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Global Nitrogen Supply & Demand
TFI Outlook, Jacksonville

November 2018

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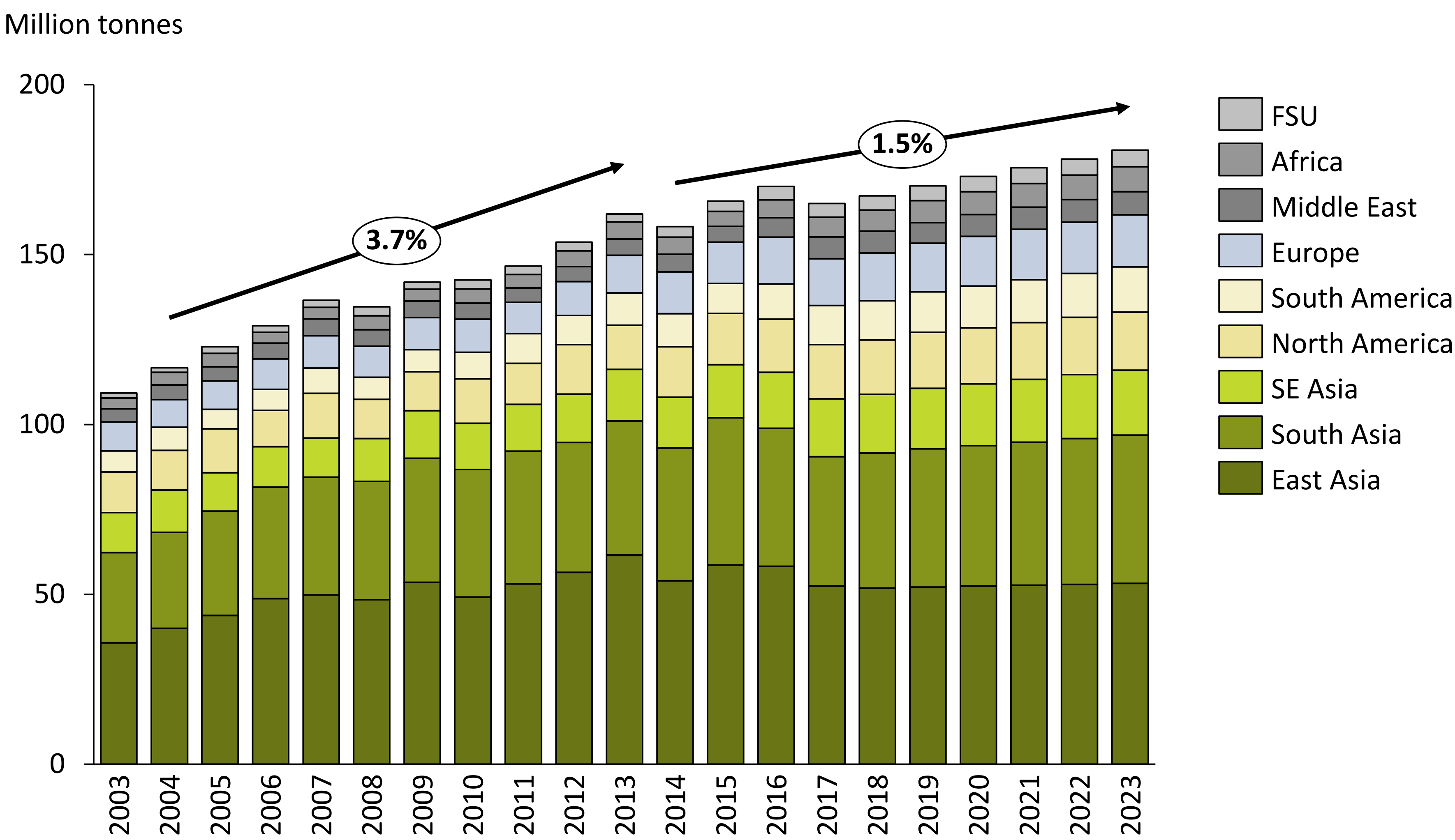
OUTLINE OF TODAY'S PRESENTATION

1. **OUTLOOK FOR DEMAND**
2. OUTLOOK FOR CAPACITY
3. S/D FORECAST
4. CHINESE SUPPLY CRUNCH
5. WILDCARDS
6. CONCLUSIONS

Source: Integer

GLOBAL UREA DEMAND HAS HALVED: Trend growth is averaging 1.5% p.a. and unless we see significant growth from Africa it's unlikely to change



Source: GTIS, COMTRADE, Integer

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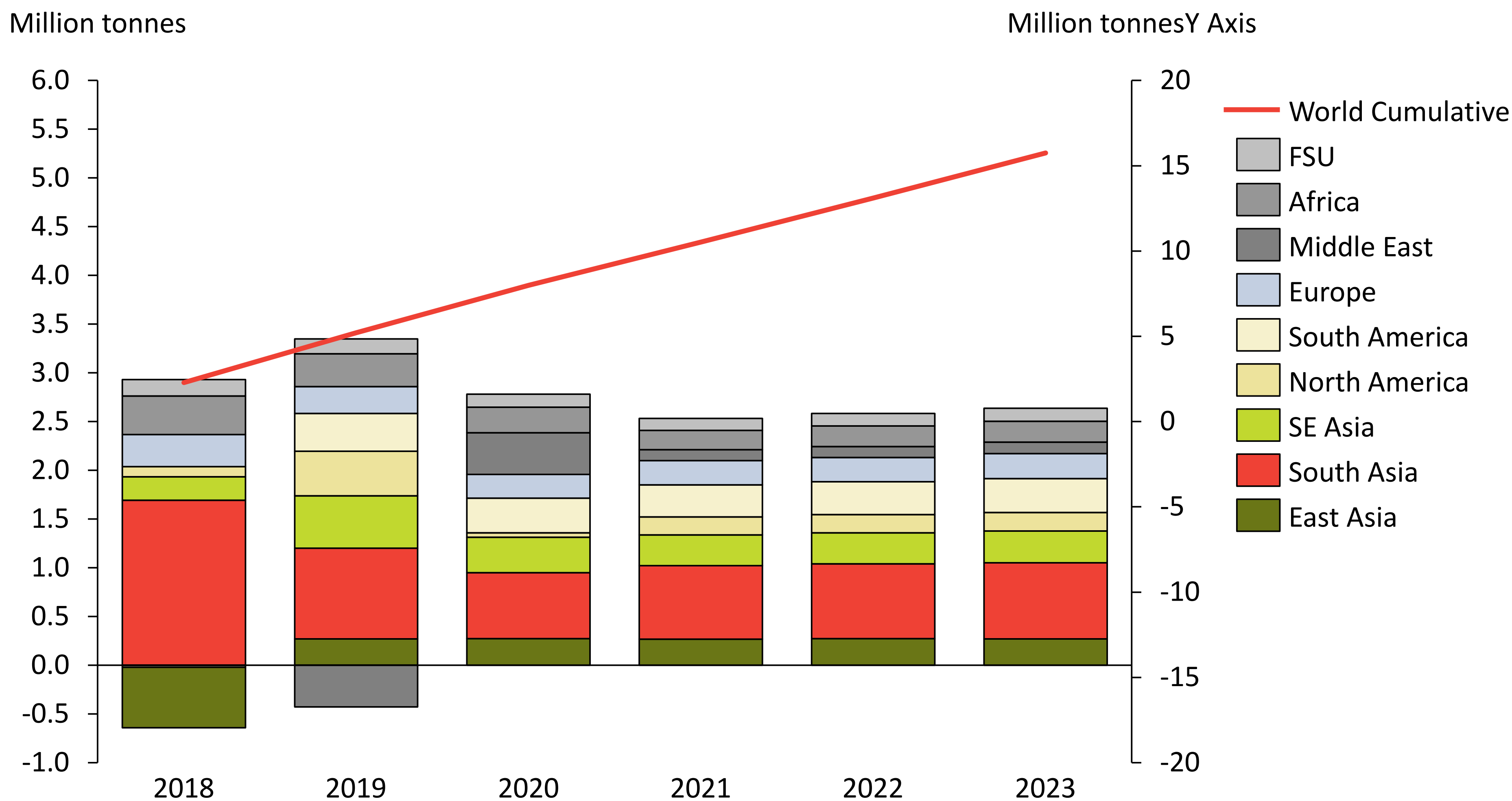
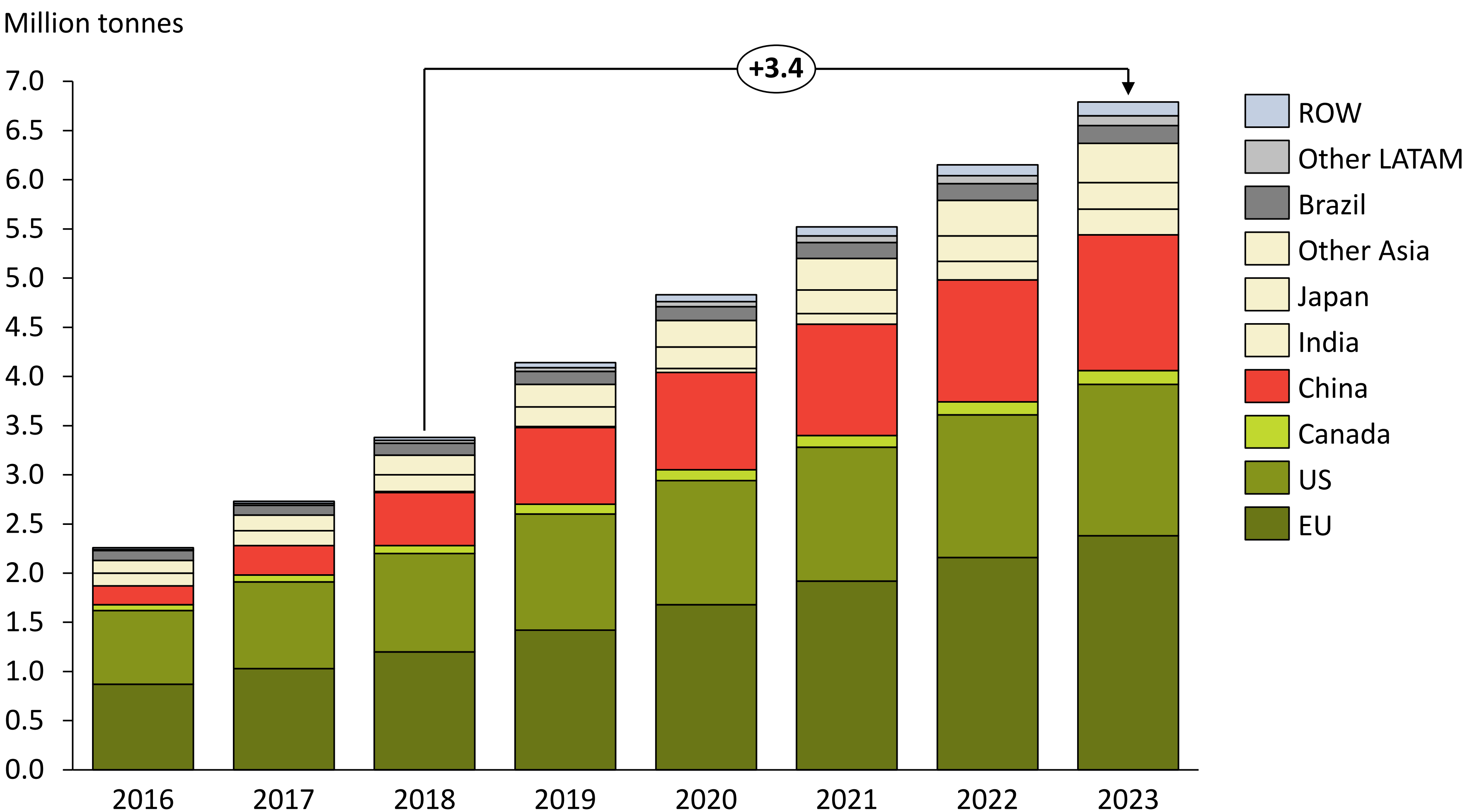
SOUTH ASIA REMAINS THE BASELINE FOR GROWTH: We are expecting India to continue recovering lost cosuption growth for the next 18 months



