Global Nitrogen Supply & Demand
TFI Outlook, Jacksonville

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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
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
SOUTH ASIA REMAINS THE BASELINE FOR GROWTH: We are expecting India to continue recovering lost consumption growth for the next 18 months.
ADBLUE/DEF DEMAND IS A MAJOR DRIVER: We are forecasting AdBlue demand to drive around 20% of future urea demand growth.
EM CURRENCY CRISIS: Policy response to weakening currencies in emerging markets will prove critical to demand over the next 12 months.
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CENTRAL ASIA & THE CAUCUSES: Integer is forecasting three projects to be operational in Central Asia by the close of 2019.

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

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

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

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

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

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

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

Source: Integer

- **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
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
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

- **Gorakphur, India**
  - Capacity: 1.3 million t/y
  - CAPEX: $1.0 billion

- **Barauni, India**
  - Capacity: 1.3 million t/y
  - CAPEX: $1.0 billion

- **Matix, India**
  - Capacity: 1.3 million t/y
  - CAPEX: $1.1 billion

- **Sindri, India**
  - Capacity: 1.3 million t/y
  - CAPEX: $1.0 billion

- **Gadepan III, India**
  - Capacity: 1.3 million t/y
  - CAPEX: $0.9 billion

- **Ramagundam, India**
  - Capacity: 1.3 million t/y
  - CAPEX: $1.0 billion

- **Talcher, India**
  - Capacity: 1.3 million t/y
  - CAPEX: $1.8 billion
SOUTH AMERICA: There is only one project we are seriously tracking in LATAM and gas supply remains challenging in Brazil.

Source: Integer

UFN III, Brazil (Acron)
Capacity: 1.2 million t/y
CAPEX: $1.3 billion
NORTH AMERICA: We are not forecasting any additional US capacity investments at present; greenfields look too costly.

Source: Integer

Midwest Ferts, USA
Capacity: 0.8 million t/y
CAPEX: $2.4 billion
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
CAPACITY FORECAST: At first glance, the market looks well supplied over the next five year, averaging >3.5 million t/y of additions

Source: Integer
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 INVESTMENT HAS SHIFTED: Governments are driving a wave of counter-cyclical investment...

Economic cost of supply, $/tonne

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

[Graph showing net change, demand, Chinese export delta, Iran export delta, closures, and capacity expansion from 2016 to 2023.]

*Source: Integer*
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**CHINESE COST CURVE:** China’s cost curve has lowered across the year as coal prices eased and the renminbi depreciated.
CHINA’S IDLE PLANTS: China’s effective capacity is currently estimated at 62.5 million t/y, and will fall towards 40.0 million.
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.
CHINESE OPERATING RATES: If capacity is adjusted down for idle plants, China has been operating at around 85-90% for much of the year.
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IRANIAN SANCTIONS: India notionally no longer buying Iranian urea following MMTC tender addendum, but…

Million tonnes

Source: 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.
**UKRAINIAN RESTART:** It will be difficult to restart Ukrainian exports with $8.00/MMBtu European gas. Even with $300/t FOB urea.
EUROPEAN GAS: European hubs are proliferating across Europe, and are pricing to their marginal supply; seaborne LNG
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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.
Thank you!