

What Influences Global P and Fertilizer Prices?

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Based on

Trade and Finance as Cross-cutting Issues in the
Global Phosphate and Fertilizer Market by

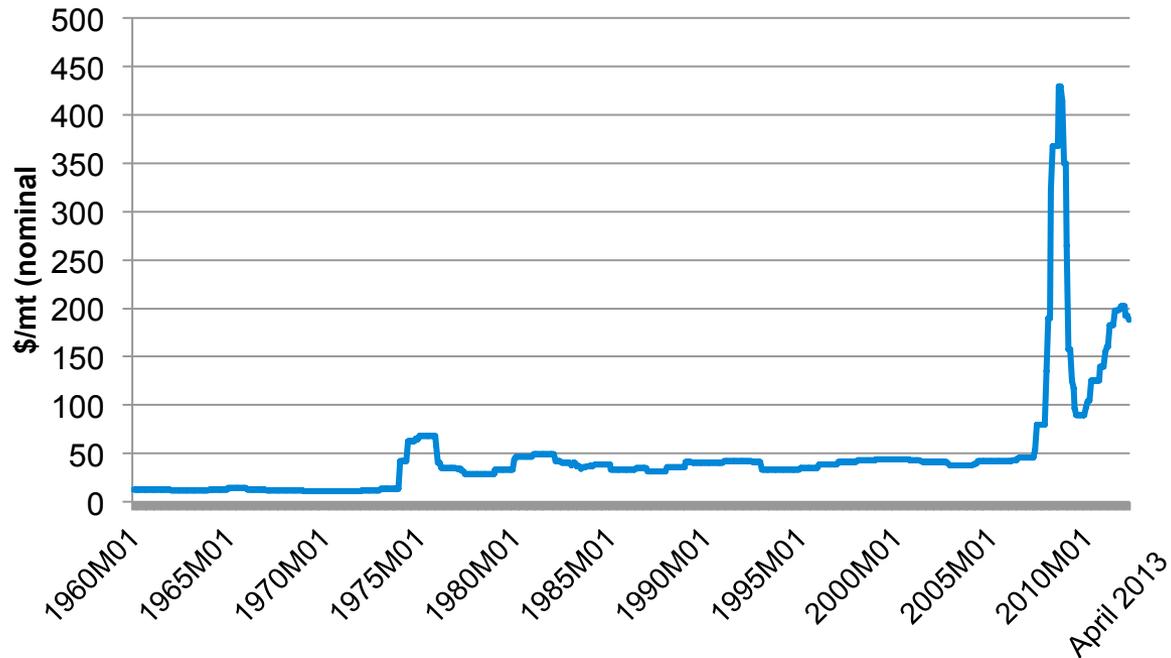
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- Peak Phosphorous
- Financial market speculation
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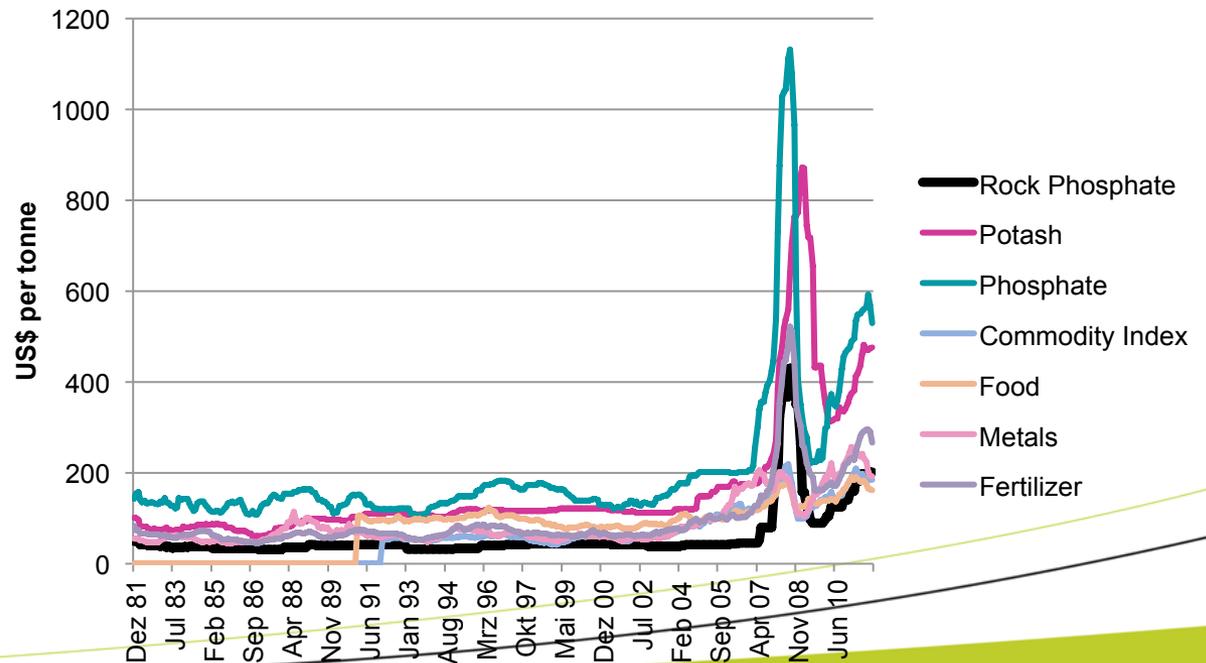
Background