Source: Integer

integer

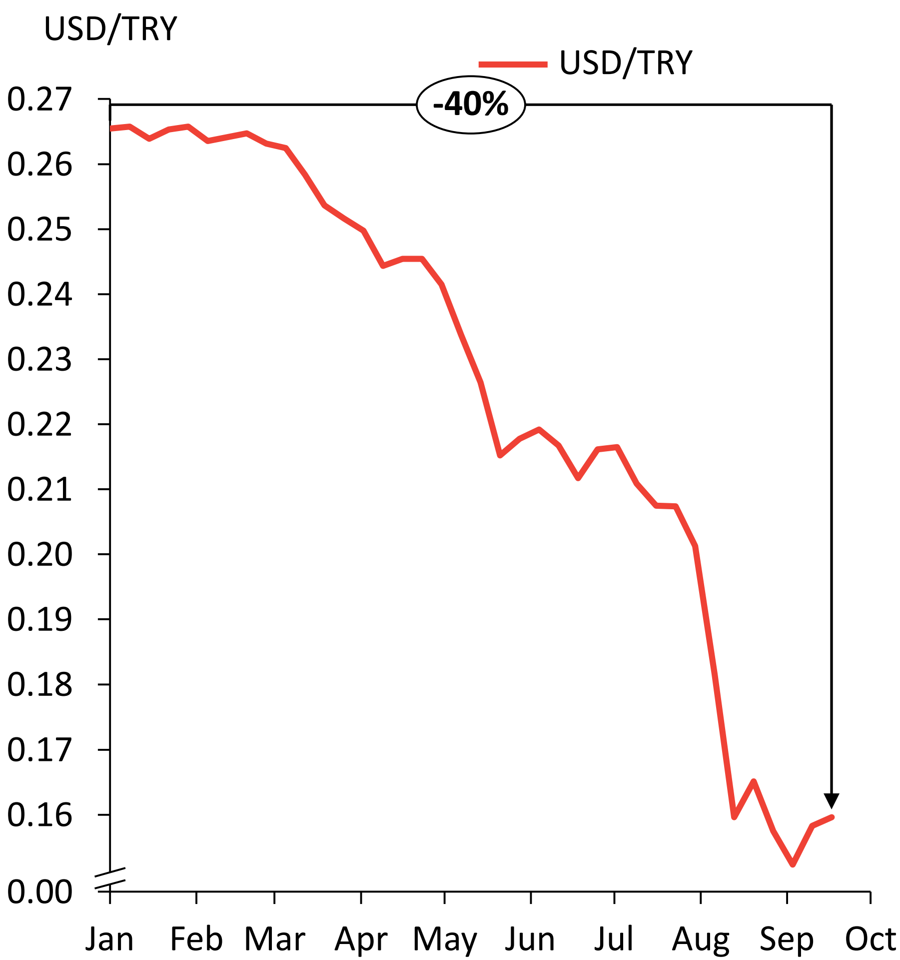
ADBLUE/DEF DEMAND IS A MAJOR DRIVER: We are forecasting AdBlue demandto drive around 20% of future urea demand growth

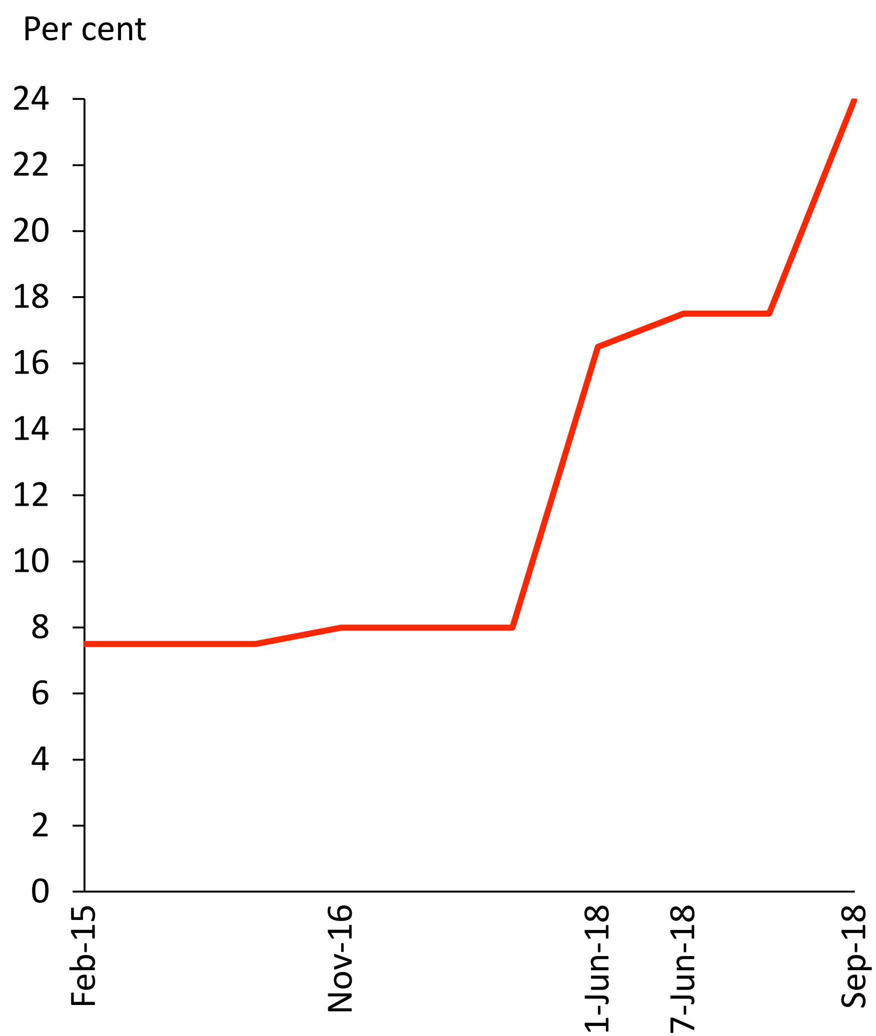


Source: Integer

integer

EM CURRENCY CRISES: Policy response to weakening currencies in emerging makets will prove critical to demand over the next 12 months





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integer

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integer

CENTRAL ASIA & THE CAUCUSES: Integer is forecasting three projects to be operational in Central Asia by the close of 2019

SOCAR, Azerbaijan
Capacity: 0.7 million t/y
CAPEX: $0.9 billion

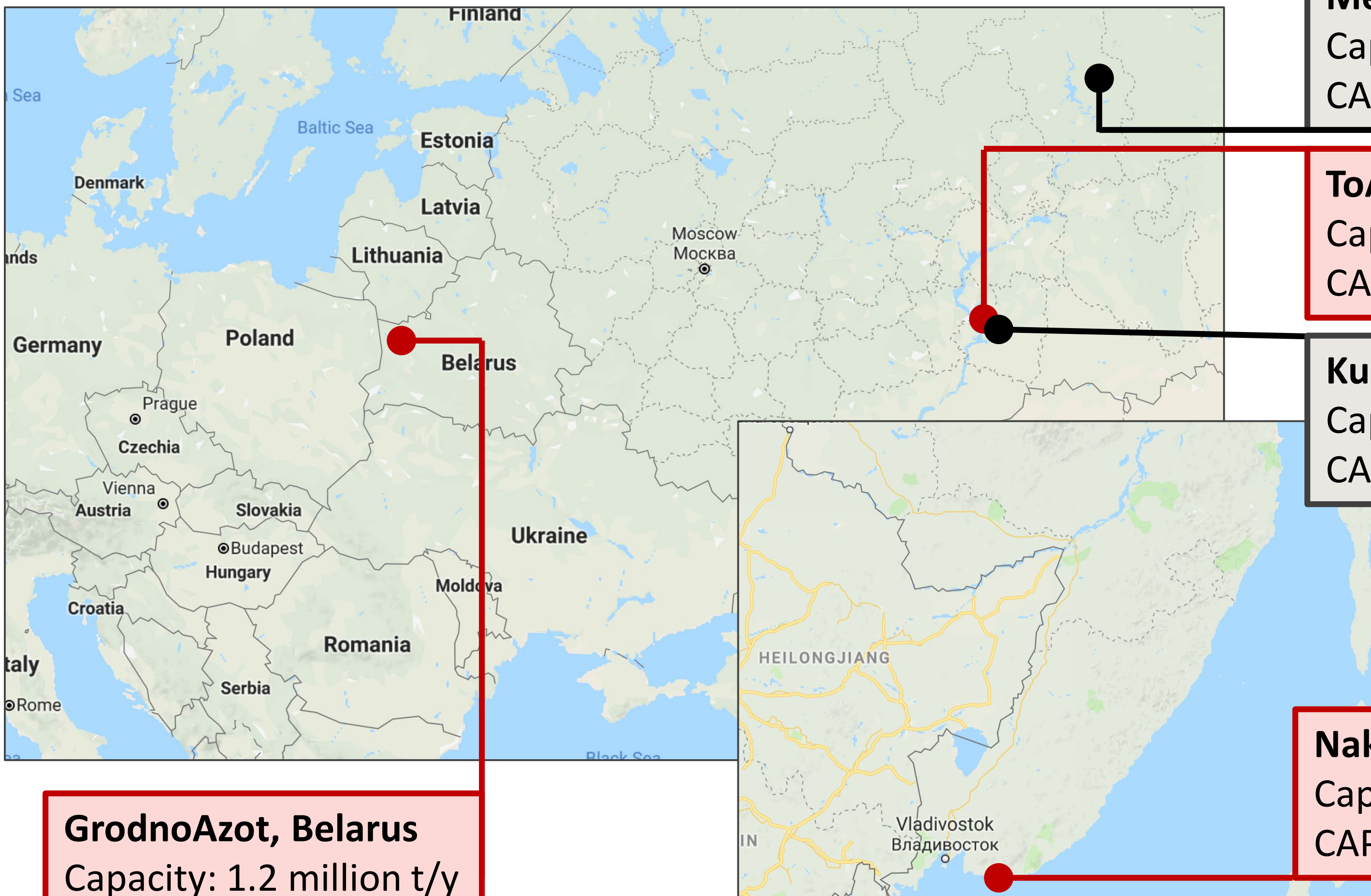
Navoiyazot, Uzbekistan
Capacity: 1.2 million t/y
CAPEX: $1.6 billion

Yangiyer, Uzbekistan
Capacity: 0.4 million t/y
CAPEX: $0.6 billion

Garabogaz, Turkmenistan
Capacity: 1.2 million t/y
CAPEX: $1.6 billion

Source: Integer

RUSSIA & EAST EUROPE: We currently only have two significant new urea plants in our forecast for Russia, but there is potential for more building



