FERTILIZER TRENDS

Prepared for the Nomura Global Chemistry Leaders Conference by
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Director, FERTECON Limited
Rome, 22 March 2012
FERTECON Limited

- Formed in 1978
- Leading provider of fertilizer market information, prices and analysis
- Now part of Informa – publishers of Lloyd’s List, Agra Europe, Agrow and owners of Datamonitor
- The link with Informa gives FERTECON new access to data and analysis resources on agriculture, shipping and freight and energy
A WORLD TURNED UPSIDE DOWN

- China – the new Europe - high energy prices, overcapacity, rationalisation, reduced exports
- United States – the new Middle East - low energy prices – new investment
- Sub Saharan Africa – The other new Middle East – interest in projects to use surplus gas
- The Middle East – the new United States - increases in energy prices
- Russia – higher gas prices on the horizon – now higher than US
- India – the new swing market
A CHANGING MARKET

MARKET BEHAVIOUR

- Dealers/distributors becoming risk averse – there is a switch to “just in time” purchasing
- This is pushing price risk both up and down the supply chain, to suppliers and farmers

NITROGEN

- Changing energy costs with US now low cost, China high cost and costs in Middle East increasing. This will affect future investment decisions

PHOSPHATE

- Phosphate becoming the new potash with lots of exploration interest by junior miners in phosphate rock

POTASH

- New entrants could challenge current market structure
FERTILIZER MARKET DRIVERS

- There has been a strong correlation between crop prices and prices for key crops.
- Corn, wheat, rice, soybeans are key drivers, although there are differences between regions and nutrients.
- On the supply side, for nitrogen, oil, gas and coal, prices are key drivers, determining base costs and where new capacity is located.
- For phosphate and potash, the existence of reserves, investment costs and finance and logistics are key drivers of new supply.
- Fertilizer costs are critical for farmers – making up 30-40% of input costs for many key crops – and usually the largest single component.
FERTILIZER USE BY CROP

Source: IFA
UREA PRICES

$/t

2011 2012

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NOLA granular (ston)

Yuzhnyy prilled (tonne)
CROP PRICES

Monthly average price received by US farmers

$/bushel

Source: USDA

soybean
wheat
corn
CROP vs FERTILIZER PRICES
CROP vs FERTILIZER PRICES

Monthly average corn price received by US farmers

- urea fob Middle East
- DAP fob US Gulf
- potash fob

Source: FERTECON/ USDA
CROP PRICES - EUROPE

End month price LIFFE - Paris

Source: The Public Ledger - Informa Agra
CROP vs FERTILIZER PRICES

Source: FERTECON/ The Public Ledger - Informa Agra

wheat: end-month price LIFFE Paris
CROP vs FERTILIZER PRICES

Source: FERTECON/ The Public Ledger - Informa Agra

wheat: end-month price LIFFE Paris
Demand destruction was seen in 2008 as fertilizer prices rose above long term correlations with prices of key crops. Many crops did not see the strong prices and fertilizer application fell sharply on these – especially in subsistence agriculture. India was immune to demand destruction in 2008 due to the subsidy system. Indian subsidy cuts on P+K in the current fertilizer year, together with higher international prices led to higher retail prices and a sharp fall in demand. Last week’s budget indicated cuts in P+K subsidies for 2012/13 – around 16%. Urea subsidy cut by 1% for local urea and 5% for imported. Government looking to switch subsidy payment system from producers and importers to local dealers and eventually to farmers.
## INDIAN SUBSIDY CHANGES

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<tbody>
<tr>
<td>Imported urea</td>
<td>69.830</td>
<td>138.830</td>
<td>133.980</td>
<td>64.150</td>
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<td>Indigenous urea</td>
<td>133.080</td>
<td>191.080</td>
<td>190.000</td>
<td>56.920</td>
<td>-1.080</td>
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<td>Decontrolled fertilizer</td>
<td>297.069</td>
<td>342.079</td>
<td>285.761</td>
<td>-11.308</td>
<td>-56.318</td>
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<tr>
<td>Total subsidy</td>
<td>499.979</td>
<td>671.989</td>
<td>609.741</td>
<td>109.762</td>
<td>-62.248</td>
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Billion rupees
IMPORTANCE OF INDIA

