

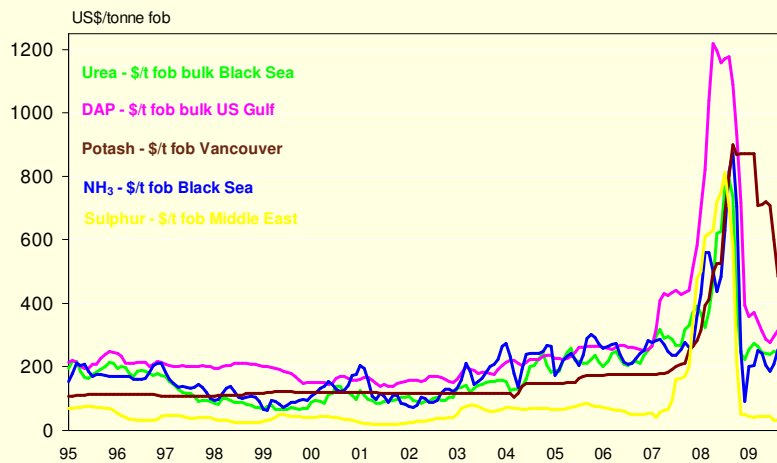
Outlook for International Prices of Fertilizers, Raw Materials and Intermediates

Barrie Bain, Director

FERTECON

FAI, Hyderabad, 3 December 2009

FERTILIZER PRICES



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WHAT HAPPENED IN 2008

- Fertilizer and intermediate prices reached all time highs for all products
- This was driven primarily by a surge in crop prices driven in turn by increased demand and low stocks of key crops
- The drivers of demand were economic growth in rapidly developing countries, particularly in Asia plus the surge of interest in biofuels
- High energy prices stimulated biofuels demand, but also increased fertilizer production costs
- Supply proved inadequate to meet the surge in demand
- Rationalisation in the phosphate industry in 2005 and 2006 meant there was insufficient capacity to meet the unexpected surge of demand
- Overcapacity in potash since the 1970s meant there had been little new investment. The loss of a mine in Russia to flooding tightened the market
- The application of high tariffs cut off urea exports from China
- Strong demand from the phosphate industry and delays to new supply led to a surge in sulphur prices

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BACK TO REALITY

- Crop prices fell sharply in the second half of 2008 as the commodity bubble burst, but are now increasing
- Oil and natural gas fell sharply but have now increased
- Urea prices fell sharply to the cost of marginal export supply
- Ammonia prices fell to below FSU export costs but have partly recovered
- DAP prices fell \$900 from their peak of \$1200 in the early summer 2008
- Sulphur prices have corrected back to pre-boom lows
- Potash prices have fallen but remain above pre-boom levels

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WHAT HAPPENED?

- The financial crisis and credit crunch had direct and indirect effects on the fertilizer industry – it burst the bubble
- Agricultural commodity prices fell
- Tightened credit lines slowed both agricultural and fertilizer markets
- Downside price risk discouraged buying
- Recession hit non-fertilizer demand for ammonia and sulphur

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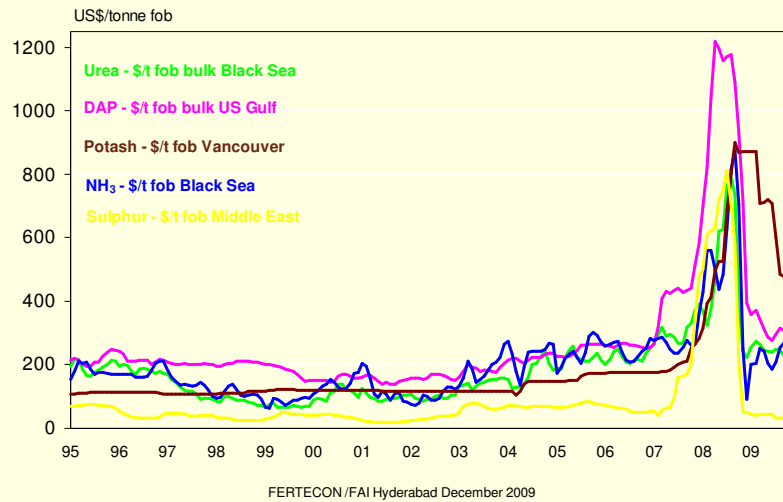
WHAT NOW?

- The period of global destocking of fertilizer is over
- Agricultural commodity prices are starting to improve
- Credit remains tight, encouraging “just-in-time” buying through the supply chain – could lead to short term price increases
- Downside price risk gone, except for potash
- Non-fertilizer demand for ammonia and sulphur starting to recover - slowly

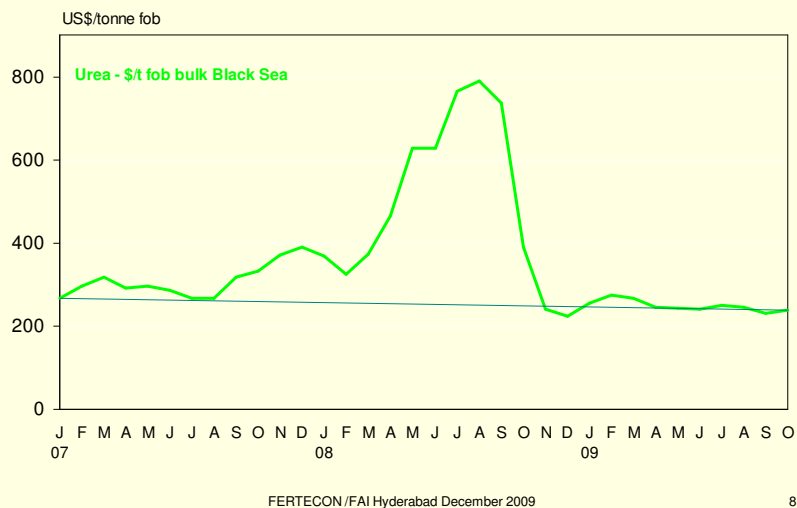
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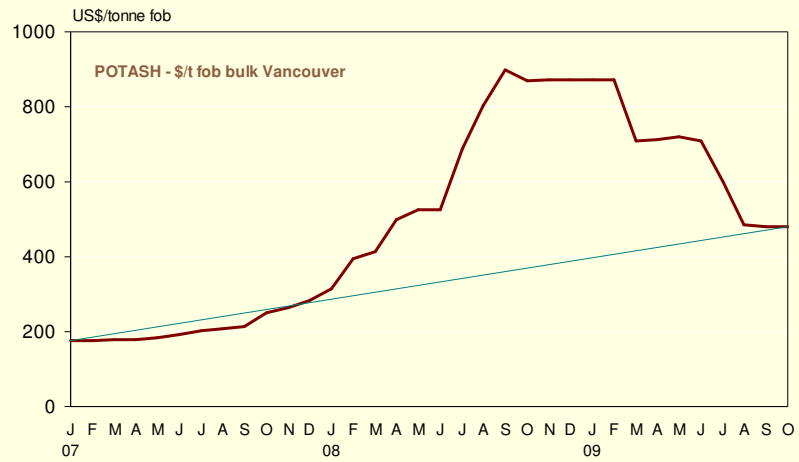
FERTILIZER PRICES



UREA PRICES



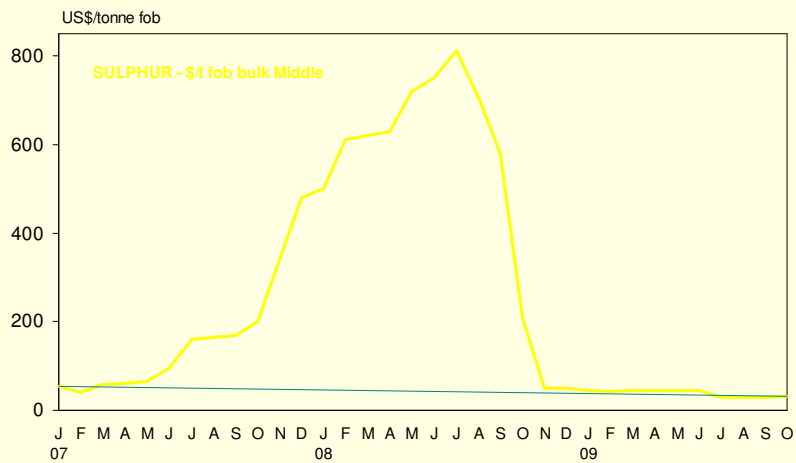
POTASH PRICES



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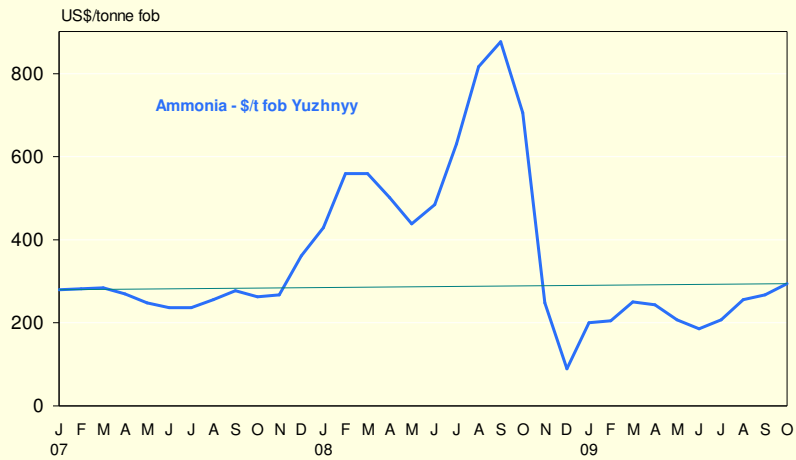
SULPHUR PRICES