Metafrax, Azerbaijan
Capacity: 0.5 million t/y
CAPEX: $0.7 billion

ToAz, Russia
Capacity: 0.7 million t/y
CAPEX: $0.4 billion

Kubiyshev, Russia
Capacity: 0.5 million t/y
CAPEX: $0.2 billion

Nakhodka, Russia
Capacity: 2.0 million t/y
CAPEX: $3.0-3.5 billion

GrodnoAzot, Belarus
Capacity: 1.2 million t/y
CAPEX: $1.6 billion

Source: Integer

AFRICA: Nigeria is one of the last places gas is available for under $2.00/MMBtu, but investment opportunities look more limited now

Kima, Egypt
Capacity: 0.5 million t/y
CAPEX: $0.5 billion

Dangote, Nigeria
Capacity: 2.5 million t/y
CAPEX: $2.4 billion

Brass Fertilizer, Nigeria
Capacity: 1.3 million t/y
CAPEX: $1.2 billion

Eleme II, Nigeria
Capacity: 1.4 million t/y
CAPEX: $1.1 billion

Notore, Russia
Capacity: 0.2 million t/y
CAPEX: $0.1 billion

Source: Integer

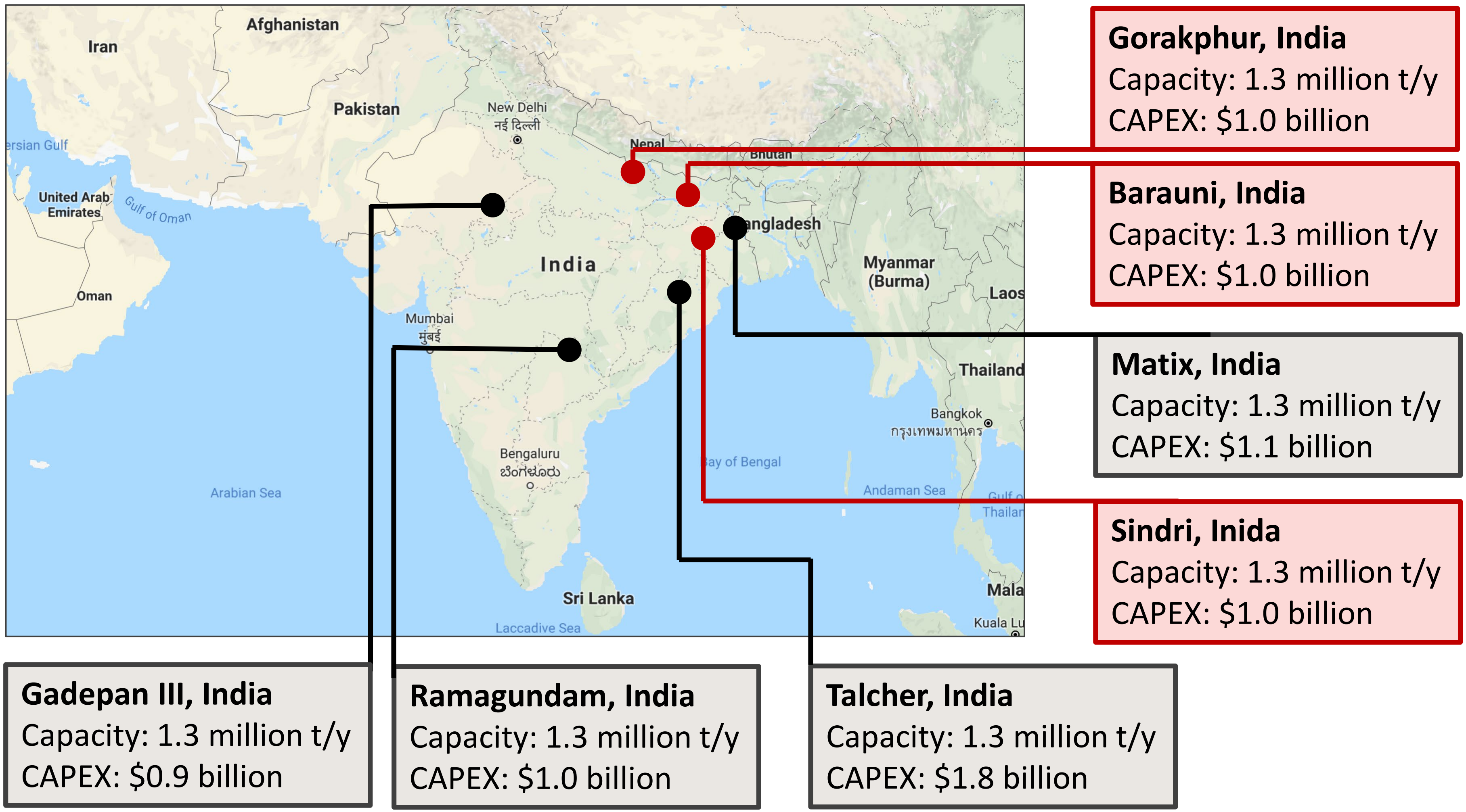
MIDDLE EAST: US sanctions on Iran have limited building activity in Iran, there are two potential plants, but only one is close enough to include

Lordegan, Iran
Capacity: 1.1 million t/y
CAPEX: $0.7 billion

MIS Petrochem, Iran
Capacity: 1.2 million t/y
CAPEX: $0.8 billion

Source: Integer

INDIA: India could replace almost all of its import requirement by 2023 if the HURL projects move ahead, but access to gas remains a challenge



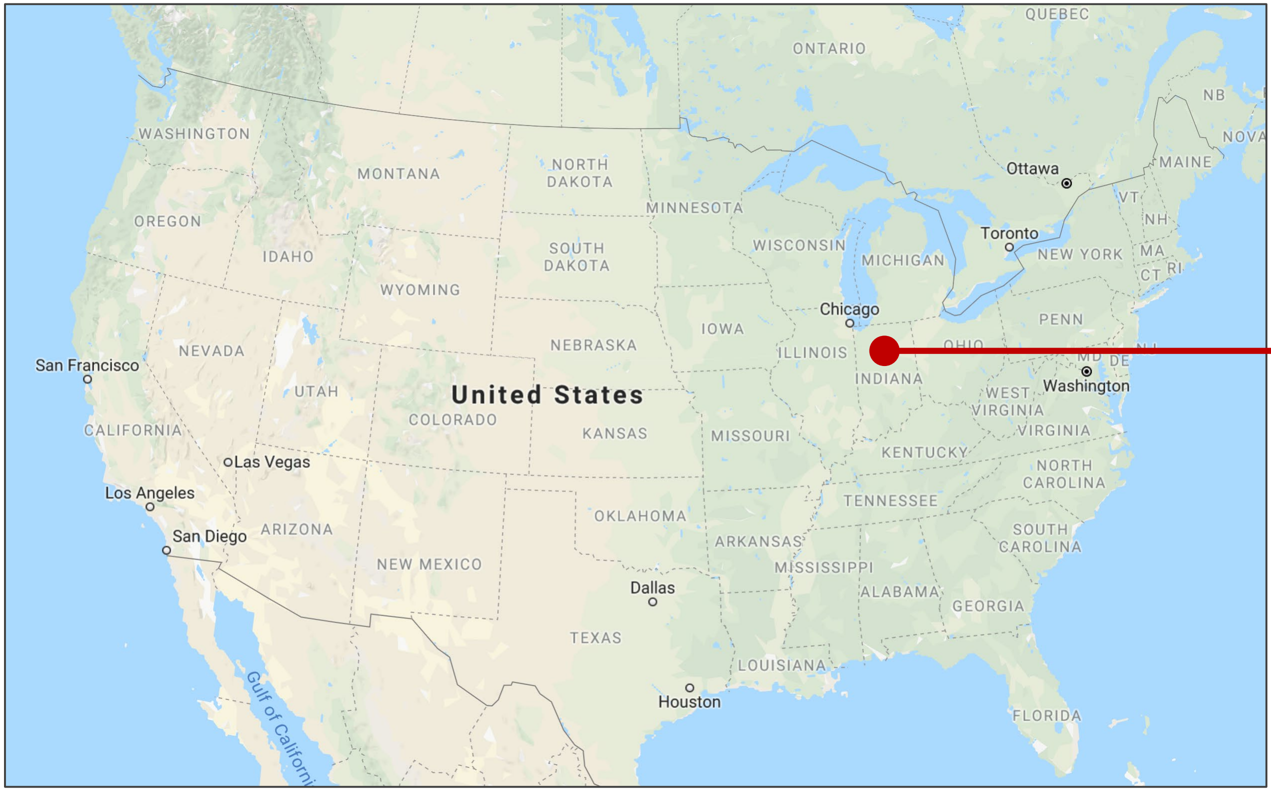
Source: Integer

SOUTH AMERICA: There is only one project we are seriously tracking in LATAM and gas supply remains challenging in Brazil

UFN III, Brazil (Acron)
Capacity: 1.2 million t/y
CAPEX: $1.3 billion

Source: Integer

NORTH AMERICA: We are not forecasting any additional US capacity investments at present; greenfields look to costly



Midwest Ferts, USA
Capacity: 0.8 million t/y
CAPEX: $2.4 billion

Source: Integer

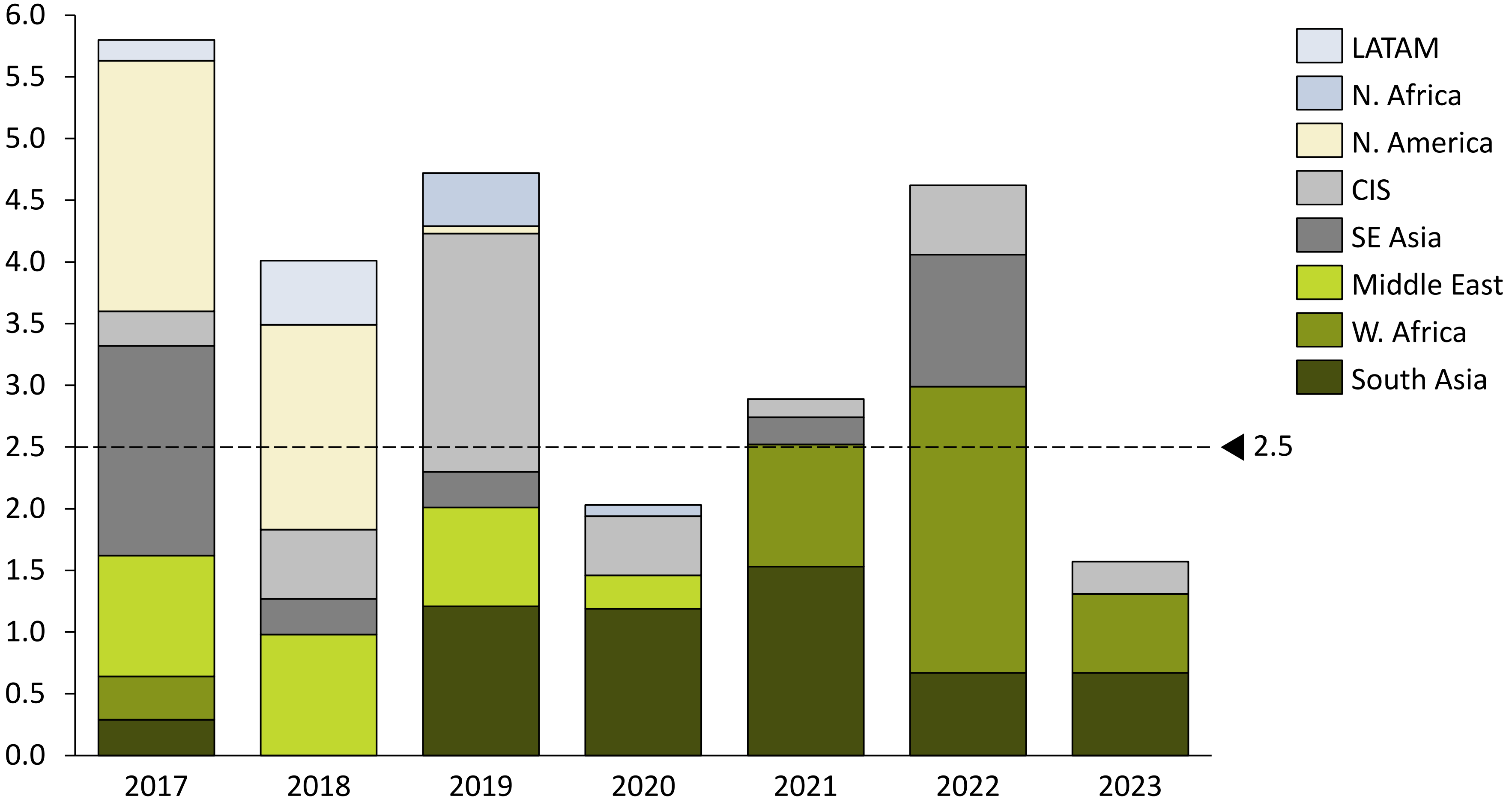
SE ASIA & OCEANIA: Capacity growth has slowed and BFI Brunei is now the only project in the region we are forecasting

