Sulphur Market Outlook

WHAT HAS CHANGED IN 2017?
IS IT HERE TO STAY?

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- Wider fertilizer analysis team covers all nutrient areas with analysis, prices and costs
- Fertilizer team has 27 analysts based in 7 countries
Presentation Overview

Review of 2017

- Q3 price rally
- Influence of Chinese buying on market balance
- Production/Export performance in 2017
- Can the price rally continue?

Market Outlook from 2018

- Medium term demand prospects
- Regional overview of supply expectations

Market Balance Outlook

- How will the global balance develop to 2022?
2017 – A normal year for prices until Q3

Sulphur prices, 2013-2017

Price, US$ /t

Data: CRU

Data – CRU Fertilizer Week
2017 – A normal year for prices until Q3

Sulphur prices, 2015-2017

Price, US$ /t

weekly price change, US$ /t

Data: CRU

Data – CRU Fertilizer Week
China imports down 16% y/y in H1 2017, Q3 imports up 11% y/y

Monthly Chinese sulphur imports, 2015-2017

<table>
<thead>
<tr>
<th>Quarter</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>2.56 Mt</td>
<td>3.10 Mt</td>
<td>3.05 Mt</td>
</tr>
<tr>
<td>Q2</td>
<td>2.74 Mt</td>
<td>3.47 Mt</td>
<td>2.44 Mt</td>
</tr>
<tr>
<td>Q3</td>
<td>3.52 Mt</td>
<td>2.78 Mt</td>
<td>3.11 Mt</td>
</tr>
<tr>
<td>Q4</td>
<td>3.17 Mt</td>
<td>2.61 Mt</td>
<td>2.60 Mt*</td>
</tr>
</tbody>
</table>

Data: CRU, IHS GTA

Data – CRU, * estimate
Global importers show limited volume growth

Index of major Importers, 2015-2017
production index, Index 2015 = 100

### TOTAL IMPORT VOLUME
- Annual global increase estimated at only 0.6 Mt in 2017

### GROWTH MARKETS
- Morocco, USA, Brazil and Indonesia increase imports for phosphate demand
- Morocco buys greater share from Middle East as CIS supply tightens
- USA increases seaborne imports

### DECLINE MARKETS
- Chinese and Indian import demand declines as local supply climbs
- Australia imports fall due to closure of Ni leaching capacity
Contraction in key exporter supply availability

Index of major exporters, 2015-2017
production index, Index 2015 = 100

**CANADA/USA**
- Export decline focused in Q2/Q3
- Very limited stock drawdown in 2017

**RUSSIA**
- Production stable but local demand increases, cut export volume

**KAZAKHSTAN**
- Increase in sales due to Tengiz with Kashagan due in 2018

**MIDDLE EAST**
- Stable production but limited growth in exports

**JAPAN/SOUTH KOREA**
- Drop in exports from 2016 has tightened availability in Chinese market

Data – CRU
Demand growing faster than supply in 2017

Sulphur market indicators, y/y change

y/y change, Mt

Data – CRU
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**Market Outlook from 2018**
- Medium term demand prospects
- Regional overview of supply expectations

**Market Balance Outlook**
- How will the global balance develop to 2022?
Demand growth focussed in few industries

Sulphur demand increase by country to 2022

demand, Mt

Data – CRU
Majority of consumption increases in three countries

Sulphur demand increase by country to 2022

demand, Mt

**PHOSPHATE**
Growth from capacity expansion

**CHINA**
Substitution from pyrites to sulphur and growth in industrial demand

**RUSSIA**
Improved domestic demand and currency benefit

**AUSTRALIA**
Loss of nickel leaching operation

Data – CRU
Production growth is past the peak

Annual sulphur production growth

Production growth, Mt

growth rate, %

Data - CRU
Canada production weak and stock drawdown limited in Q3 2017

Canada sulphur production, 2016-2017

production, Mt

**SULPHUR FROM OIL SANDS**
- Syncrude production down 18% y/y
- Other oil sands production up 45% y/y
- Sector production is flat in 2017

