

DEBUNKING TEN MYTHS ABOUT PHOSPHATE ROCK PRODUCTION

Trends from 1992 to 2011

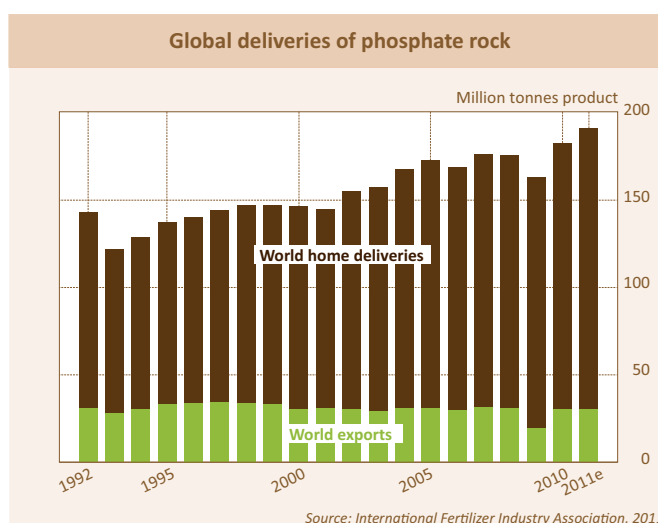
The importance of phosphate as one of the most important nutrients for global agriculture has come to the fore in recent years because of growing concern about this resource becoming scarce in the future. IFA has undertaken the publication of a series of short briefs on phosphate rock production in order to share its original data; outline the most common misconceptions; and present some of the key trends in this market. This brief highlights ten myths commonly disseminated in public information regarding phosphate rock production. It also provides the most up-to-date original data available on market trends.

Myth 1 – World phosphate rock production is declining

Between 1992 and 2011, global production of phosphate rock rose by an overall 35%, reaching a record level of 194 million metric tonnes (Mt) in 2011. This equates to an average annual growth rate of 1.8% during that period.

Myth 2 – All production of phosphate concentrates is exported

Much of the net increase in production has been driven by rising home deliveries. While global trade of phosphate rock remained relatively stable at around 30 Mt during the period from 1992 to 2011, home deliveries increased by 52 Mt to reach 164 Mt in 2011. The share of home deliveries in total sales grew from 77% in 1992 to 85% in 2011. Phosphate concentrates refers to commercially traded and consumed phosphate rock that has been processed to higher grades. Phosphate ore would grade between 5% and 39% P_2O_5 , while phosphate concentrates would grade between 28% and 40% P_2O_5 .

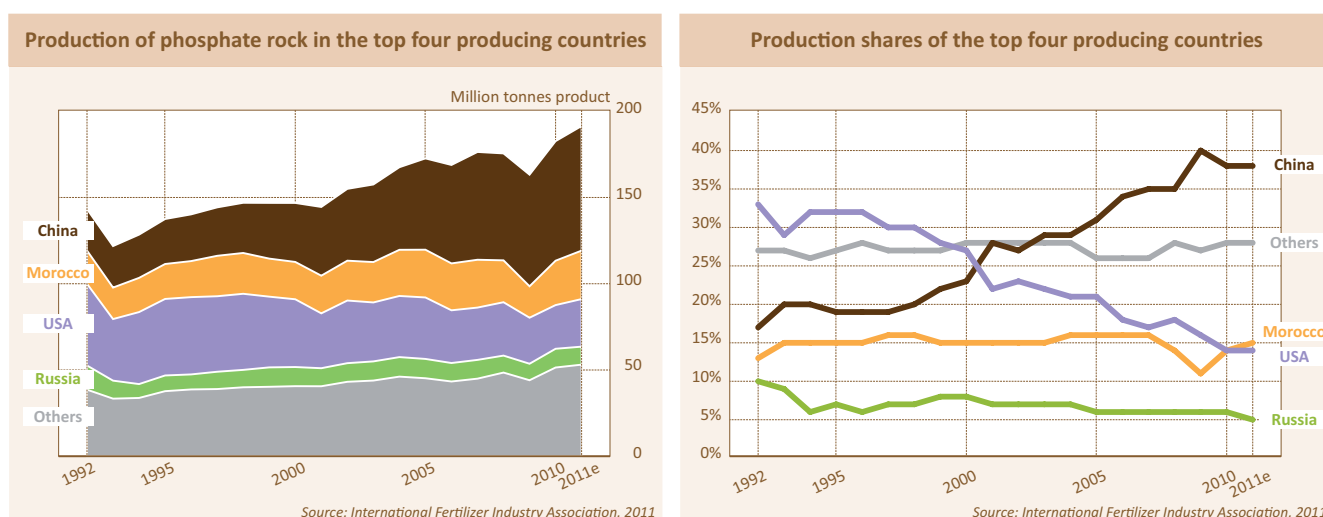


Myth 3— Much of the phosphate ore is extracted from guano and sedimentary deposits