BFC, Brunei
Capacity: 1.3 million t/y
CAPEX: $1.8 billion

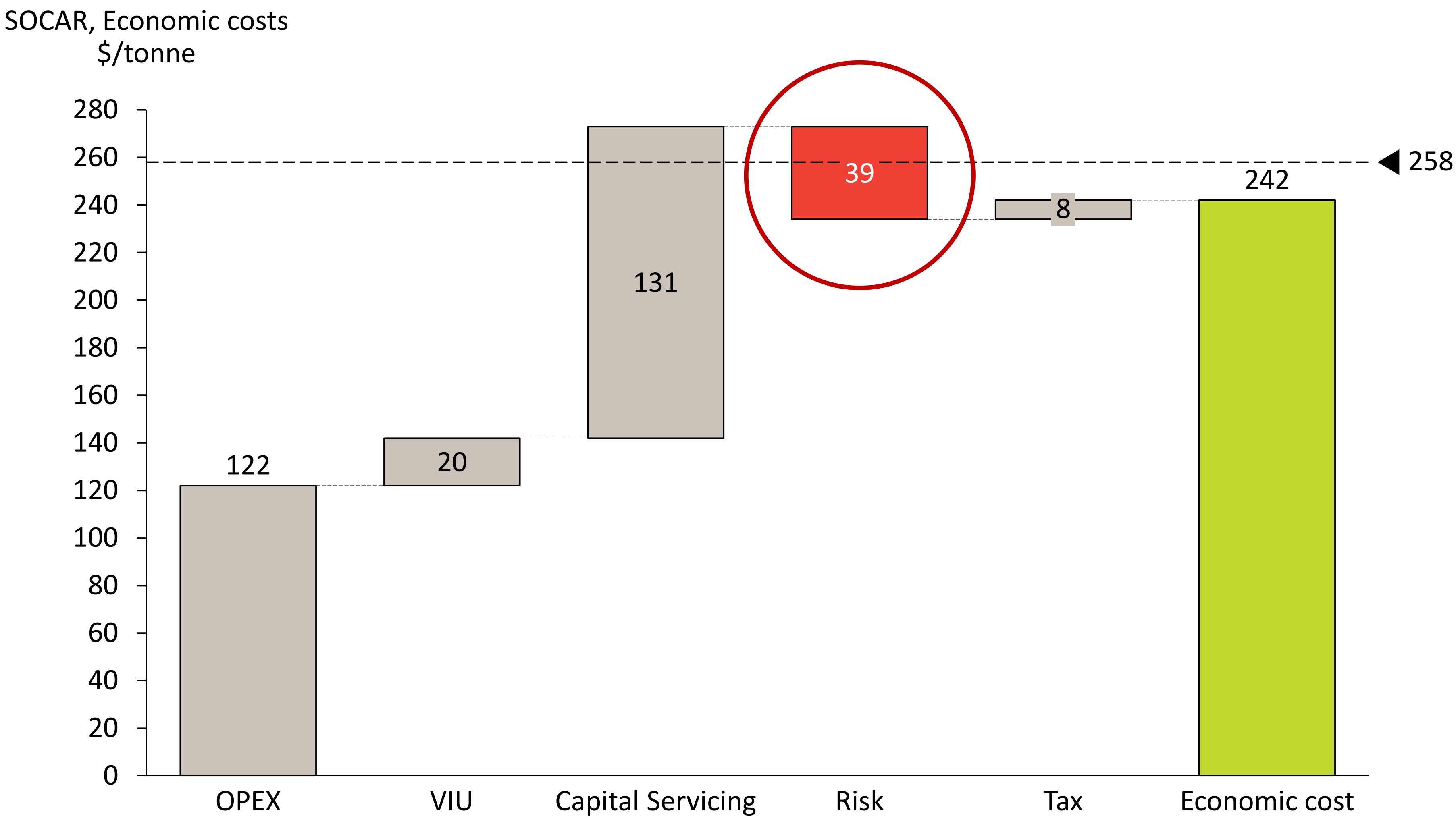
Source: Integer

integer

CAPACITY FORECAST: At first glance, the market looks well supplied over the next five year, averaging >3.5 million t/y of additions

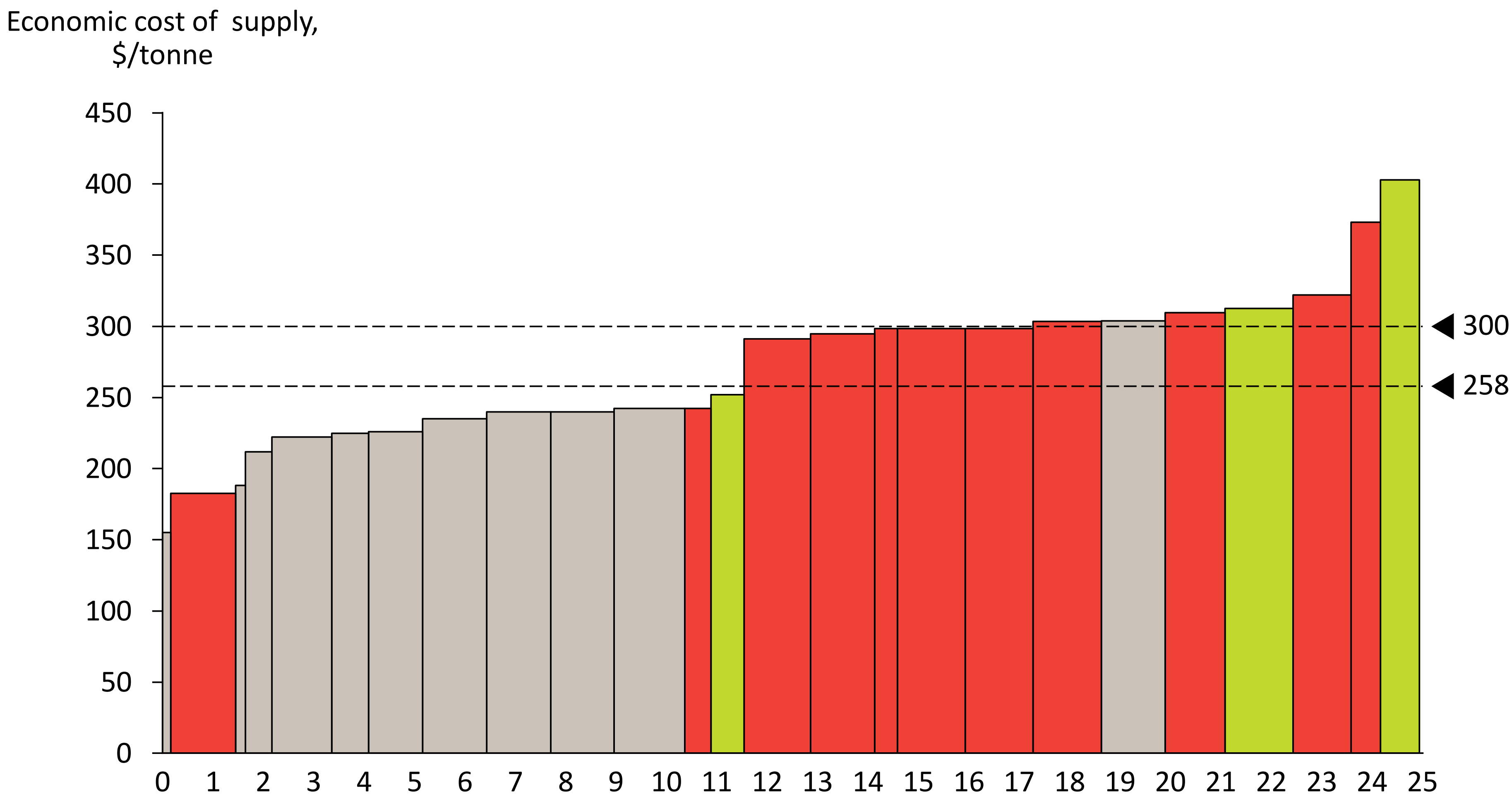


FULL ECONOMIC COSTS ARE AN ESSENTIAL MEASURE OF SUCCESS: Governments are lowering the cost of capital to the nitrogen industry



Source: Integer

THE NATURE OF CAPACITY INVESTENT HAS SHIFTED: Governments are driving a wave of counter-cyclical investment…