INDIAN IMPORTS AS SHARE OF WORLD TRADE

- Phos acid
- DAP
- MOP
- Urea
- Ammonia

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<tr>
<th>Product</th>
<th>India</th>
<th>RoW</th>
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<tr>
<td>Phos acid</td>
<td></td>
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<tr>
<td>DAP</td>
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<tr>
<td>MOP</td>
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<tr>
<td>Urea</td>
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<td>Ammonia</td>
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million tonnes

FERTECON/NomuraMar 2012
NITROGEN

New capacity changing market balance
UREA SUPPLY INCREASES


- More from China
- Less from CIS
- More from Egypt
- More from Middle East
- More from Africa, Indonesia, Malaysia & Argentina
- Less from CIS
- More from CIS
- More from Middle East
- Same from Middle East

Legend:
- Other Marginal
- Other Dedicated
- CIS
- Middle East
NEW NORTH AMERICAN CAPACITY?

- Low gas prices in the US have stimulated new petrochemical projects – especially ethylene
- However, in the fertilizer sector, firm announcements have been restricted to debottlenecking and small expansions
- Now, Yara is talking about a major expansion at Belle Plaine, Saskatchewan
- OCI has been awarded state grants to help develop an ammonia/urea/DEF/UAN project in Iowa
- We could see other projects announced, but capital costs and permitting remain a constraint
US UREA COST OF SUPPLY

$/tonne cash cost delivered to Midwest terminal/ex-plant Midwest March 2012

- barge freight
- freight to US
- other costs
- cost of gas /coal

- Midwest plant
- Middle East plant
- Ukrainian plant
- Chinese coal-based plant
UREA COST CURVE 2011

Cash Cost in $/tonne fob plant in 2011

2011 Production in million tonnes

China

Anthracite

Gas

Steam

Coal

N. America

India

Russia

M. East

Europe

Other Asia

Africa

Ukraine

FERTECON/NomuraMar 2012
UREA COST CURVE 2015

Cash Cost in $/tonne fob plant vs. 2015 Production in million tonnes.

Regions and fuel types:
- China
- Ukraine
- Gas
- Steam
- Coal
- Anthracite
- Russia
- India
- West
- East
- Europe
- L.America
- N.America
- Other Asia
- Africa
- M.East
NEW AFRICAN CAPACITY?

- Availability of low cost associated gas, currently being flared, is attracting interest in investment in ammonia/urea in Africa
- Project going ahead in Gabon, led by Olam, agricultural commodities company
- Interest in projects in Nigeria, Angola, Mozambique and elsewhere
- With gas costs increasing in the MENA region, Africa looks attractive at $1/mmBtu gas
New entrants could change market structure
POTASH PRODUCTION

Total 60.5 million tonnes KCl - 2011 estimate

- Germany
- Israel
- Jordan
- China
- US
- Chile
- Spain
- UK
- Brazil
- Canada

Capacity 75.8 million t - 80% utilisation
POTASH EXPORT SOURCES - 2012 estimate
Total - approx 25.6 million tonnes nutrient

- Canada
- Russia
- Belarus
- Jordan
- Israel
- Germany
- Others

FERTECON/NomuraMar 2012
POTASH SUPPLY

- **Two** major supply points – Canada and FSU – account for almost two thirds of world production
- This is represented by **five** producers and **two** marketing organisations
- **Four** marketing organisations – Canpotex, BPC, K+S and ICL – account for almost 90% of export sales (excluding Canada to US)
NEW POTASH SUPPLY

- Two new Canadian producers – K+S and BHP Billiton
- Two new mines in Russia by new producer EuroChem
- Two new mines in Latin America by Vale – one in Brazil and one in Argentina
- Twenty or more potential projects by junior miners
FORECAST WORLD POTASH PRODUCTION 2009-2020

million tonnes KCl

- Middle East
- Europe
- Latin America
- Asia
- FSU
- North America
POTASH COSTS

- Israel
- Germany
- FSU
- Canada

$/tonne

ex-mine
fob port
POTASH CASH COST CURVE EX-MINE

Cash Cost in $/tonne fob mine

Production in million tonnes KCl

FERTECON ESTIMATES

Russia
Jordan
Belarus
Canada
Germany
Spain/UK

FERTECON/NomuraMar 2012
New Saudi capacity moving market into surplus
SAUDI ARABIA ADDING TO SUPPLY

