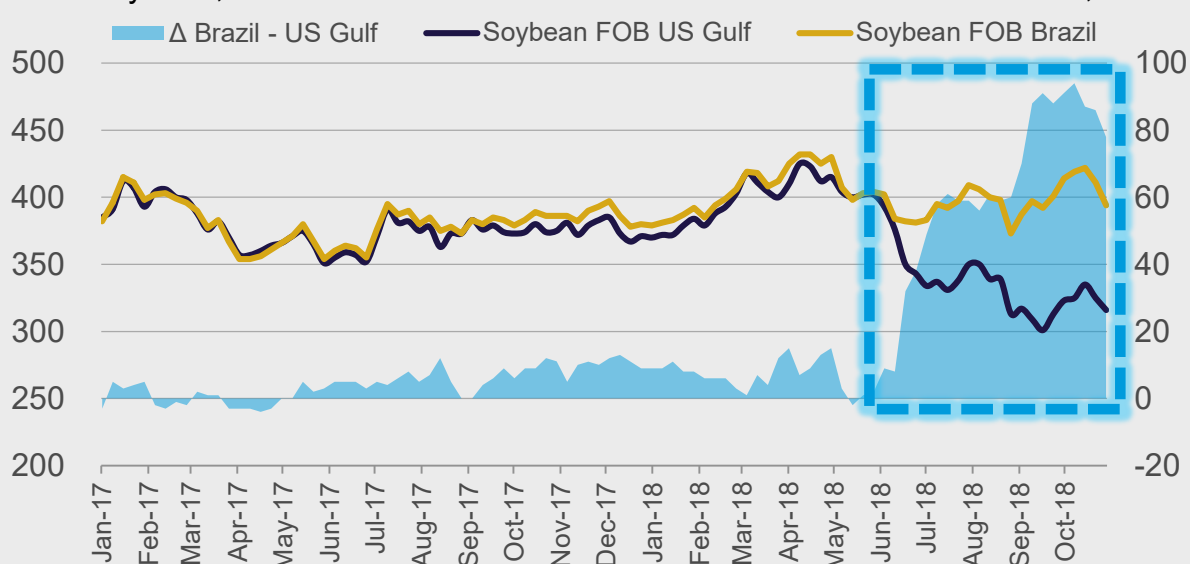


- Subsidy cut and INR depreciation pressuring market
 - **MRP at INR 19,000/t MOP**
 - **+50% since January and a record high**
- Near-term demand stable, stocks to be replenished
- **But**, decreased inland purchasing likely

