

## Fertilizers: The seed growing secretly

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### Executive summary

- World fertilizer sales (USD160b) make up 4.5% of the global chemical market. By 2015, fertilizer consumption is expected to grow by +1.8% per year on average.
- Global production and consumption hide important regional disparities such as the arrival of large emerging agricultural producers in Asia-and elsewhere.
- After years of positive and negative price shocks, fertilizer markets' vulnerabilities have been partly resolved, benefitting prices, which are expected to be stable in 2014.
- In the end, the industry is very profitable: profit margins for the main actors have been on average 21% over the last 5 years. This high profitability is expected to remain, despite being subjected to fiercer competition between types of fertilizers, threats on the oligopolistic market structure, and economic and geopolitical risks.

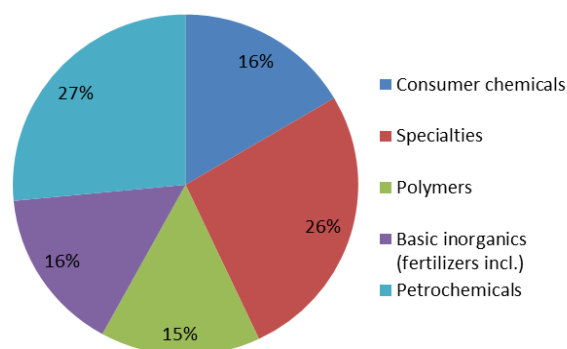
### Fertilizers: Micromarket for mega-players ?

Estimated at \$3700 USD billion in 2013, the world chemicals market is comprised of 5 activity groups with disparate characteristics. Fertilizers account for 30% of inorganic chemicals, which itself makes up 16% of the chemicals market (Chart 1). As a whole, fertilizers are equivalent to 4.5% of world chemical sales (\$160 USD billion). At the heart of the market for fertilizers, three groups of products distinguish themselves:

- Nitrogen fertilizers (61% of total world consumption in 2013), essential to the growth and yield of plants. Outside of the heart of the EU, urea is preferred (56% of ammonia totals). The market for ammonia is largely dependent on the supply of gas, and therefore coal. As a finished product, urea is subject to commercial flows from which more and more countries with low energy costs have begun to stand out.

- Phosphate fertilizers (22% of total consumed) strengthen plant roots and help counter dry periods. Since these fertilizers are taken from the solubilization of rock phosphate extracted

Chart 1: Worldwide turnover (2013)  
by subsegment



Sources: Cefic, Euler Hermes estimates

from mines, Morocco (world #1 exporter) and China boast a competitive advantage, particularly over the North American supply and the chemical processes used to produce MAP-DAP fertilizers.

- Potassium fertilizers (17% of total consumed) increase the plant's resistance to diseases. They are produced using potassium extracted from potash mines, which are more abundant than phosphate mines but unevenly distributed (three quarters of the total are located in Canada, Russia, and Belarus). It is the most widely traded fertilizer, due to the large distance between its producers and major consumers (US, Brazil, China and India).

### Fertilizers benefit from a growing global demand expected at +1.8% a year by 2015, driven by the needs of emerging countries

World fertilizer production is around 205 million tons (+2.3% in 2013 y/y). An analysis of regional production and consumption highlights the inevitable rise of Asia as a producer at the expense of Europe despite consuming 2/3 of world fertilizers. Furthermore, Eastern Europe produces more than it consumes (Chart 3), resulting in a major importance of exports. South America is a net importer, with Brazil showing a growing preference for potassium fertilizers. Its weakness lies in the fact that it does not (yet) have enough weight as a producer (of fertilizer) despite being a major agricultural exporter. For the record, Brazilian fertilizer demand has experienced an average of +5% annual growth, 2 percentage points higher than global demand. Brazil is the 4th largest consumer of fertilizers in the world, behind the US, China, and India.

Global consumption was approximately 190 million tons in 2013 (Chart 4). Supported by strong growth in agricultural production, world fertilizer consumption has shown an upward trend in the long term. After a brief slowdown in 2012 (+0.2%) from 2011, it rebounded to +2% growth in 2013. We estimate average annual growth at +1.8% over the 2012-2015 period. By 2016, the consensus is a growth rate of +1.3% for nitrogen fertilizers, +2.3% for phosphate fertilizers and +3% for potassium fertilizers.

