



# Aluminium Market Outlook... trade rises to top of the agenda

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# Agenda

Raw materials and impacts on aluminium smelting industry

Aluminium market outlook

End market drivers; construction, industry and automotive

China macro trends to focus on

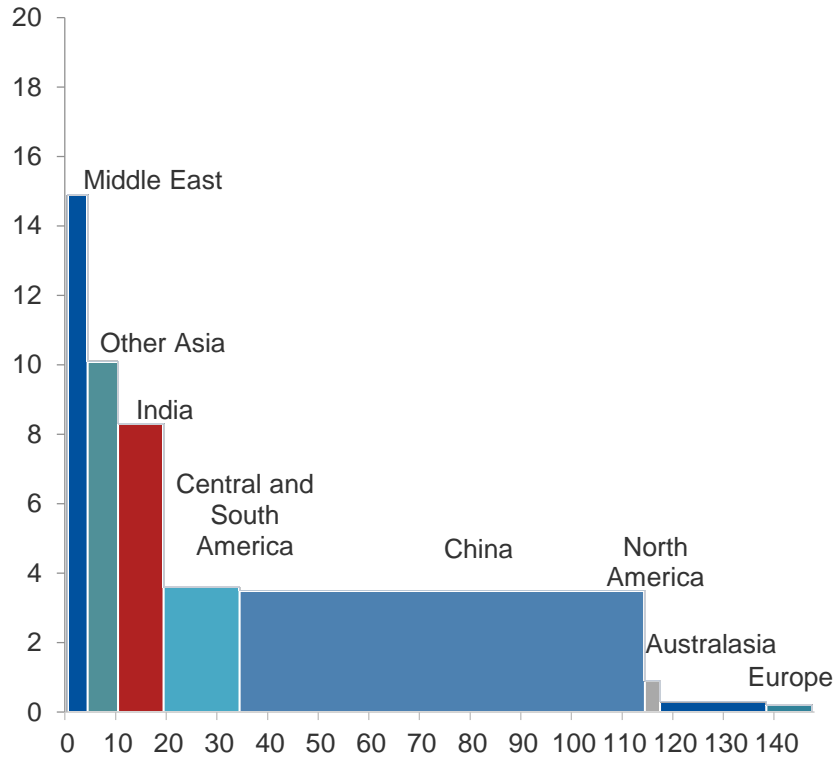
Section 232 and impact

LME and premiums forecast

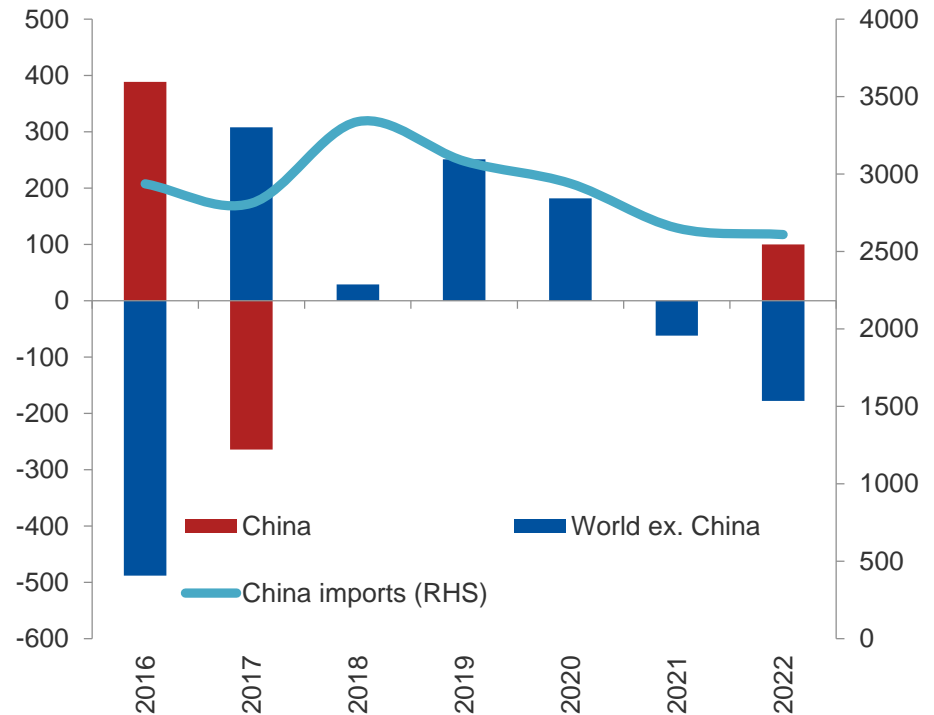
Conclusions

# Slight surplus alumina outside China in 2019 and 2020

2017 to 2022 growth %, cumulative metallurgical grade alumina supply, M tonnes

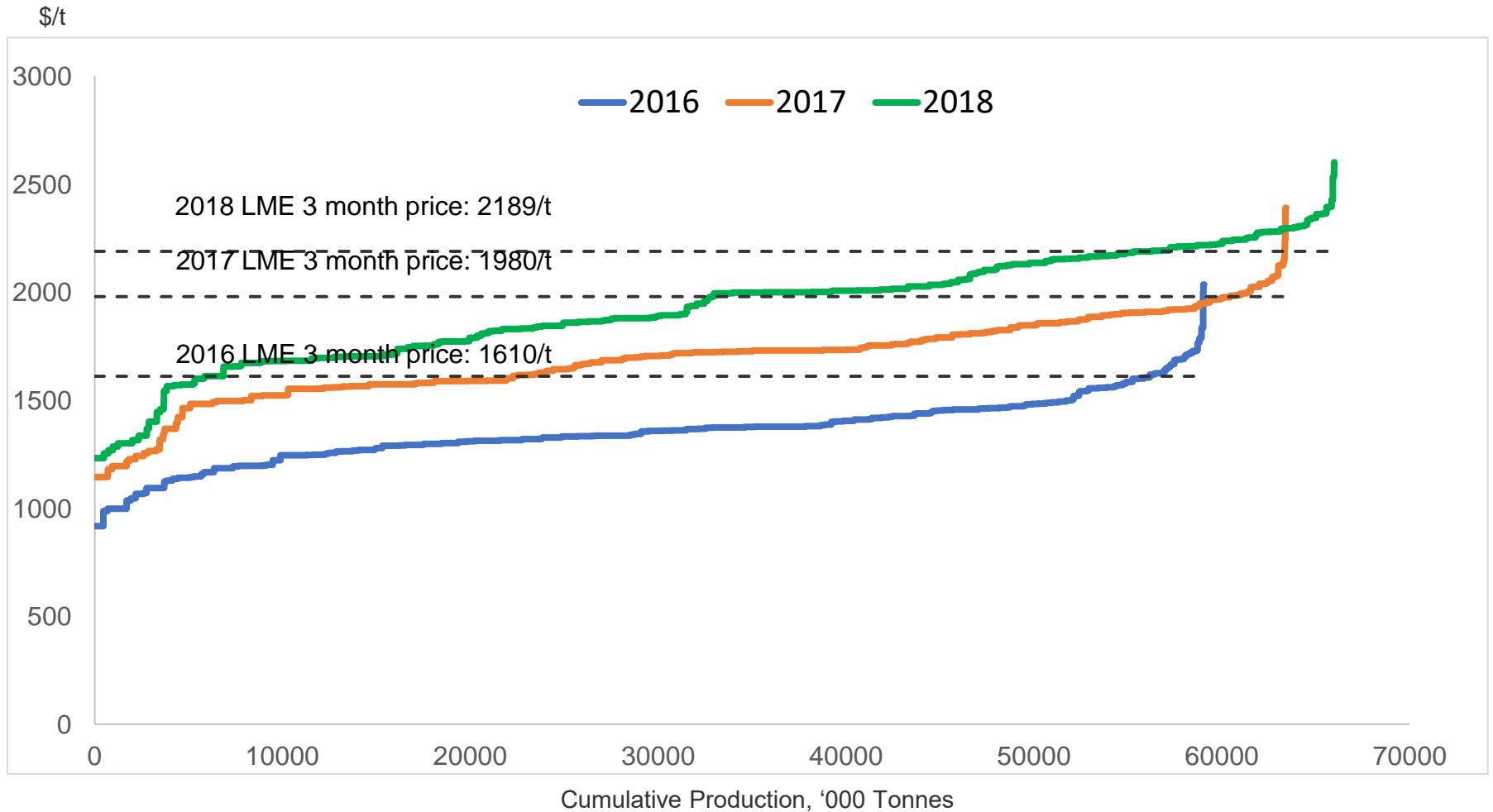


World ex. China MGA balance (LHS)  
Chinese alumina imports (RHS, '000 tonnes)



*Recent production disruptions at Alunorte Brazil likely eliminates 2018 surplus and creates tightness in the Atlantic Basin.>> USA restarts would pull their alumina from !*

# 2016, 2017 and 2018 business cost curves



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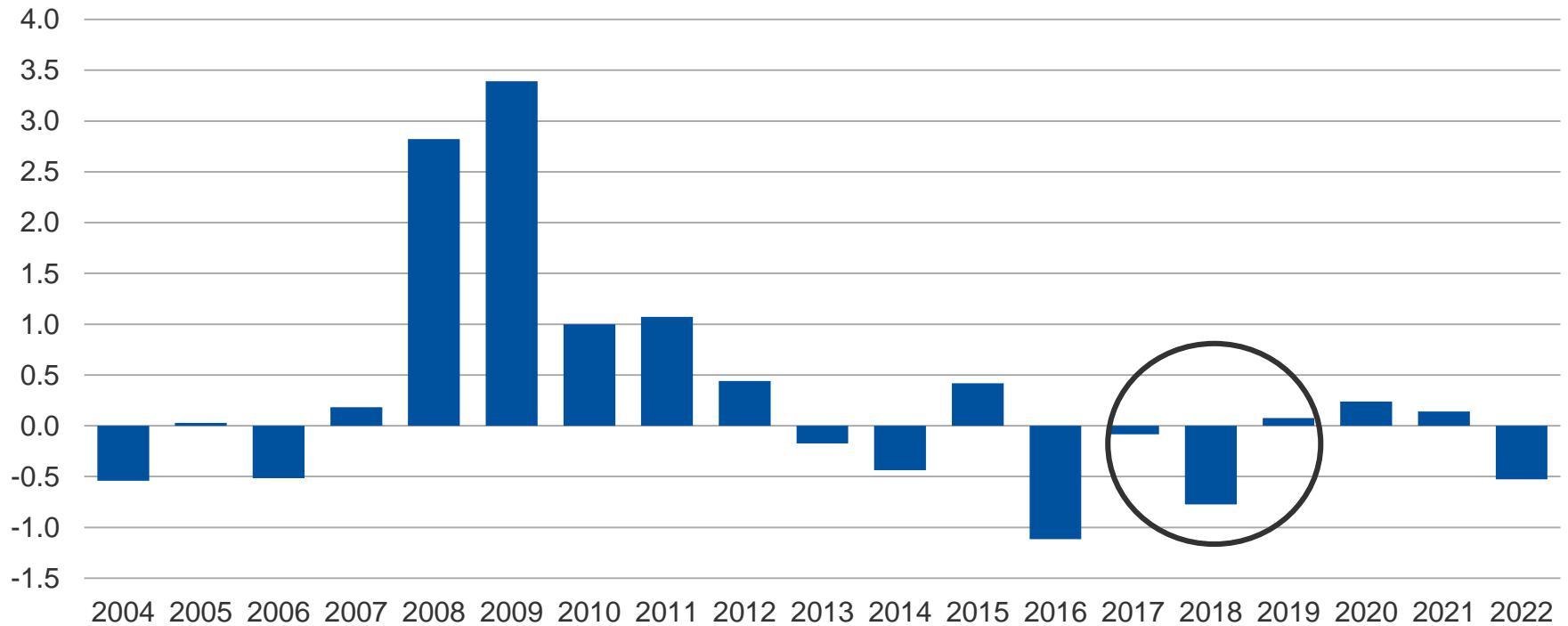
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# Global aluminium market in modest deficit for 2018

The global aluminium market is now in balance considering the overall size of the market