- Ma’aden project now cranking up towards its 3 million t/y capacity – around 15% of global trade
- Second project developing new mining area given go-ahead
- Capacity may have been easily absorbed by market except for downturn in Indian demand
- Extra Saudi supply could be compensated by lower Chinese exports in 2012
ROCK DEVELOPMENTS

- Higher prices for phosphates since 2007 has attracted interest in new projects
- Vale Bayovar project in Peru already operational
- Potential projects in Australia, Africa and Latin America
- Projects focusing on just rock – lower capex and quicker to develop than integrated phosphate fertilizer facilities
- New rock supplies could eventually reduce Moroccan dominance of rock market
MIDDLE EAST / NORTH AFRICA

Still a supply risk
Middle East accounts for 32% of urea exports and 15% of ammonia
Middle East accounts for one third of US urea imports and 20% of US total supply
Middle East supply accounts for 85% of Indian ammonia imports
35% of new urea capacity located in Middle East
Middle East accounts for 30% of world sulphur exports
Middle East accounts for 90% of Indian sulphur imports and 20% of North African supplies
Yara Libya j-v plant still down
Tunisian phosphate production disrupted through most of 2011
Concern about Iran –exports disrupted by financial sanctions
MENA SHARE OF EXPORTS

EXPORTS 2010

- Phos acid
- TSP
- MAP/DAP
- MOP
- Urea
- Ammonia

- Algeria
- Egypt
- Libya
- Morocco
- Tunisia
- Bahrain
- Iran
- Israel
- Jordan
- Kuwait
- Lebanon
- Oman
- Qatar
- Saudi Arabia
- UAE
- RoW

million tonnes
A curate’s egg – good and bad in parts
SHORT TERM MARKET OUTLOOK

POSITIVE
- Crop prices remain strong
- Farmer and dealer purchasing behind normal
- No big consumer inventory build
- Farmers still need to buy fertilizers for the spring
- Delays to major nitrogen projects

NEGATIVE
- Last minute rush for product could create bottlenecks
- Indian demand destruction has had a negative impact on P+K
- Supply increases in all three nutrients this year
CROP vs FERTILIZER PRICES

Monthly average corn price received by US farmers

Source: FERTECON/ USDA
LONG TERM SENSITIVITIES

Population growth

- There are signs that population growth is slowing.
- This could mean that instead of having to feed 9 million people by 2050 (the UN medium forecast), it could be 8 billion – just 15% more than today.
- This could mean slower fertilizer demand growth, although increased affluence will mean increased meat consumption, and thus increased demand for feed grains.
LONG TERM SENSITIVITIES

Genetic modification could limit fertilizer demand growth longer term

- Research underway on transferring the ability of legumes to fix nitrogen from the atmosphere to corn, wheat etc, thus reducing nitrogen requirements.
- GM techniques could improve nutrient uptake by crops, lowering potential fertilizer demand growth.
- GM could lead to development of crops that require less nutrient input
- However, there will still be fertilizer demand growth and there is an increased potential for higher value “smart fertilizers”
LONG TERM SENSITIVITIES

Increased recycling

- Nutrient recovery at sewerage plants could provide source of fertilizers
- Better use of manures and application of some of the techniques of organic farming could provide larger portion of nutrient requirements although this will remain limited
- Organic lobby is increasing in influence – could affect some government policy – particularly over “sustainability”
Africa could see substantial fertilizer demand growth

- African fertilizer application the lowest in the world
- Increased focus from fertilizer industry, government international agencies and NGOs on increasing food production
- Investment in distribution schemes and farmer education to help smallholder farmers
- Gates Foundation looking at major development programmes
- Contract farming schemes to produce food for export could see major increase in fertilizer usage
ENVIRONMENTAL SENSITIVITIES

- Nitrate directive already constrains nitrogen application in most of EU
- Phosphate application limited by regulations in Scandinavia, Netherlands
- Growing concern on impact of fertilizer run off leading to lawn fertilizer restrictions in many US states and now proposals in several states to restrict agricultural fertilizer application
- Concern of imbalanced nitrogen application in parts of China and India
- Major opportunity for “smart” fertilizers and enhanced application techniques
- Greenhouse gas emissions become a major factor – already top of the agenda in EU industry
- Increasing market for ammonia and urea for NOx abatement