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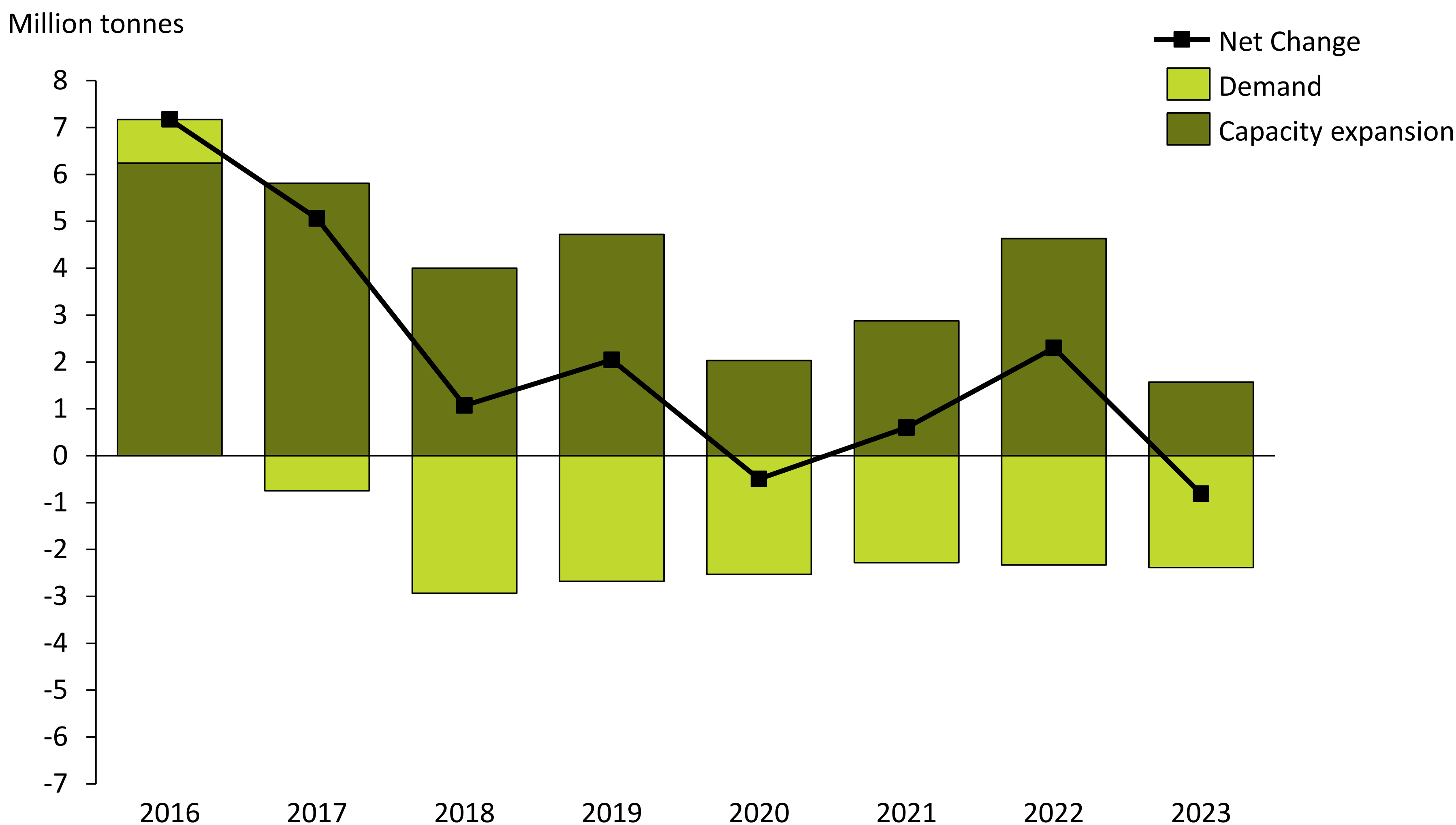
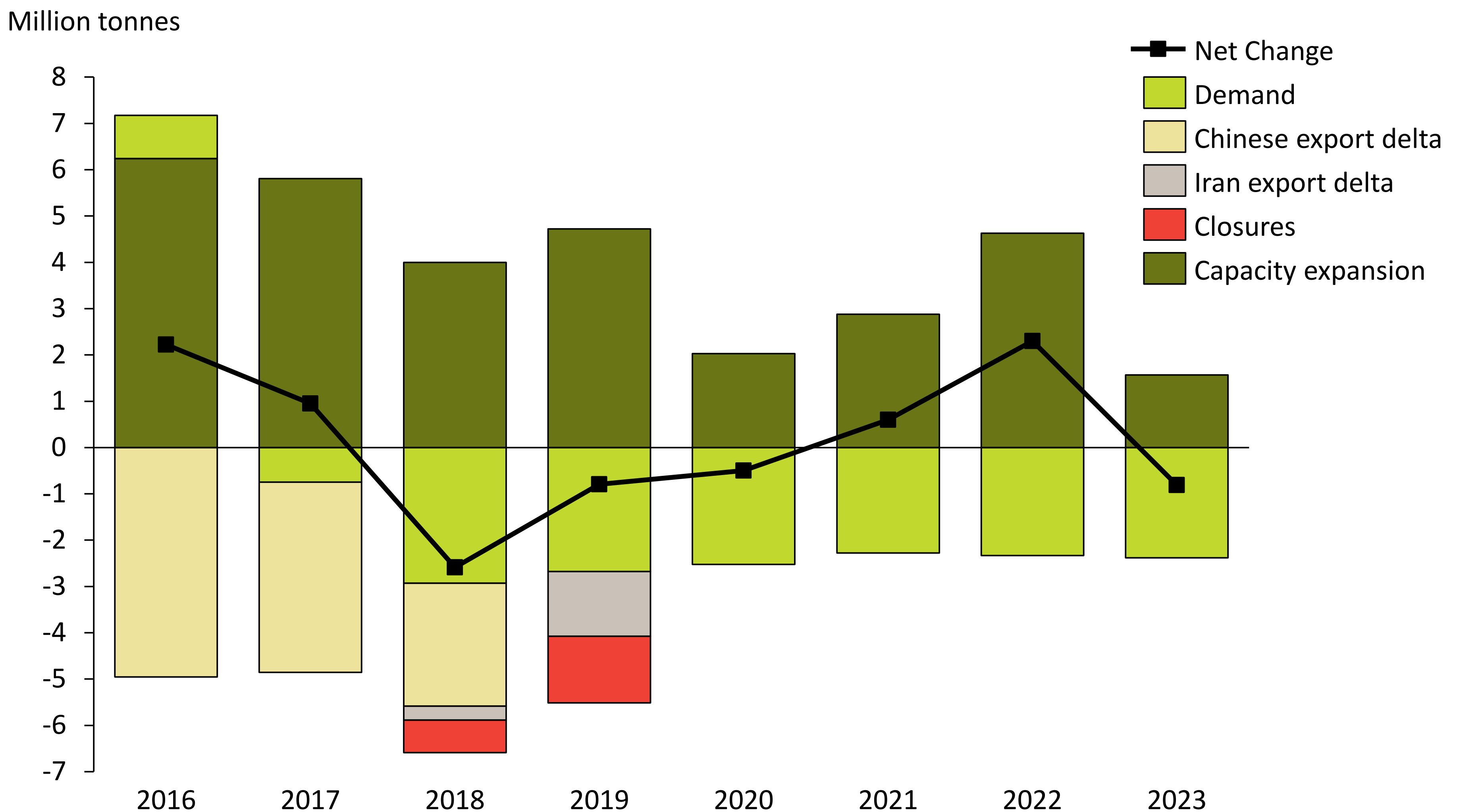
S/D BALANCE: Based on pure capacity and demand forecasts the nitrogen market looks like it will be very oversupplied …



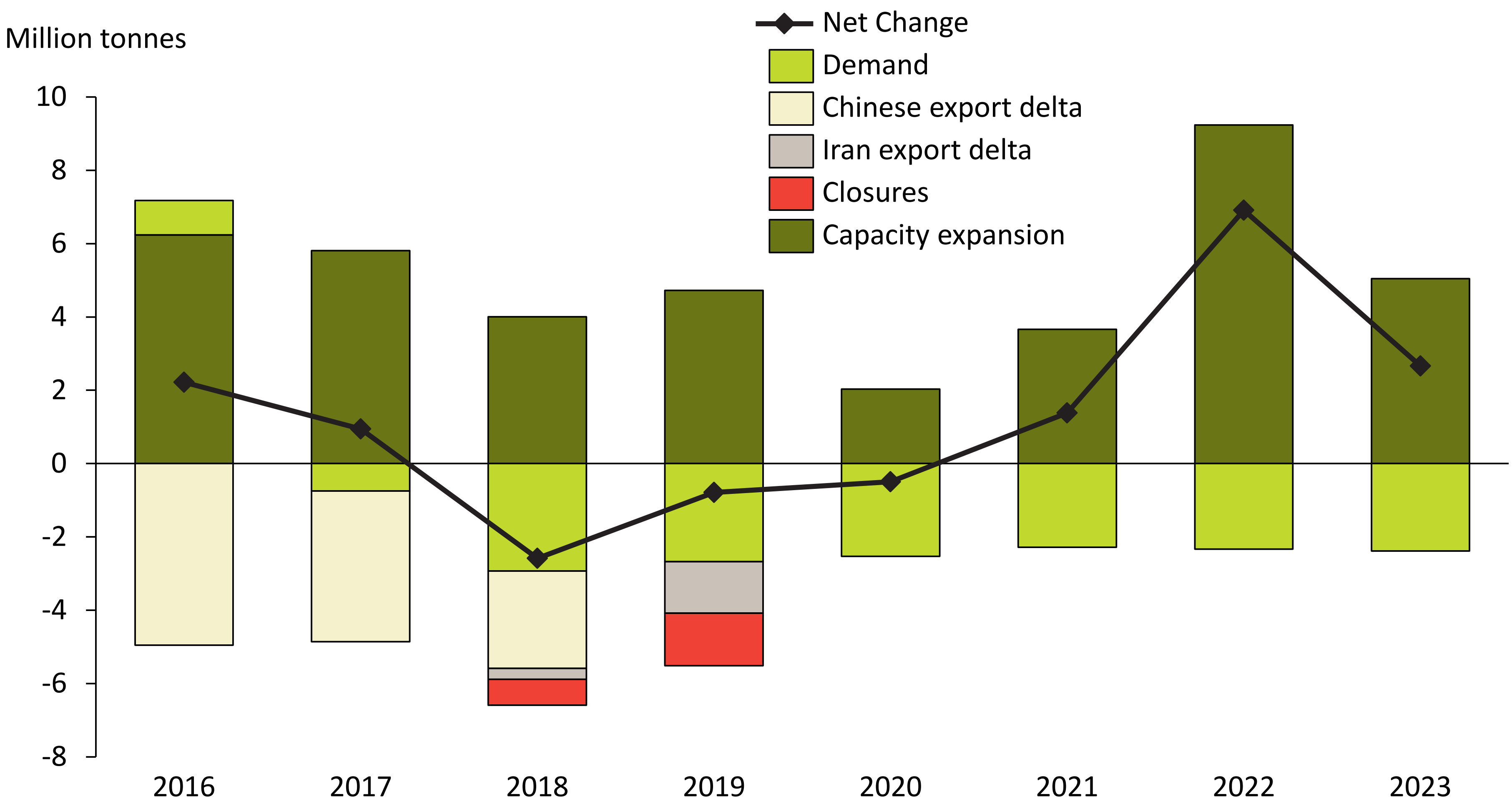
Source: Integer

S/D BALANCE: But once we adjust for closures, Chinese policy changes and US sanctions on Iran, the market looks much, much tighter



Source: Integer

S/D BALANCE: If we add the more speculative projects, expect a significant oversupply even in the early-2020s