Global aluminium market balance, million tonnes



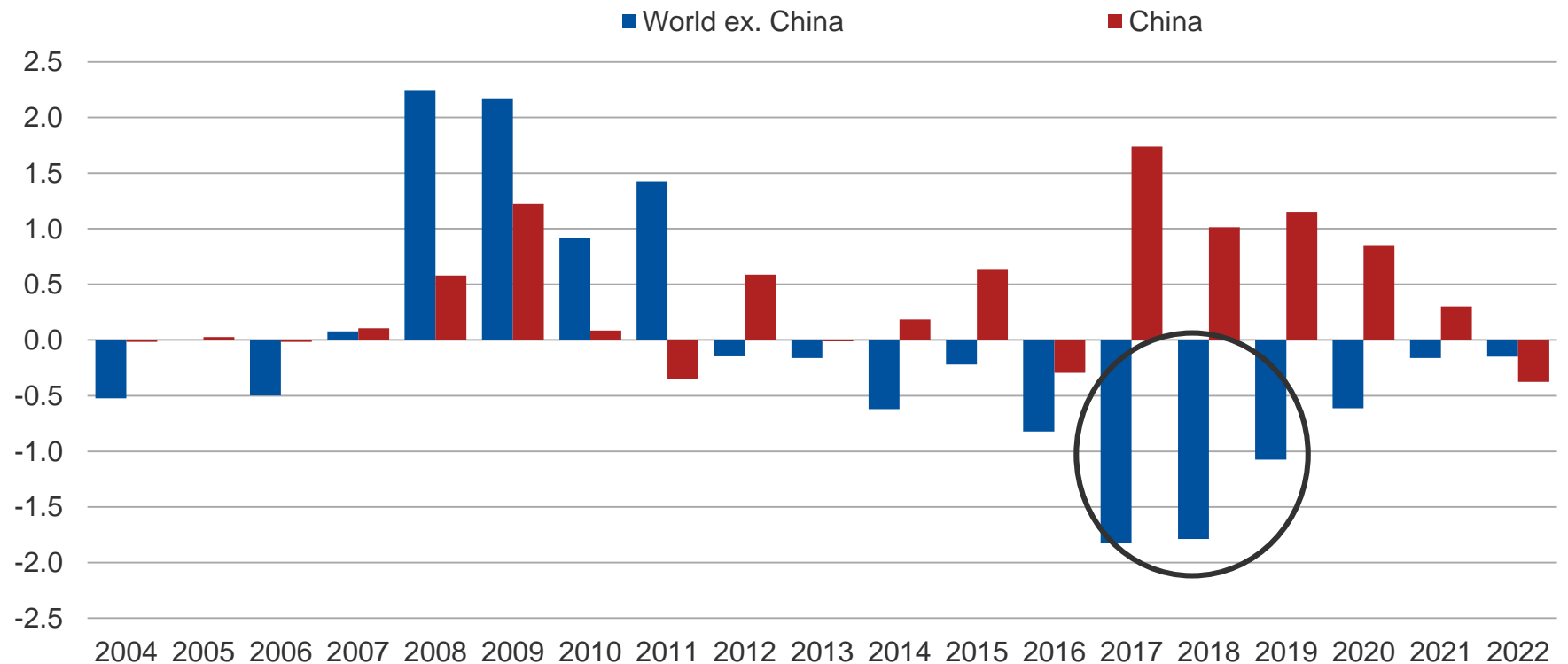
Data: CRU



# World excluding China in a large deficit

... but the market is now in a major deficit outside of China and that drives premium volatility

Aluminium market balance, million tonnes

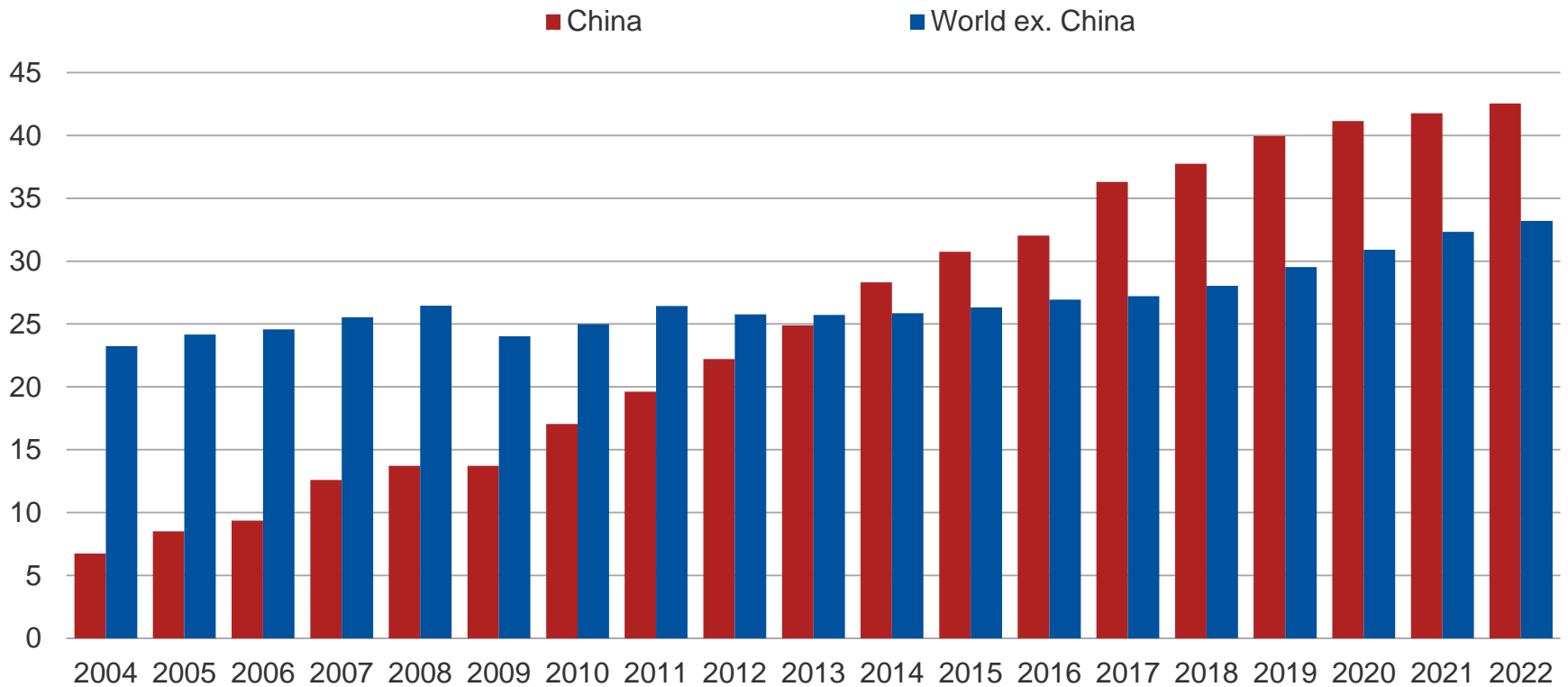


Data: CRU

# Chinese production growth has continued to climb

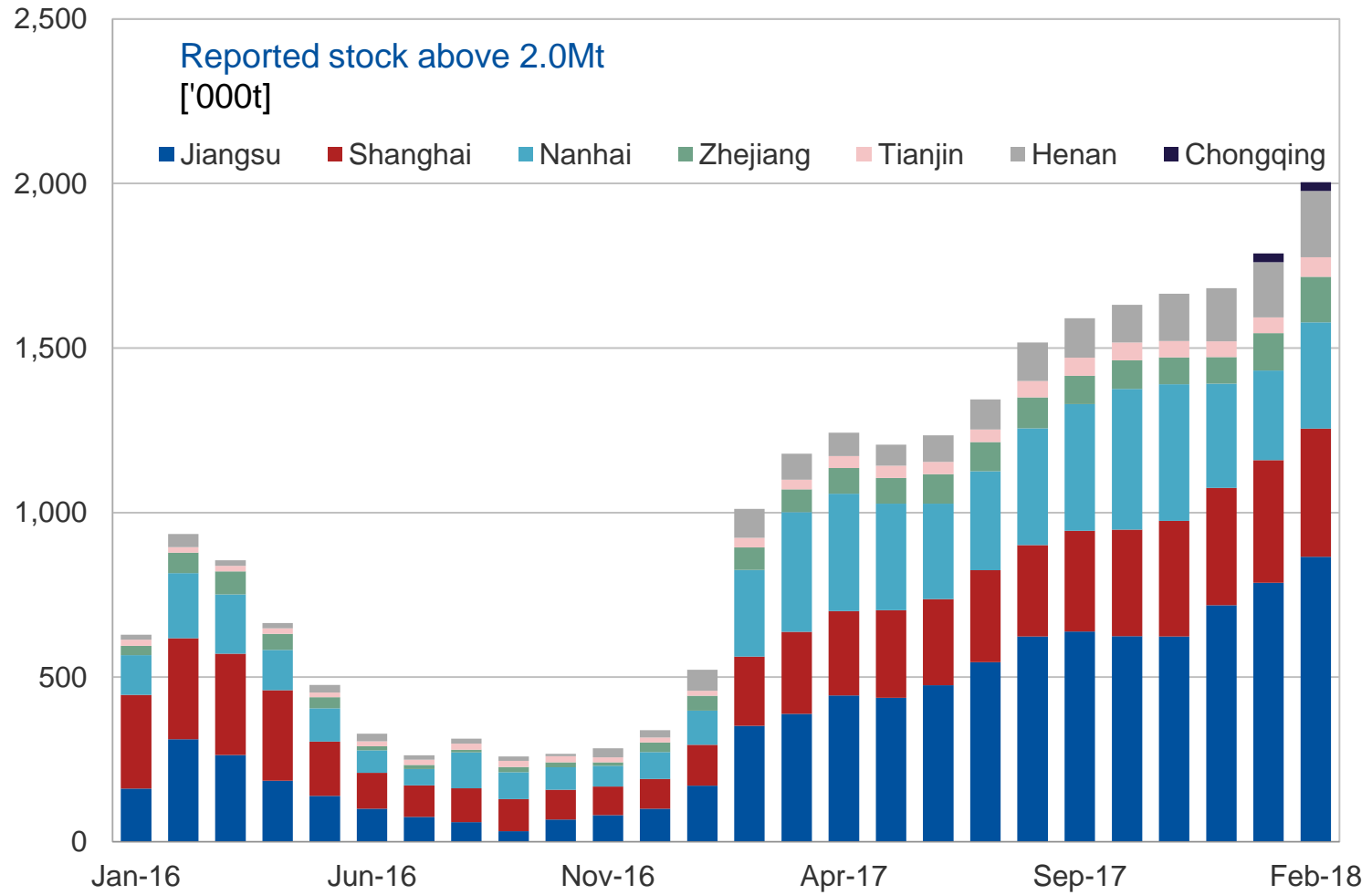
China production growth must now slowdown to avoid systemic surpluses

Aluminium production, million tonnes



Data: CRU

# China inventory rising- the uncomfortable proof of surplus

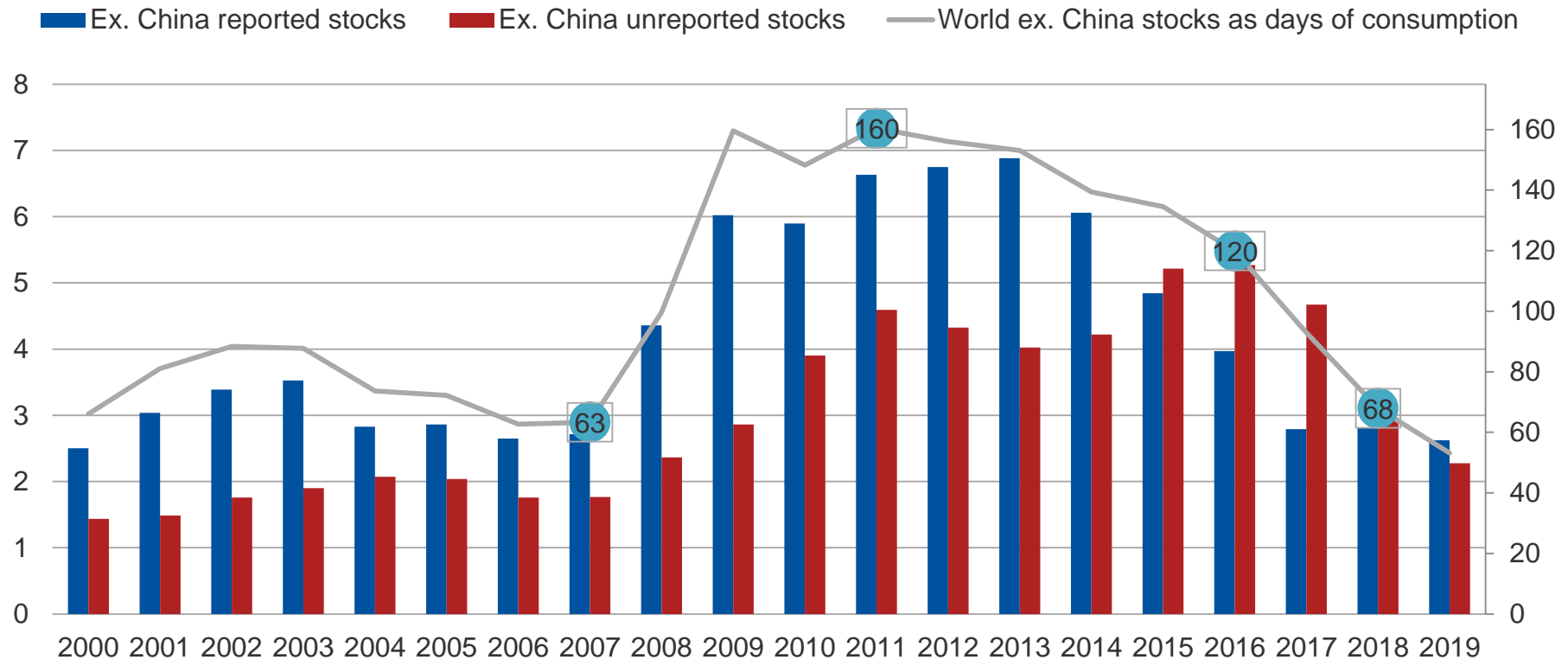


Data: CRU

# But stocks outside of China are falling rapidly

By the end of 2018, the financial crisis surplus will be gone

World excluding China inventories, million tonnes (LHS) as days of consumption (RHS)



Data: CRU, LME, IAI, CME

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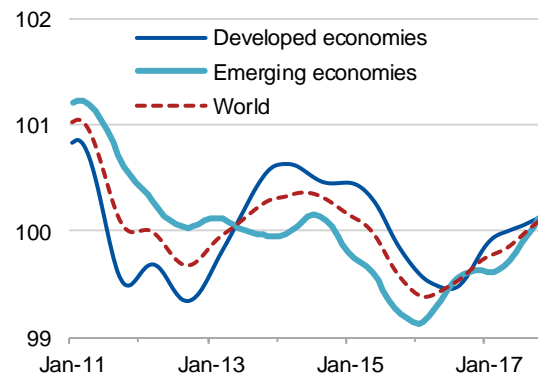
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# Broad improvement in global economic growth

World: Leading indicators

Index, normalised to 100



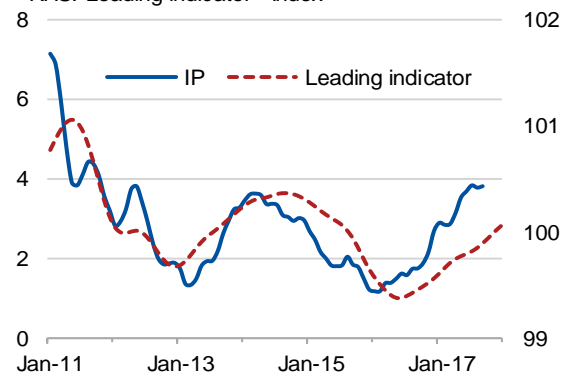
Note: 'World' is OECD plus China, India, Brazil, Russia, Indonesia & S. Africa.