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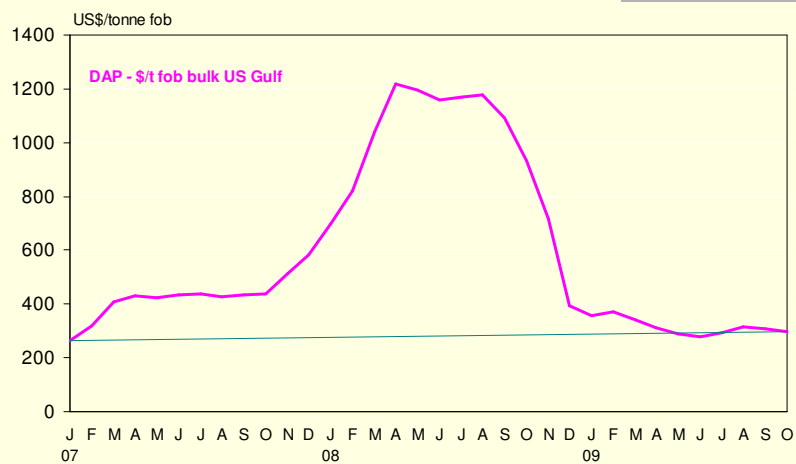
AMMONIA PRICES



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PHOSPHATE PRICES

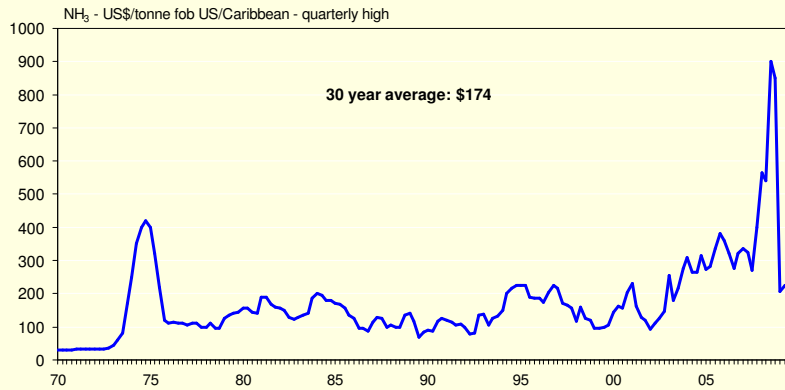


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LONG TERM PERSPECTIVE

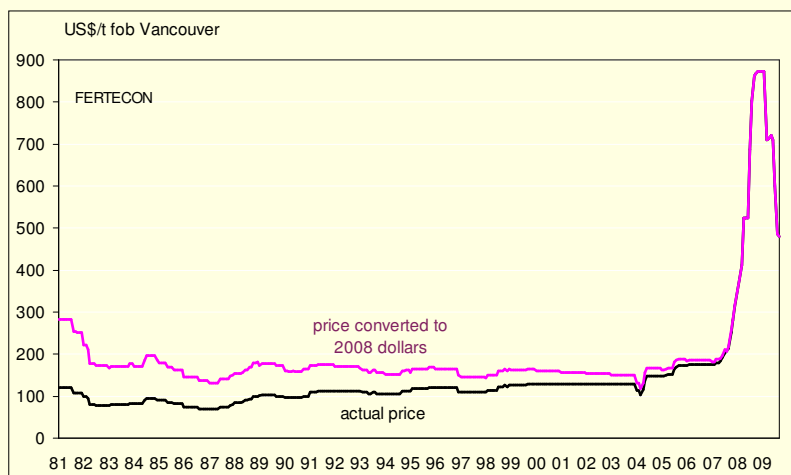
AMMONIA PRICE 1970-2009



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POTASH PRICES – LONG TERM



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PRICE DRIVERS

Agricultural fundamentals

WHAT DRIVES FERTILIZER PRICES?

- Fertilizers are a commodity
- The drivers are supply and demand
- Demand is driven by the ag economy
- For nitrogen, short term supply/demand trends can have more influence on price than longer term trends
- This can also be the case in phosphates
- Marketing structure means potash prices tend to be influenced more by longer-term trends

DEMAND DRIVERS

- POPULATION - more mouths to feed
- BETTER NUTRITION – increased meat consumption in rapidly growing economies, more varied diets – more feed grains required
- ARABLE LAND AVAILABILITY – need to increase yields
- NUTRIENT BALANCES – under-application of P and K in many areas – e.g. India and China
- COMMERCIAL CROPS – affordability – if farmers are getting a good price for their crops they look to optimise fertilizer application
- BIOFUELS – new demand

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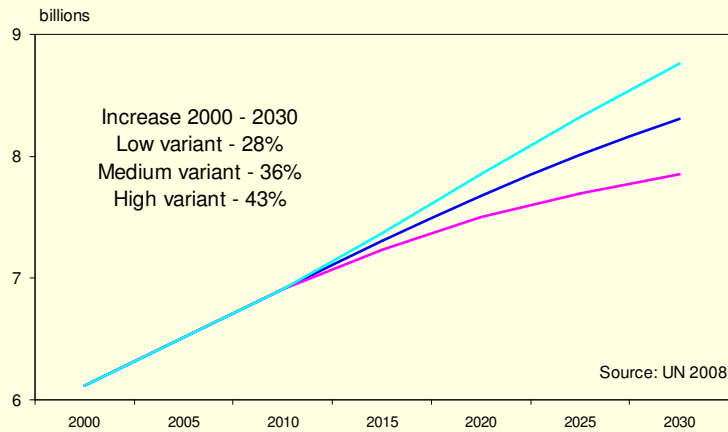
DEMAND DRIVER CHANGES

- POPULATION - **still** more mouths to feed
- BETTER NUTRITION – meat and vegetable consumption - **growth has continued in India, China etc despite the recession**
- ARABLE LAND AVAILABILITY – need to increase yields – **more ag land in Latin America – but that needs fertilizer**
- NUTRIENT BALANCES – under-application of P and K - **but high prices lead to demand destruction in P and K**
- COMMERCIAL CROPS – affordability – **crop prices have come off peaks and high fertilizer prices were unaffordable for subsistence agriculture**
- BIOFUELS – new demand – **some countries backing off from biofuels commitments – but massive expansion in Brazil and renewed commitment from President Obama**

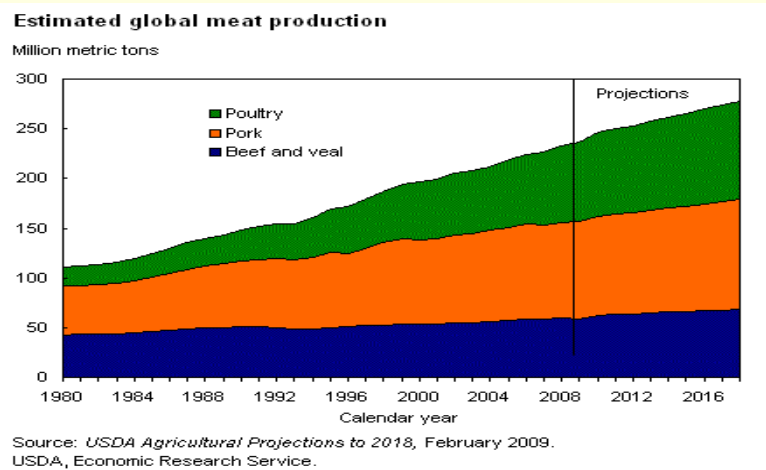
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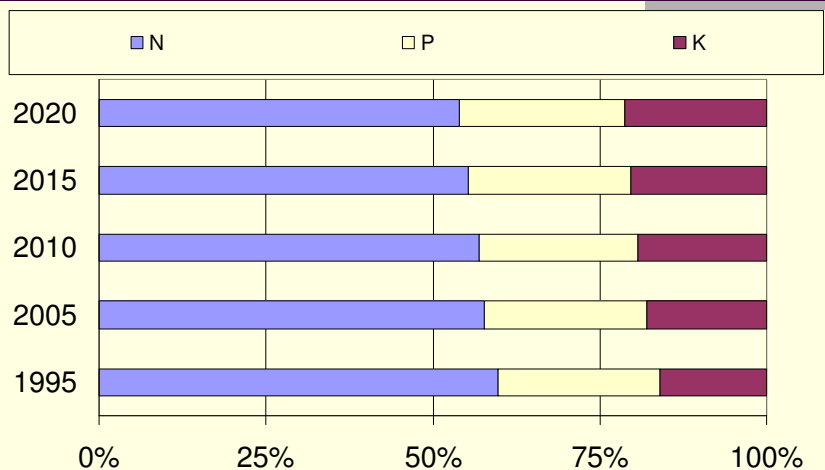
POPULATION