Phosphate ore is currently mined from igneous and sedimentary deposits. Production from sedimentary deposits contributes 85% of world output, with the remaining 15% coming from igneous deposits. However, sedimentary deposits account for about 90% of world known phosphate reserves. Phosphate deposits of igneous origin are currently being exploited in Russia, China, Brazil, South Africa, Canada, Finland, and Zimbabwe, in order of declining production. The main countries where sedimentary phosphate deposits are exploited are China, Morocco, the United States, Tunisia, Jordan, Syria, Israel, Egypt, Peru, Viet Nam, Australia and India. Guano-derived phosphate deposits are only mined in a few countries, such as Australia (The Territory of Christmas Island) and Nauru.

Myth 4— The phosphate industry is static

The top four producing countries are China, Morocco, the United States and Russia. Together, these countries accounted for a stable share of 72-73% of global production between 1992 and 2011.



During the period from 1992 to 2011, production of phosphate rock in these four countries showed quite divergent paths. China became the world's largest producer, with a market share that expanded from 16% in 1992 to 35% in 2011. The United States lost its prominence in the early 2000s, while the shares of Morocco and Russia have remained relatively stable. Production in all the other countries as a whole increased, accounting for a stable 28% share of global output. Emerging production in Egypt, Algeria, Australia, Syria and Peru have offset the gradual decline in formerly large phosphate rock producing countries, such as Kazakhstan, Togo, Senegal and Nauru.

Myth 5— Morocco is the only key player in phosphate rock production

Morocco accounted for 14% of global phosphate rock production in 2011. IFA data show that phosphate rock concentrates are currently produced in 37 countries in the world. The top ten producing countries account for 90% of world production, with the top four contributing about 70%. In terms of geographical distribution, close to 16 countries are producing phosphate rock in Africa and West Asia; 10 countries in East Asia and South Asia and Oceania; 7 countries in the Americas; and 4 countries in Europe and Central Asia.

Myth 6— Morocco's phosphate output is stagnant

Production of phosphate rock in Morocco has increased steadily during the past 20 years, with the exception of a correction in 2007/08 as a consequence of the global economic and financial crisis. Moroccan phosphate rock production grew by an overall 45% between 1992 and 2011, reaching close to 29 Mt in 2011. The bulk of the net 10 Mt increase resulted from an expansion of domestic deliveries for downstream processing. While exports fluctuated between 10 and 14 Mt during this period, Morocco remained the world's largest exporter of phosphate rock, with a market share ranging between 35% and 45% of global rock trade.

Myth 7— The United States will soon stop producing phosphate rock because resources are being depleted

Between 1992 and 2011, production of phosphate rock in the United States registered a gradual decline of close to 2% per annum. Rock production dropped from 47 Mt in 1992 to 27 Mt in 2011 due to four factors: a reduction of exports of processed phosphates because of rising domestic supply in large importing countries such as China; a decline in the production of other P-based products; the termination of US phosphate rock exports in 1999/2000; and tightening environmental regulations on mining.

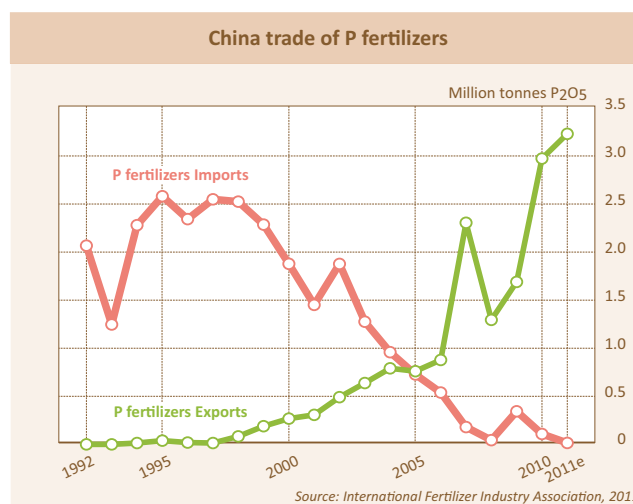
Myth 8— Phosphate production in Russia has totally collapsed

Between 1988 and 1994, production of phosphate rock in Russia dropped three-fold due to the collapse of its domestic fertilizer consumption. Russia's exports of phosphate rock culminated in 1998 at close to 5 Mt and have gradually declined to less than 1.5 Mt since then. However, during the past decade rock production in Russia has remained stable at around 10-11 Mt as home deliveries have gradually recovered.