Data: OECD, CRU

World IP and leading indicator

LHS: IP - % y/y 3 month moving average;

RHS: Leading indicator - Index



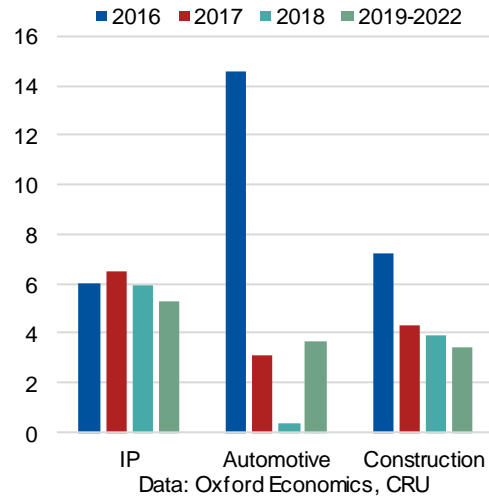
Note: The leading indicator is for OECD plus China, India, Brazil, Russia, Indonesia & S. Africa and is advanced three months.

Data: OECD, CPB, CRU

- The leading indicators for global economic activity, and IP data, are positive at the start of 2018.
- **We forecast global IP growth of 3.5% in 2018** after 3.5% in 2017, emerging market growth will be stronger - we expect that during next year the **faster growing economies in the developed world will hand-off momentum to the emerging economies.**
- Whilst there is risk around this transition, **it is difficult to identify a catalyst for recession in 2018.** The economies of both Germany and the US, along with many others...seem immune to political turmoil!

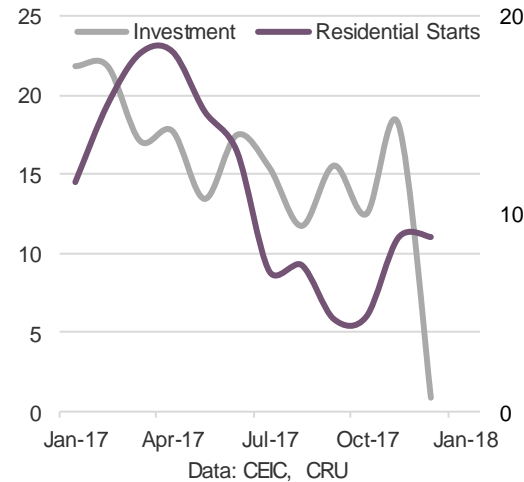
# China economy: Slowing investment and construction

China industrial, automotive and construction output forecasts  
% y/y



Residential starts and infrastructure & utilities investment

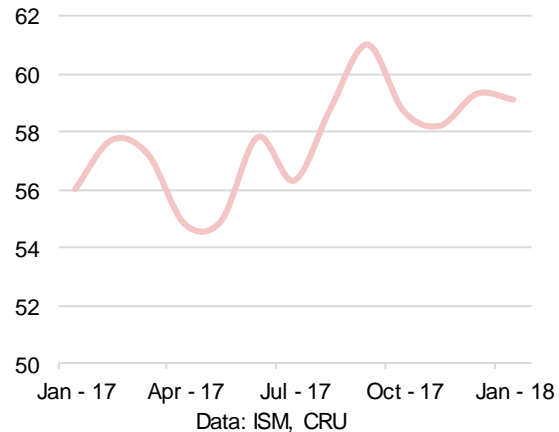
LHS: Infrastructure investment, % y/y  
RHS: Residential starts, % y/y



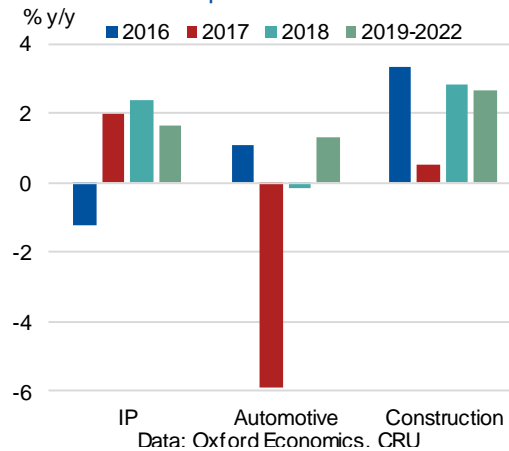
- A breakdown of the GDP shows that the growth was driven by stronger net external trade, whereas **fixed asset investment (FAI) slowed toward the end of 2017**.
- Despite last year's robust growth, we **expect GDP growth in 2018 to slow to 6.4%** due to several factors which will constrain domestic demand.
- **First, we expect investment spending to continue to decelerate** throughout 2018, given the government's efforts to rein in capacity in heavy industry.
- **Second, a gradual slowdown in credit**, accompanied by tighter monetary and financial policies, will continue to **dampen activity in real estate sector**.

# US economy: Construction firm, auto production stable

United States manufacturing PMI  
Diffusion index, 50 implies no change



United States industrial, automotive and construction output forecasts

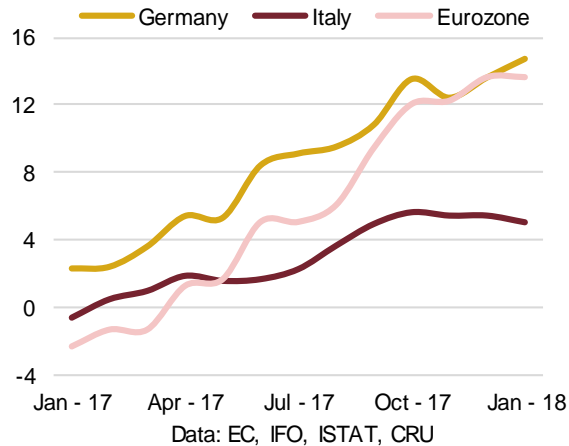


- There is clear momentum in spending for non-residential equipment as well as residential outlays. As such, we expect housing starts to rise to 1.3 M units in 2018, up from a lower-than-expected 1.2 M last year.
- **We continue to expect GDP growth of 2.6%** this year and maintain our 2019 forecast for slower growth of 2.0%. The prospect of a corporate tax cut spurred investment spending but the stimulus will fade after this year.
- IP growth was just 2.0% last year, we forecast IP growth of 2.4% in 2018. Total vehicle output is expected to be around 11.6 M units, on par with 2017 production levels.

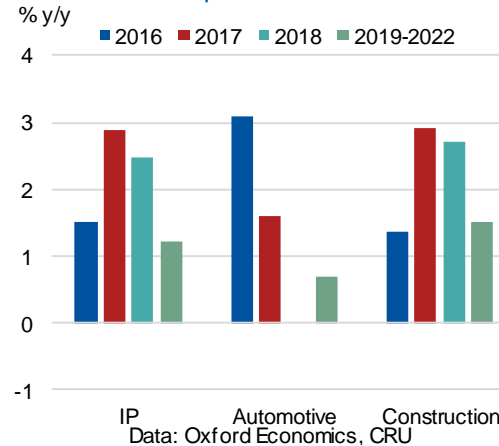


# Eurozone economy: Confidence still rising

Eurozone business confidence  
SA, Index



Eurozone industrial, automotive and  
construction output forecasts

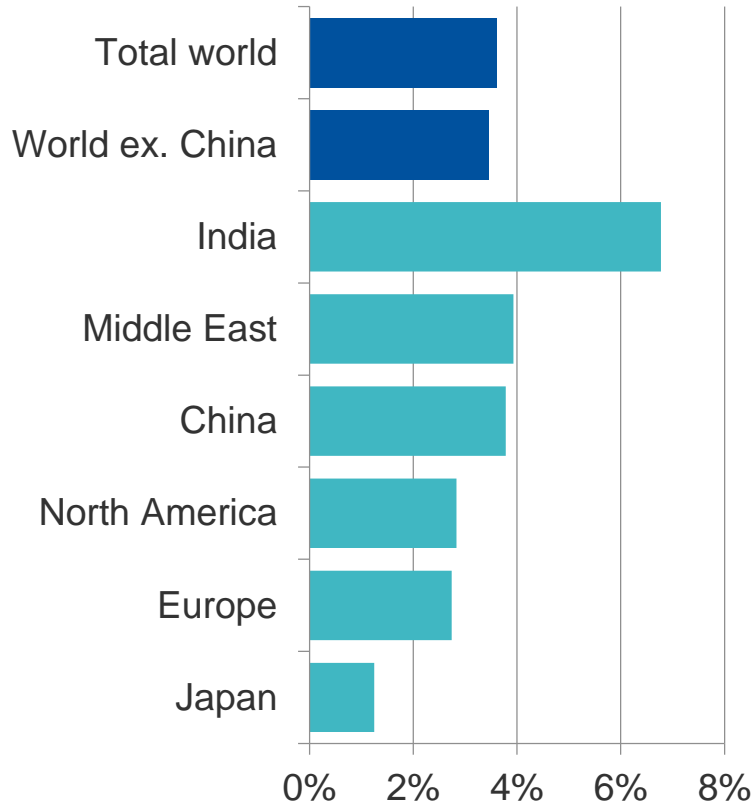


- GDP expanded robustly by 2.7% y/y in Q4 2017, bringing annual growth to 2.5% last year, the highest rate since 2008.
- Housing demand, and subsequently residential investment, are expected to slow as the ECB starts to normalize monetary policy, which will push up mortgage rates
- After a steady recovery from a low production level since 2009, as the benefits to demand of cheaper fuel fade, autos production in 2018 is set to stay flat at 2017's level of about 14.3 M units.
- **We forecast total IP growth of 2.5%** this year, down from 2.9% posted in 2017.