USDA GLOBAL MEAT PRODUCTION



NUTRIENT BALANCES



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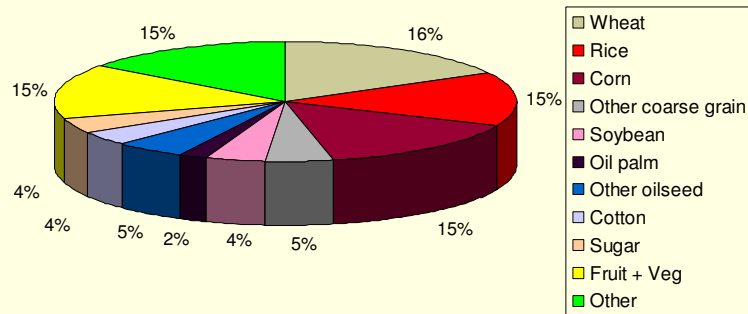
CROP PRICES

- Crop prices are the key underlying driver of fertilizer demand in commercial agriculture
- At times of high crop prices farmers want to maximise yields to maximise revenue
- This supports high fertilizer prices as long as farmers see a positive margin
- There is a cumulative effect – good farmer income in the previous year makes farmers more willing (and able) to pay higher fertilizer prices.

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FERTILIZER USE BY CROP

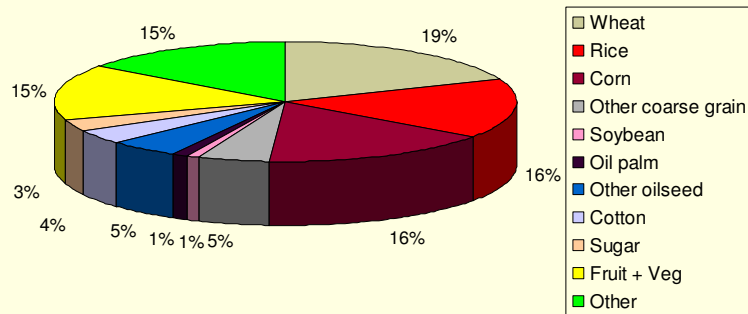


Source: IFA

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NITROGEN USE BY CROP

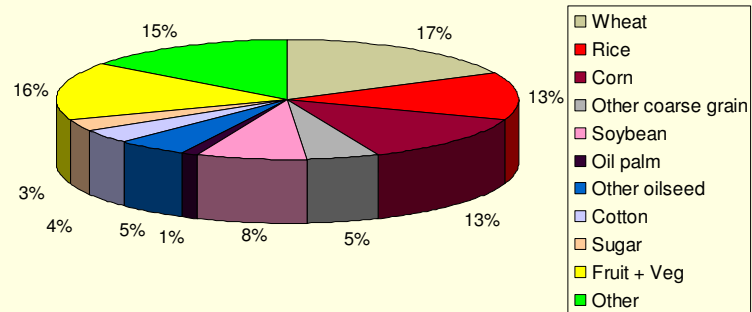


Source: IFA

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PHOSPHATE USE BY CROP

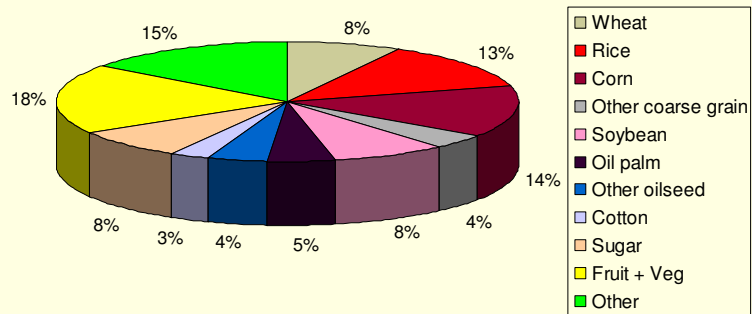


Source: IFA

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POTASH USE BY CROP

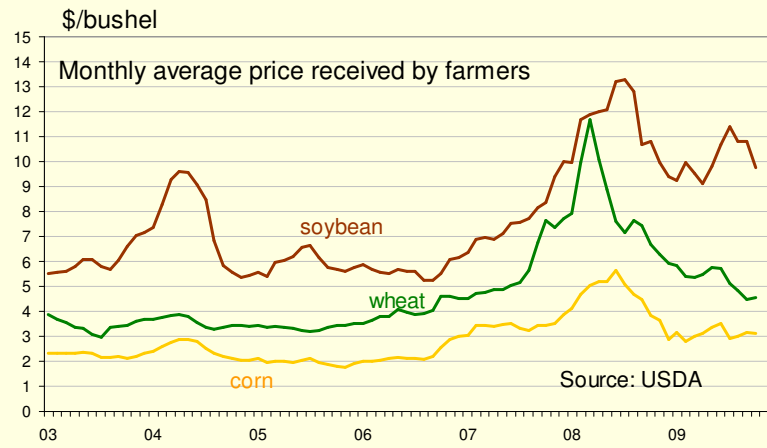


Source: IFA

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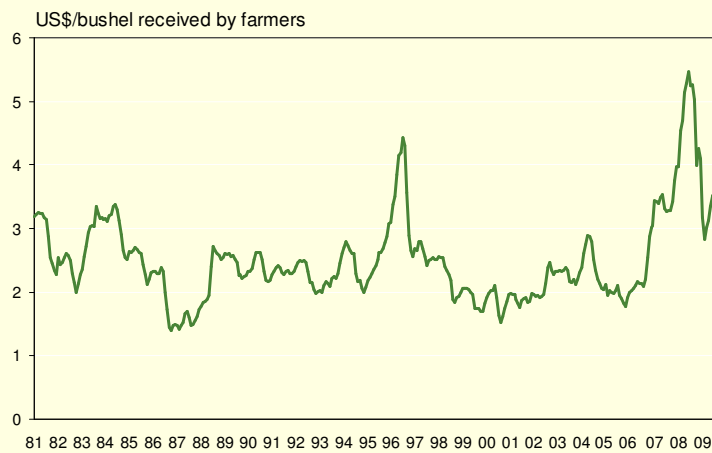
US CROP PRICES



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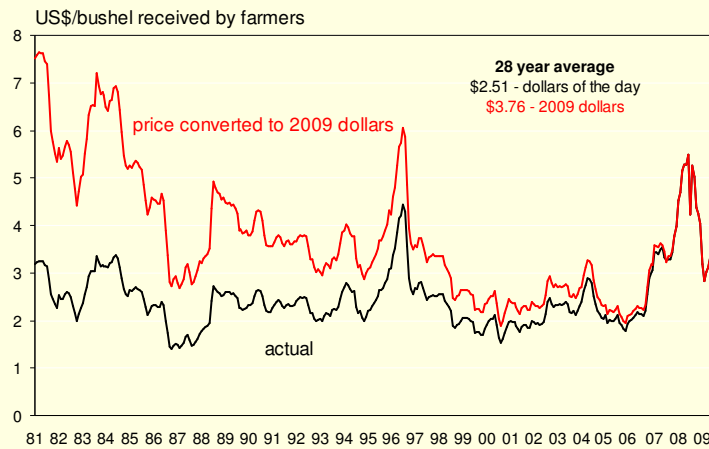
CORN PRICES



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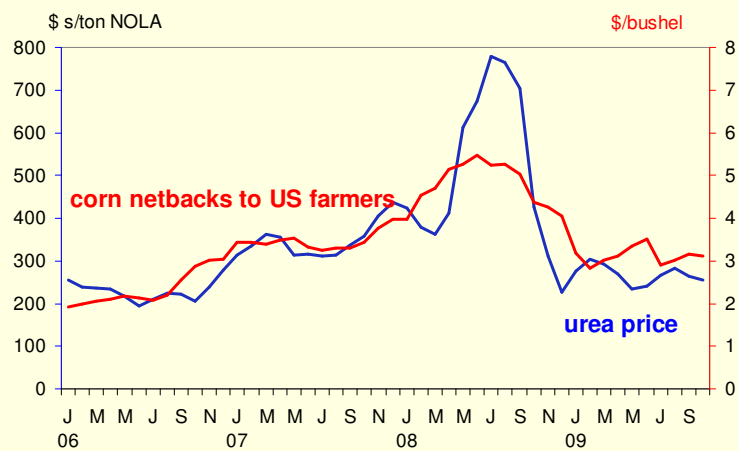
CORN PRICES