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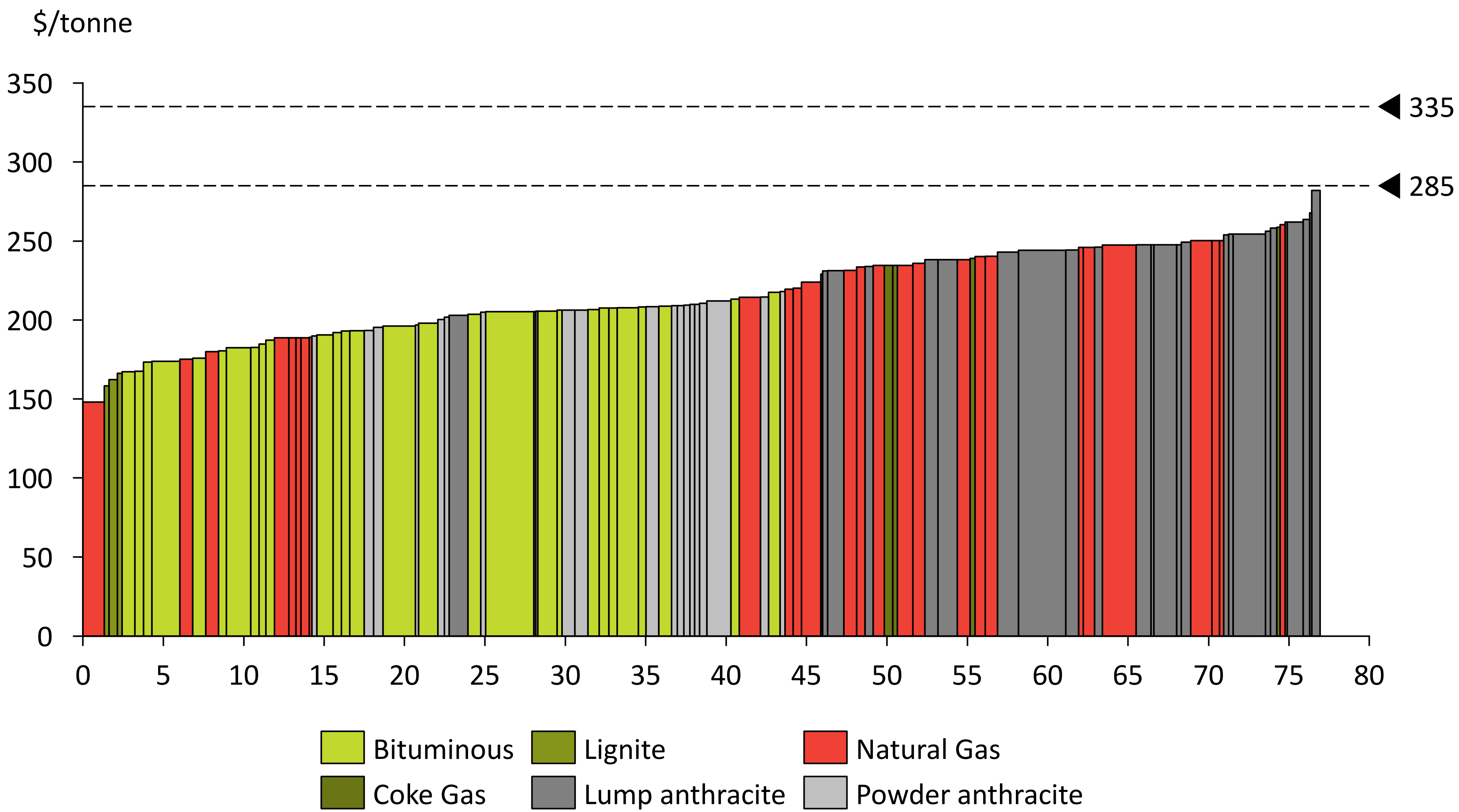
CHINESE COST CURVE: China's cost curve has lowered across the year as coal prices eased and the renminbi depreciated



Source: Integer

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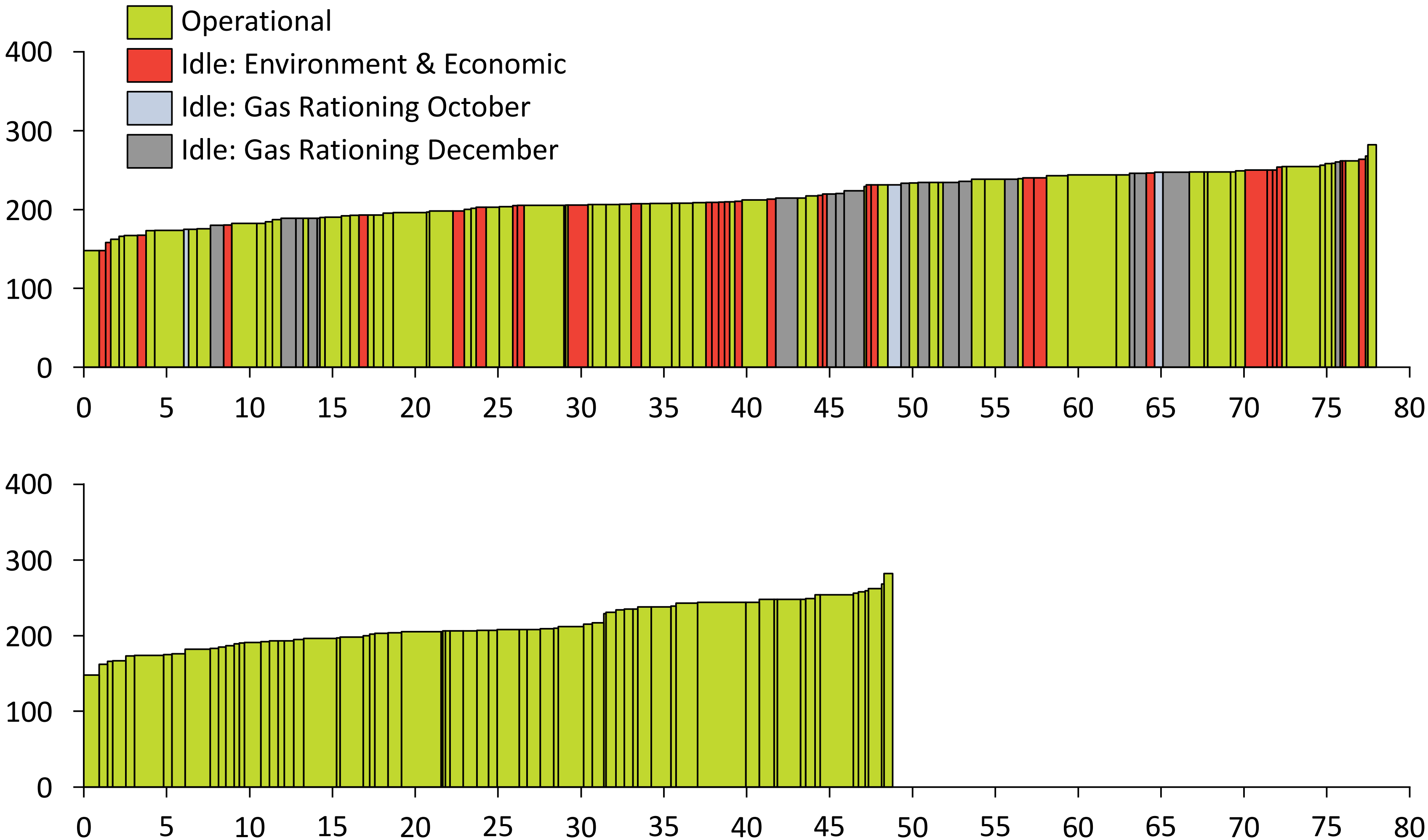
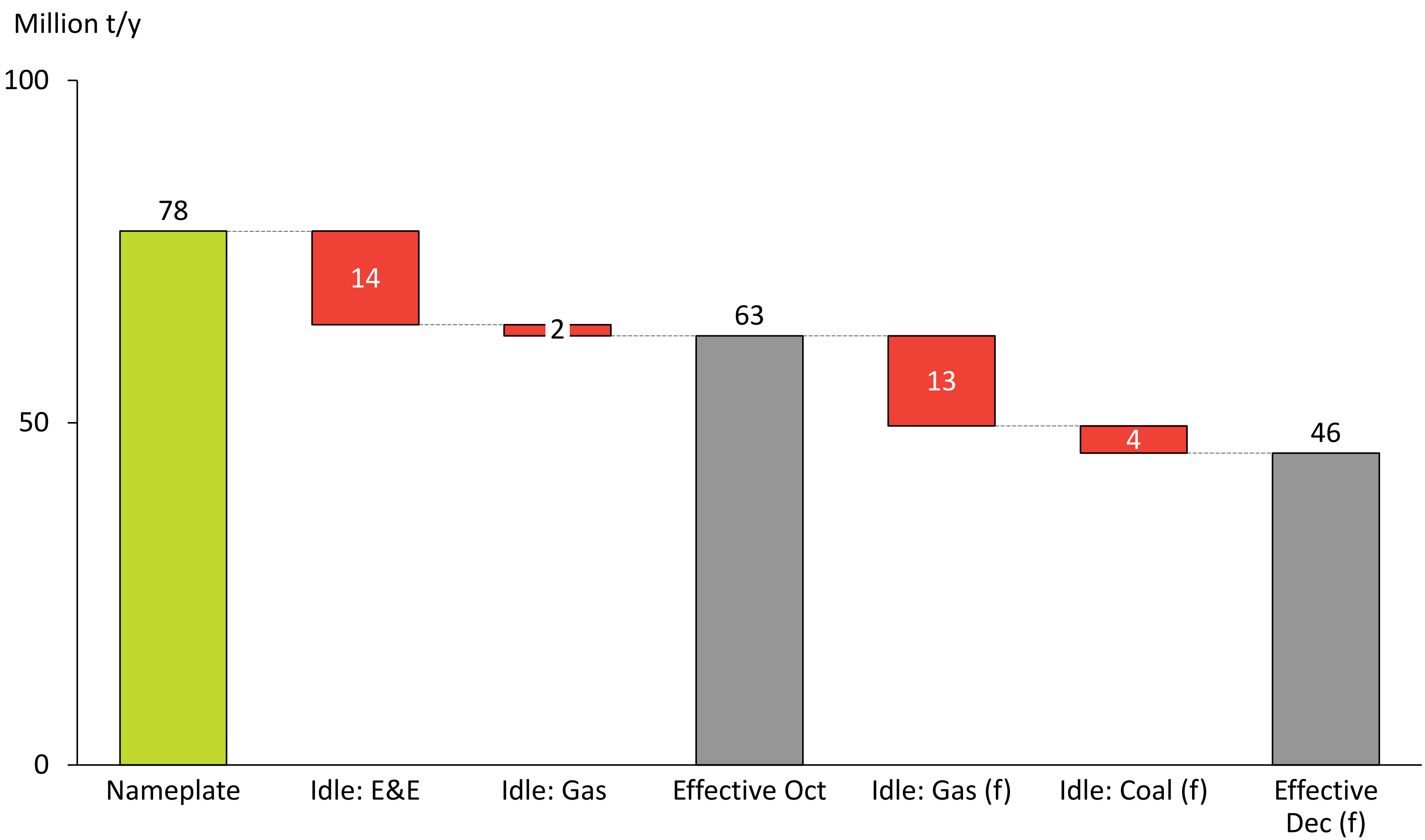
CHINA'S IDLE PLANTS: China's effective capacity is currently estimated at 62.5 million t/y, and will fall towards 40.0 million