# Aluminium consumption: transport leads, construction lags

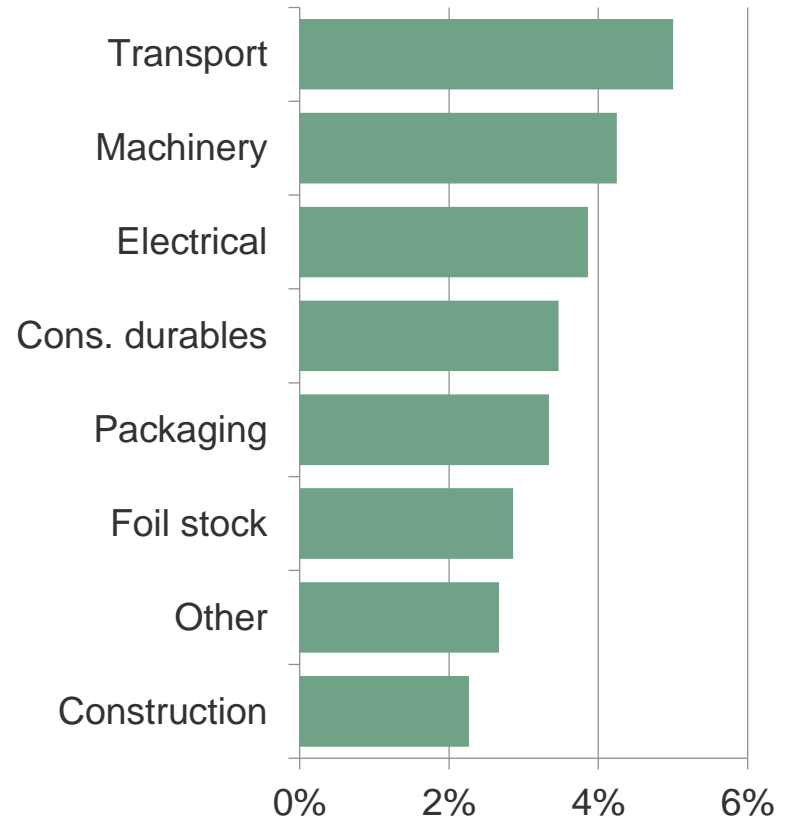
## Global aluminium demand growth

**Regional** compound annual growth rate, 2016-2021



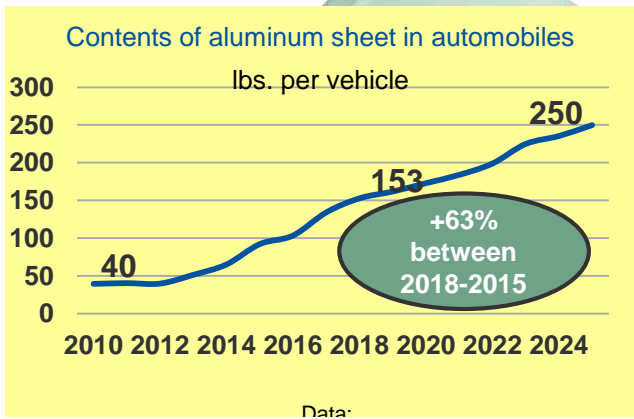
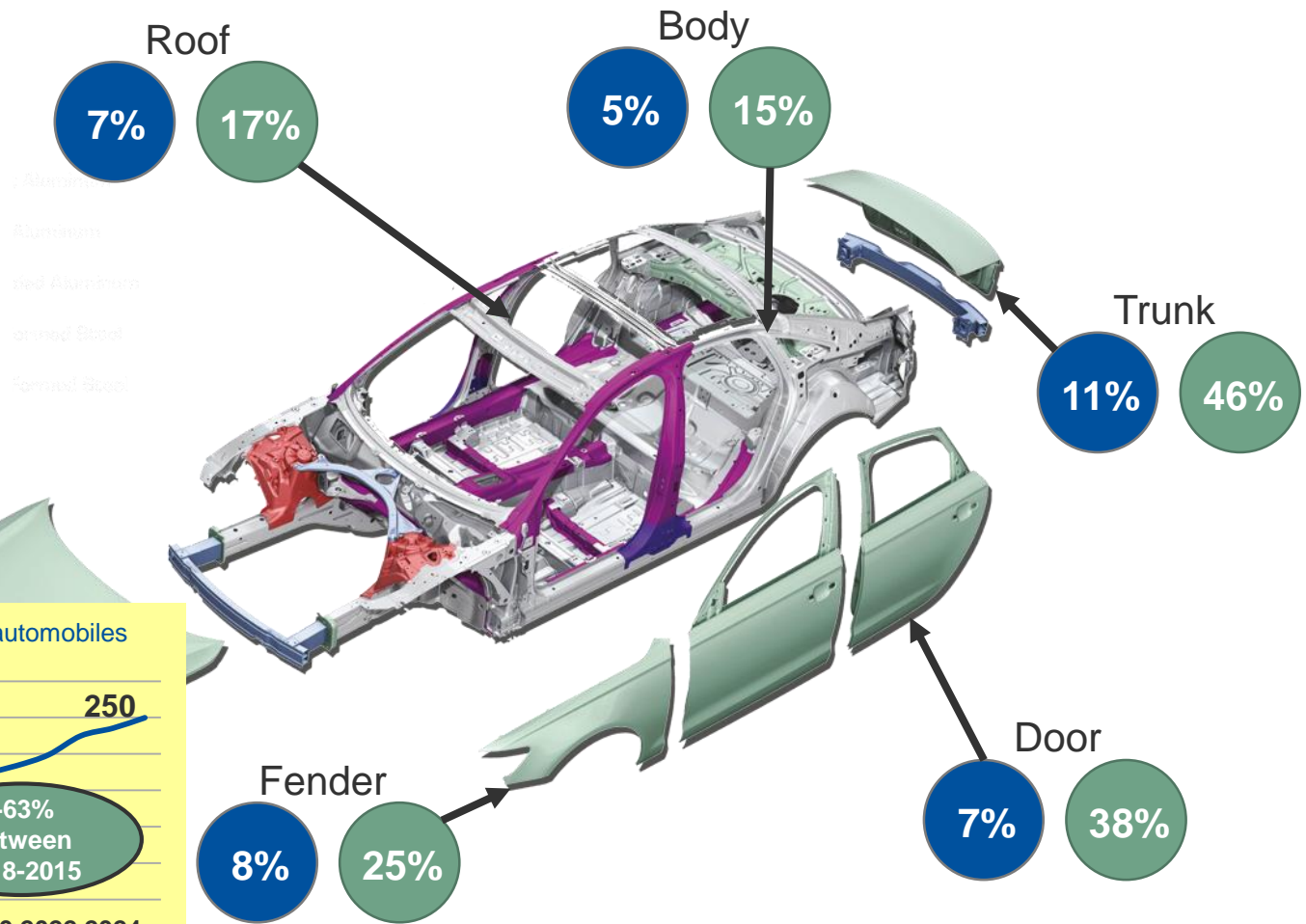
## Global aluminium demand growth

**End-use** compound annual growth rate, 2016-2021



# Penetration of NA ABS primarily in closures and body

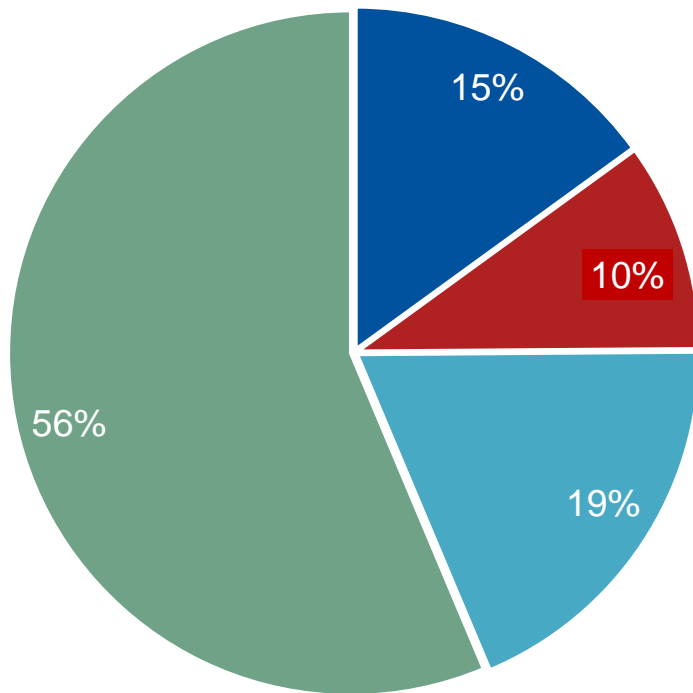
2016 2025



Data:

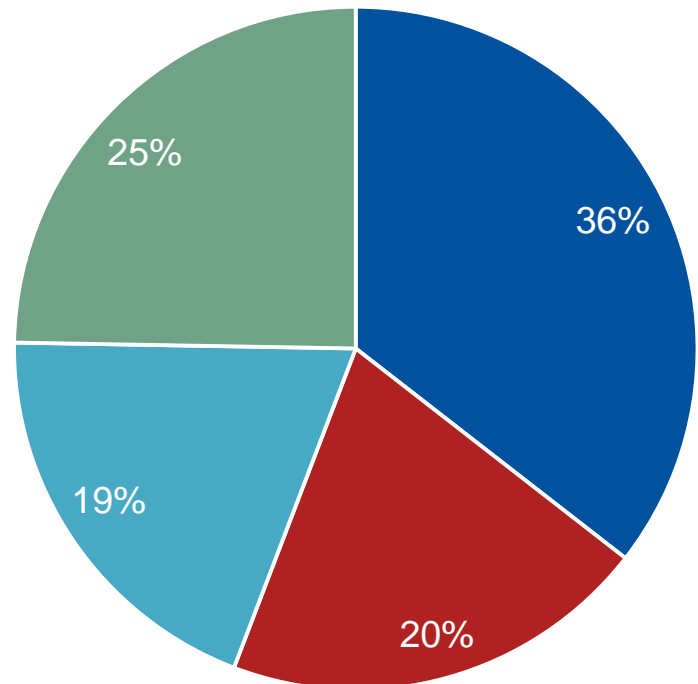
# Further boost in shift to electric vehicles, “mix” changes!

Aluminium content breakdown by product, ICE



- Rolled
- Extrusions
- Primary castings
- Secondary castings

Aluminium content breakdown by product, BEV



- Rolled
- Extrusions
- Primary castings
- Secondary castings

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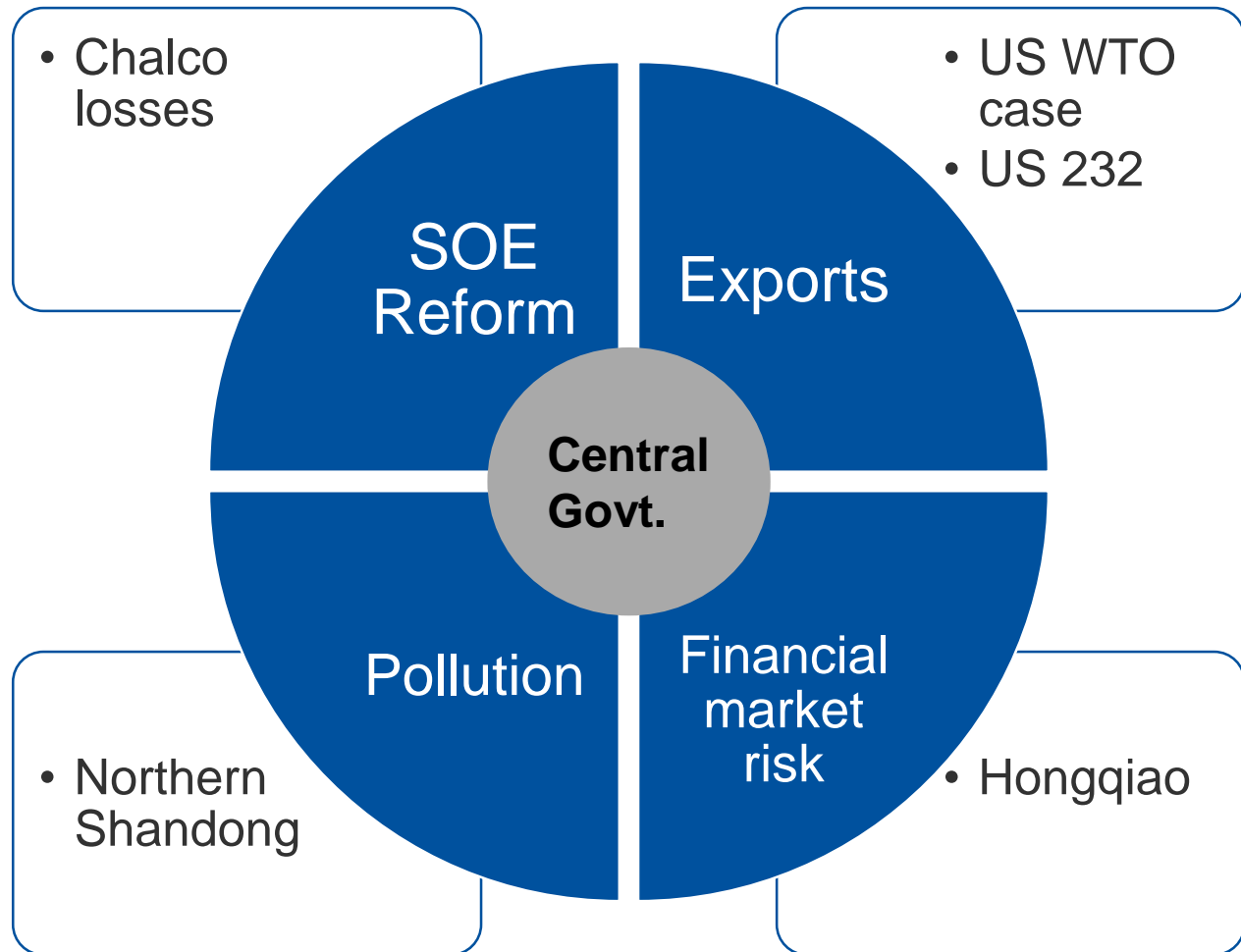
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# China supply side reform finally getting serious

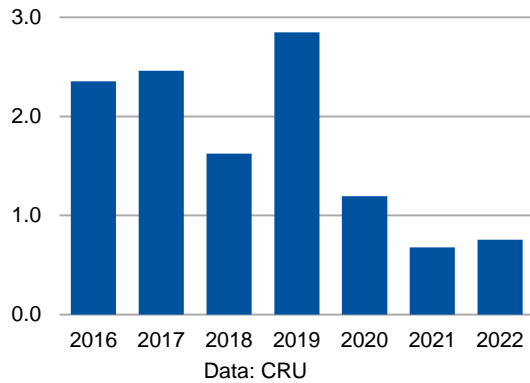
- **3 million tonnes per year of operational aluminium smelting capacity to close**
  - 8% of output
  - Illegal
  - Privately owned
  - Permanent closure



# China production growth will be more deliberate

## Chinese smelter expansions to add over 2.8Mt of production in 2019

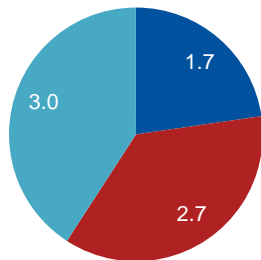
Increase in Chinese production from major greenfield and brownfield projects, million tonnes