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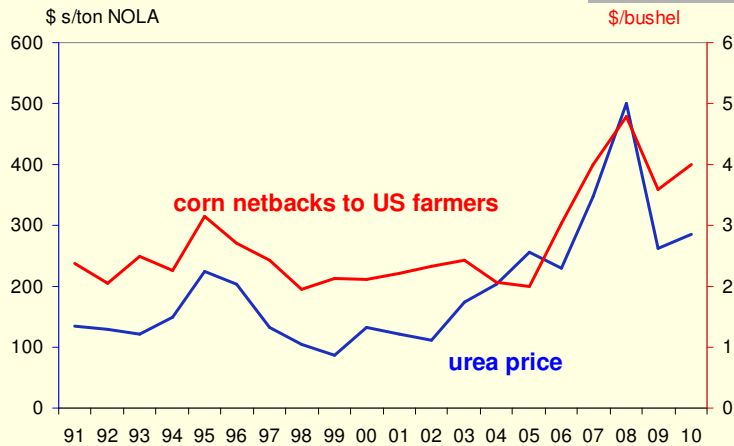
CORN NETBACKS v UREA



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CORN NETBACKS v UREA



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STRONG AG MARKETS FORECAST

- The USDA is forecasting continued growth in ag export trade
- Forward crop prices are higher than current levels
- There has been a step change – recent very high crop prices were not sustainable – but nor were the low prices of the late 1990s

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AGRICULTURE OUTLOOK

- Strong growth in trade in all key crops
- Exports are based on commercial farming that will want to maximise yields by optimising fertilizer application
- In addition countries with large populations such as India and China will look to maximise their domestic crop production to ensure food security – and minimise imports of high-priced crops at a time of tight global supply
- China and Middle East countries are now looking to develop contract agriculture in Central Asia, Africa and South America to produce food for China
- Brazil has planning a major increase in sugar cane plantings for ethanol production

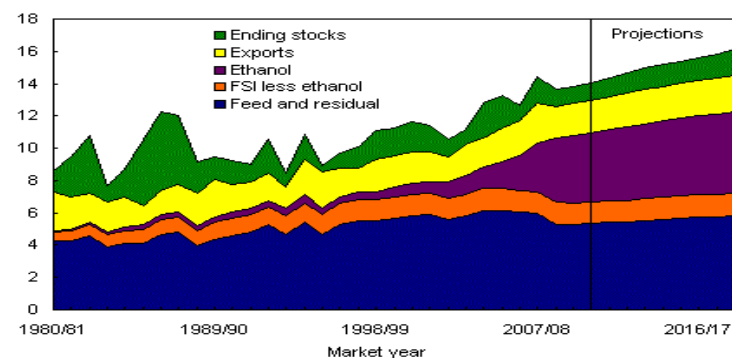
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US CORN USE

U.S. corn utilization

Billion bushels



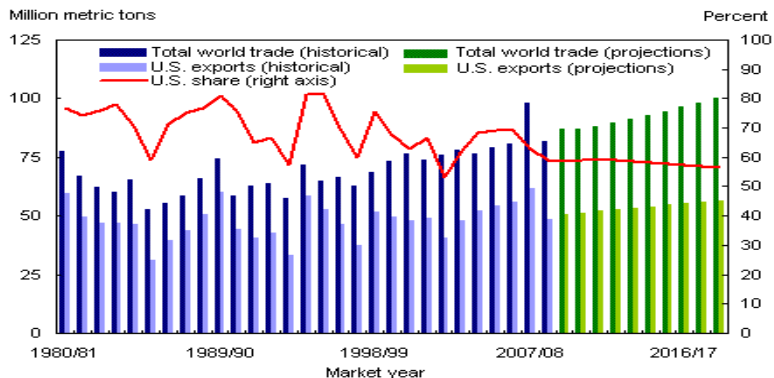
Source: *USDA Agricultural Projections to 2018*, February 2009.
USDA, Economic Research Service.

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USDA GLOBAL CORN TRADE

World and U.S. corn trade



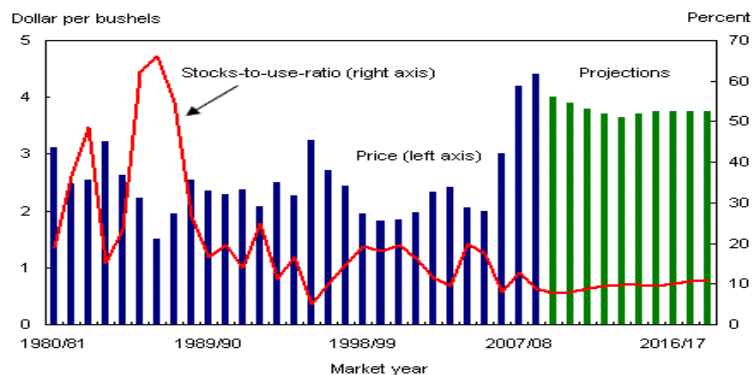
Source: *USDA Agricultural Projections to 2018*, February 2009. USDA, Economic Research Service.

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US CORN PRICES AND STOCKS TO USE RATIOS

U.S. corn price and stocks-to-use ratio



Source: *USDA Agricultural Projections to 2018*, February 2009. USDA, Economic Research Service.

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CROP PRICES AND FERTILIZER PRICES

- High commercial crop prices support high fertilizer prices by creating additional demand in markets such as the US and Brazil as farmers look to maximise yields
- High crop prices also enable farmers to pay higher prices for fertilizer
- High crop prices also provide a stimulus for countries with large populations such as India and China to maximise crop production to ensure food security and minimise imports

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PHOSPHATE AND POTASH HOLIDAYS

- Farmers throughout the world have taken phosphate and potash “holidays” – cutting application to save money
- Despite this, in many regions yields have been good “mining” the soil of P and K
- There could be a delayed impact on yields for next year’s crops
- We could see a bounce-back in P and K consumption from 2010

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SUBSISTENCE AGRICULTURE

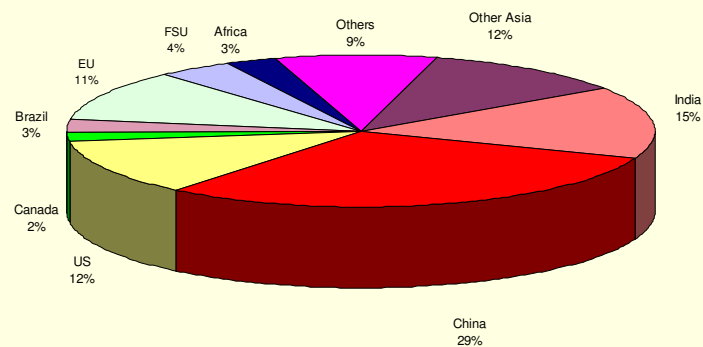
- There is a different picture for subsistence agriculture, which has suffered badly from high fertilizer prices
- High fertilizer prices result in a sudden and sharp drop in demand – unless subsidy systems are in place, as in India
- However the impact of this on the world fertilizer market is limited by the domination of demand from the commercial agricultural sector
- Subsistence agriculture needs to be protected from fertilizer price fluctuations for social, humanitarian and economic reasons

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DOMINATION OF ASIA

MAJOR NITROGEN CONSUMERS
Total 96.7 million tonnes N - 2008

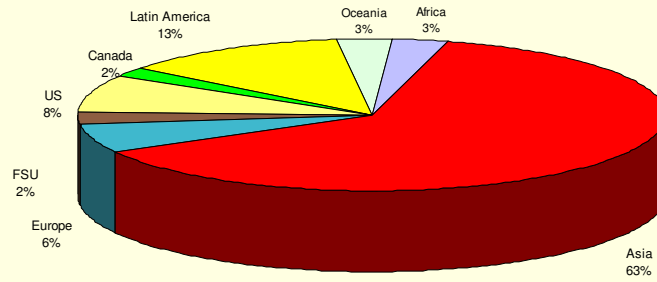


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DOMINATION OF ASIA

MAJOR PHOSPHATE FERTILIZER CONSUMERS
Total 38.8 million tonnes P₂O₅ - 2008/9



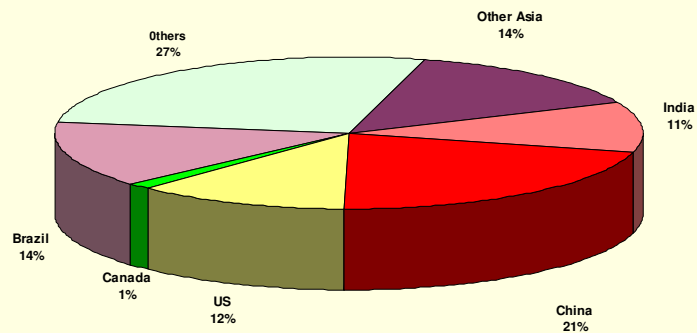
Source: IFA

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DOMINATION OF ASIA

MAJOR POTASH FERTILIZER CONSUMERS
Total 26.5 million tonnes K₂O - 2008



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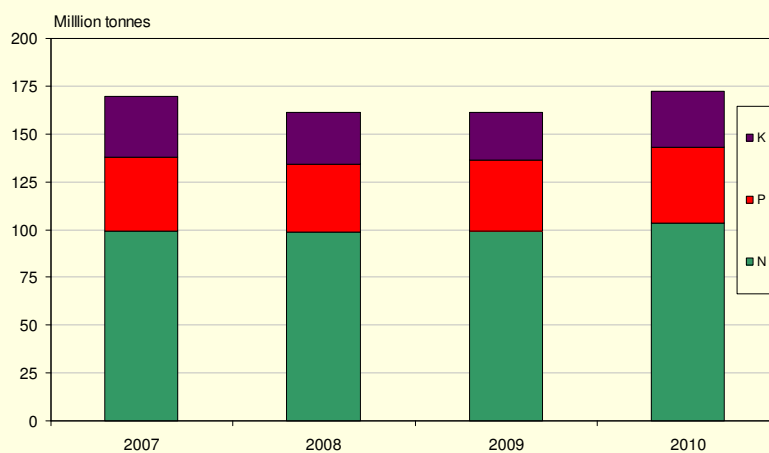
DEMAND – SHORT TERM

