



THE INDEPENDENT AUTHORITY
MINING | METALS | FERTILIZERS

Sulphur Market Outlook

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

DR. PETER HARRISSON

HEAD OF

SULPHUR & SULPHURIC ACID ANALYSIS

☎: +44 207 903 2249

✉: peter.harrison@crugroup.com

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For more information please contact CRU Customer Services
Email: customer.services@crugroup.com
Phone: +44 (0) 20 7903 2146

Sulphur analysis at CRU

Sulphur/Sulphuric Acid



Peter Harrison
Head of Sulphur/Sulphuric Acid
t +44 20 7903 2249
e peter.harrison@crugroup.com



Nick Waters
Consultant
t +44 20 7903 2283
e nick.waters@crugroup.com



Isaac Zhao
Senior Consultant, Phosphates & Sulphur
t +86 10 6510 2206 ext 315
e isaac.zhao@crugroup.com



Deepak Chitroda
Consultant
t +91 22 4504 5710
e deepak.chitroda@crugroup.com



Brendan Daly
Sulphur/Sulphuric Acid Markets Editor
t +44 20 7903 2185
e brendan.daly@crugroup.com

CRU SULPHUR ANALYSIS

- Sulphur Market Outlook
- Sulphuric Acid Market Outlook

FERTILIZER WEEK

- Weekly and daily price reporting, news, short term analysis

CRU GROUP

- Independent **analysis**, **consulting**, **prices** and **events** across **mining**, **metals** and **fertilizers**

CRU FERTILIZER ANALYSIS

- Global team of analysts with specific focus on **primary research** and **client engagement**
- 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

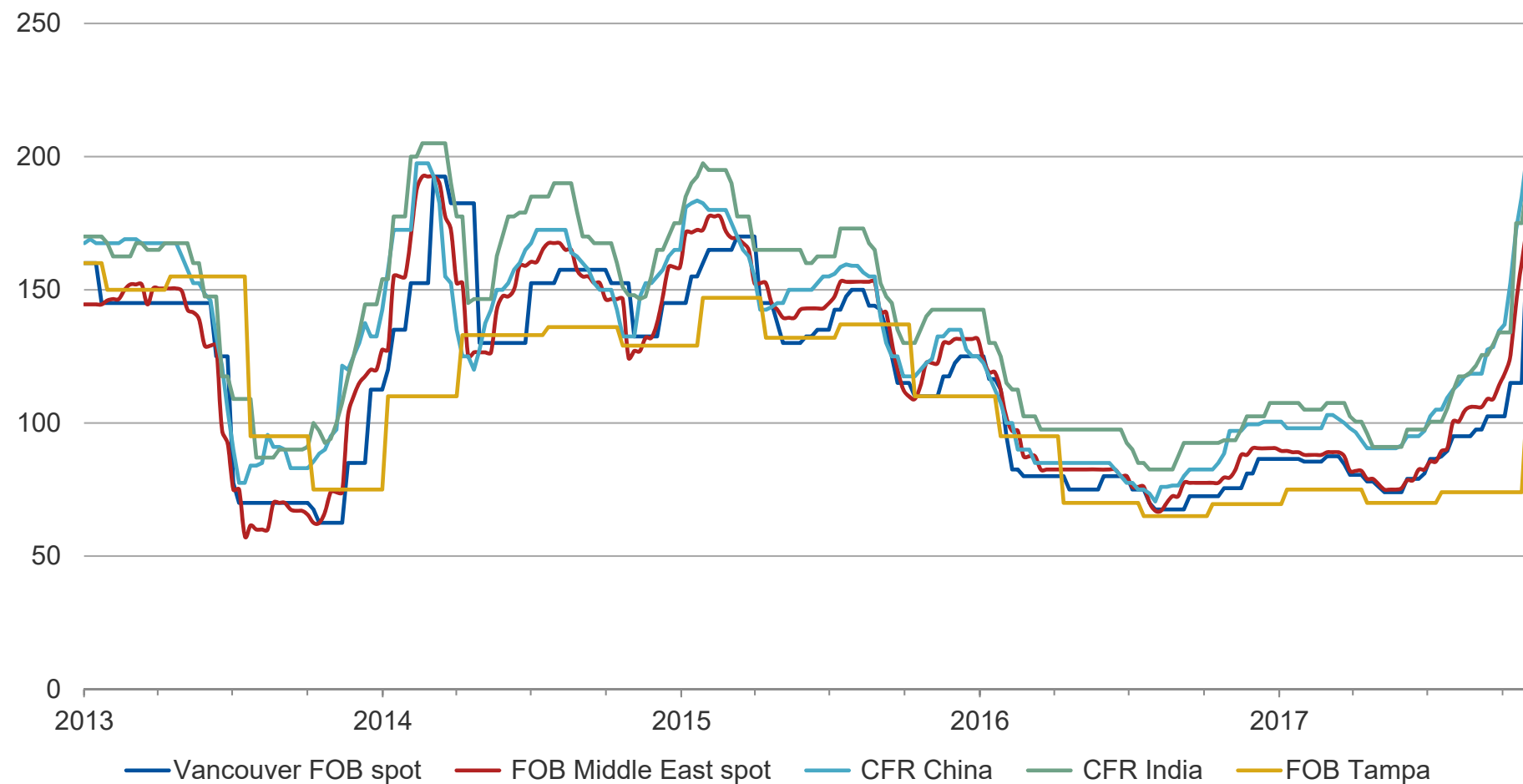
MARKET BALANCE OUTLOOK

- HOW WILL THE GLOBAL BALANCE DEVELOP TO 2022?