Source: Integer

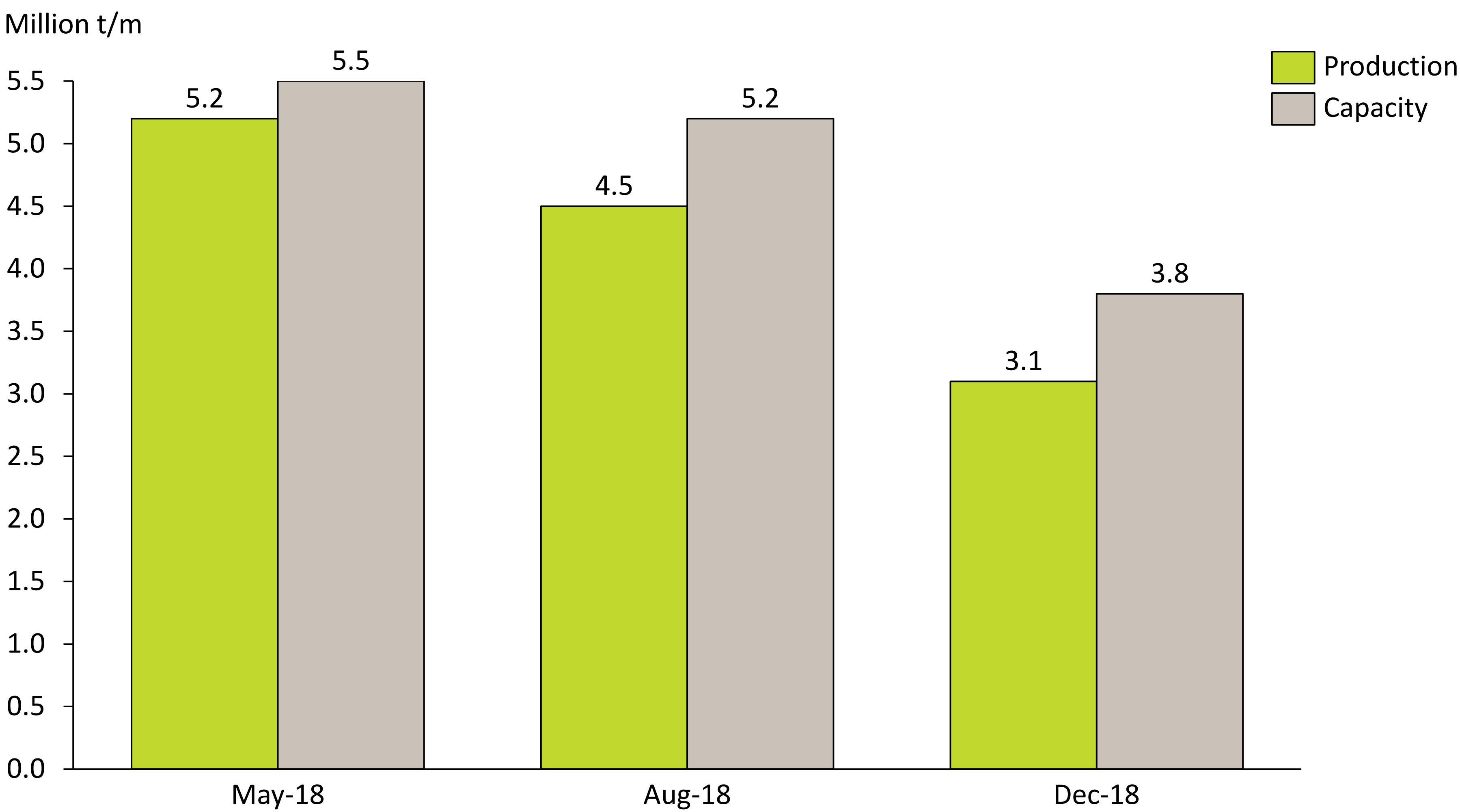
integer

CHINESE OPERATING RATES: China's operating rate is often understated, if we reappraise it for idled plants we can see why prices are so high



Source: Integer

CHINESE OPERATING RATES: If capacity is adjusted down for idle plants, China has been operating at around 85-90% for much of the year



Source: Integer

BACK

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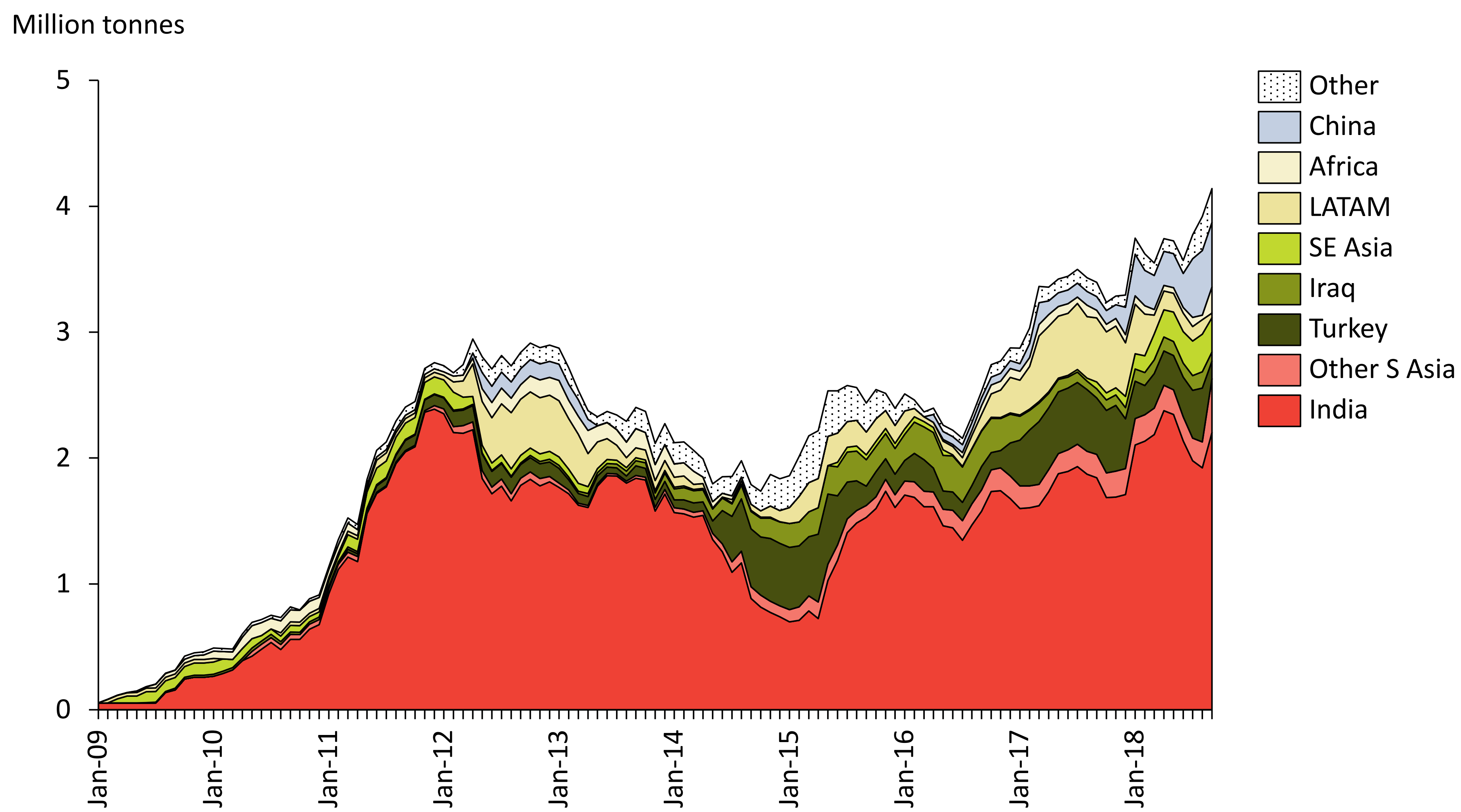
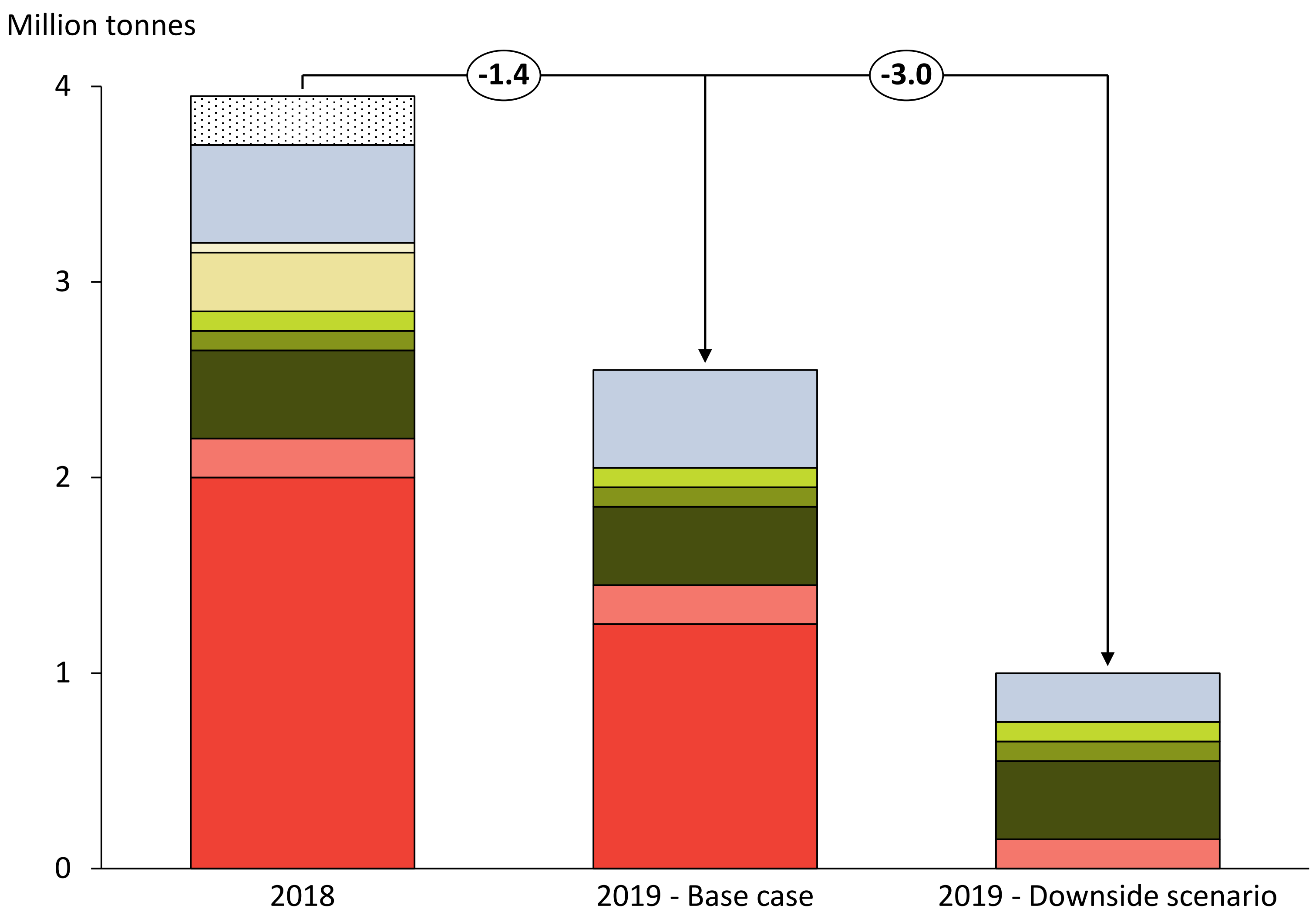
IRANIAN SANCTIONS: India notionally no longer buying Iranian urea following MMTC tender addendum, but…