- Fertilizer demand has fallen in all three sectors – demand was down in second half 2008 and so far in 2009
- Nitrogen demand is recovering first – demand is starting to pick up
- Phosphate demand is starting to pick up slightly, but major improvement not expected until 2010
- Potash demand remains low in 2009 and recovery will be slower than for other nutrients due to comparatively high prices
- Recovery depends on key crop prices recovering and credit being available throughout the supply chain

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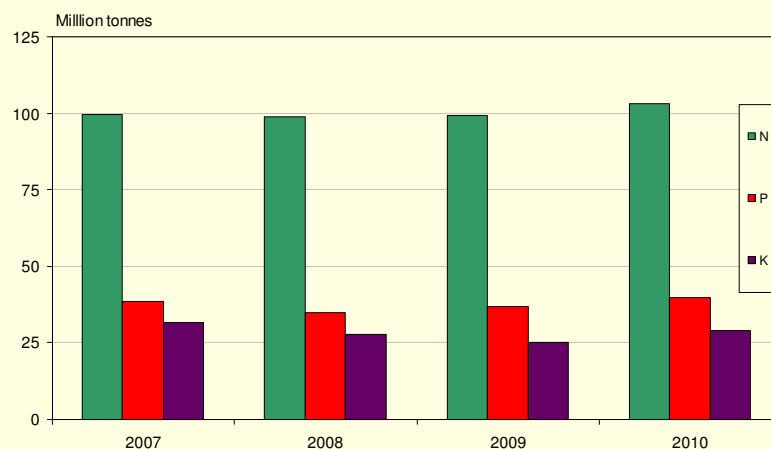
SHORT TERM DEMAND



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SHORT TERM DEMAND



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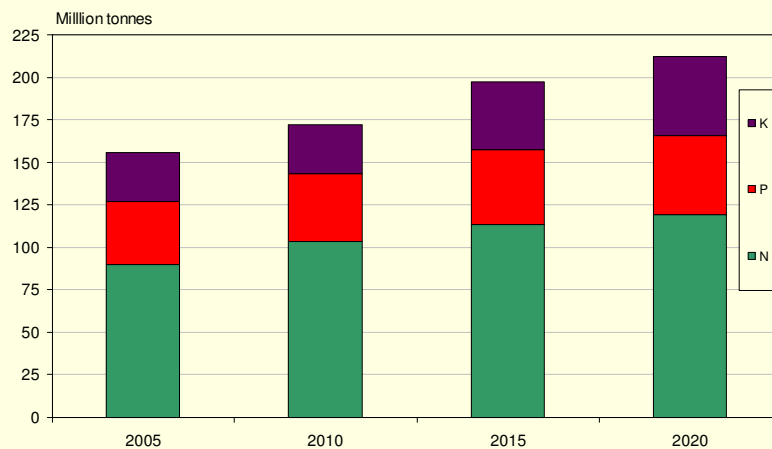
DEMAND GROWTH - MEDIUM TERM

- Fertilizer demand will to grow in all three sectors from 2010
- Nitrogen demand growth will be the strongest initially but the lowest longer term
- Phosphate demand growth will be higher in the medium term as nutrient imbalances are addressed in key market areas
- Potash demand will be slow to recover but eventually growth will be stronger than the other nutrients – nutrient imbalances are greater and some of the main growth crops are big potash users – soybean, palm oil, sugar cane

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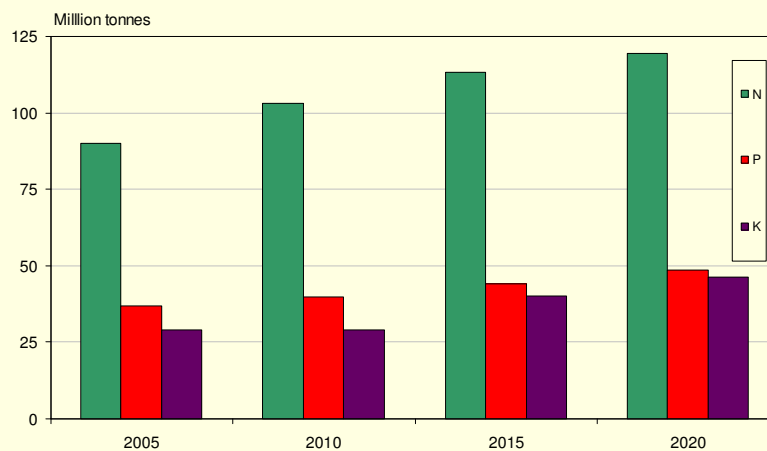
MEDIUM TERM DEMAND



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MEDIUM TERM DEMAND



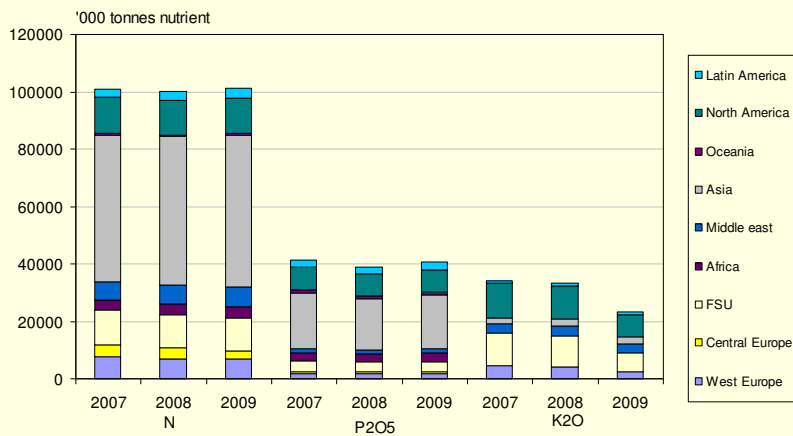
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SUPPLY FACTORS

Supply management key to price development

FERTILIZER PRODUCTION



SUPPLY FACTORS

- **NITROGEN** – many producers with no one producer or group of producers able/willing to manage supply
- **PHOSPHATE** – Increased concentration in the US facilitating some supply management
- **POTASH** – Supply concentrated with major producers managing supply

SUPPLY MANAGEMENT

- Supply management protects prices in a downturn and sets the scene for big increases in prices when demand moves upwards
- Surplus capacity is managed in both phases of the cycle
- Possible in potash and phosphates, but not nitrogen

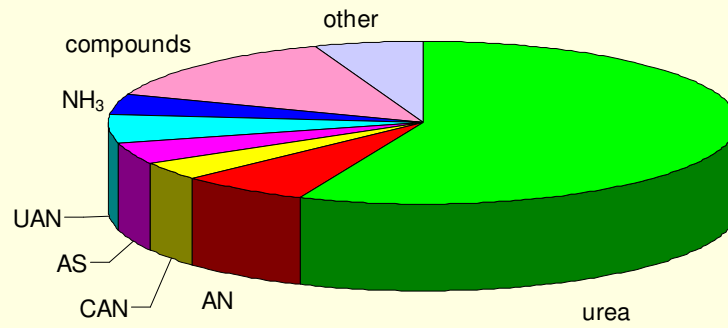
NITROGEN SUPPLY

- Many suppliers – FSU, Middle East, North Africa, Asia
- Desire to utilize cheap gas feedstock encourages new investment
- Low cost producers do not manage supply – they keep producing whatever the price
- Relatively quick to build a new worldscale plant – less than 3 years
- Construction costs are increasing which may slow new capacity additions

NITROGEN FUNDAMENTALS

- Ammonia is the building block of the world nitrogen industry providing the feedstock for urea, nitrates, the nitrogen content of DAP and a range of industrial uses
- To produce ammonia you need a hydrocarbon feedstock – usually natural gas, but coal is also important
- Urea is by far the most important nitrogen fertilizer accounting for 56% of nitrogen use