Future demand: US-China trade war's effect on fertilizer demand

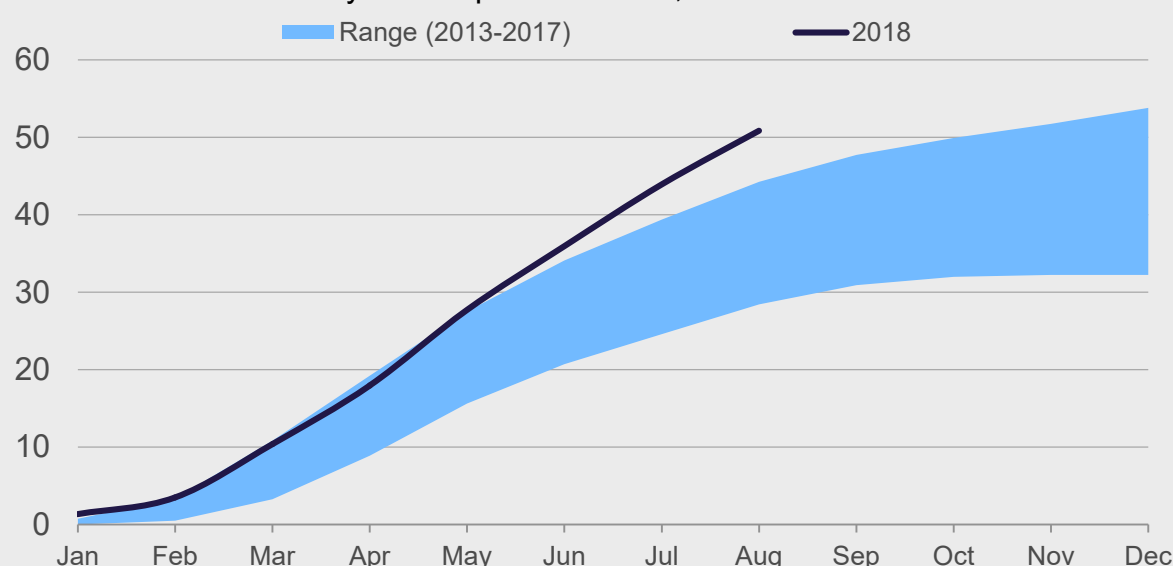
Premium for Brazilian soybeans

FOB Soybean, USD/t



...But 2018 Brazilian soybean exports to China rising sharply

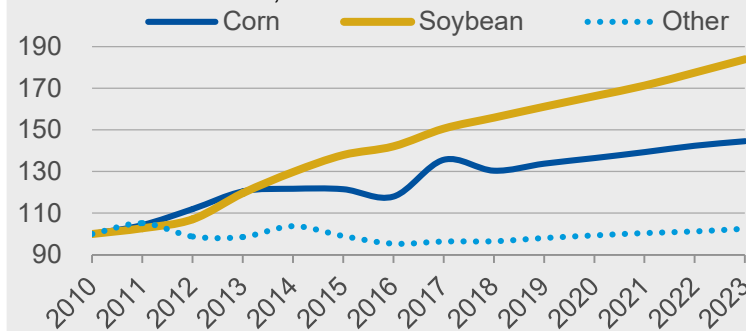
Cumulative Brazilian soybean exports to China, Mt



- Brazilian soybean prices now at a premium of ~USD 80/t over US Gulf
 - Historically, the premium has rarely exceeded USD 20/t
- Chinese imports of US soybeans towards the low-end of the range of the previous five years:
 - Q4 will reveal the full extent of the decline
- 2018 Brazilian imports into China have soared to record levels

Brazilian soybean area to surge

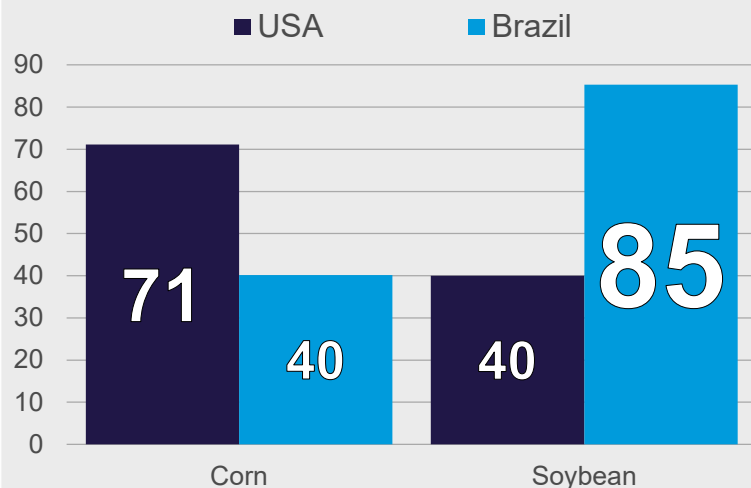
Harvested area index, 2017=100



Future demand: US-China trade war's effect on potash demand

K₂O application rates highest on corn in US

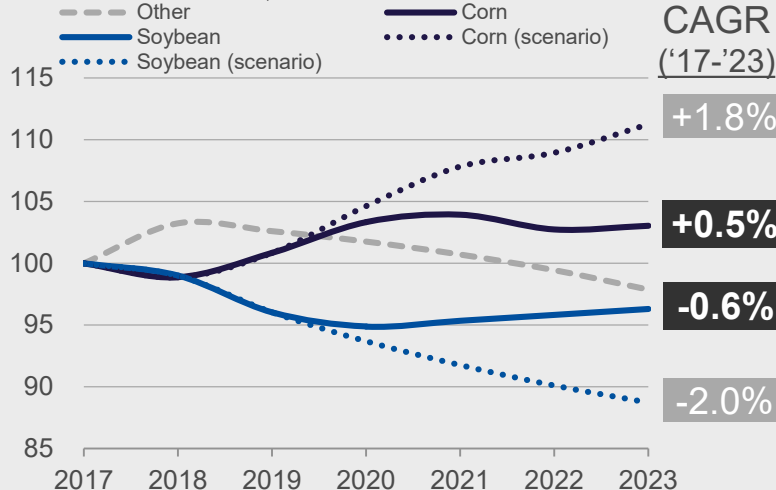
Application, kg/ha



- Lower soybean area provides potential upside for MOP demand
- Opposite K₂O application on corn and soybeans in Brazil and US:
 - **Corn** significantly more potash-intensive in USA
 - **Soybean** more potash-intensive in Brazil