Myth 9— China exports phosphate concentrates and imports P fertilizers

China has registered a sustained expansion of production of phosphate concentrates, notably since the mid-1990s. IFA estimated phosphate production in China at close to 75 Mt in 2011, representing three-fold growth compared with 1992. This expansion has been driven by a national investment policy encouraging domestic production of phosphate fertilizers and the reduction of China's prevalent heavy import reliance. Home deliveries of phosphate concentrates have shown sustained expansion during the past 20 years. Meanwhile, China's exports of phosphate concentrates reached a peak of 5 Mt in 2001 and gradually decreased to less than 0.8 Mt in 2011, owing to the implementation of export restrictions on raw materials in order to increase the lifespan of this resource.

Rock concentrates are used mostly to produce P fertilizers. Earlier, growth in P fertilizer output was driven by the need to meet China's growing domestic demand. This demand resulted in a massive reduction of imports. Much of the increase in China's P fertilizer production in recent years has been earmarked for export.

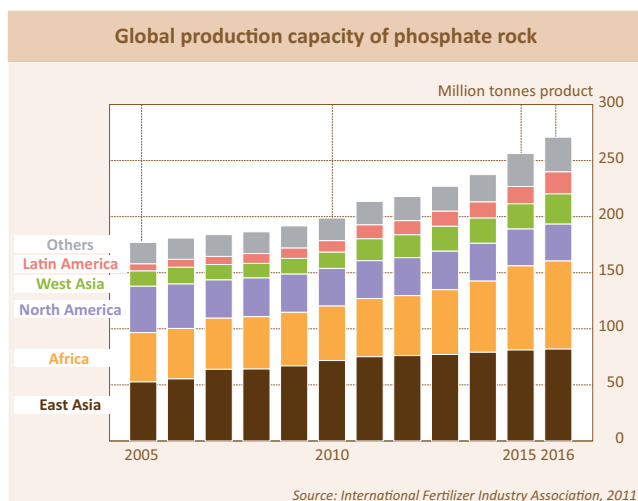


Myth 10— The phosphate industry is no longer investing in new capacity

Based on the 2011 IFA survey of future phosphate rock supply, world phosphate rock capacity is projected to increase by an overall 26% (from 203 Mt in 2010 to 256 Mt in 2015). Rock potential supply is projected to increase in virtually all regions, but the largest increment would occur in Africa, accounting for half of growth between 2010 and 2015. Other regions that would see an

increase in capacity above 5 Mt include Latin America, West Asia, East Asia, and possibly Oceania. Productive capacity is projected to decline in North America. China would contribute 10% of the world capacity increment between 2010 and 2015, compared with nearly 95% between 1990 and 2000.

On a global basis, all these developments have the potential to add close to 53 Mt of productive capacity between 2010 and 2015. The largest increases would occur in 2011 and 2015. Expansions from current producers would account for two-thirds of the total capacity increment during the forecast period. The remaining 19 Mt would come from new exporters and new integrated operations.



Over the next five years, new export-oriented capacity is likely to emerge in Peru, Australia, Kazakhstan, Namibia and Senegal. Additional capacity is projected to come on stream in established exporting countries with sizeable expansion plans; these would include Morocco, Algeria, Togo, Syria and Viet Nam.

Conclusion

Phosphate rock production has steadily continued to increase over the past 20 years, contradicting some assessments of declining output. While the concentration of production has raised some concern, which has been expressed in public debates, the number of producing countries actually expanded from 28 in 1992 to 37 in 2011.

Several projects are currently being developed with respect to deposits not considered fit for mining a decade ago. If all these projects, with known exploitable reserves, proceed as planned, there will be enough phosphate rock concentrates to meet demand during the next five years.

As seen in the largest phosphate mining countries, the development of new productive capacity has tended to be earmarked for on-site downstream processing. This adds value to the mineral resource, brings more revenues to local companies, creates local jobs, and widens the scope for increasing mining and processing efficiency. More phosphate concentrates have been produced – and will be produced – to manufacture processed fertilizers and industrial products, which ultimately will be sold locally or abroad. This trend reaffirms the shift in the trade of raw materials towards finished products.

Feeding the Earth represents a series of issue briefs produced by the International Fertilizer Industry Association to provide current information on the role of fertilizers in sustainable agriculture and food production.