P rock price



Why the Price Change?

- Peak Phosphorous?
- Financial Market Speculation?
- Supply-and-demand?

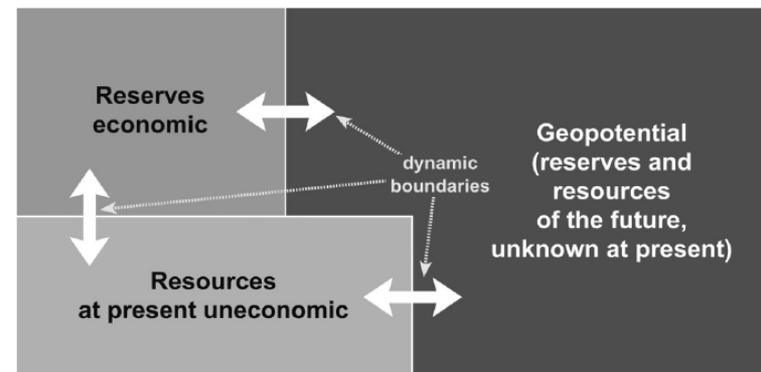


Peak Phosphorous

- We will run out of P rock soon, this is why prices increase
- But
 - Variance between 60 and 500 years for the lifetime of **current** resources plus unknown resources

Cordell, D., & White, S. (2011). Peak phosphorus: clarifying the key issues of a vigorous debate about long-term phosphorus security. *Sustainability*, 3(10), 2027-2049.

Scholz, R. W., & Wellmer, F.-W. (2013). Approaching a dynamic view on the availability of mineral resources: What we may learn from the case of phosphorus? *Global Environmental Change*, 23(1), 11-27.



(Wellmer, 2008)

On the one Hand: Change of the Commodity Market

- Index Speculators have bought more commodities futures contracts in the last five years than any other group of market participants.
 - Goldman Sachs, Morgan Stanley, J.P. Morgan and Barclays Bank control 70 percent of the commodity index swaps positions (Masters & White, 2011).



Financial Markets and Commodity Prices

- 1936: The Commodity Exchange Act placed limits on the size of speculators' positions, ensuring the dominance of physical hedgers.
- Agricultural and energy markets rely on futures prices as benchmark for the pricing transactions in the real world markets.
 - Futures and spot prices 1:1
- Today price discovery function of the commodities futures markets is breaking down.
 - With the advent of financial futures, the important distinctions between commodities futures and financial futures were lost
- Potential consequences
 - Futures and spot prices are not the same anymore
 - Prices may be driven by speculation and not by hedging

On the other Hand: Financial Markets Entry

- Increasing liquidity of commodity markets
- Not influencing P because it does not belong to common indices
- There are as many bets on price increase as on price decrease
- Did not lead to an increase of speculation compared to hedging activities
- No statistical evidence for an influence on prices

P Rock Trade

- Production
 - China producing 73,000 kt , exporting 462 kt
 - Morocco producing 27,820 kt, exporting 7,493 kt
 - US producing 27,620 kt, exporting 0
- Africa is the biggest supplier of P rock, but only imports a small amount of fertilizers
- Consumption
 - China, India, the US and Brazil are the biggest fertilizer consumers
- Fertilizers and P are a global business

Global fertilizer trade map

Produced by ICIS in partnership with IFA
For more information please visit www.icis.com/fertilizers