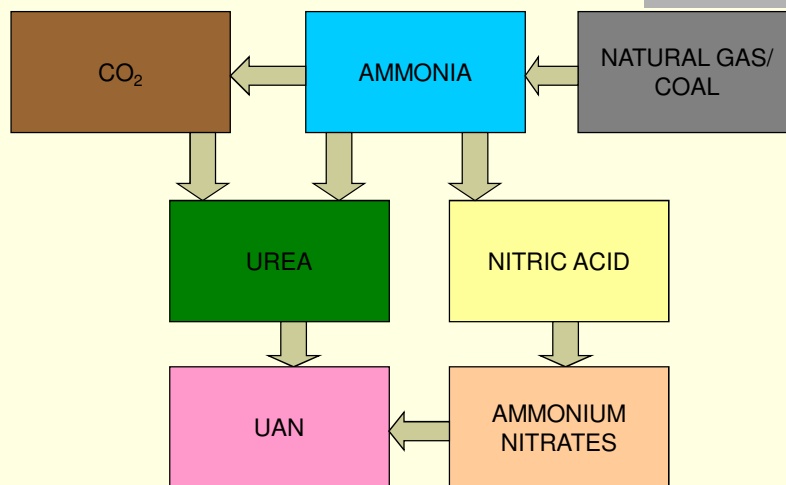
WORLD NITROGEN FERTILIZER USE BY TYPE 2007



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NITROGEN PRODUCTION

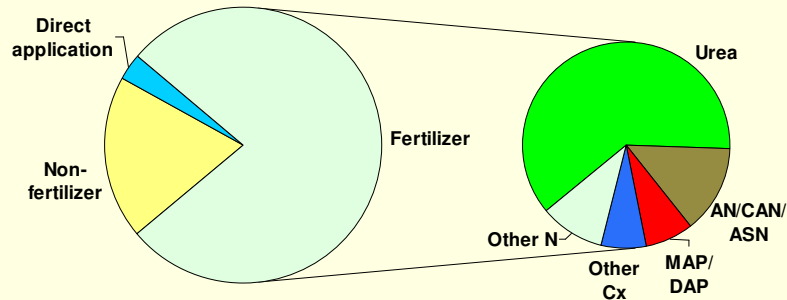


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WORLD DEMAND FOR AMMONIA BY END-USE 2007

Total 157 million tonnes product

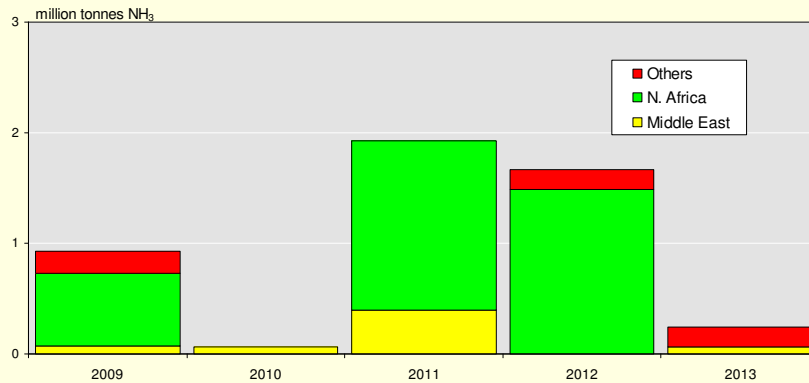


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NEW AMMONIA PLANTS

LOCATION OF AMMONIA EXPORT SUPPLY ADDITIONS - 2008-2013

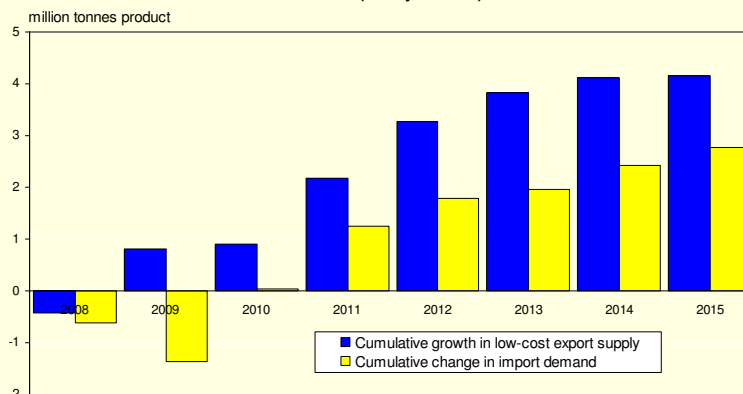


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AMMONIA SUPPLY GROWTH

CUMULATIVE GROWTH IN LOW-COST NH₃ EXPORT SUPPLY v. IMPORT DEMAND (base year 2007)



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UREA FUNDAMENTALS

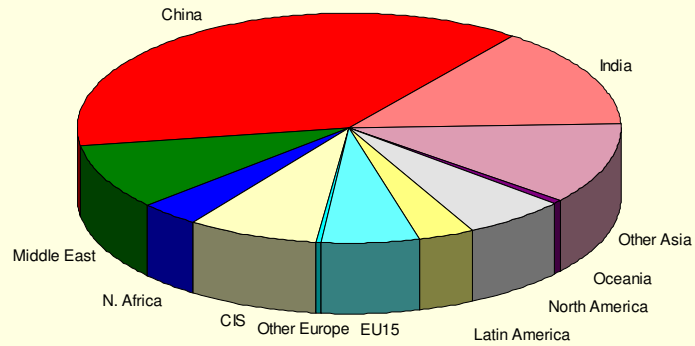
- Urea production is dominated by the large Asian producers – China and India
- Around one quarter of urea production enters international trade
- Exports are dominated by the CIS and Middle East
- Imports are dominated by Asia, North America and Latin America

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WORLD: UREA PRODUCTION 2007

Total 141 million tonnes

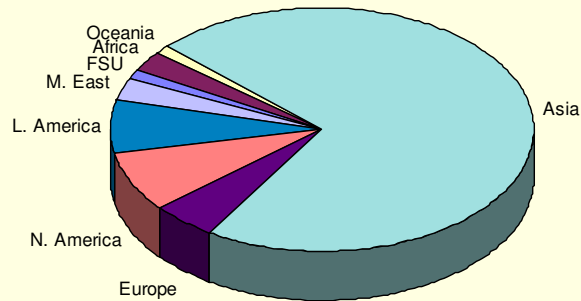


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UREA CONSUMPTION

Total urea consumption - 141 million t - 2007



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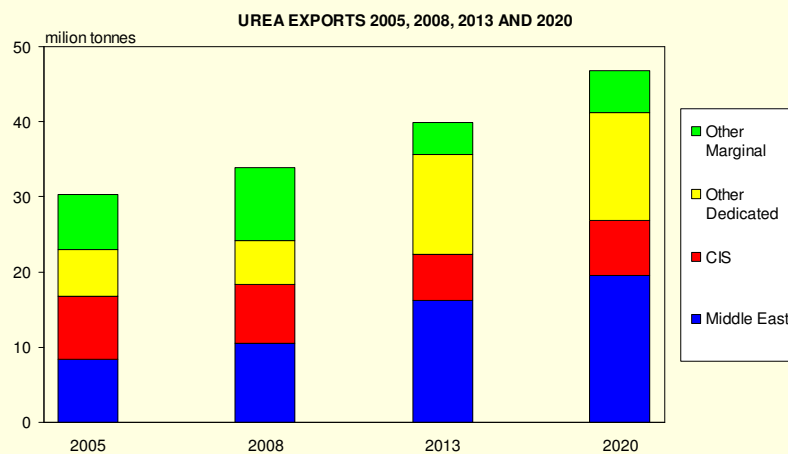
NEW UREA PLANTS

- Increase from 169 million t in 2008 to 222 million t in 2015 (FERTECON forecasts)
- Increase in export capacity of 14.4 million t by 2014
- Most new export capacity in Middle East/North Africa
- New export capacity all located in low gas cost areas
- Continued expansion for local consumption in Asia

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UREA SUPPLY GROWTH



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NITROGEN FEEDSTOCK

- Outside of China, natural gas is the key feedstock for fertilizer production.
- Gas production is increasing – not only in low-cost areas like the Middle East but in major gas consuming areas like India, the US and Europe
- Prices have fallen in the US due to the surge of gas supply from shale gas deposits using new drilling techniques
- The same techniques are now starting to be used in Europe and will be spread elsewhere – massively increasing potential gas supply
- This is likely to reduce the differential in gas prices between low-cost areas and major consuming areas
- LNG provides the balancing mechanism between different markets
- Lower gas costs in markets like the US, Europe and India will reduce their cost disadvantage over low cost producers – especially when transport and capital costs are taken into account.