## Special status projects will contribute the largest share of production growth in China

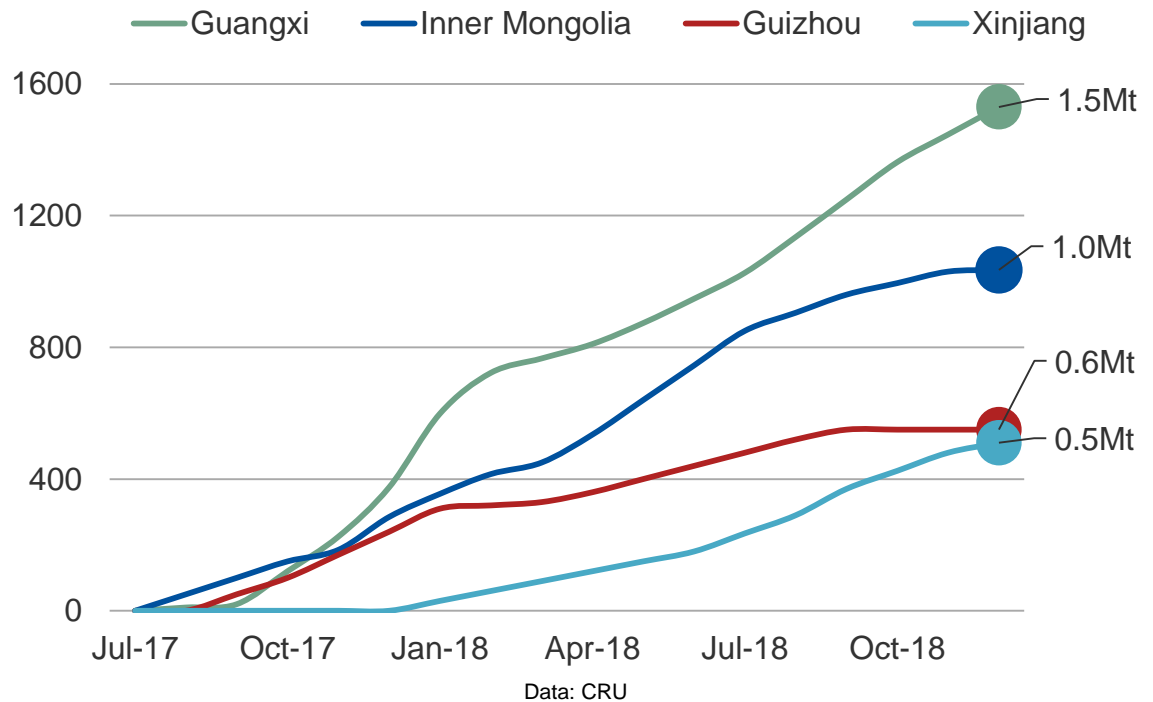
Growth in Chinese aluminium production from major projects, split by approval type, M tpy

- Purchased replacement capacity
- Internal transfer
- Special status projects



## Major smelter ramp-ups expected in Guangxi and Inner Mongolia

Increase in annualised production by province, '000t



## Environmental regulation in China IS getting tougher

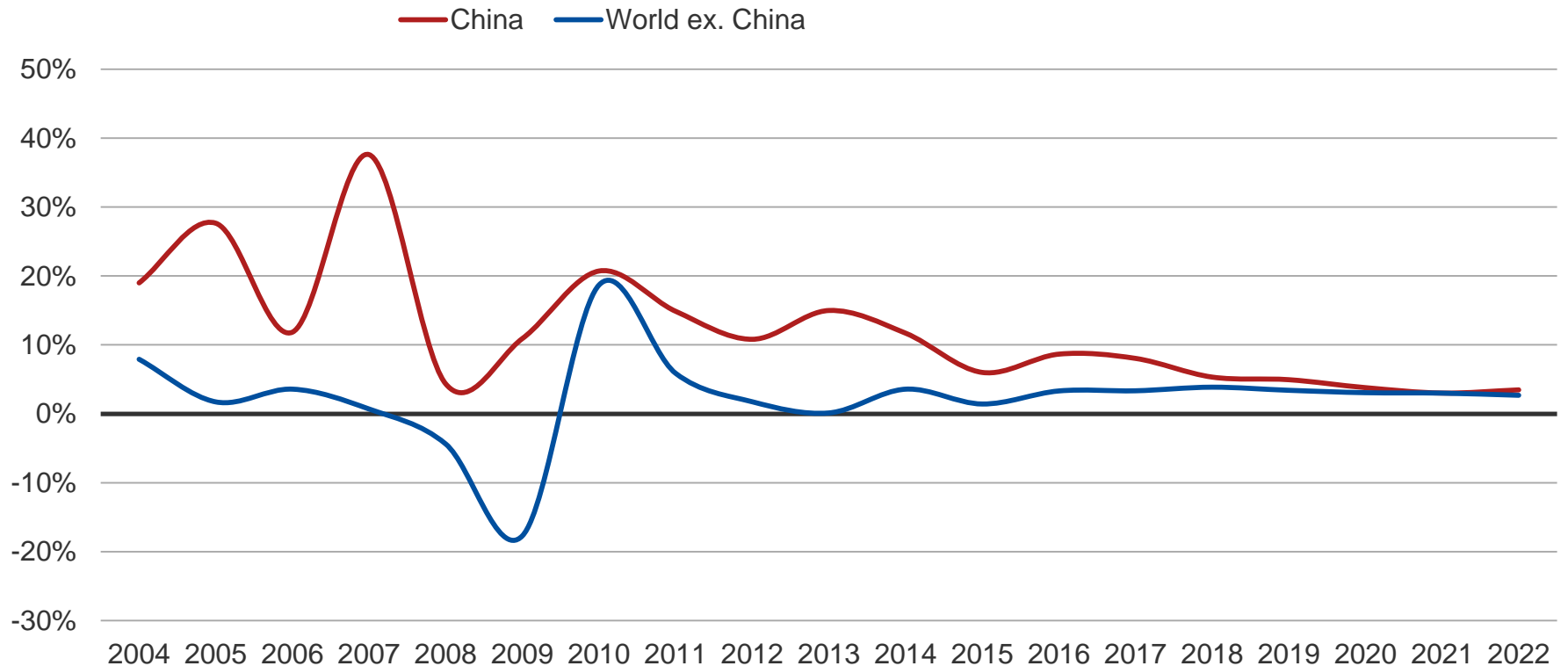
- The Chinese government cannot ignore the environmental issues anymore. ...the “environmental mortgage has gotten TOO BIG”
- It must continue fixing the problem **as it has created expectations amongst its population of steady improvement**
- **The central government is doubling down on control**
  - Ministry of Environmental Protection (MEP) being changed to Ministry of Ecological Environment
  - Assuming wider from over Land, Water and Agriculture Ministries= more central coordination of efforts
- **Winter curtailment is expected to be continued next winter.** The Henan provincial government issued the plan for next winter already
- Aluminium smelters in 2+26 cities have been asked to meet higher emission standards in March;
- Greenhouse gas trading scheme has been created by the end of 2017, but real transaction will be seen in 2020;
- Illegal capacity control will remain tight, all of new capacity have to purchase capacity quota first; **\* by end of 2018, illegal capacity either has to acquire operating rights or it can not return to production...time is running out to find willing sellers**



# Chinese aluminium demand growth slowing

Chinese consumption growth is slowing but rising demand growth outside of China

Year on year change in aluminium consumption

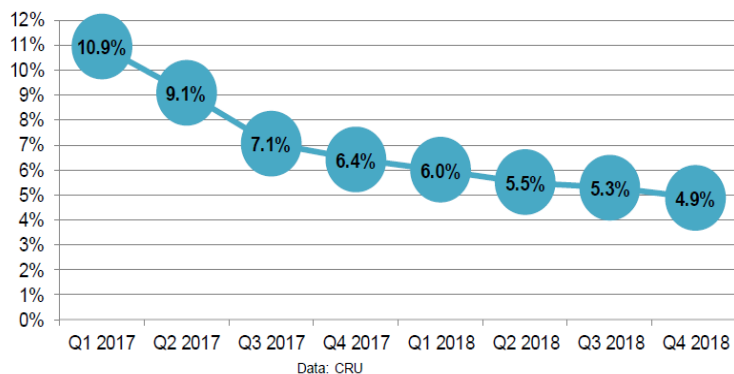


Data: CRU

# China *primary* demand consumption is slowing

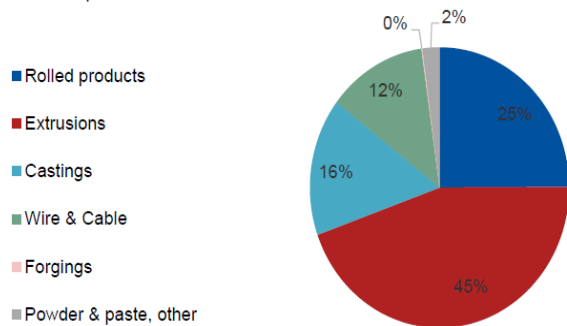
China aluminium consumption

y-o-y % change



Semis production by end use in 2018

% of total semis production



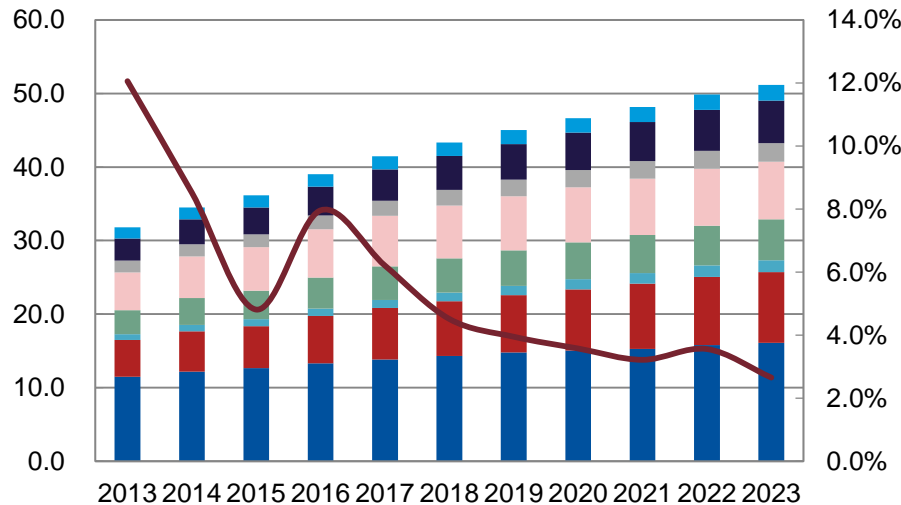
Data: CRU

- **CRU forecasts 2018 Chinese primary aluminium will be 36.5Mt in 2018, up 5.4% y/y.** Quarterly growth y/y has slowed compared to that of 2017, indicating a softening market. There will be a seasonal drop in Q1 2018, as small downstream plants shut down and larger plants curtail operations.
- **Construction and transport sectors will continue to drive demand growth.** New applications such as pedestrian bridges, bus stations, aluminium formwork and aluminium furniture will be an additional source of growth. **More than 60 aluminium made pedestrian bridges have been installed in China as of December 2017. Also, we estimate 15% of formwork is now made of aluminium.**
- **China remains far behind the ROW in terms of efficient scrap utilization in its aluminium downstream operations**
  - This will change as Beijing places more emphasis on carbon trading
  - Practically speaking, downstream in China can't compete making FRP and Extrusions out of nearly 100% primary metal

# Transport sector key to offset for slower construction

Construction growth in infrastructure and residential development slowing...even “hukou reform”...which promises legal rights to 250m disenfranchised migrants in Tier 1 cities may not be enough to sustain residential growth

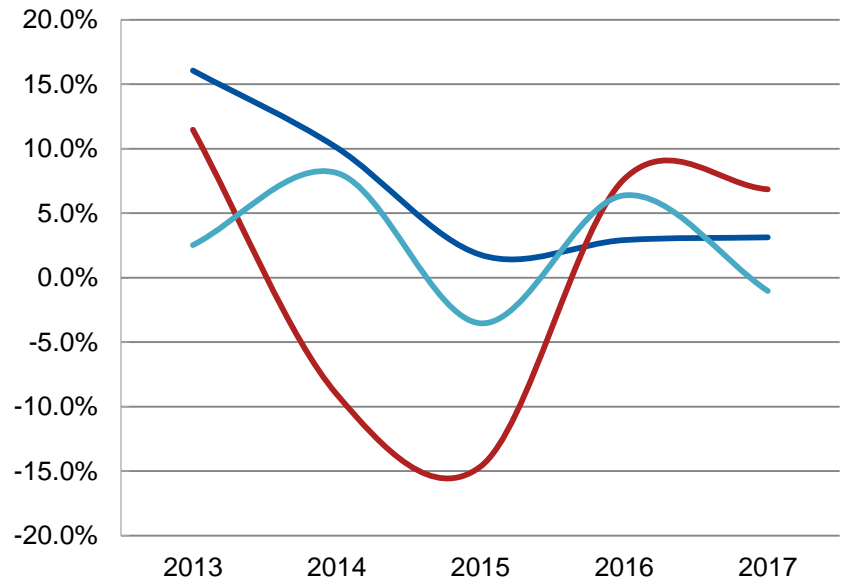
Aluminium demand rising in 2018 at a slower pace  
[million tonnes]



- Construction
- Packaging consumption
- Electrical
- Machinery & Equipment
- Annual demand growth%
- Transport
- Foil stock
- Consumer durables
- Other

Data: CRU

Construction growth to slow down in 2018



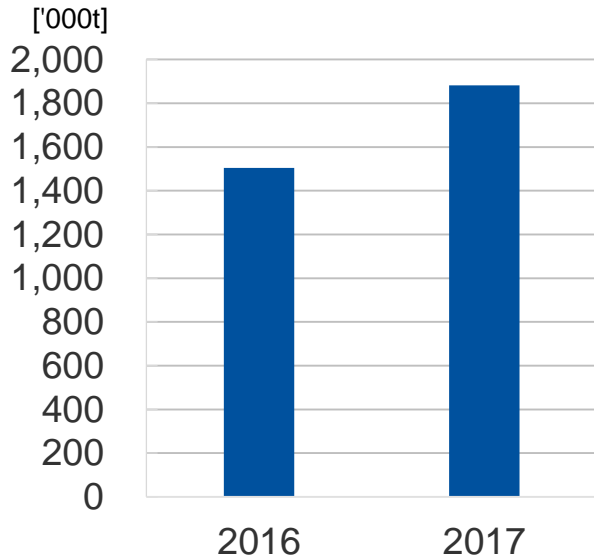
- Real estate under construction
- Real estate started this year
- Real estate completed

