



Exploraciones Oceánicas  
S. de R. L. de C.V.

**PHOSPHATES FOR  
FERTILIZER INDEPENDENCE  
AND FOOD SOVEREIGNTY**

## EXPLORACIONES OCEÁNICAS

# PHOSPHATES FOR FERTILIZER INDEPENDENCE AND FOOD SOVEREIGNTY

The world population is projected to reach 9.7 billion by 2050. This leads to a need for more food (up to 70 percent more) than we have now, which will imply greater demand for grains and cereals.

- In a world demanding more fertilizer for agricultural production, Mexico would cease dependence on phosphate imports and could become an exporting nation.
- The country could potentially move towards food self-sufficiency.

Farmers globally face the need to increase their production of cereals and oilseeds. However, expanding their cultivated areas would contribute only four percent of what is required, and is an unviable option considering that global policies should aim at decreasing human impact on forested and jungle areas of the world.

This inevitably means that there is not enough arable land to feed the world's growing population. Therefore, **productivity yields in the land currently cultivated must become a priority.**

However, natural and organic fertilizers do not contain enough nitrogen, potassium and phosphorus to improve production to the required degree. **Phosphate-based fertilizers**, on the other hand, are made from phosphate rock, which occurs naturally and is found in sedimentary deposits of prehistoric fish and shark bones. Phosphates ( $P_2O_5$ ) are a natural form of phosphorus (P) that plants need for photosynthesis. **These are the most strategic to enhance crop production.**

## 1. MEXICO PHOSPHATE SUPPLY AND DEMAND OUTLOOK

Mexico has three producers processing phosphate rock: Fertinal (in Lázaro Cardenas, Michoacán) which produces MAP and DAP fertilizer, Innophosat (in Coatzacoalcos, Veracruz), which produces purified phosphoric acid and industrial products, and some TSP fertilizer, and Agrogen (in Querétaro), a compound fertilizer producer with SSP capacity.

Fertinal also produces phosphate rock at an underground mine at San Juan de la Costa, in Baja California Sur. Production in 2020 is forecast at 865,000 tonnes, up from an estimated 523,000 tonnes produced in 2019. Production from this mine is sent to the Fertinal complex in Lázaro Cardenas.

However, production at the San Juan de la Costa mine has fallen since 2013, as the mine has faced increasing engineering challenges and there are questions about the viability of the mine over the medium-term.

**This leads to a profound concern over Mexico's ability to produce domestic fertilizer, which in turn implies a growing dependence in imports and more expensive crop production, all resulting in a threat to food sovereignty.**

## The Exploraciones Oceánicas project

The ExO project, located in Mexico's Exclusive Economic Zone off the coast of Baja California Sur, represents an opportunity to produce 3.5 MMT of phosphate rock at 24-28% P<sub>2</sub>O<sub>5</sub> concentration.

The project would be ideally located to supply the Fertinal production facility in Lázaro Cardenas and eliminate the need for imports of phosphate rock for that facility.