2017 – A normal year for prices until Q3

Sulphur prices, 2013-2017

Price, US\$ /t



2017 – A normal year for prices until Q3

Sulphur prices, 2015-2017

Price, US\$ /t

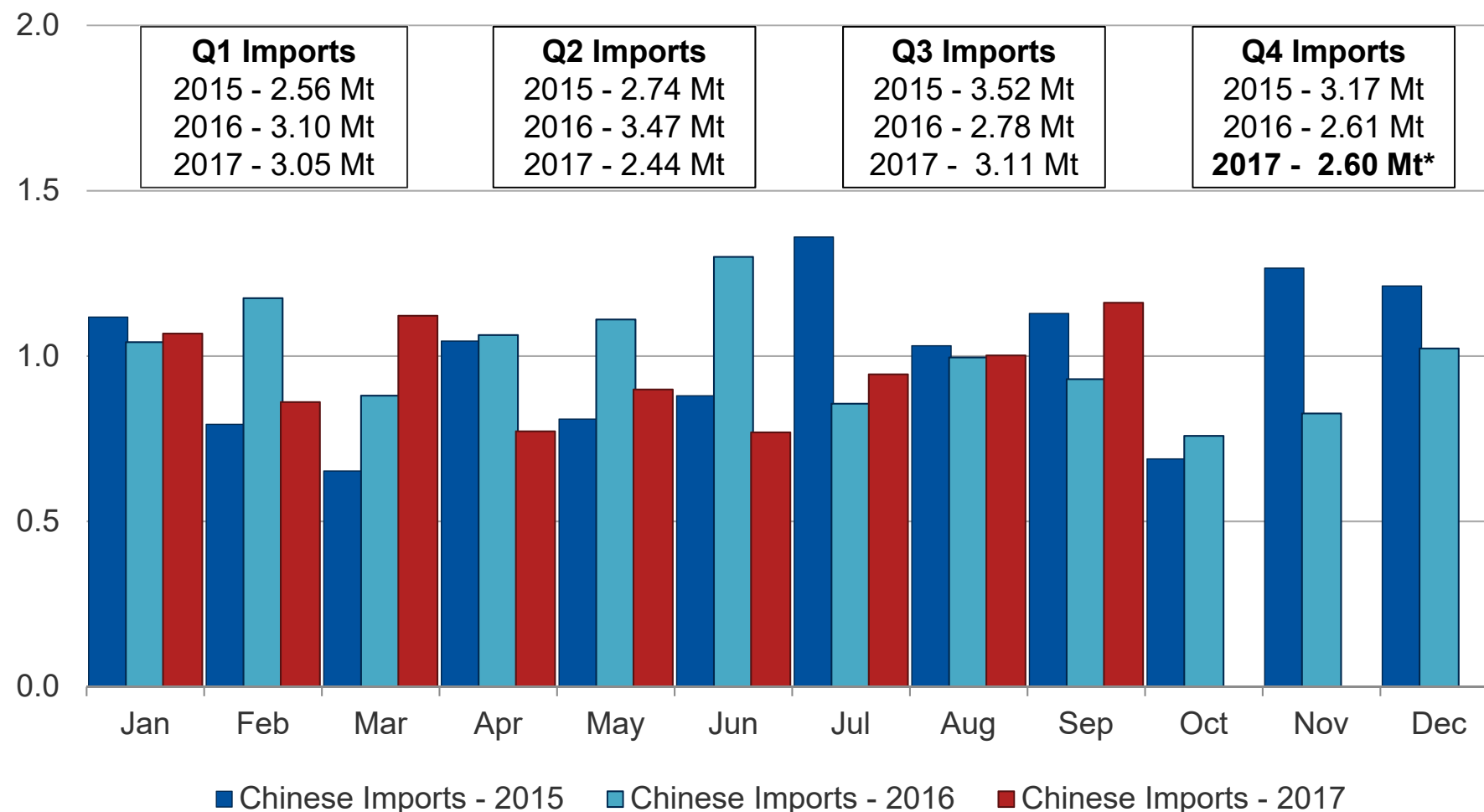
weekly price change, US\$ /t



China imports down 16% y/y in H1 2017, Q3 imports up 11% y/y