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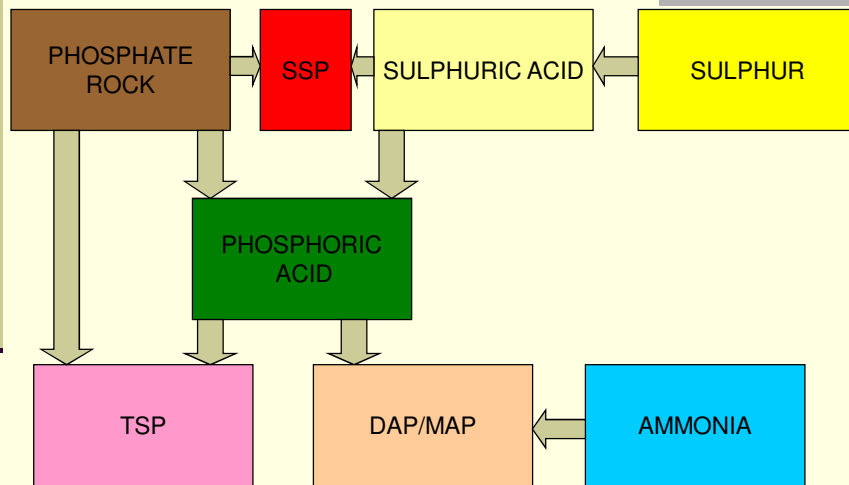
PHOSPHATE SUPPLY

- Typified by over-supply in the US industry until 2005/6 and the formation of Mosaic
- Mosaic acted to rationalise capacity, closing plants to bring supply back into balance and to compensate for the loss of the export market to China
- Phosphate became more like potash – with managed supply – but the demand collapse in 2008 and 2009 showed that suppliers would rather sell than cut production
- From 2011/12 the 3 million t/y Ma'aden plant in Saudi Arabia will significantly increase supply to the market
- OCP/Morocco and other phosphate-rich countries are focussing on joint-ventures for future development

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PHOSPHATE PRODUCTION

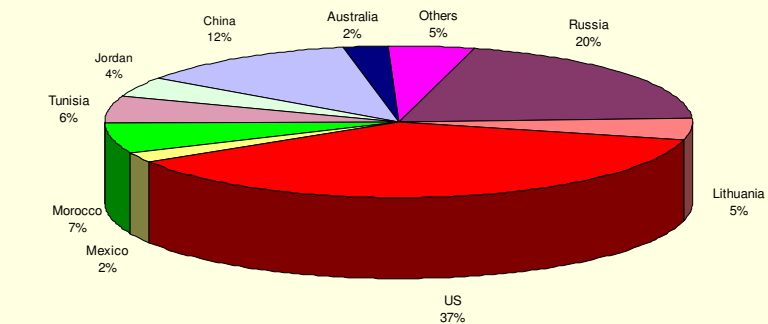


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PHOSPHATE SUPPLY

MAP/DAP EXPORTS 2008
Total 7.9 million tonnes P₂O₅ / 14.5 million tonnes product



Source: IFA

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POTENTIAL PHOSPHATE PROJECTS – ROCK

- Increase from 189 million t in 2008 to 248 million t in 2013 (IFA data)
- Europe – Yara (Finland)
- Africa – Algeria, Morocco, Egypt, Tunisia, Senegal, Togo
- Middle East – Jordan, Israel
- Asia – China
- Oceania – Australia
- North America – Ontario, Canada
- Latin America – Brazil, Mexico, Peru

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NEW PHOSPHATE PROJECTS – PHOSPHORIC ACID

- Increase from 43 million t P₂O₅ to 55 million t in 2013 (IFA data) – although most expansions for on-site downstream use
- Little new merchant grade acid capacity
- Africa – Algeria, Morocco, Egypt, Tunisia, Senegal, Togo
- Middle East – Saudi Arabia, Jordan
- Asia – China, India
- North America – Ontario, Canada
- Latin America – Brazil, Mexico

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NEW PHOSPHATE PROJECTS – MAP/DAP/TSP

- Additional 9 million t by 2013 (IFA data)
- Africa – Algeria, Morocco, Egypt, Tunisia
- Middle East – Saudi Arabia, Jordan
- Asia – China, India, Pakistan, Vietnam
- Latin America – Brazil, Mexico, Venezuela

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CHINA – THE WILD CARD

- Formerly world's biggest importer of phosphates
- China's policy to become self-sufficient in phosphates was achieved in 2006
- Uses domestic phosphate rock – but new plants mostly based on imported sulphur
- Supply grew faster than demand
- Became major exporter of phosphates
- Exports now restricted by export duties for part of year
- China's underlying policy is that phosphate exports should be restricted to ensure long-term secure supply for domestic requirements

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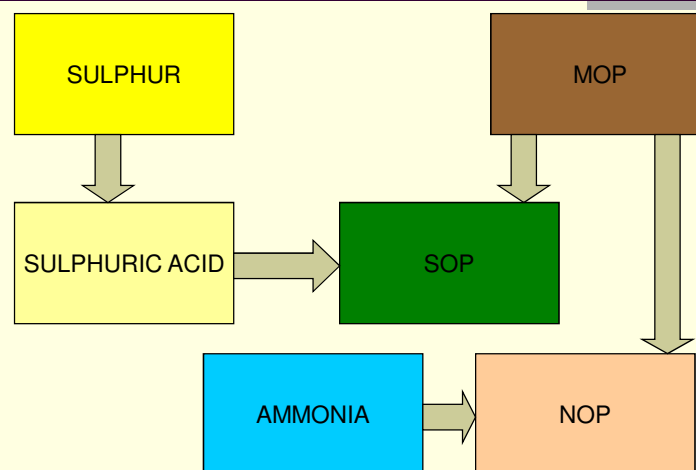
POTASH SUPPLY

- Supply very concentrated
- **Two** major supply points – Canada and FSU – account for two thirds of world production
- This is represented by **six** producers and **three** marketing organisations
- **Three** marketing organisations – Canpotex, BPC and K+S – account for 70% of sales
- **Five** marketing organisations control 85% of sales.

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POTASH PRODUCTION

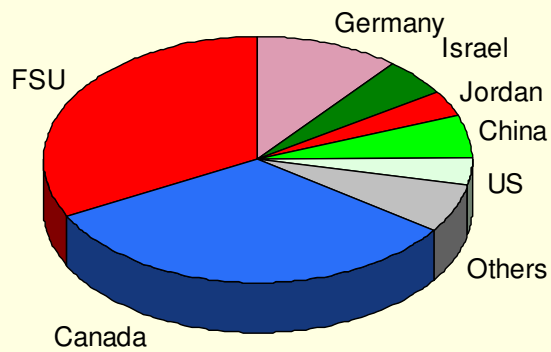


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POTASH SUPPLY

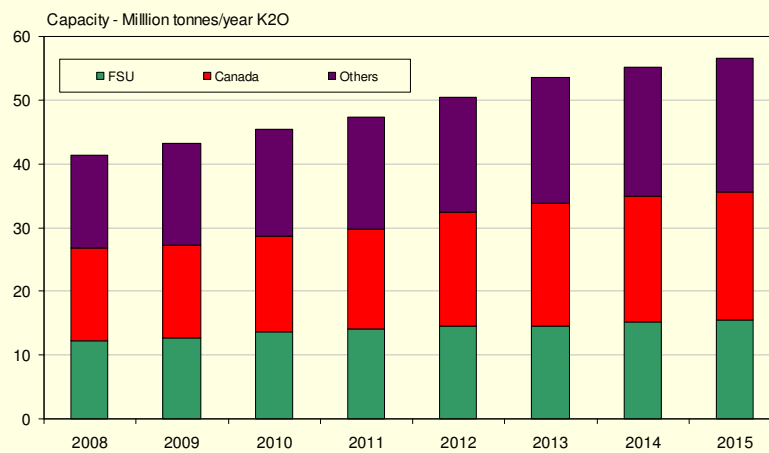
Total 33.6 million tonnes K₂O - 2007 estimate



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NEW POTASH SUPPLY



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POTASH INVESTMENT

- Most of the new potash capacity is represented by expansions of existing facilities, primarily in Canada and Russia, although there is a greenfield project underway in Russia. Some of the expansions are virtually new mines. There is also a new mine in Brazil. There are also greenfield projects in Argentina and Congo.
- There has not been a greenfield potash development for many years and capital costs are high and lead times are lengthy. Vale's proposed potash mine in Brazil will have a capital cost of over \$4 billion for a 2.4 million t/y mine.
- The need for new mines, and the high capital cost involved, will mean that potash prices will not return to the low prices on the 1980s, 1990s and early 2000s. Unlike new nitrogen plants in low cost gas areas which have lower costs than older plants in high gas cost areas, new potash mines will have total costs substantially higher than existing mines, which have low capital costs.