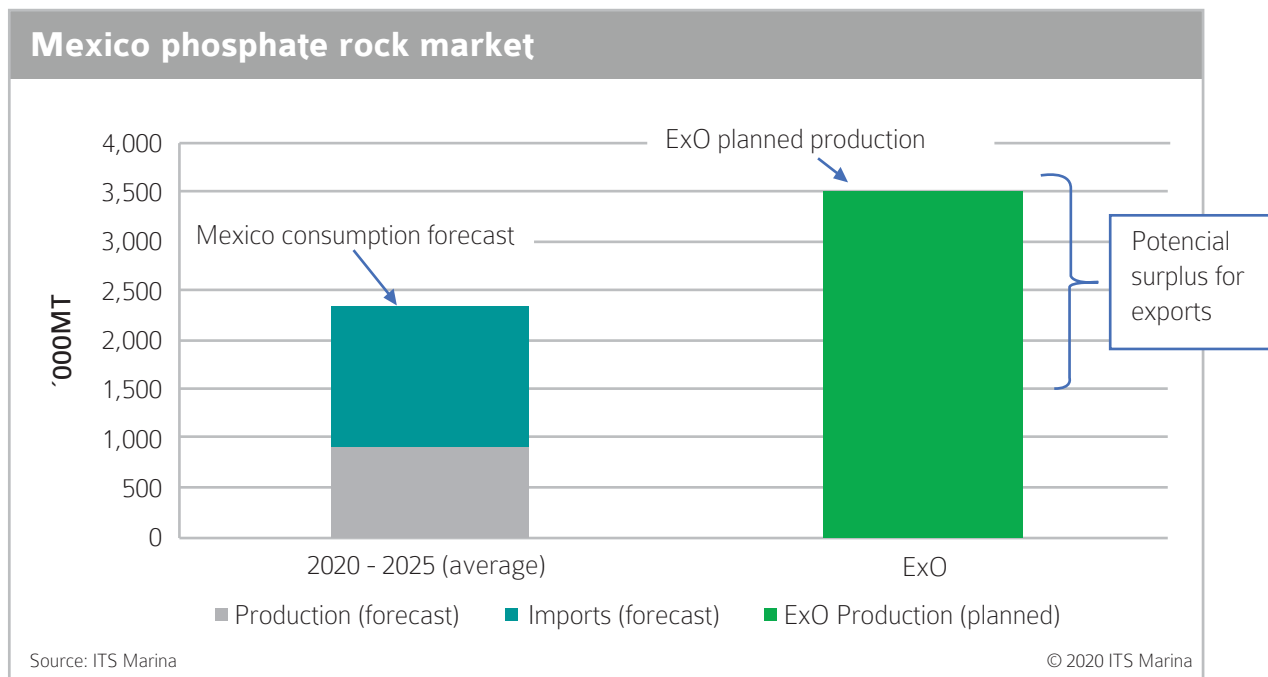
Given the engineering challenges facing the San Juan de la Costa underground mine and the costs associated with maintaining production, the ExO project -with a lower cost of production- could become the main supplier of phosphate rock to Fertinal, thus enhancing food security for Mexico.

### THE EXPLORACIONES OCEÁNICAS PROJECT –KEY TAKEAWAYS

Mexico currently imports more than half its phosphate rock demand. The ExO project represents a cost competitive alternative to imports and could replace a share of imports, particularly those shipped to the West Coast of Mexico to the Fertinal fertilizer production facility in Lázaro Cardenas.

The project could provide long-term domestic supplies to support Fertinal's operations and guarantee that it has choices in the future regarding production and investment by ensuring that its production base has fully competitive costs for fertilizer export markets.

## 2. EXO PROJECT TO INCREASE PHOSPHATE SUPPLY SECURITY THROUGH DOMESTIC PRODUCTION, AND GENERATE SURPLUSES FOR EXPORT



The ExO project would provide Mexico the ability to reduce dependence on imports of phosphate rock to meet Mexico's demand and ensure a long-term supply to support Fertinal's operations.

Domestic supply of phosphate would in turn lower cost inputs, allowing Fertinal to be more profitable and provide the opportunity to supply more competitively priced phosphate fertilizers to Mexico's agricultural sector.

Competitively priced fertilizers for farmers could potentially boost agricultural production in Mexico providing income and increased opportunity for Mexican farmers.

Additionally, the ExO's planned production more than meets the forecast domestic demand for phosphate rock (~2.3 MMT) and provides the opportunity for exports which further bolsters GDP and supports jobs throughout the economy.

ExO has the potential to support thousands of jobs within Mexico both through direct mining jobs as well as jobs in support and service industries.

- Tax generation is a net positive for Mexico with a potential of millions of pesos per year.
- Mexico heavily relies on phosphate imports with 75% of phosphate use in 2019 coming from outside the country. Bolstering domestic production mitigates risk from foreign drivers outside of Mexican control and develops a consistent supply of phosphate rock for Mexican fertilizer manufacturers like Fertinal.
- Increased competition through introducing new industry players as well as the development of an export market for Mexican phosphate leads to competitive pricing, which supports lower domestic phosphate pricing in Mexico. This lowers input costs for fertilizer manufacturers and has the potential to lead to lower finished fertilizer costs for Mexican farmers.
- Overall, the proposed mining operation positively impacts the Mexican economy through significant gains in jobs, GDP and output, bolsters a reliable domestic supply of phosphate rock, supports the development of a Mexican phosphate export market and increases domestic supplier competition supporting lower phosphate prices within Mexico.

The project would also be beneficial for the wider Mexico economy providing additional employment, demand for goods and services, and tax revenues for Mexico.