Data: NBS, CRU

# Trade actions are a wakeup call to China's ability to export

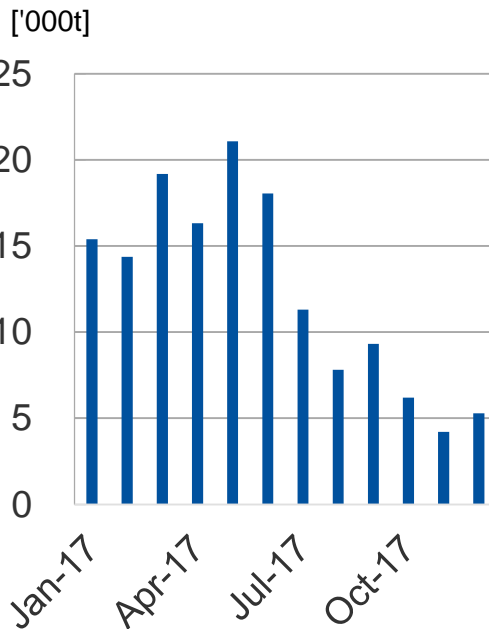
*China has operated with a premise that it had unbridled access to ROW demand to export its surplus capacity....NOW for the first time, that assumption is being challenged*

China FRP export up 25%



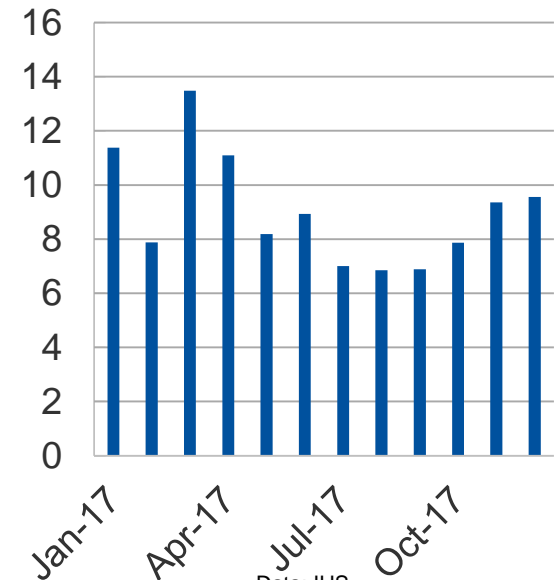
Data: CRU

Chinese foil to US down



Data: IHS

Chinese foil to India up in Q4



Data: IHS

## One Belt One Road (OBOR) is China's next export plan

- \$150 billion/year being spend in 68 countries currently part of the scheme
- May total upward of \$5 TRILLION dollars over the life the Plan
- Involves countries with 62% of global population and 30% of its GDP
- Multiple motives:
  - ✓ Investing in foreign infrastructure providing a profitable home for China's massive foreign exchange reserves vs investing in US securities
  - ✓ Providing economic stability in adjacent Central Asia creating insulation against unrest spreading back into China (example....Tibet and Xinjiang)
  - ✓ Broadens political influence
  - ✓ Creates external demand for China's massive excess capacity in core industries
- **Within the aluminum sector we see examples of this increasing:**
  - **Bauxite** mine development in Guinea
  - **Alumina** refineries in Indonesia and Vietnam
  - **Aluminum smelter technology and ventures** in India, Iran, and Malaysia
  - Attempted acquisitions of **rolling capacity** in the USA
  - **Purchases of LME warehousing capacity and LME dealing members**

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trade wars are good,  
and easy to win



**Donald J. Trump** ✓

@realDonaldTrump

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Our Steel and Aluminum industries (and many others) have been decimated by decades of unfair trade and bad policy with countries from around the world. We must not let our country, companies and workers be taken advantage of any longer. We want free, fair and SMART TRADE!