Monthly Chinese sulphur imports, 2015-2017

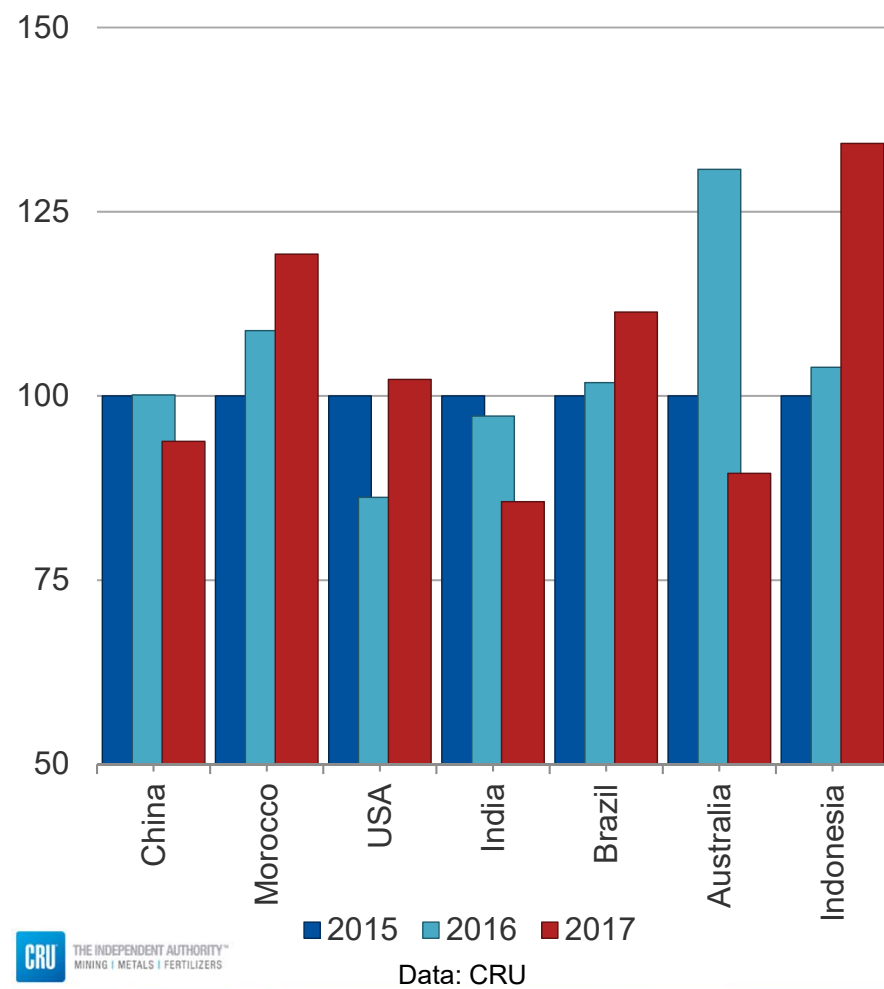
China sulphur imports, Mt



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

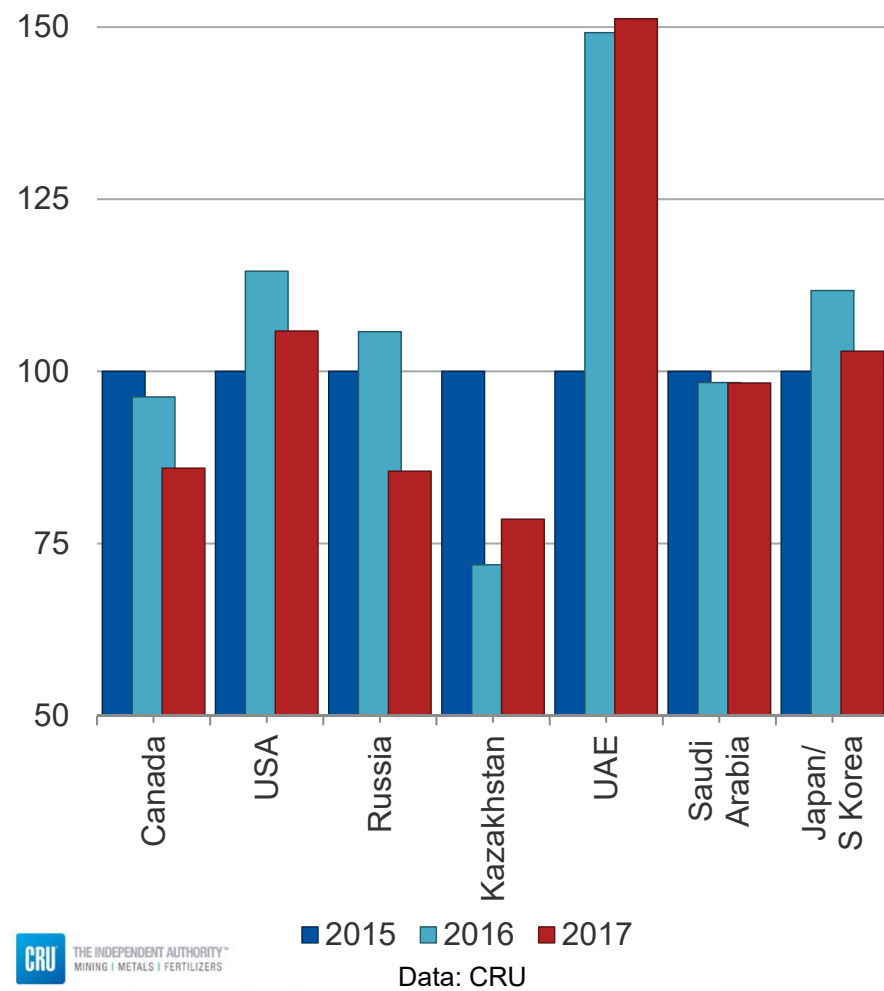
DECLINE MARKETS

- 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 focussed 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