Strong corn area growth, soybean muted

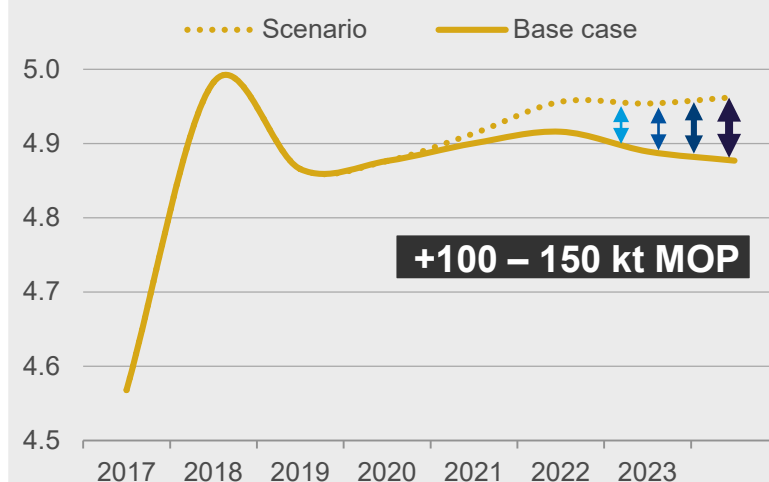
Harvested area index, 2017=100



- US base-case (**short trade war**):
 - **Soybean** area to fall to 2020 before recovering
 - **Corn** area to increase to 2021 before flattening
- Scenario (**prolonged trade war**):
 - Corn area to rise and soybean area to fall to 2023