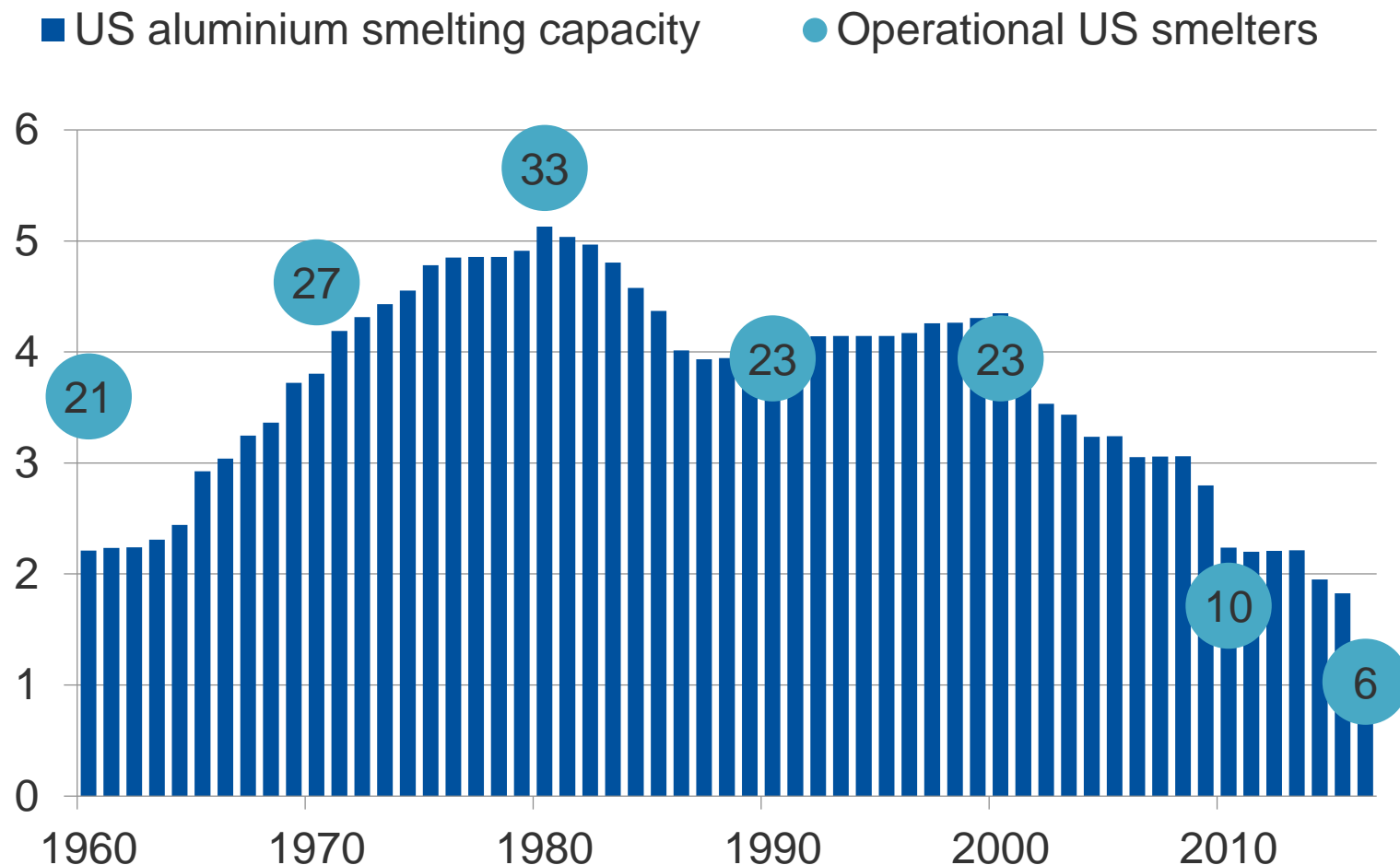
4:12 AM - 1 Mar 2018

20,910 Retweets 93,130 Likes



## Why? As US smelters have closed down...

Aluminum capacity, million tonnes per year, and number of operational smelters

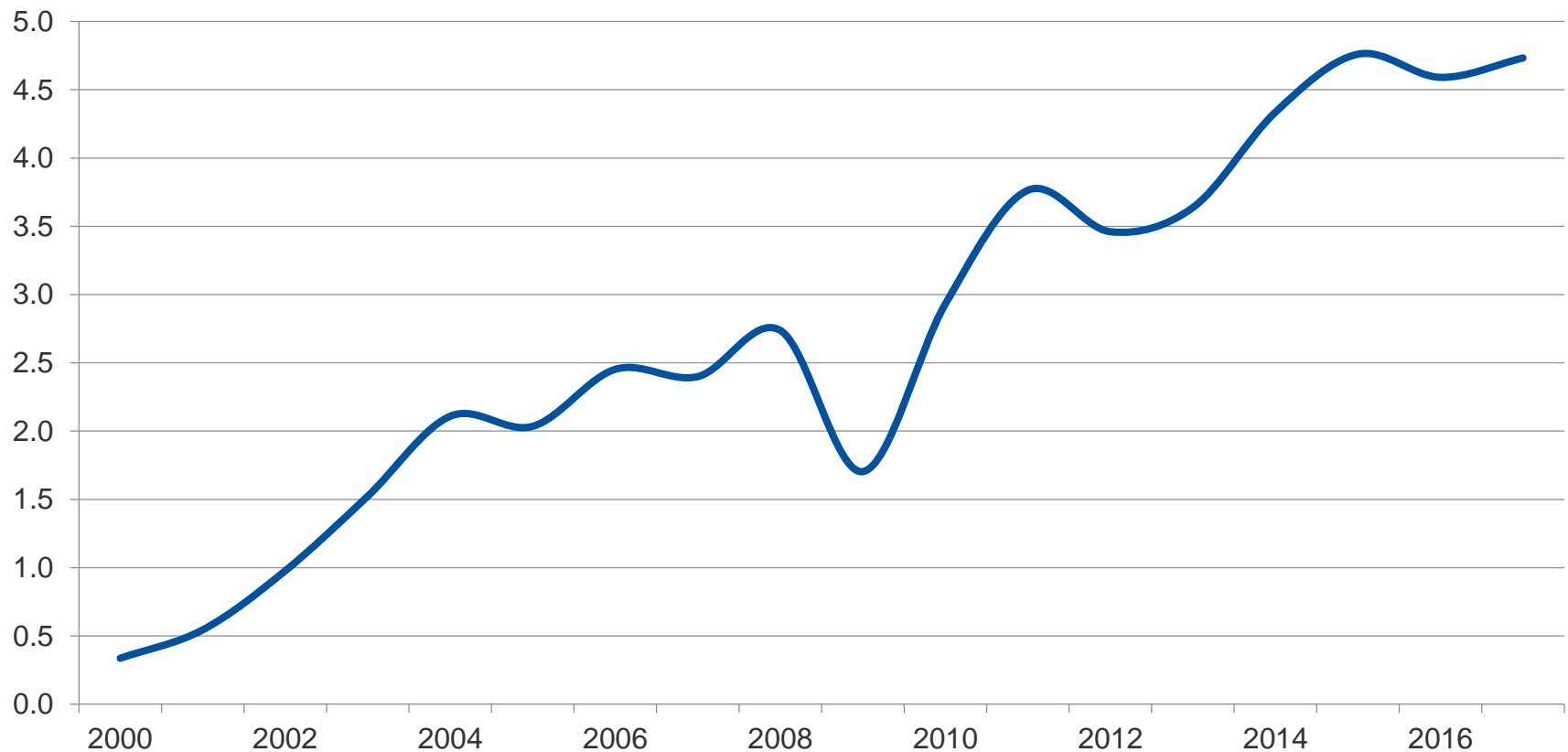




## .....Chinese exports to the world have surged

Chinese exports up 14-fold since 2000 when China emerged as a player

Chinese aluminium exports, million tonnes



## The practical effects of Section 232 on US prices

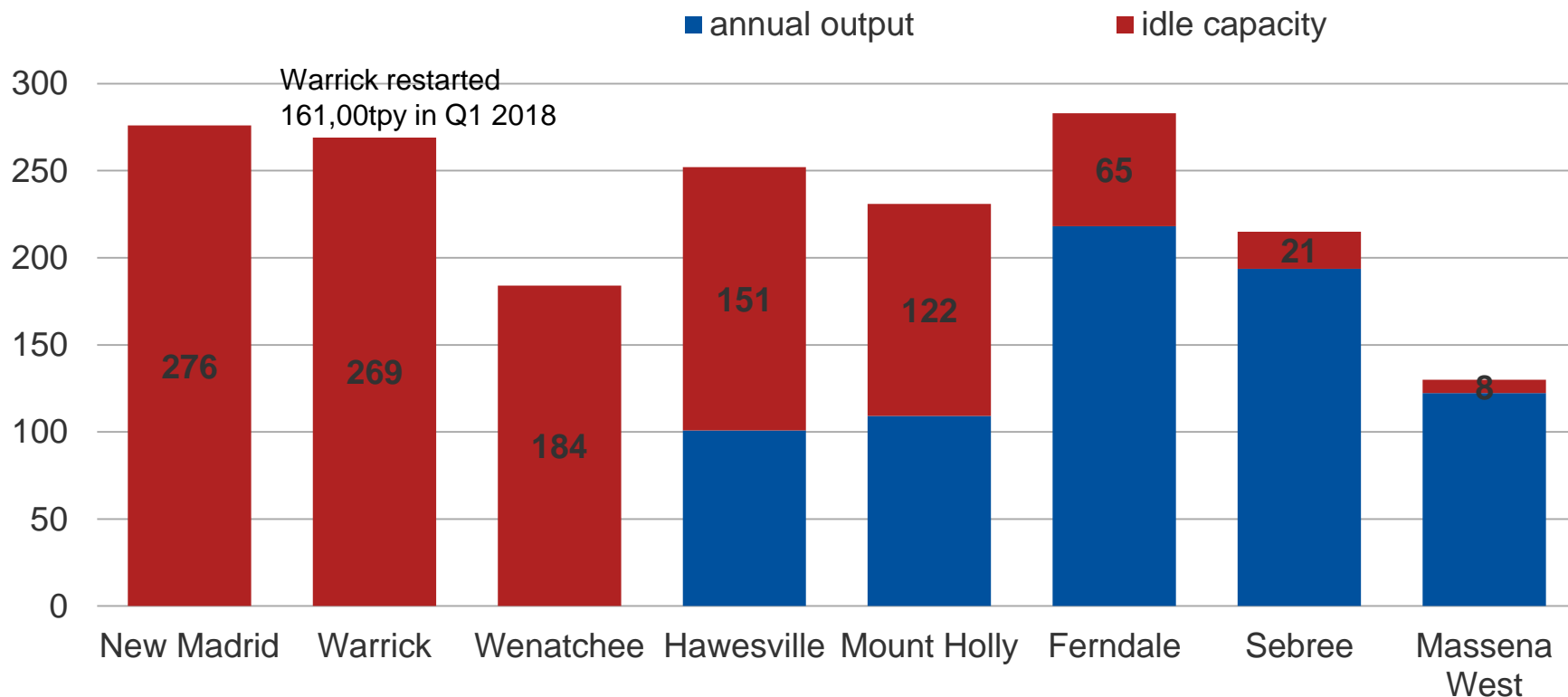
- **US remains a net importer of metal units**, the imposition of the tariff simply raises the clearing physical premium for the imported metal required
- **Producers exempt from the tariff EARN the incremental clearing premium** as revenue
- **Domestic restarts should be incentivized by the tariff but the timing may be slower**
- **Producers NOT exempt from the tariff are revenue neutral** as the tariff becomes a cost of doing business and they are not earning any more or less as a result of this...hence no effect on their production decisions
- **Inventory liquidation could delay but not halt premium appreciation**
- **Scrap substitution** through higher imports and domestic recycling could also help but can't **fully displace the more expensive cost seaborne primary supply**
- **Billet upcharge indexed to Midwest could see some appreciation as domestic duty paid capacity may not be adequate to replace seaborne imports subject to duty**

# Delays on power & tariff execution could scupper any restart

935,000 of capacity presently idle in the USA

## US smelting capacity and production

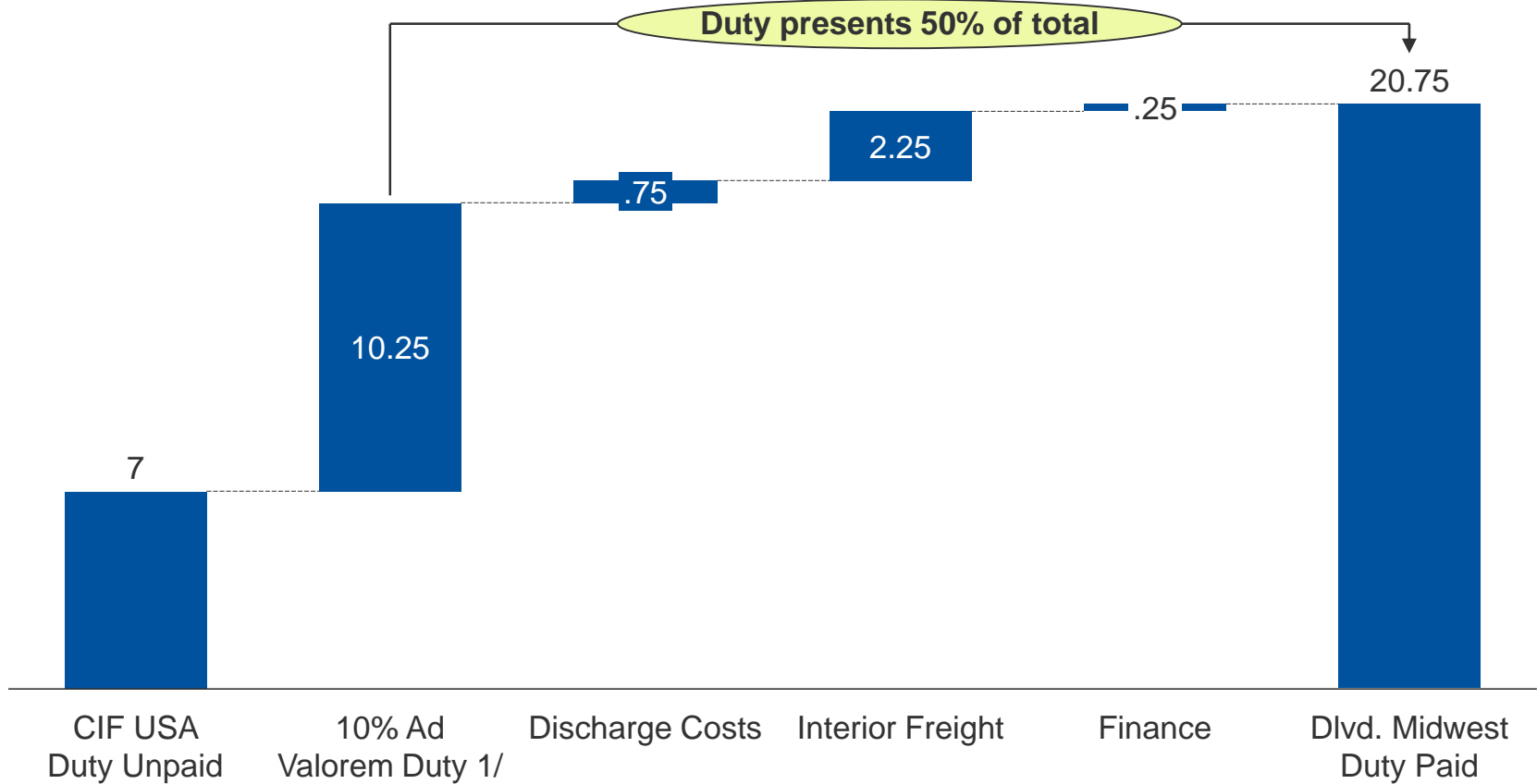
2017 annual output and capacity in 000 MT



Data: CRU

# Bottom up construction of the import clearing premium

USA premium expressed in cents/lb



1/ LME cash \$2,112.50+ \$154 CIF premium x 10%

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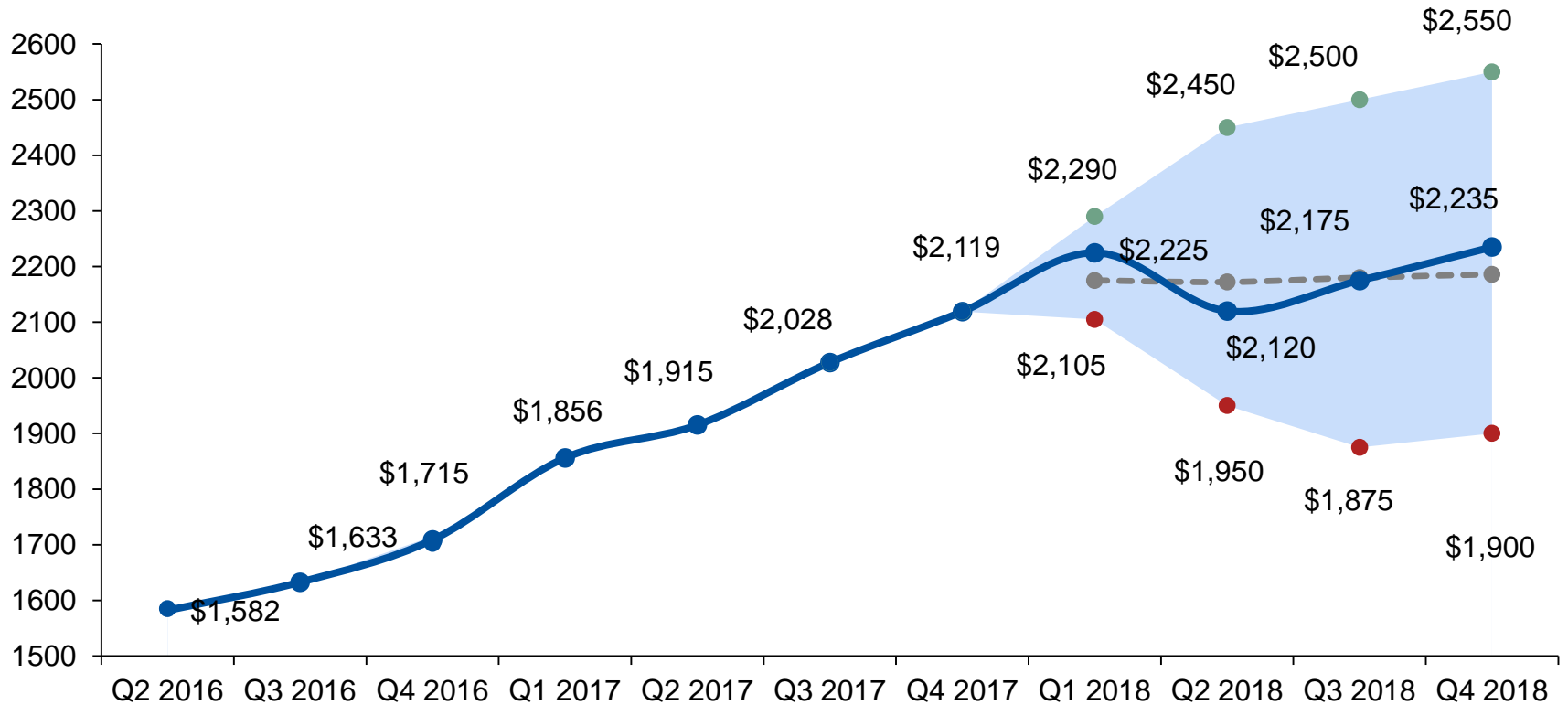
Conclusions

# Prices to stabilise in 2018

## LME 3-month price forecast

\$/t

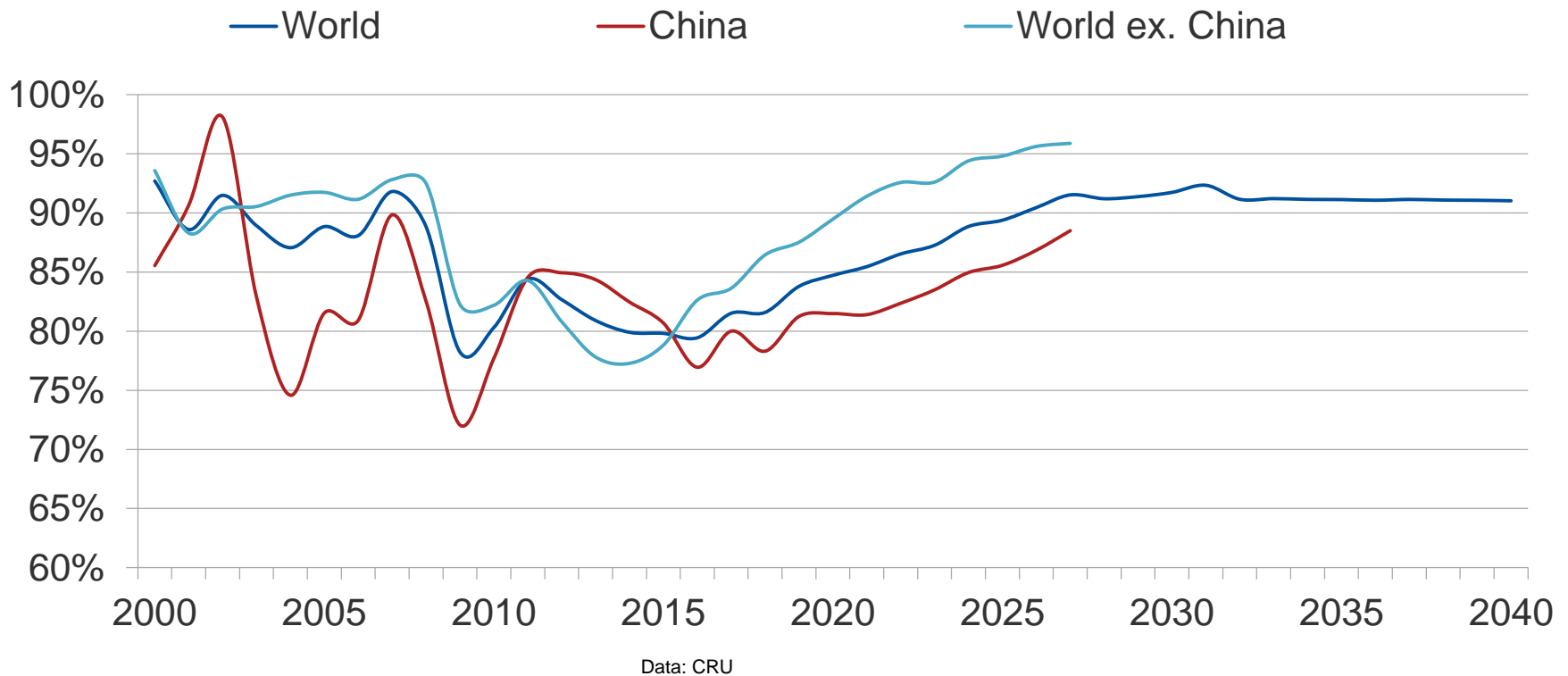
- High Case
- Forward curve, February 21, 2018
- Low Case
- Base case