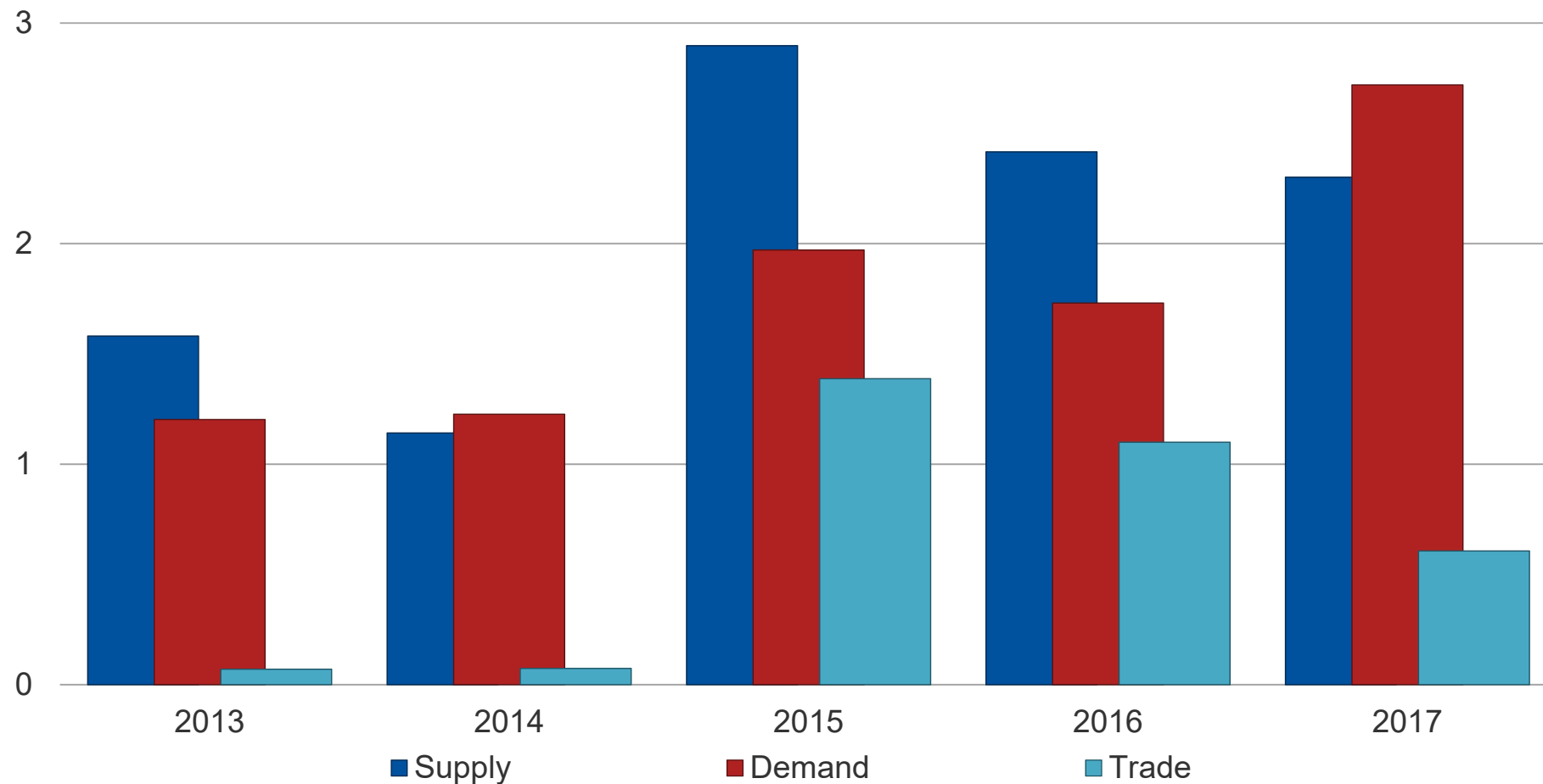
JAPAN/SOUTH KOREA

- Drop in exports from 2016 has tightened availability in Chinese market

Demand growing faster than supply in 2017

Sulphur market indicators, y/y change

y/y change, Mt



Data: CRU

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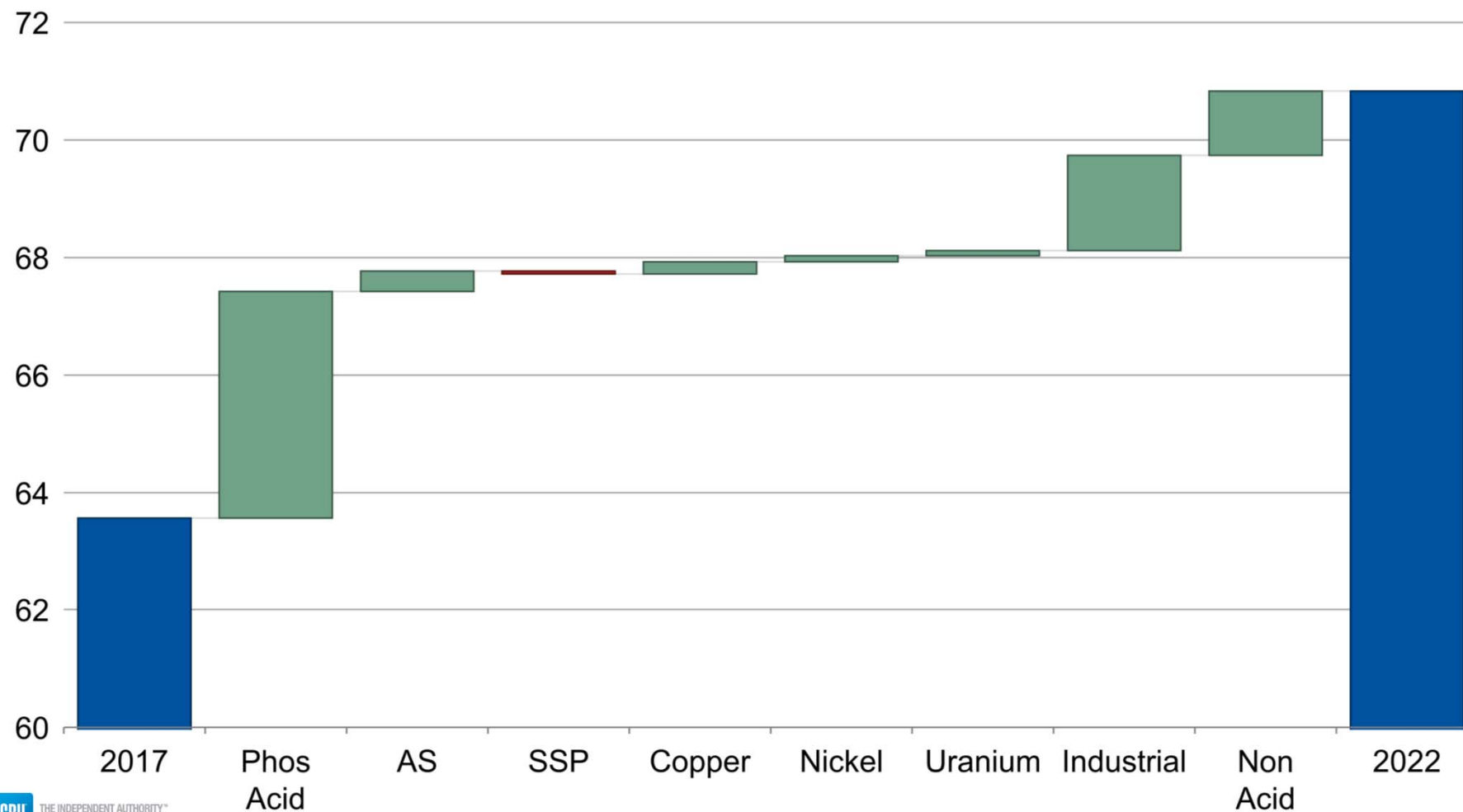
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Demand growth focussed in few industries