Increased corn planting a positive for K₂O

US K₂O consumption, Mt K₂O

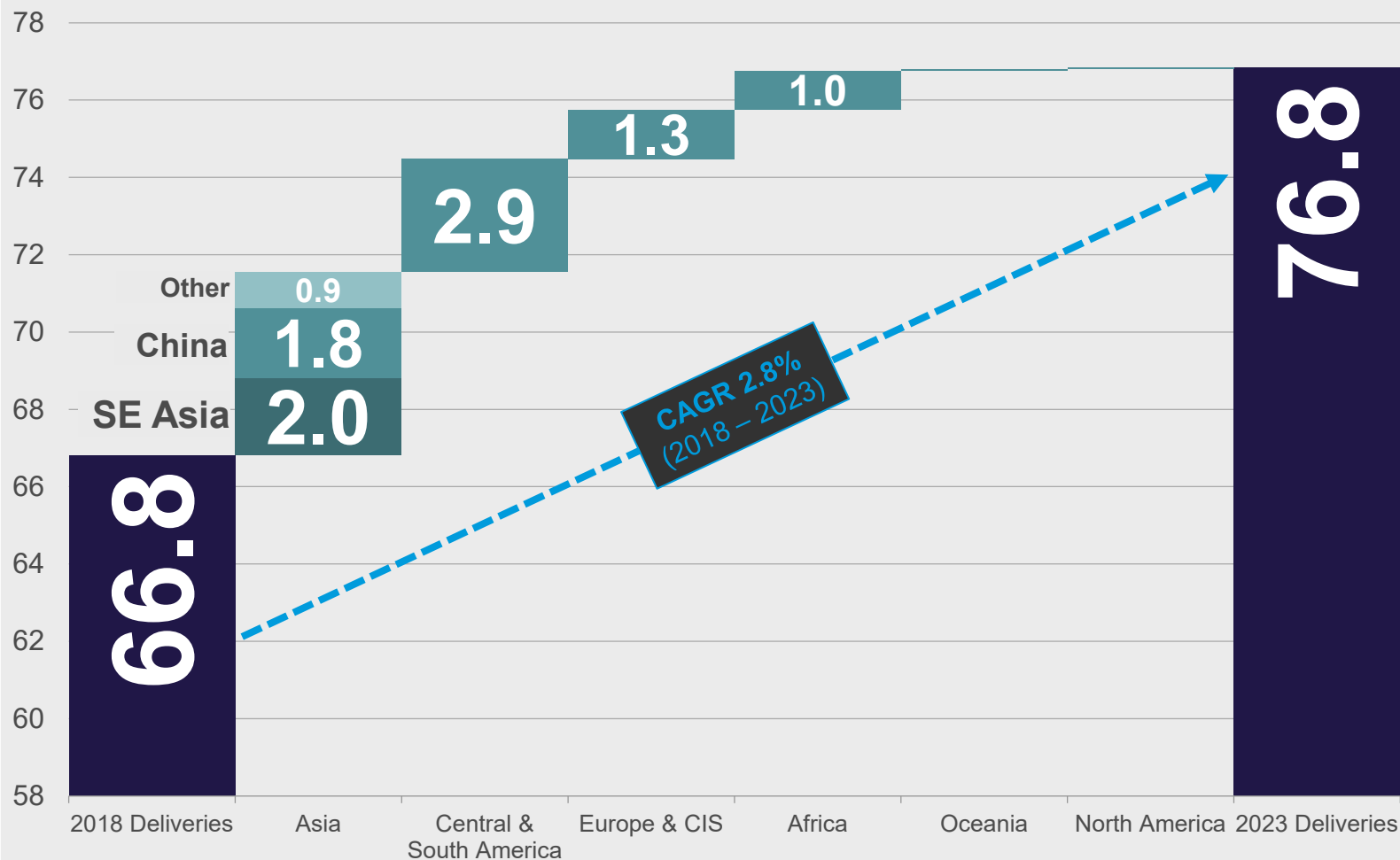


- Scenario (**prolonged trade war**):
 - Increasing corn area provides **upside for K₂O demand**
 - MOP would fulfil much of this additional requirement
 - Around **100 – 150 kt MOP** extra required by 2023

Future demand: Global growth to continue despite flat US consumption

Components of medium-term demand growth

Deliveries, Mt MOP

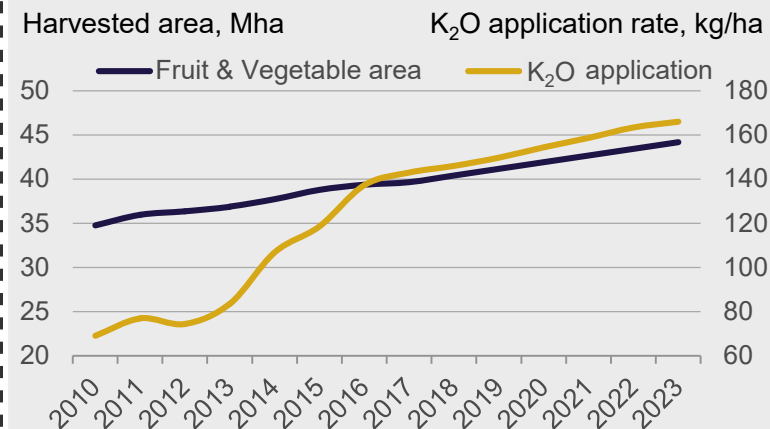


• **Asia & Latin America** to drive MOP demand

• In **Asia**:

- Southeast Asian **oil palm** area (**Malaysia + Indonesia**) to continue to expand
- **China** projected continue to enlarge **fruit and vegetable** area & raise application rates

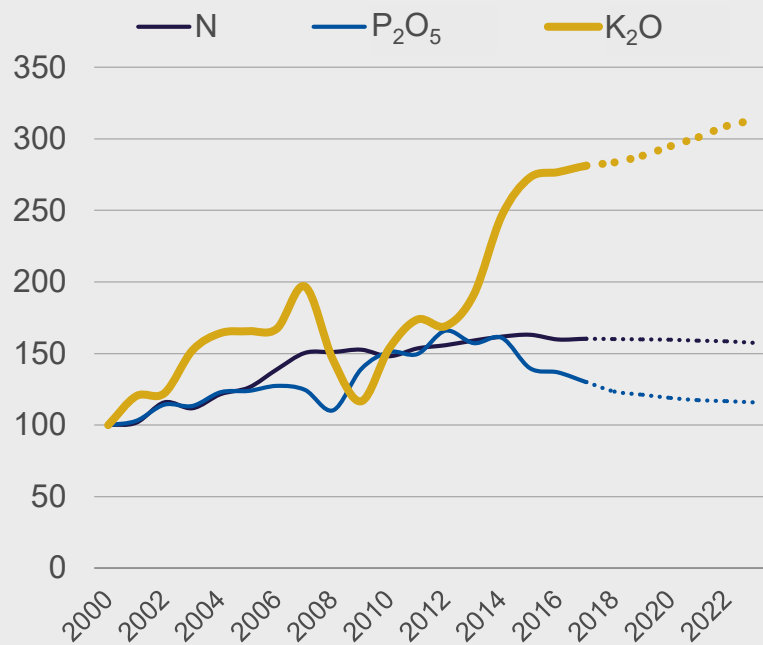
Fruit & vegetable demand driving Chinese MOP consumption growth



