

Fertilizer *facts*

Phosphate supply

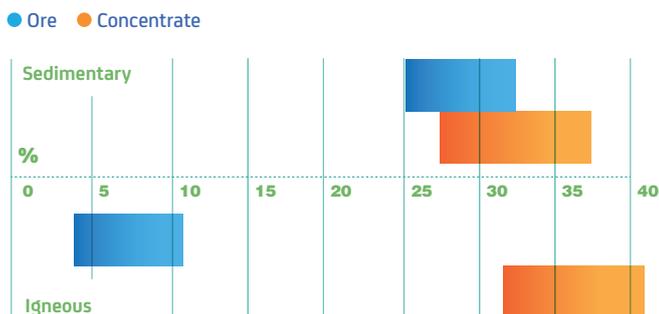
What you need to know to understand current trends

Technological innovation expands phosphate ore availability and increases phosphate concentrate grades

Phosphate rock is the primary source of phosphorus (P) and the main raw material for phosphate fertilizers. Phosphate ore is extracted from sedimentary deposits (85% of world production) and from magmatic deposits.

Phosphate ore grades range between 2% and 35% phosphorus pentoxide (P_2O_5). Beneficiation increases the phosphate content of saleable phosphate concentrates to 27%-40% P_2O_5 . But this process increases production costs and requires particular skills.

Since 2012, lower grade sedimentary ore left in the ground (below 26% P_2O_5) has been recovered economically and processed thanks to advanced flotation technology. This approach is increasing the quality of saleable phosphate concentrate, expanding reserves of known deposits, and extending the lifetime of established operations.

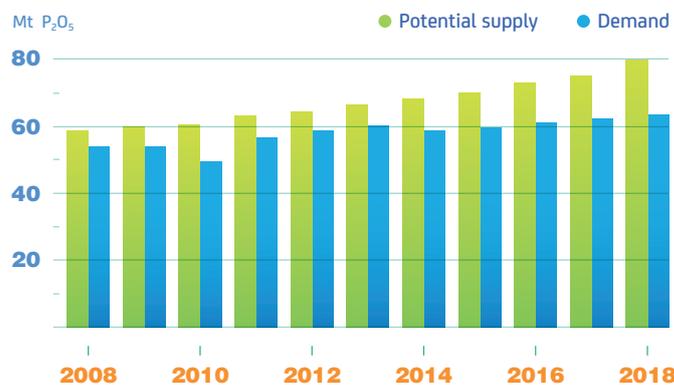


P_2O_5 content of P ore and P concentrate after beneficiation

Important investments are needed to secure future phosphate rock supply

Mining projects are planned over the long term (25 to 40 years). These projects take up to 8 years to come to fruition, requiring investments of US\$ 0.2 billion per million tonnes of greenfield capacity.

Between 2014 and 2018, the potential supply of phosphate rock concentrates is projected to expand by an overall 18% to nearly 80 million tonnes (on a P_2O_5 basis). This increase in capacity has already required total capital expenditures in excess of US\$ 6 billion since 2013.



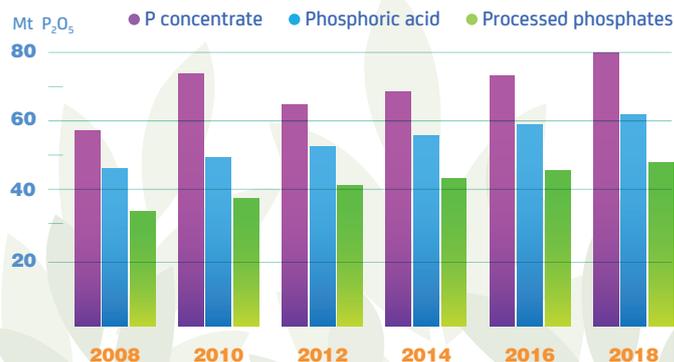
Global P rock potential supply and demand

More downstream processing is creating new fertilizers and skilled jobs

Since 2008, most new phosphate projects have been geared towards downstream processing rather than focusing solely on extraction of phosphate rock. This vertical integration provides value-added to finished products, creates additional jobs, and enhances the quality of the finished products.

The most recent improvement in this sector is the manufacture of customized compound fertilizers. These fertilizers have more flexible nutrient formulations and include other macronutrients, as well as micronutrients. Customized compound fertilizers are being adopted rapidly by farmers, with the dual benefits of improving yields and minimizing losses to the environment when they are adequately applied.

Most phosphate-based projects have planned downstream developments for the period 2013 to 2018. These integrated projects account for more than four-fifths of all new phosphate rock mining projects. Overall, they could create up to 16,000 direct jobs and 30,000 indirect ones during the next five years.



Global capacity of phosphate products