Source: Integer

integer

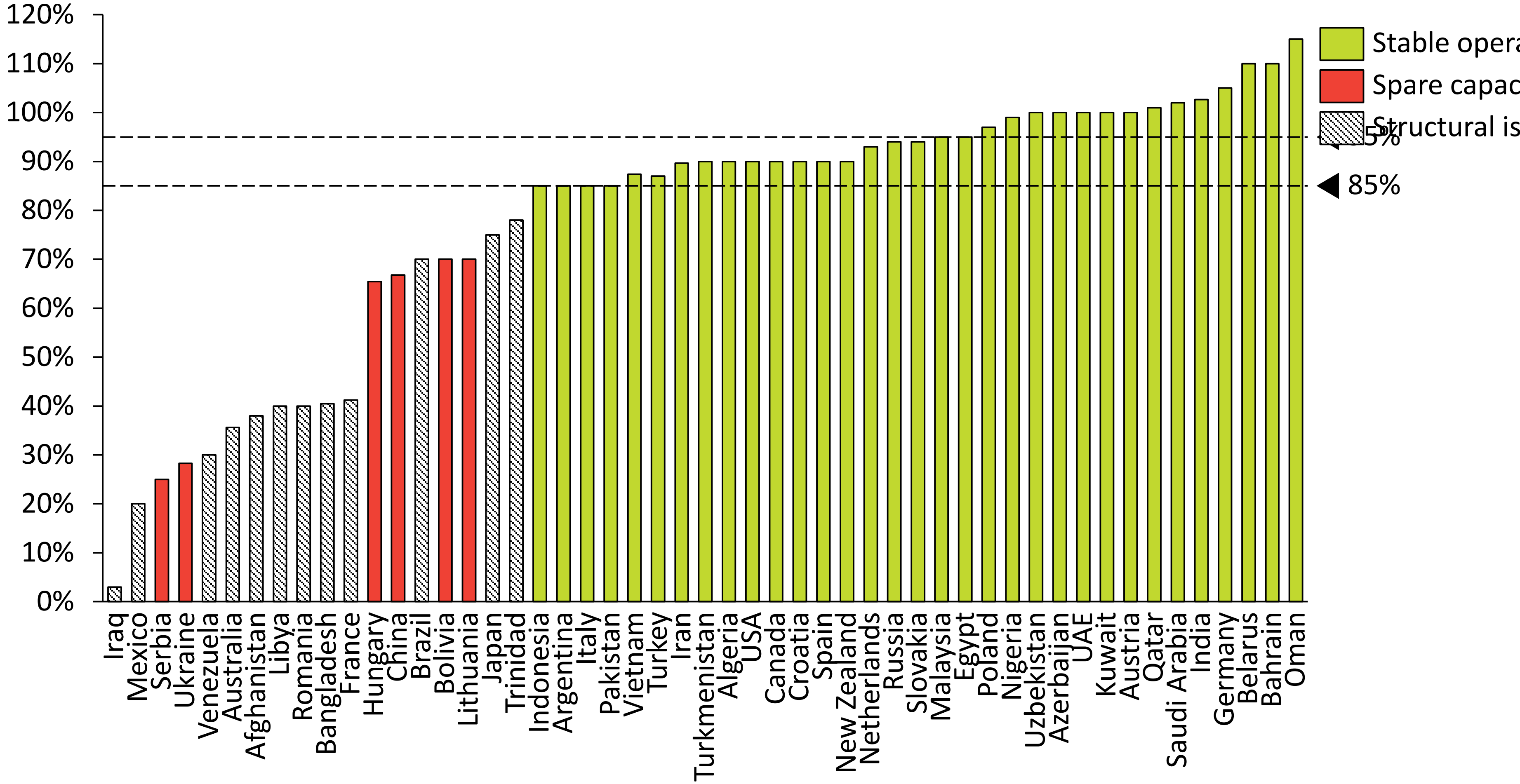
IRANIAN SANCTIONS: Despite its pronouncements otherwise, expect India to blur the source of origin via China and the UAE



Source: Integer

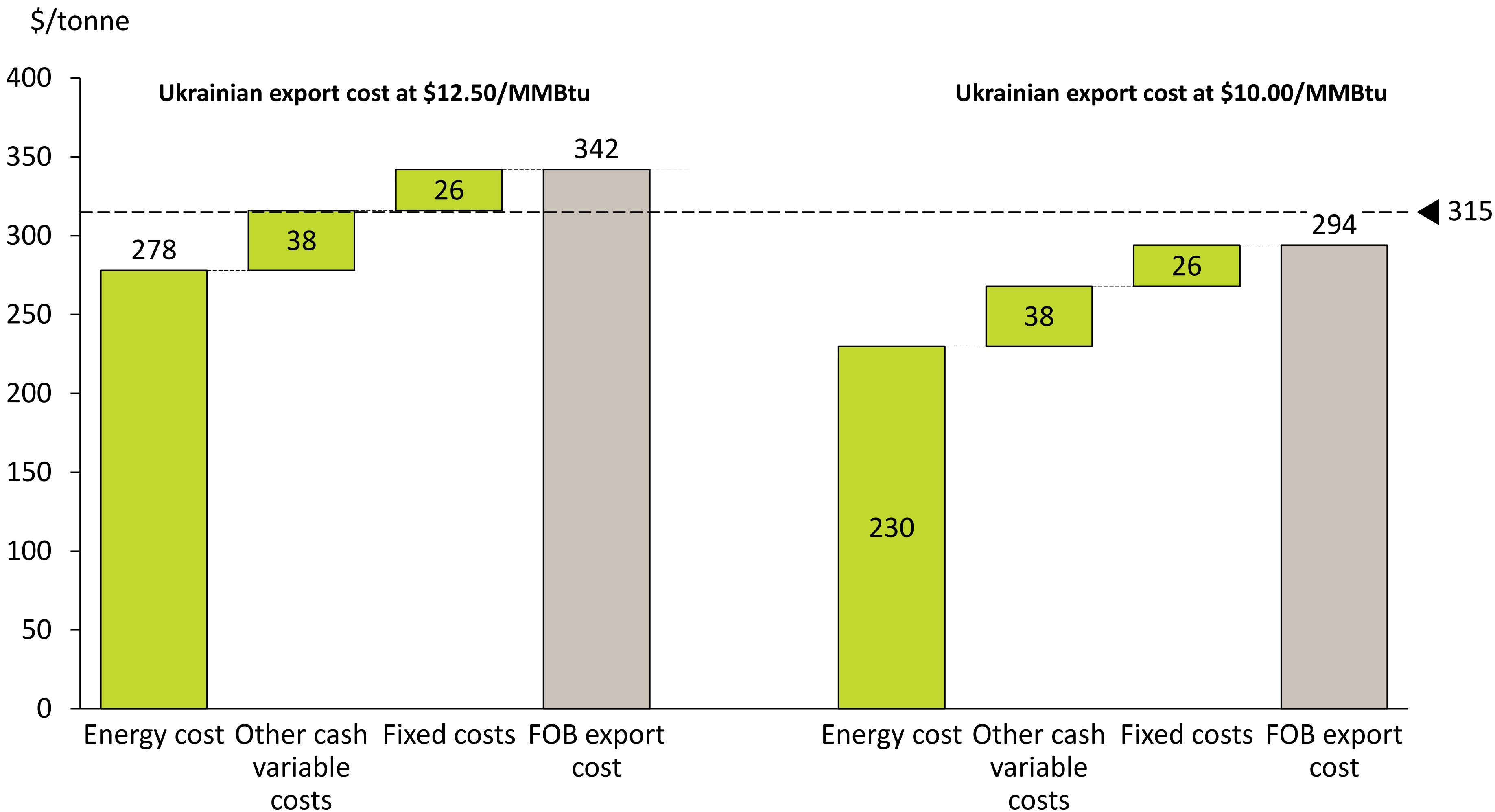
IRANIAN EMBARGO: If our downside scenario plays out the market needs to replace 3 mn t of urea. Spare capacity is limited.

Operating rate, 2018



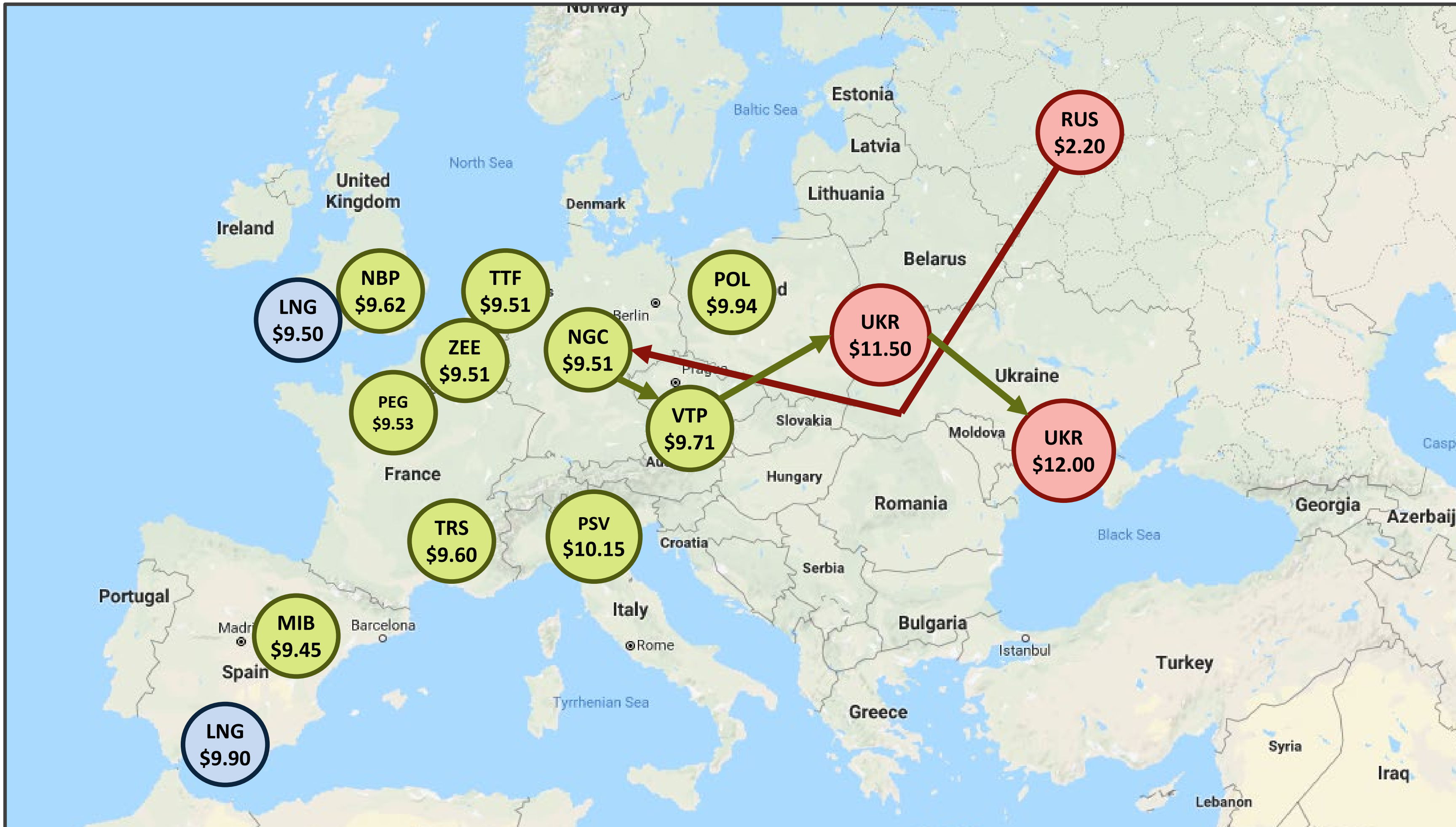
Source: Integer

UKRAINIAN RESTART: It will be difficult to restart Ukrainian exports with $8.00/MMBtu European gas. Even with $300/t FOB urea.



Source: Integer

EUROPEAN GAS: European hubs are proliferating across Europe, and are pricing to their marginal supply; seaborne LNG



Source: Integer, Reuters

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CONCLUSIONS

The urea market looks to be tipping towards deficit for the next two or three years. At least until India and Nigeria complete their capacity build-outs

China will remain supportive of higher urea prices in the near-term as it continues to withdraw liquidity

The S/D balance should tighten market until 2021/22, although we are assuming Iran has a much reduced role. Should they find work-arounds to avoid sanctions, expect price sentiment to soften.

Governments are directly and indirectly subsidizing the urea market and could tip market back to significant surplus

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Thank you!

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