Sulphur demand increase by country to 2022

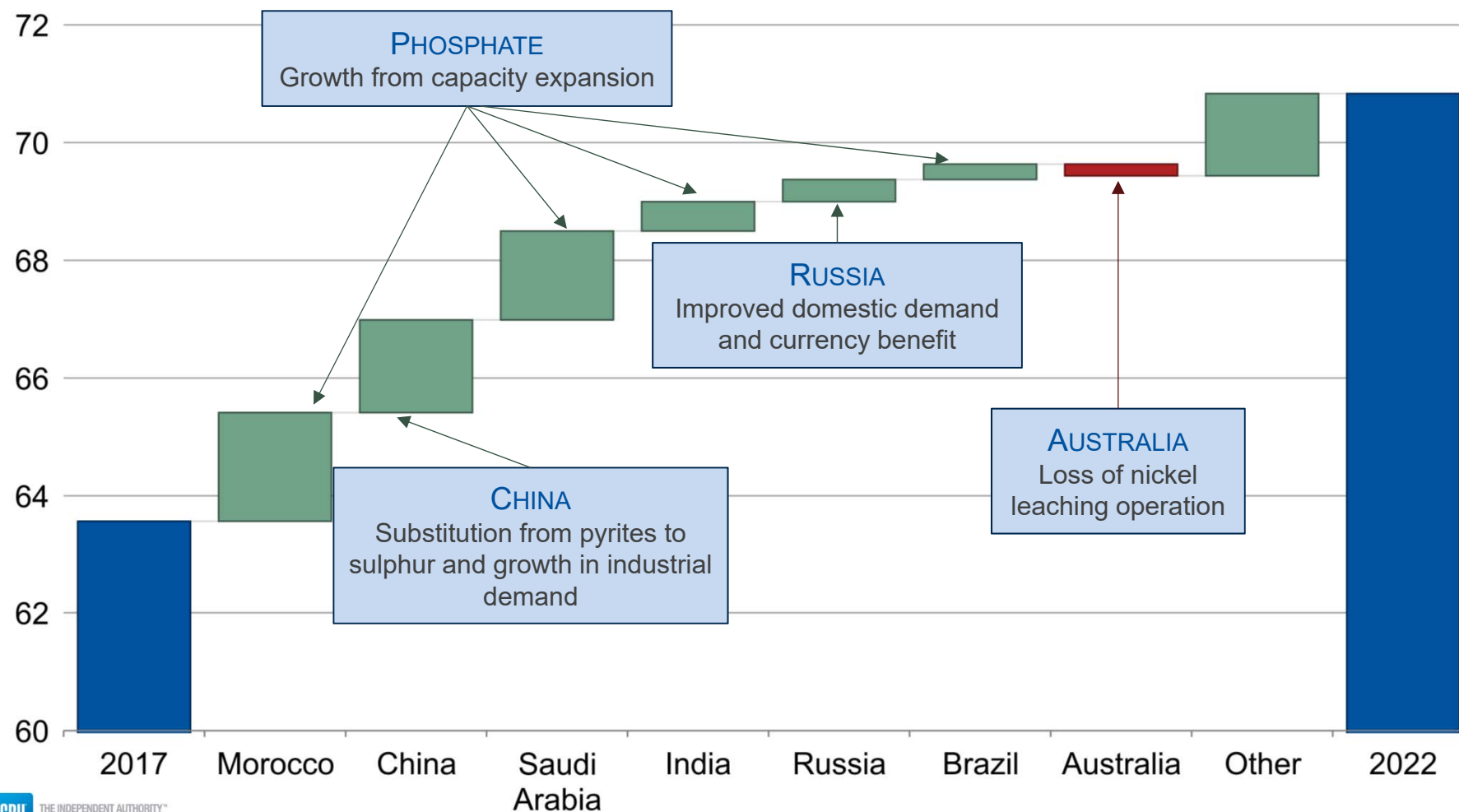
demand, Mt



Majority of consumption increases in three countries

Sulphur demand increase by country to 2022

demand, Mt

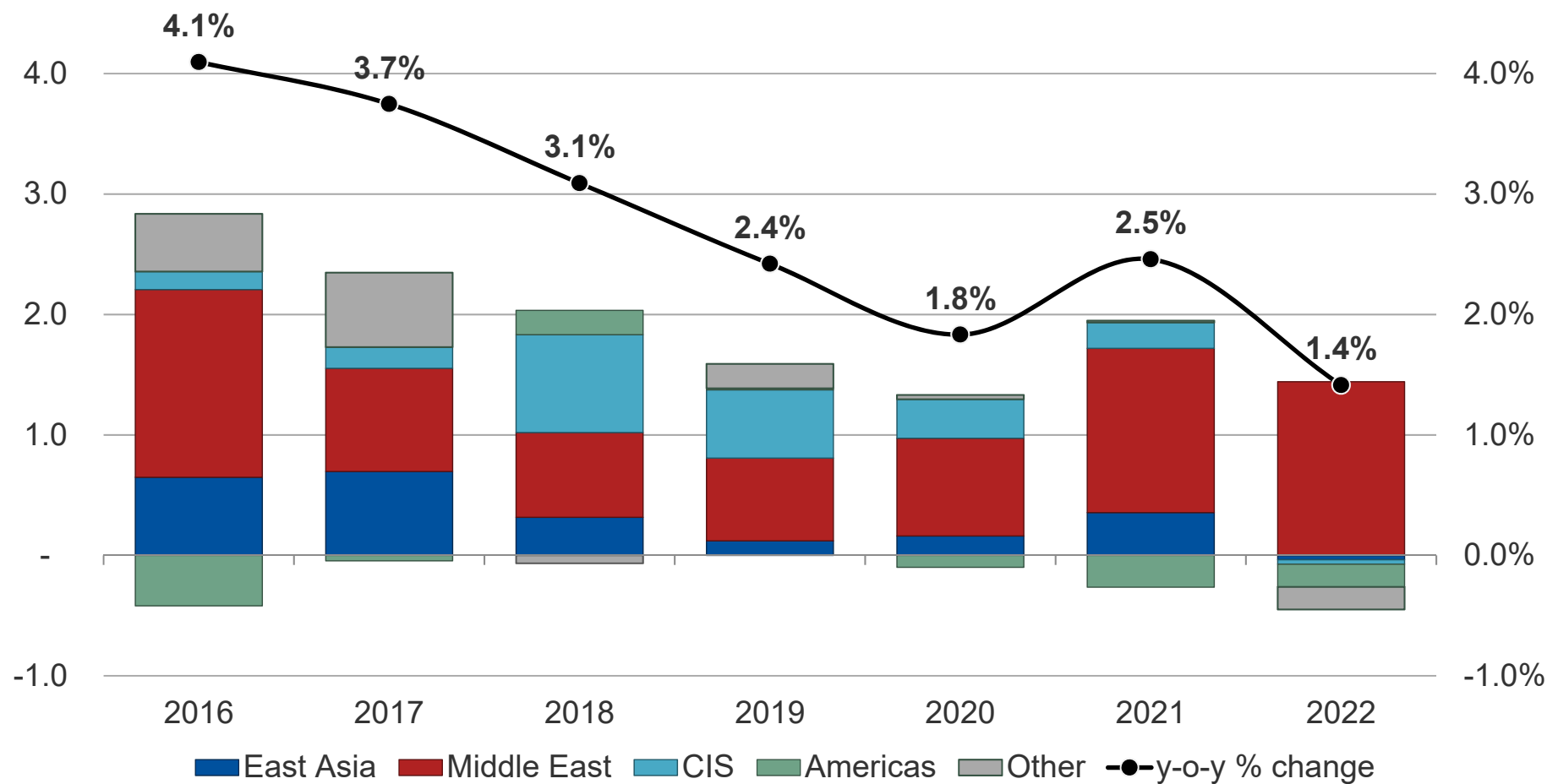


Production growth is past the peak

Annual sulphur production growth

Production growth, Mt

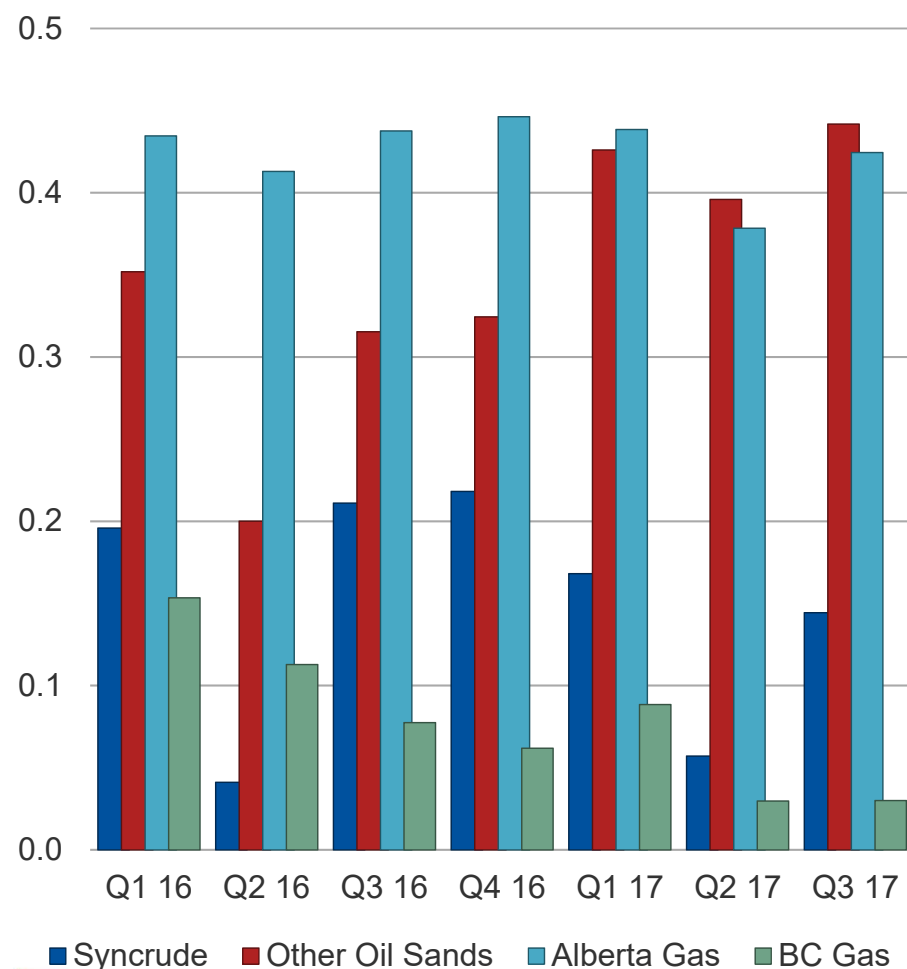
growth rate, %



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