Future Demand: Chinese growth to persist as domestic capacity reaches limit

Chinese application rates continue to rise

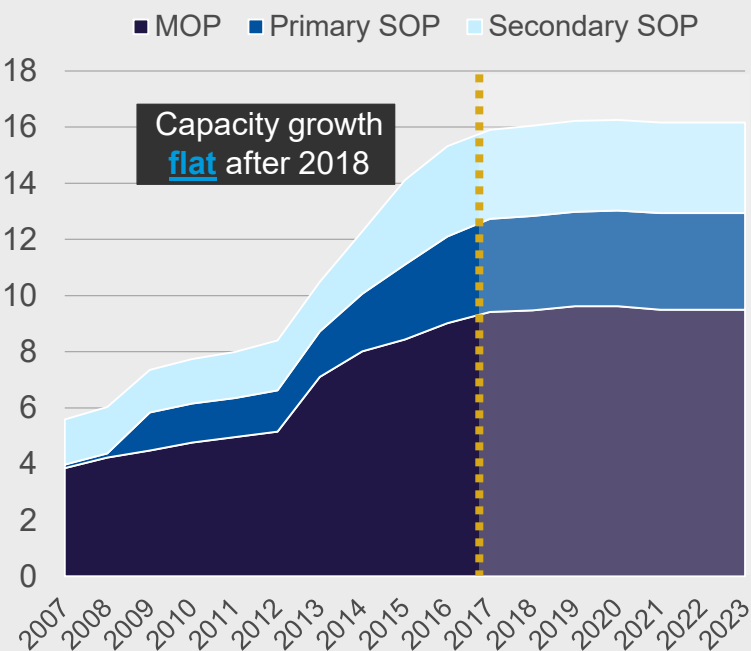
Nutrient demand index, 2000=100



- K₂O application rates to continue to rise further
- Increased fruit & veg area, greater focus on crop quality
- Fewer environmental concerns

Domestic capacity growth to stagnate

Capacity, Mt/y

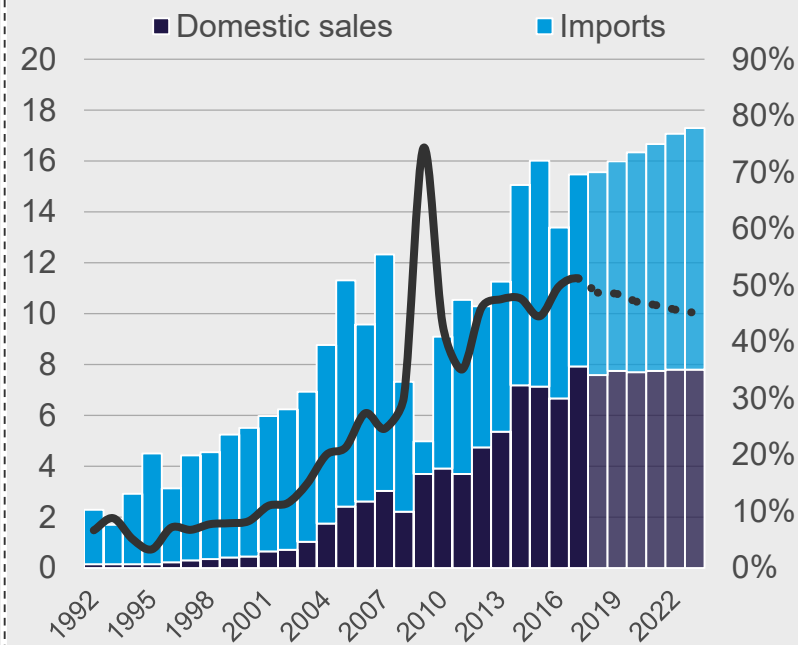


- Domestic capacity appears to have reached a limit
- CRU is no longer aware of any further investment in new or expanded MOP capacity