Map updated 15 March 2012

AMEROPA Reliability - Dedication - Integrity - Accuracy

Production - Wholesale - Retail - Trading
in business since 1948

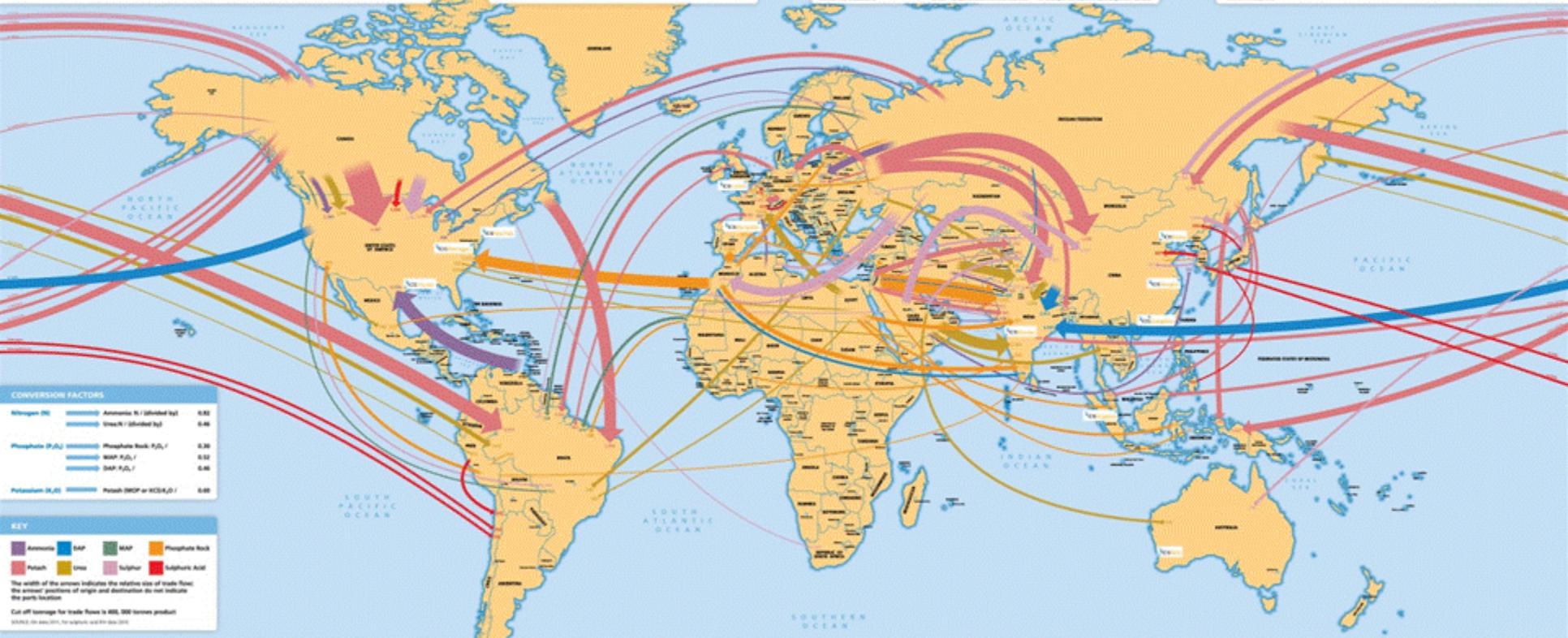
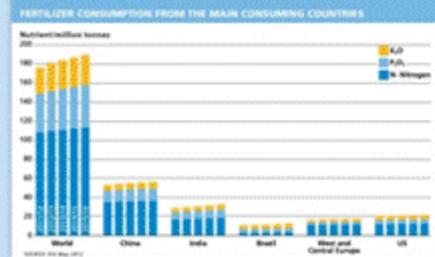
AMEROPA is a leading global fertilizer trader, providing a full range of services from production to retail. The company's operations are supported by a global network of production facilities and a fleet of specialized vessels. AMEROPA's commitment to reliability, dedication, integrity, and accuracy has earned it a reputation as a trusted partner in the fertilizer industry.

WORLD MAJOR PRODUCING COUNTRIES OF FERTILIZERS AND RAW MATERIALS 2011

AMMONIA (100,000 tonnes)	UREA (100,000 tonnes)	PHOSPHATE ROCK (100,000 tonnes)
China: 10,103	China: 27,274	China: 21,829
Russia: 13,919	India: 21,274	Russia: 21,029
India: 12,886	Indonesia: 4,285	US: 16,300
US: 10,633	Russia: 4,085	Russia: 16,300
Indonesia: 5,841	US: 4,413	Jordan: 3,388
Indonesia: 5,436	Pakistan: 4,313	Brazil: 3,095
World: 103,676	World: 106,919	World: 100,400

CLAP (100,000 tonnes)	POTASH (100,000 tonnes)	SULPHUR (100,000 tonnes)
China: 1,403	Canada: 17,471	US: 1,717
US: 6,433	Russia: 16,415	Russia: 8,297
India: 3,283	Belarus: 4,241	Canada: 4,144
Malaysia: 2,083	Germany: 3,282	China: 4,000
Russia: 1,389	China: 4,131	Saudi Arabia: 3,258
Lithuania: 839	Saudi Arabia: 4,130	Kazakhstan: 3,059
World: 33,200	World: 56,292	World: 33,200

Source: IFA report 'World Fertilizer Resources 2011'. The world of the fertilizer for Europe and Asia.