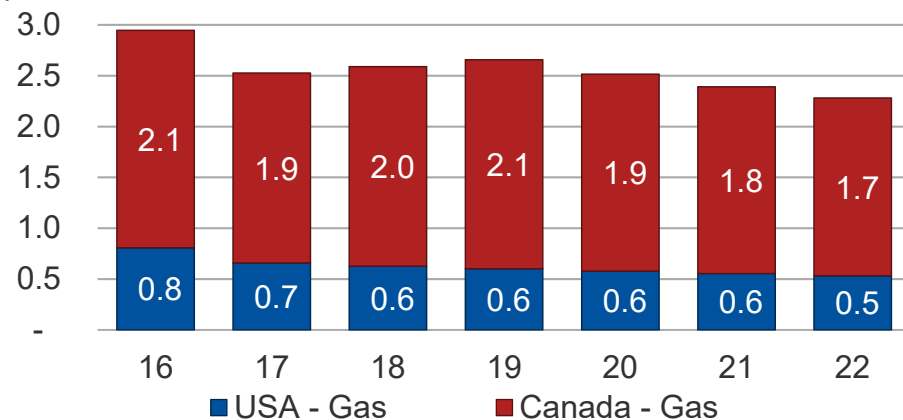
SULPHUR FROM GAS

- 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

Regional demand expected to decline further to 2022

North America supply from gas

production, Mt



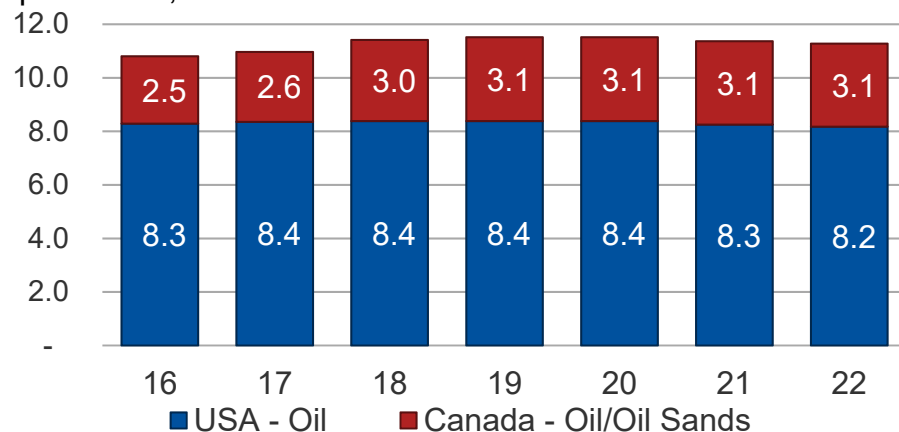
Data: CRU

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

North Americas supply from oil/oil sands

production, Mt



Data: CRU

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

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