Domestic production share of demand to fall

Deliveries, Mt MOP

Proportion of total demand

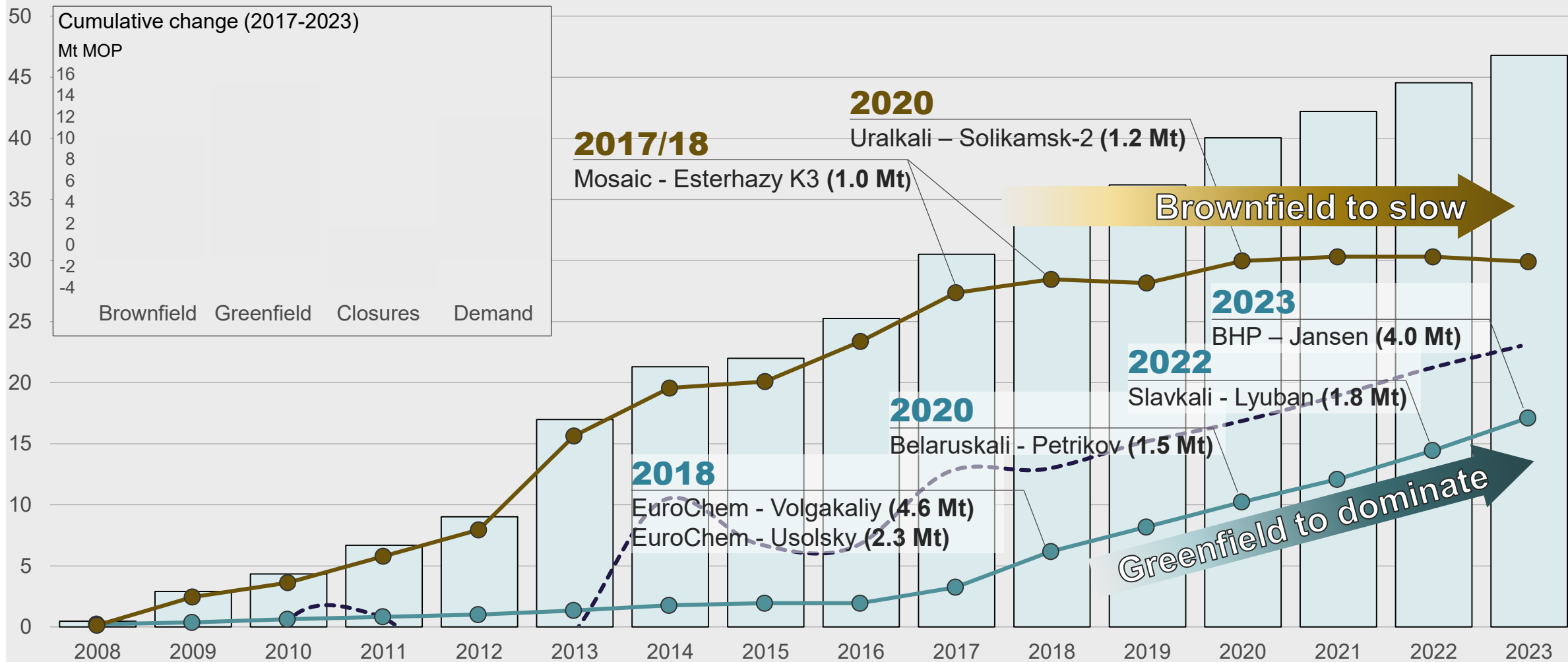


- MOP imports will be required to satisfy increased K₂O demand
 - Increased domestic production remains possible
 - Some MOP producers switching to other products

Future Supply: Plenty still to arrive

Major nameplate capacity additions (2008-2023)

Net addition, Mt/y MOP



Future Supply: Potential market balance effects

- Despite continued demand growth, operating rates unlikely to increase significantly over the next five years
 - New capacity** > New demand
 - Utilisation ~70-75%
- Smaller, higher cost production facilities likely to come under cost pressure once again
- Producers with product flexibility may increasingly move away from MOP
 - Other forms of potash (SOP, SOPM, NOP) + *other products*
 - Decreased MOP production or increased internal consumption
- Some more marginal producers may limit long-haul exports
 - Maximising netbacks in proximal markets

CRU's Potash Team



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Thank you