Despite inter-regional competition and the emergence of Asia, the global market has adjusted without much difficulty, without surpluses, shortages, or pressure on inventories. This results in rather stable price dynamics and a degree of visibility of profitability for market actors.

Chart 2 : Production and consumption of fertilizers (2005, in millions of tons)

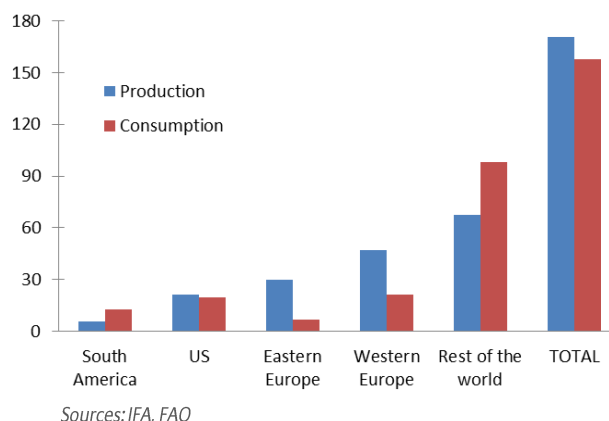


Chart 3 : Production and consumption of fertilizers (2012, in millions of tons)

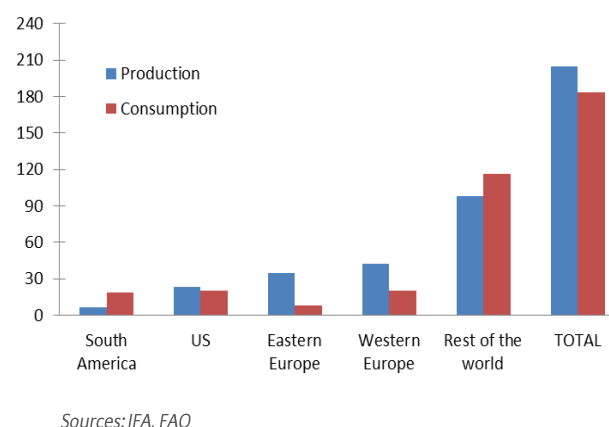
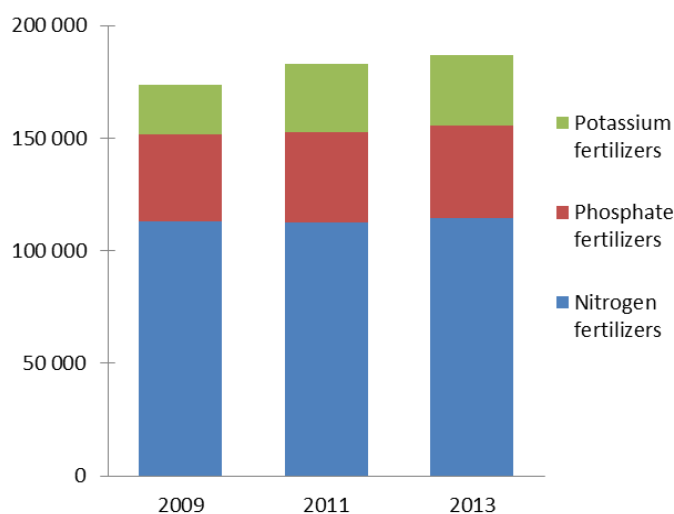


Chart 4: Worldwide consumption of fertilizers (in Ktons)



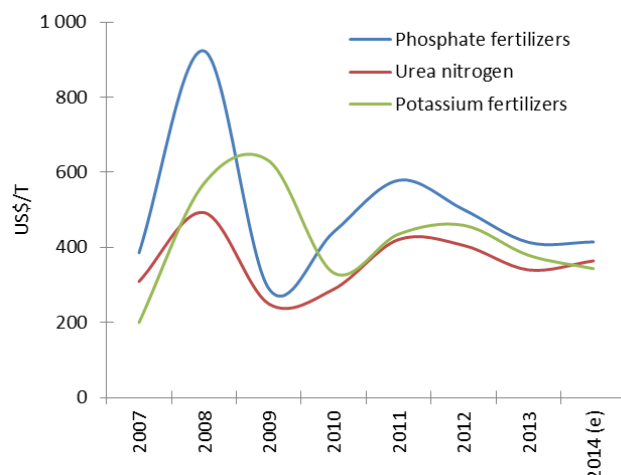
**The highlighting of vulnerabilities of the sector by the 2009 crisis has forced the market to adjust. Fertilizer prices should finally be relatively stable in 2014**