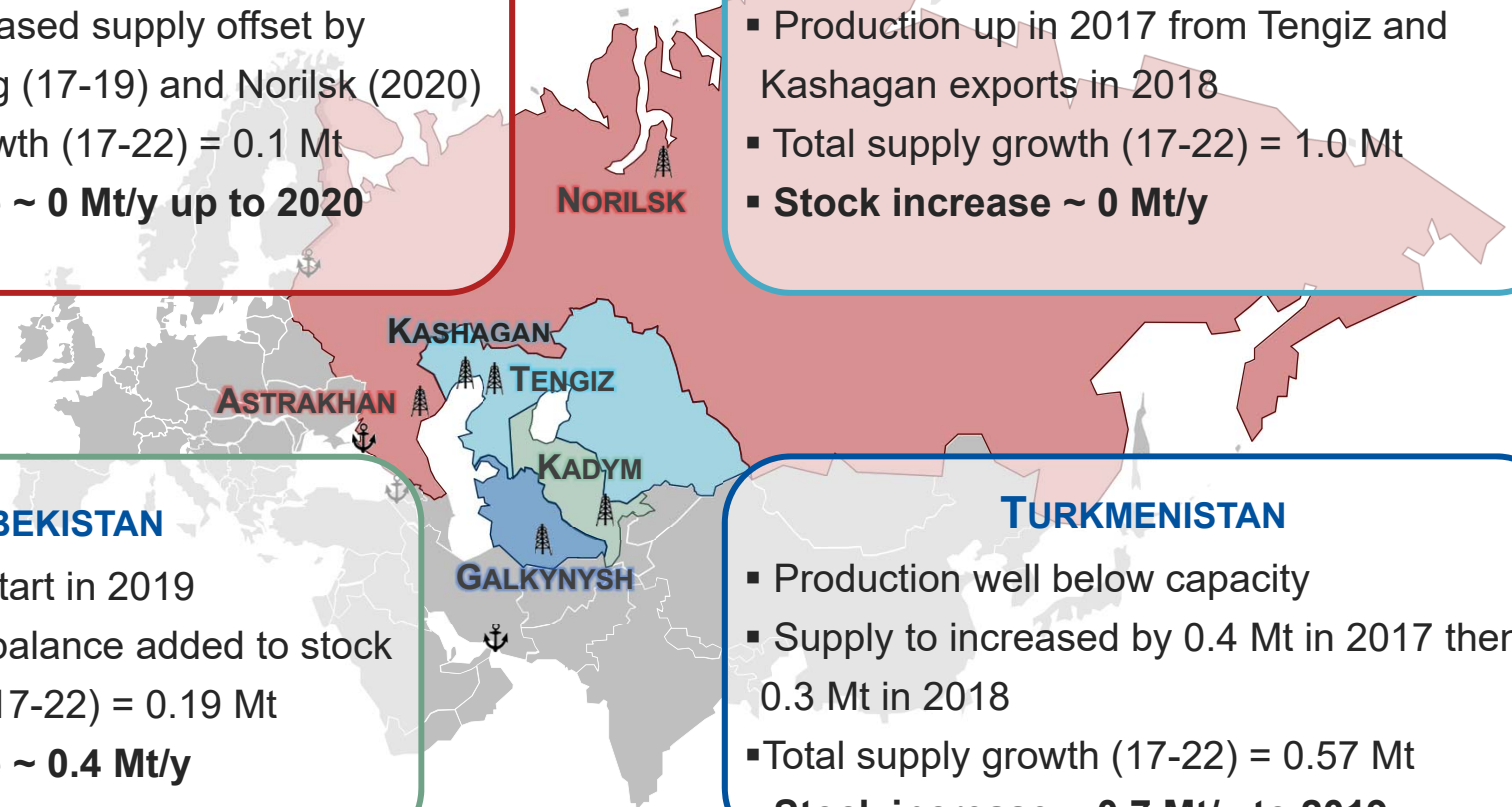
- Production up in 2017 from Tengiz and Kashagan exports in 2018
- Total supply growth (17-22) = 1.0 Mt
- **Stock increase ~ 0 Mt/y**

UZBEKISTAN

- Kadm 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

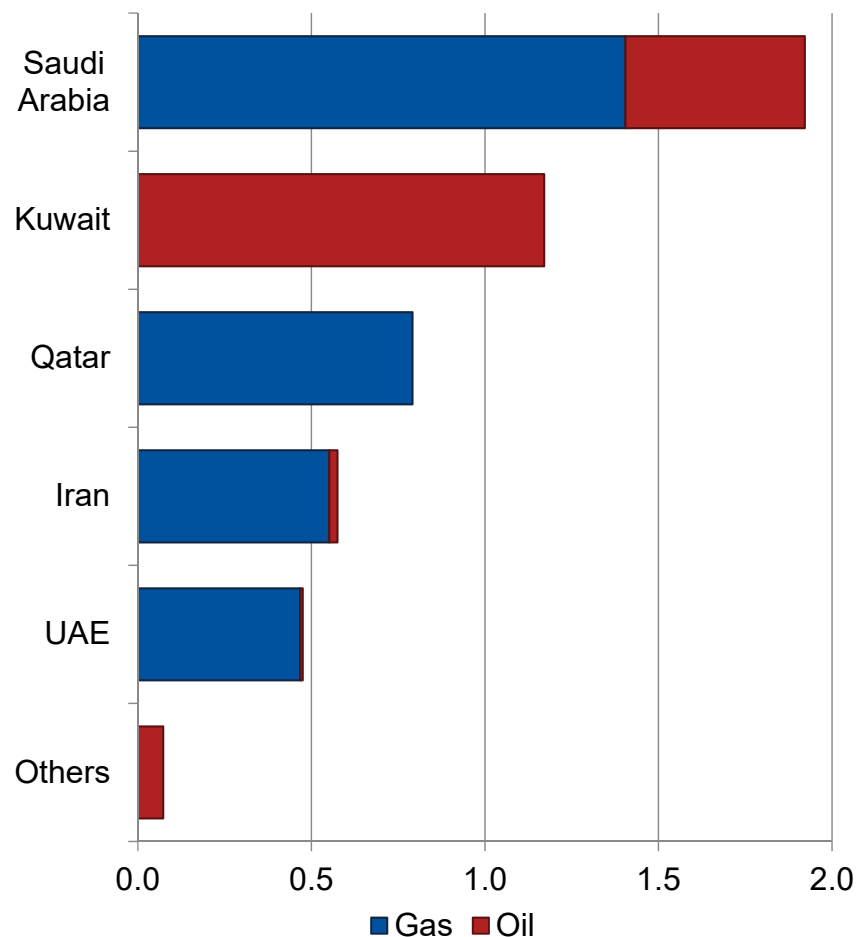
- Production well below capacity
- Supply to increased by 0.4 Mt in 2017 then 0.3 Mt in 2018
- Total supply growth (17-22) = 0.57 Mt
- **Stock increase ~ 0.7 Mt/y to 2019**