## ... But with smelter utilisation rates rising...

### Smelter utilisation outside of China to exceed 90% by 2020

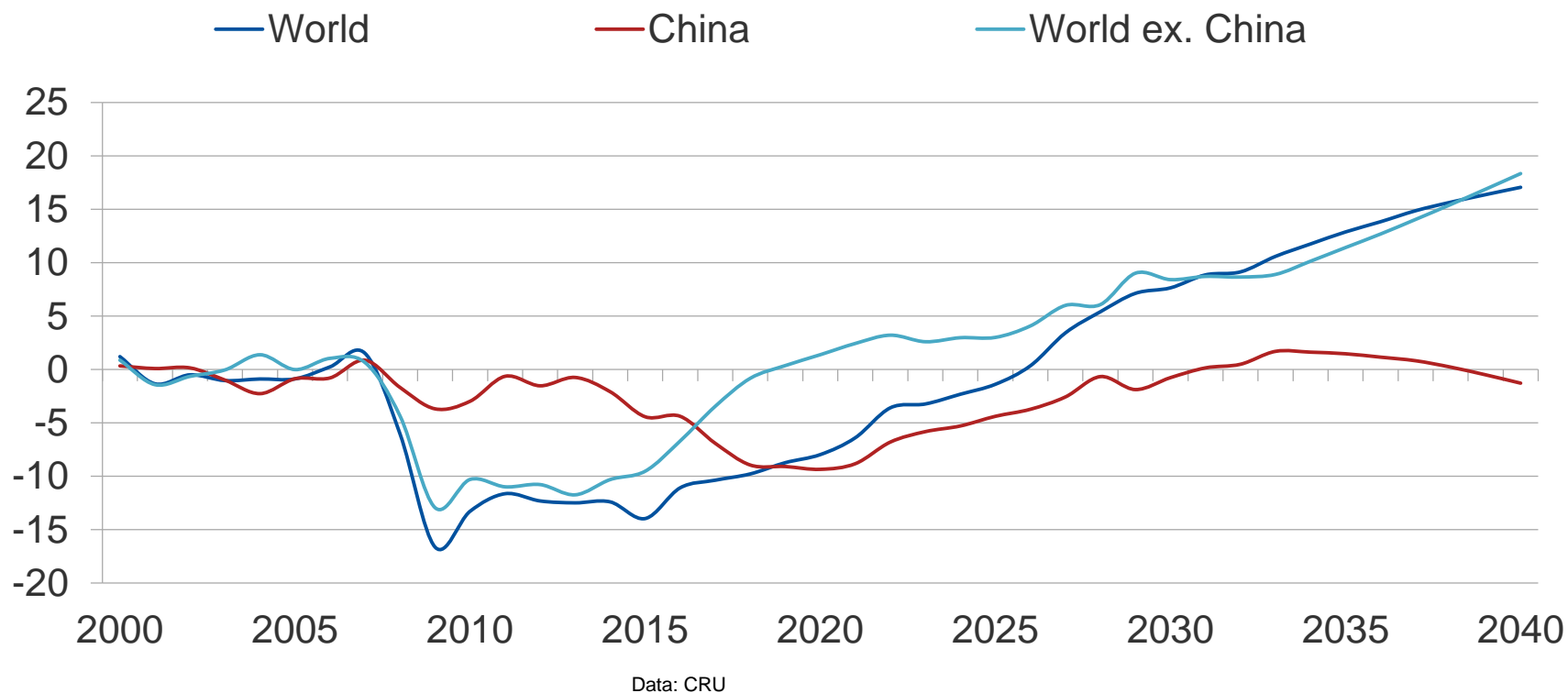
Smelter utilisation rates



# Growing investment need will keep prices higher long term

## Additional smelting investments needed before 2020

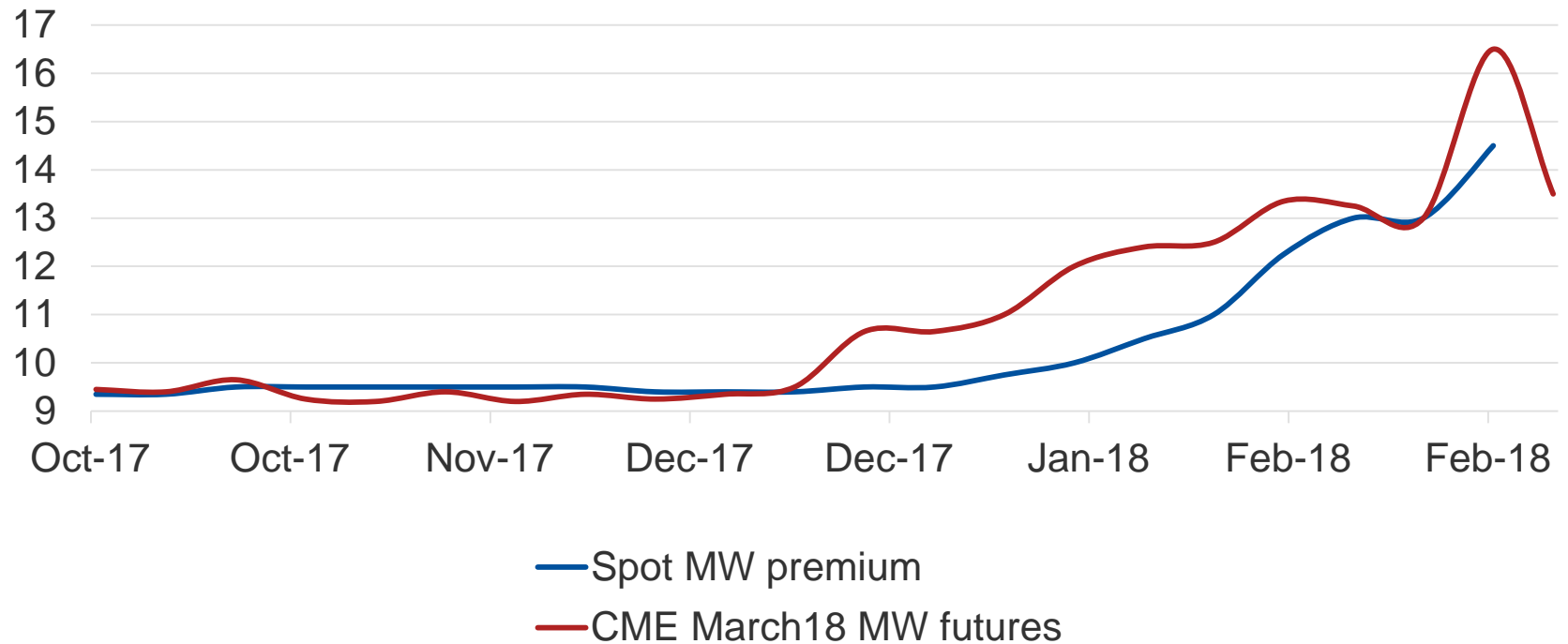
Primary aluminium investment capacity requirement, million tonnes per year





# US Midwest premium already pricing in the duty

## US Midwest premium ¢/lb

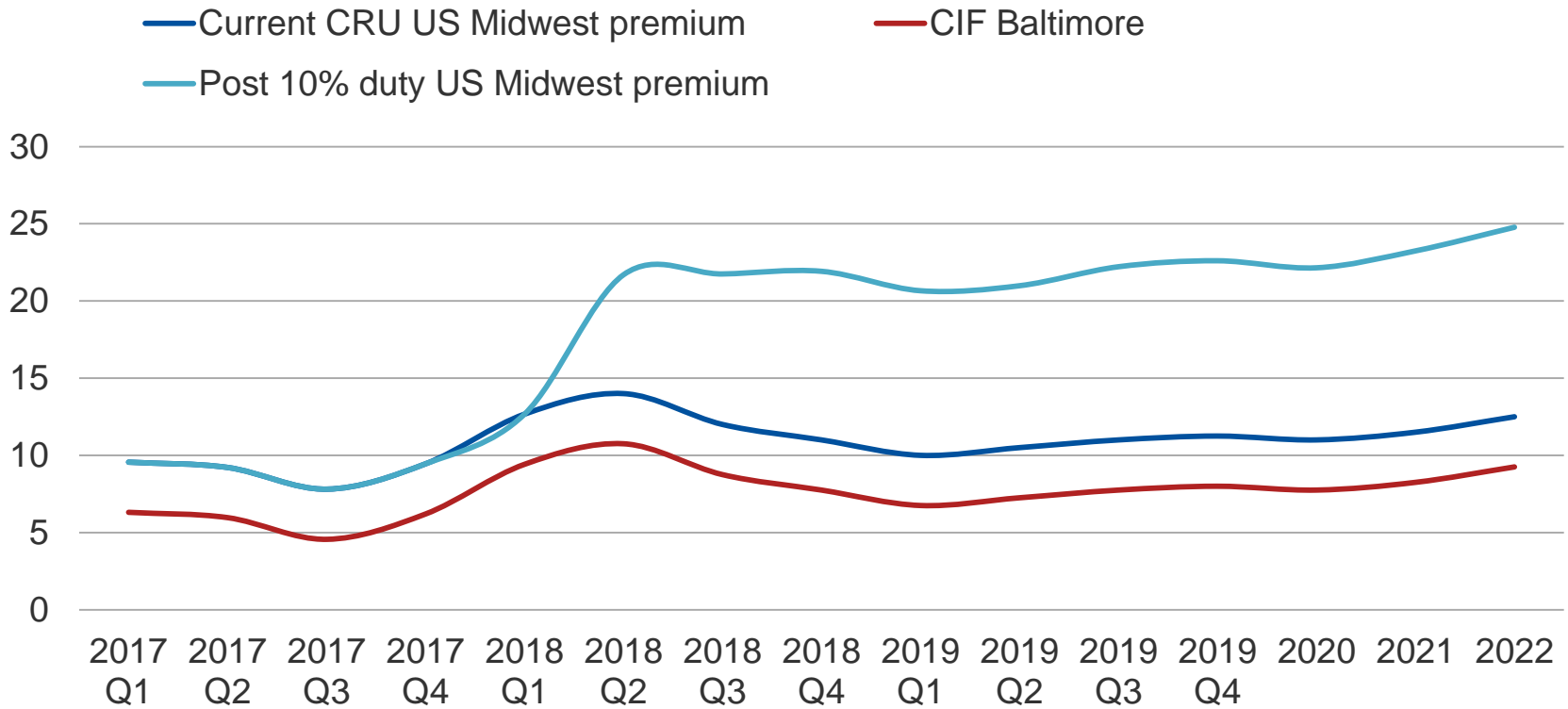


Data: CRU, CME

# Longer term premiums stay high, duration of duty is key!

## US Midwest premium will jump if duties are confirmed

US aluminium premium, ¢/lb



Data: CRU

# Agenda

Raw materials and impacts on aluminium smelting industry

Aluminium market outlook

End market drivers; construction, industry and automotive

China macro trends to focus on

Section 232 and impact

LME and premiums forecast

Conclusions

## Conclusions

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Large market deficits outside China

China in surplus but supply reforms are getting serious

Demand ex China is good, but China is slowing

China's access to ROW markets is being seriously challenged

LME prices and premiums may remain high to encourage more investment and to price the cost of seaborne imports to the US market

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# CRU Product Offerings

SEGMENT	PRODUCT	TYPE	FREQUENCY
<b>RAW MATERIALS</b>	Bauxite and Alumina Monitor	Monitor	Monthly
	Bauxite and Alumina Monitor Weekly Update	Monitor	Weekly
	Bauxite and Alumina Market Outlook	Market Outlook	Quarterly
	Bauxite and Alumina Market Outlook Exec. Summary	Executive Summary	Quarterly
	Bauxite and Alumina Long Term Market Outlook	Market Outlook	Yearly
	Alumina Cost Curve	Cost Curve	Daily
	Bauxite Mining Cost Curve	Cost Curve	Daily
	Bauxite and Alumina Cost Model	Cost Model	Yearly
	Alumina Cost Report and Profiles	Cost Report	Yearly
	Bauxite Cost Report and Profiles	Cost Report	Yearly
	Carbon Products Monitor	Monitor	Monthly
	Carbon Products Market Outlook	Market Outlook	Yearly
<b>PRIMARY</b>	Aluminum Monitor	Monitor	Monthly
	Aluminum Monitor Weekly Update	Monitor	Weekly
	Aluminum China Fortnightly	Monitor	Fortnightly
	Aluminum Market Outlook	Market Outlook	Quarterly
	Aluminum Market Outlook Executive Summary	Executive Summary	Quarterly
	Aluminum Long Term Market Outlook	Market Outlook	Yearly
	Aluminum Casthouse Shapes Market Outlook	Market Outlook	Yearly
	Aluminum Cost Curve	Cost Curve	Daily
	Aluminum Cost Model	Cost Model	Yearly
	Aluminum Cost Report and Profiles	Cost Report	Yearly
<b>DOWNSTREAM</b>	Aluminum Products Monitor	Monitor	Monthly
	Aluminum Rolled Products Market Outlook	Market Outlook	Quarterly
	Aluminum Rolled Products Market Outlook Exec. Summary	Executive Summary	Quarterly
	Aluminum Auto Body Sheet Market Outlook	Market Outlook	One-off
	Aluminum Can Stock Market Outlook	Market Outlook	One-off
	Aluminum Rolling Cost Model	Cost Model	Yearly
	Aluminum Rolling Cost Report and Profiles	Cost Report	Yearly