Beyond commodity market speculation between 2000 and 2008, the soaring of fertilizer prices during this period can also be attributed to the lack of investments by producers towards capacity utilization after the crisis of the early 90s, while demand from emerging countries was taking off. As a result, the drop in fertilizer prices was especially strong during the 2009 crisis, as the weakening of agricultural demand and the credit crunch became significant. The simultaneous entry of export oriented producers seeking profit from cheap materials –compared to the competition- only accentuated this fall.

After these shocks, 2011-2013 was categorized by relative price stability, as a result of an adjustment between supply and demand. In 2014, fertilizer prices as a whole should remain around \$400 USD/T (Chart 5). Nitrogen fertilizer prices will stabilize with new factories in East Asia located mainly in China. The market for nitrogen fertilizers remains weakly concentrated and mostly exploited by private actors, and is therefore vulnerable to price movements arising from the strategies of historical global players (YARA) against those benefiting from cheap gas prices (Saudi SAFCO, the Chinese QSLP, or the Americans with shale gas).

Given that China consumes its entire national production, the price of phosphate fertilizers is dependent on its #1 producer, Morocco, and Saudi Arabia’s ambitions for development into this market. In addition, the structure of the distribution of PCBs has caused potassium prices to become more volatile as of late. As an oligopolistic market, the market structure is not meant to change. Nevertheless, the changes in potassium fertilizer prices could still carry the stigma of dissension between Belaruskali and Urakali.

Chart 5: Evolution of prices



Sources: Bloomberg, World Bank

**Key players have registered a comfortable profit margin of 21% on average over the last 5 years**

Globally, fertilizer production is very profitable, as profit margins for our panel of actors comes in at 21% on average over the last 5 years (Chart 4). By analyzing the top ten world fertilizer producers, three characteristics stand out: (i) Eastern Europe’s focus on potassium fertilizers with Belaruskali and Urakali due to their monopoly on the extraction of rich potash deposits; (ii) Morocco’s essential role in phosphate fertilizer production as a result of its exclusive access to rich natural phosphate deposits; (iii) Historical dominance by the Norwegian YARA due to their gas reserves in Scandinavia, although currently in competition with other actors benefitting from lower gas prices, with the American CF in the lead.

Several characteristics help bolster the profitability of fertilizer manufacturers: (i) the comparative advantage of ammonia (and urea) producers who enjoy very low gas prices, at the expense of Europeans forced to shut down factories located too far from deposits, as its transport is much more expensive than that of oil; (ii) the oligopolistic nature of potassium fertilizer producers, who control the upstream (deposits and production) and the downstream thanks to a “cartelized” distribution in the Cantopex entity for North American manufacturers and in the PCB for Eastern Europe.

Barriers to entry into the market, however, are high due to the elevated cost of constructing a new potassium factory (an integral part from deposits to production of the finished product), along with the time required (9 years) and the ability of Canadian operators to quickly shift their supply to meet the demand, not unlike Saudi Arabia with its oil tap.

It is difficult to make predictions of the future profitability of the sector, as it is intertwined between a climate risk affecting crop yields, a sectorial risk due to the potential startup of new factories nearing the end of construction – particularly in China-, an economic risk related to the evolution of diverging gas prices dependent on the region considered, and a political risk as a result of crises in Eurasia and the Middle east. The possibility of overcapacities due to investments made at the peak of euphoria in 2008 paired with stagnating demand should keep profit margins around their current levels, between 19% and 21%.

**Table 6: Activity and Profitability of major players**

<b>Panel of firms (1)</b>	<b>2005</b>	<b>2008 (4)</b>	<b>2010</b>	<b>2013</b>
Revenue (3)	32.7	69.7	61.8	71.4
Net Income (3)	5.6	20.6	14.3	13.6
Profit margin (2)	17%	30%	23%	19%

- (1) PotashCorp, Agrium, CF Industries, ICL, K+S, Mosaic, YARA, Uralkali, QSLP, Saico and SQM
- (2) Profit Margin= (Net Income/Revenue)
- (3) Figures in \$USD bn
- (4) 2008 is considered an exceptional year

Source: Bloomberg, Euler Hermes

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