CONVERSION FACTORS

Ureagen (U)	Ammonia N (Standard 82)	0.82
	Ureagen N (Standard 85)	0.85
Phosphate (P ₂ O ₅)	Phosphate Rock (P ₂ O ₅)	0.30
	MAP P ₂ O ₅ /1	0.52
	DAP P ₂ O ₅ /1	0.46
Potassium (K ₂ O)	Potash (MOP or KCl) K ₂ O/1	0.85

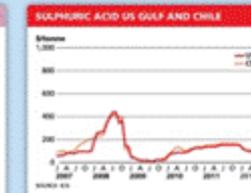
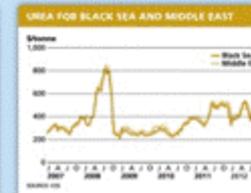
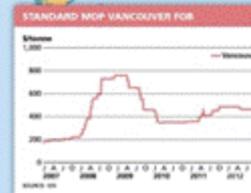
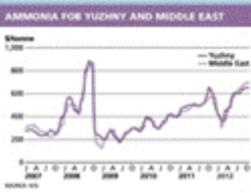
KEY

- Ammonia (Purple)
- Urea (Yellow)
- MAP (Green)
- Phosphate Rock (Orange)
- Potash (Green)
- Sulphuric Acid (Red)

The width of the arrows indicates the relative size of trade flows; the colour positions of origin and destination do not indicate the party location.

Cut off tonnage for trade flows is 400,000 tonnes product.

Source: IFA 2011, for sulphur: IFA 2011.



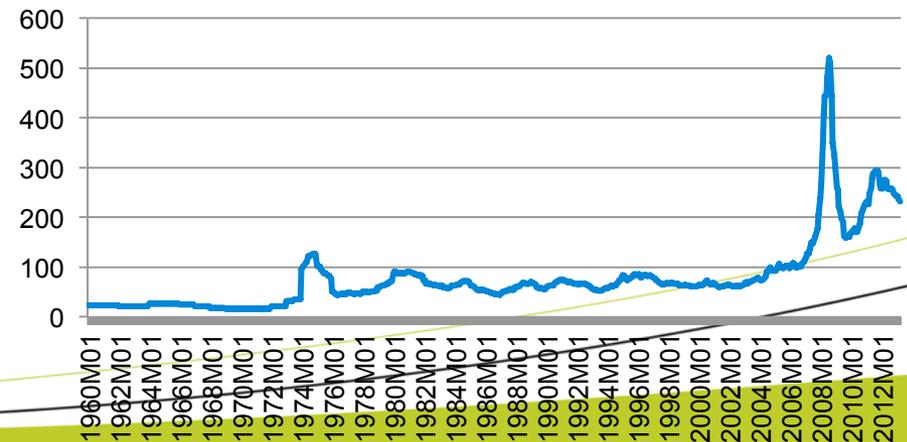
Fertilizer Demand and Prices

- Fertilizer demand has historically been influenced by dynamic and interrelated factors
 - population and economic growth
 - agricultural production
 - fertilizer prices
 - government policies

(FAO, 2008)

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Fertilizer Index (2005 = 100)



Supply and Demand: Demand

- Strong demand for fertilizers in emerging countries
 - Need for higher yields (food, biofuels)
- Higher food prices
- Unwillingness of farmers to pay high prices
 - Illiquidity because of collapse of credit market in 2008



Supply

- Ability of the supply side to increase production quickly
 - Declining fertilizer production in the US
 - 3 to 5 year gap between decision and production
- Production costs
 - Influence of oil and gas price
- Regulations
 - Chinese export tariffs



Conclusions

- P price is influenced by many impacts
 - Financial markets
 - Supply and demand
 - Trade
 - Crop price
- Availability of fertilizer in different world regions is unequally distributed
- Price volatility is increasing

Future Research

- What are the factors that influence the price starting with phosphate rock to food prices and how does the global fertilizer market function?
- How do financial market impacts influence a sustainable P use and how may they be used to foster sustainable P use?
- How can negative impacts on sustainable P use that result from the volatility of P prices be avoided to develop a sustainable P use?
- What instruments can be developed to support the sustainable use of P and fertilizer for farmers in developing countries and especially in Africa?

Thank you!