**SULPHUR FROM GAS**
- Alberta gas sector down 3% y/y
- BC gas down 57% y/y
- BC production has declined from 0.6 Mt in 2015, 0.35 Mt in 2016 to only 0.15 Mt in 2017

Data – CRU
Regional demand expected to decline further to 2022

**SULPHUR FROM GAS**
- Decline in Alberta expected to continue
  - Production 3% y/y for y-t-Q3 17
- US Gas declines in PADD 3 following plant closure in 2016

**OIL REFINING**
- US refining supply continues to grow
  - Increases focussed in PADD 3
  - Harvey cut production growth in Q3
- Syncrude production down by 18% y/y but...
- Oil sands supply still increasing with rebound growth in 2018

North America supply from gas
- Production, Mt
- Data: CRU, USGS, AER, Company reports

North America supply from oil/oil sands
- Production, Mt
- Data: CRU
CIS production growth is in remote regions

**RUSSIA**
- Decline in gas-based supply offset by growth in refining (17-19) and Norilsk (2020)
- Total supply growth (17-22) = 0.1 Mt
- Stock increase ~ 0 Mt/y up to 2020

**KAZAKHSTAN**
- Production up in 2017 from Tengiz and Kashagan exports in 2018
- Total supply growth (17-22) = 1.0 Mt
- Stock increase ~ 0 Mt/y

**UZBEKISTAN**
- Kadym due to start in 2019
- No exports, all balance added to stock
- Supply growth (17-22) = 0.19 Mt
- Stock increase ~ 0.4 Mt/y

**TURKMENISTAN**
- Production well below capacity
- Supply to increased by 0.4 Mt in 2017 then 0.3 Mt in 2018
- Total supply growth (17-22) = 0.57 Mt
- Stock increase ~ 0.7 Mt/y to 2019

Data – CRU
Middle East Sulphur production forecast

Middle East sulphur supply growth, 16-22 production, Mt

**Saudi Arabia**
- Wasit increases in 2017-18, Jazan in 2020 and Al Fadhili 2021

**Kuwait**
- Shuaiba closed in 2017 with Clean Fuels Project upgrades due in 2018.

**Qatar**
- Growth is tied to Barzan. Start date remains uncertain, major volume likely delayed to 2019

**Iran**
- Final phases of South Pars commissioning with Total/CNPC JV due in 2022

**UAE**
- Shah expansion forecast for start in 2022

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Data: CRU
China supply outlook

China – Gas-based supply by operation
production, Mt

GAS PRODUCTION
- Puguang operating down on historical levels
- Production optimised at Yuanba
- Chuangdongbei Phase I operating but Phase II only in 2021

China – Oil-based supply by region
production, Mt

OIL REFINING
- Refinery start ups in 2017
  - Yunnan refinery (0.24 Mt)
  - Huizhou refinery (0.22 Mt)
- Project pipeline is limited beyond 2019
Presentation Overview

**REVIEW OF 2017**
- Q3 PRICE RALLY
- INFLUENCE OF CHINESE BUYING ON MARKET BALANCE
- PRODUCTION/EXPORT PERFORMANCE IN 2017
- CAN THE PRICE RALLY CONTINUE?

**MARKET OUTLOOK FROM 2018**
- MEDIUM TERM DEMAND PROSPECTS
- REGIONAL OVERVIEW OF SUPPLY EXPECTATIONS

**MARKET BALANCE OUTLOOK**
- HOW WILL THE GLOBAL BALANCE DEVELOP TO 2022?
Market balance peaks in 2019

Sulphur market indicators, y/y change

y/y change, Mt

Data: CRU
Conclusions

RECENT MARKET TRENDS

- Global market tightness driven by short term factors. Fundamentals do not support continuation of tightness
- Recovery in supply and slowing Chinese demand expected to trigger rebalancing

SUPPLY/DEMAND OUTLOOK

- Demand volume growth is strong although pricing remains weak in fertilizers to 2019
- Metals demand has limited growth or decline as projects remain out of the pipeline
- Production rebound expected in North America
- New supply focussed in Middle East and CIS

OUTLOOK FOR GLOBAL MARKET BALANCE

- Tightened balance trend in 2017 expected to reverse in 2018
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