Middle East Sulphur production forecast

Middle East sulphur supply growth, 16-22

production, Mt



■ Gas ■ Oil

Data: CRU

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

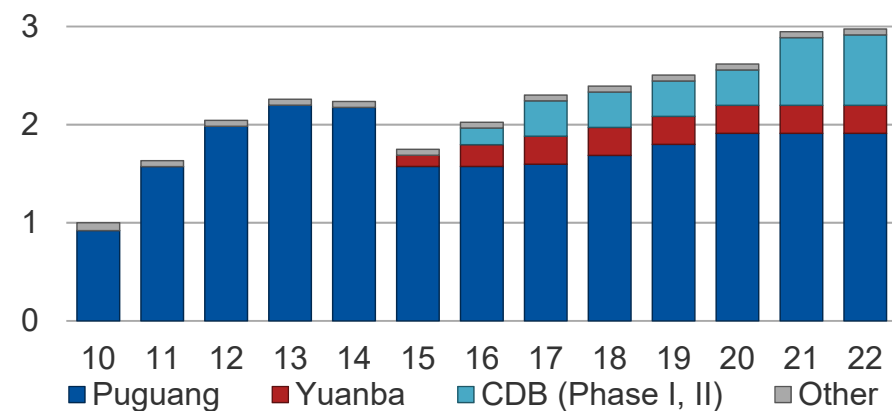
UAE

- Shah expansion forecast for start in 2022

China supply outlook

China – Gas-based supply by operation

production, Mt



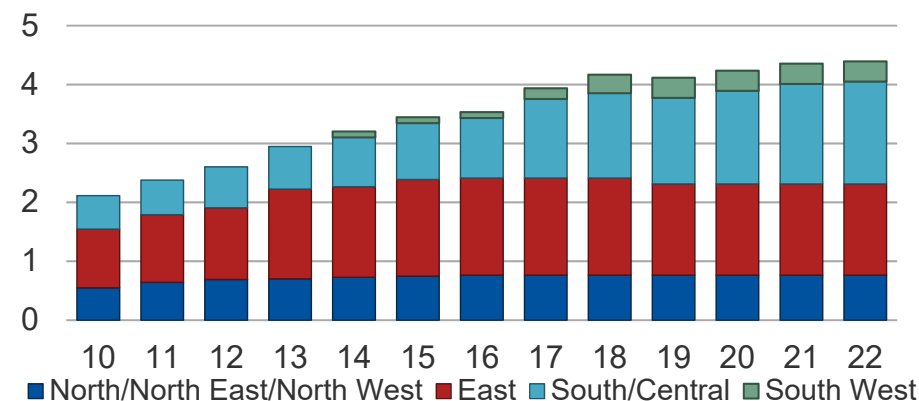
Data: CRU

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



Data: CRU

OIL REFINING

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

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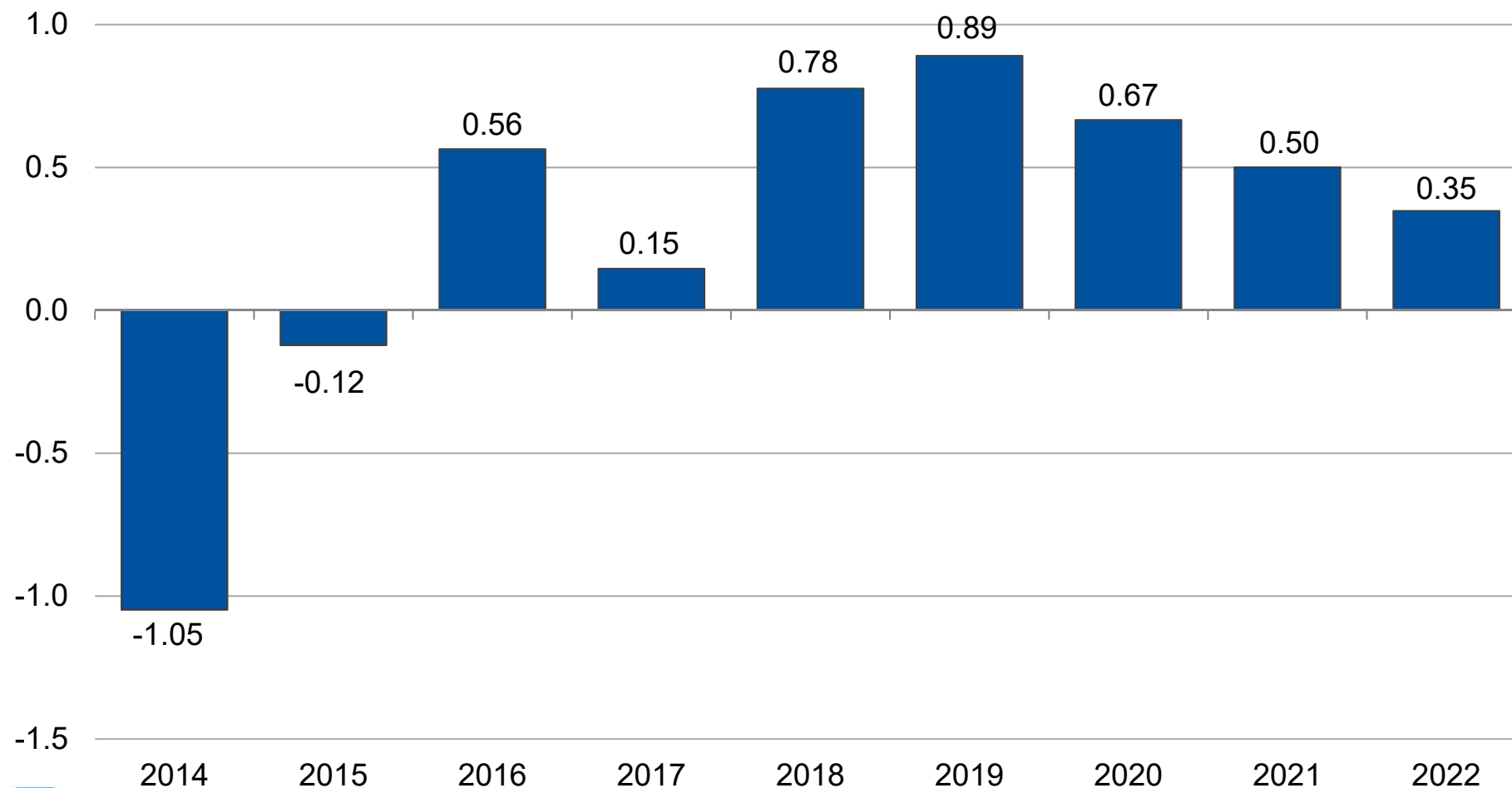
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Market balance peaks in 2019

Sulphur market indicators, y/y change

y/y change, Mt



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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Peter Harrison
Head of Sulphur/Sulphuric Acid
t +44 20 7903 2249
e peter.harrison@crugroup.com



Nick Waters
Consultant
t +44 20 7903 2283
e nick.waters@crugroup.com



Isaac Zhao
Senior Consultant, Phosphates & Sulphur
t +86 10 6510 2206 ext 315
e isaac.zhao@crugroup.com



Deepak Chitroda
Consultant
t +91 22 4504 5710
e deepak.chitroda@crugroup.com



Brendan Daly
Sulphur/Sulphuric Acid Markets Editor
t +44 20 7903 2185
e brendan.daly@crugroup.com

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