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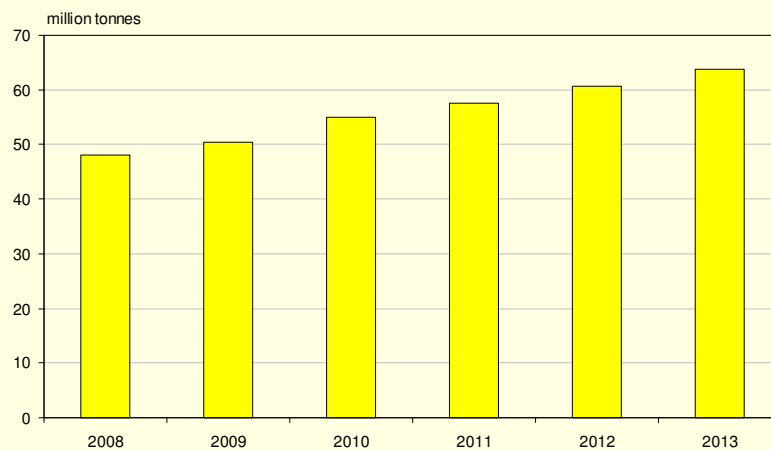
SULPHUR SUPPLY GROWTH

- Sulphur supply growth will exceed demand growth for foreseeable future
- New supply mostly in Middle East and Kazakhstan
- Supply also increasing in major sulphur consuming countries such as China and India
- Sulphur will again become a disposal problem for suppliers with negative netbacks to supplies with high logistics costs
- Re-injection of sulphur at gas production sites developing and will eventually slow supply growth

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SULPHUR SUPPLY



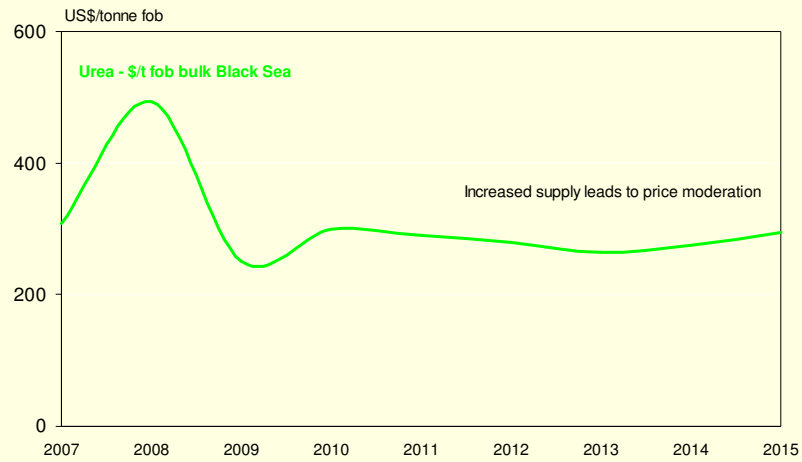
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PRICE OUTLOOK

Adequate supply will moderate price
upside

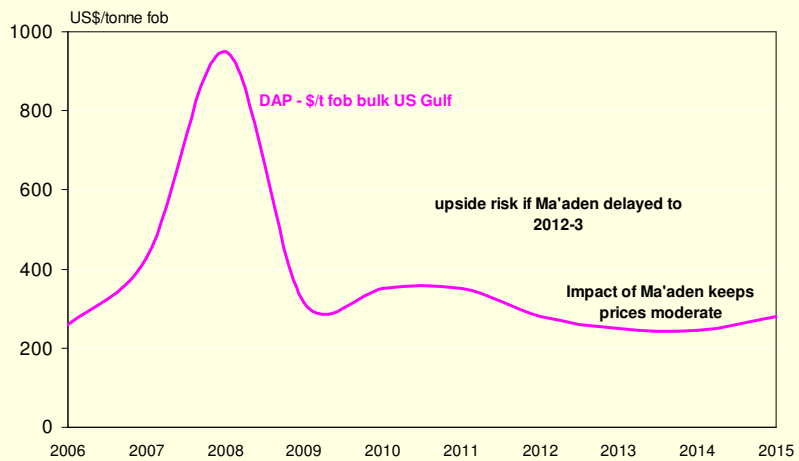
UREA PRICES – MEDIUM TERM



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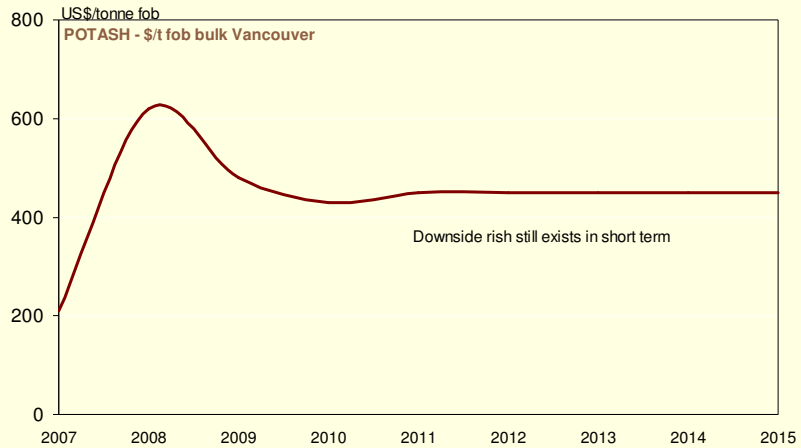
PHOSPHATE PRICES



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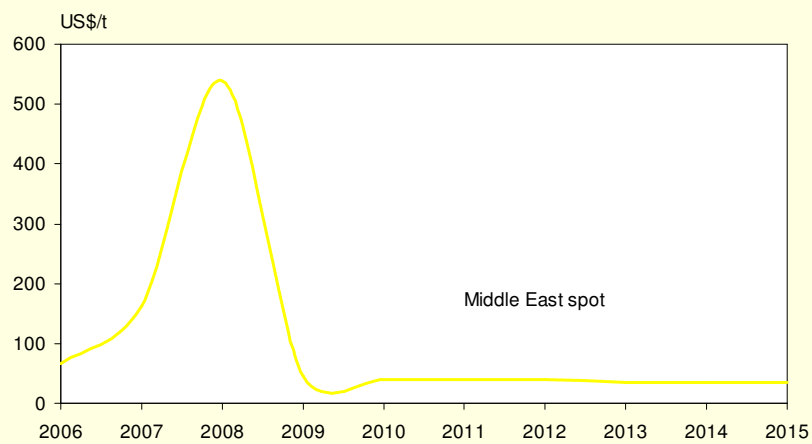
POTASH PRICES



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SULPHUR PRICES – MEDIUM TERM



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CONCLUSIONS

Moderate prices expected in medium term. High price levels of 2008 unlikely to be repeated

CONCLUSIONS - DEMAND

- Fertilizer demand is now starting to recover, and this will gather pace in 2010
- Crop prices are improving
- Low fertilizer application - particularly of P and K – will need to be corrected in 2010 and 2011 if yields are not to fall
- Subsistence agriculture was severely challenged in 2008 and will need subsidies and/or aid finance for fertilizers to avoid a drop in yields
- Medium term, fundamentals of increasing population and improving diets, plus demand for biofuels, will mean a return to strong demand growth

CONCLUSIONS - SUPPLY

- Higher costs of new plants for all products – a new 1 million tonne/year facility for ammonia/ urea, phosphate and potash all cost at least \$1 billion
- This creates a higher base cost for new producers
- There have been fundamental changes in the cost of natural gas in the US which suggests the existing US industry will remain competitive going forward
- European gas prices could go the same way – protecting the industry there.
- Gas pricing is becoming more global due to the influence of LNG
- The cost differential between existing plants in high gas cost areas and new plants in low cost areas has reduced – and in some cases disappeared.

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CONCLUSIONS - PRICE

- There has been some recovery for nitrogen – both ammonia and urea, but increased supply limits the upside on prices
- Phosphate prices could remain under downward pressure in the near term but market fundamentals could strengthen in 2010 until supply increases 2011 onwards
- Potash supply/demand balance will correct as demand recovers, but increased supply will mean upside on prices is limited.

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THE OUTLOOK FOR INDIA

- India has seen substantially lower prices for imported ammonia, urea and phosphate since August 2008
- Ammonia prices have increased, but the upside is limited due to new supply
- Increased supply, particularly from the Middle East should keep urea prices moderate, and we could see some lower prices from 2011.
- Potash prices have ended up higher than before the boom, but additional supply should mean further increases unlikely in the medium term. However, the need for new investment will increase costs – and thus prices.
- India will benefit from low sulphur prices in medium term, although there could be some short term increases
- Phosphate rock and phosphoric acid prices have been brought back into line with DAP prices. DAP looks weak once Ma'aden in Saudi Arabia comes in stream in 2011
- There is likely to be increased interest from countries with fertilizer raw material resources – natural gas, phosphate rock and potash – for joint ventures with major end users such as India – particularly in finance can be made available

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A WINDOW OF OPPORTUNITY

- India is unlikely to face again the high prices seen in 2008.
- These stretched the subsidy budget almost to breaking point and provided the initial stimulus for reform.
- Although those pressures are now reduced, the momentum for subsidy reform has become unstoppable.
- The more moderate prices expected in the near and medium term provide a window of opportunity for the industry and government to move Indian fertilizers into a new era of sustainable pricing within a structure that encourages enterprise and development whilst protecting the interests of Indian farmers.

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