

United Nations Conference on Trade and Development

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Facts and figures about the phosphate fertilizer market

By

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The views expressed are those of the author and do not necessarily reflect the views of UNCTAD.

Facts and figures about the **phosphate fertilizer market**

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Why phosphate matters?

Phosphorus is an essential nutrient found in soil and water. Its economic and agricultural functions are essential:

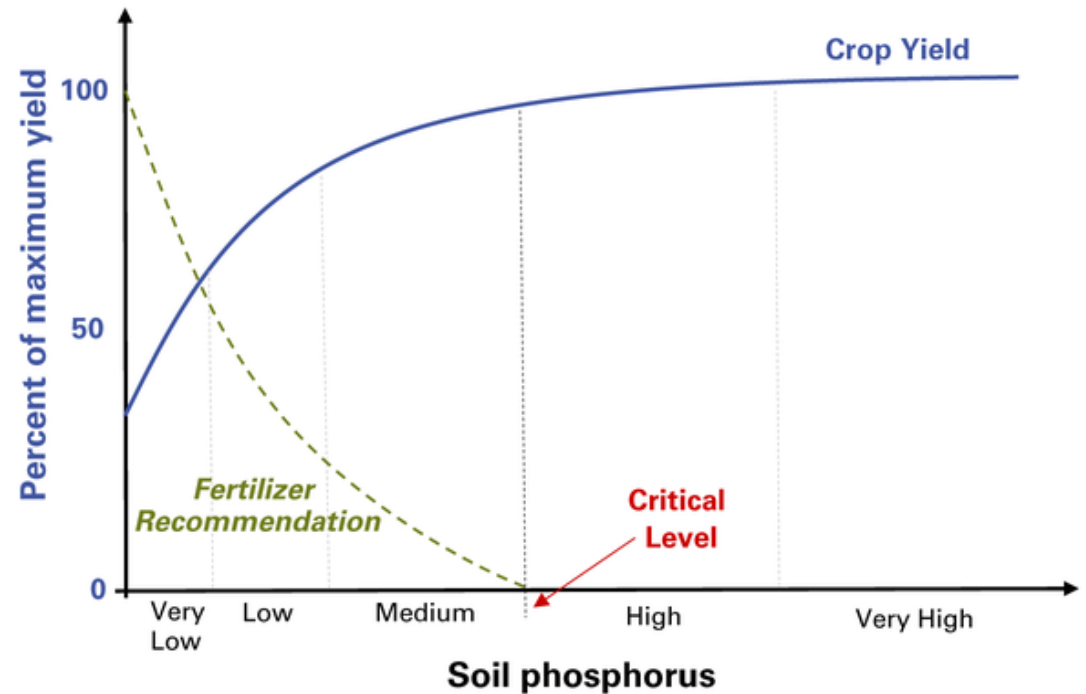
- **For agriculture.**
- **For industries.** Industrial phosphates are used in a broad range of end uses including food, detergents, personal hygiene, high technologies (lithium iron phosphate battery Li-IP) and construction and account for only around 6–8% of global phosphate consumption.
- **For medical sector.** Phosphorus-containing drugs belong to an important class of therapeutic agents and are widely applied.

A key determinant of agricultural productivity (1)

- **There are three critical nutrients for life: nitrogen, phosphorus and potassium.**
- **Nitrogen supports vegetative growth. Phosphorus improves roots and flowering. Potassium strengthens resistance to environmental assaults.**
- **Added with irrigation and pesticide utilization, they can boost food productivity, stabilize food production and strengthen food security**

A key determinant of agricultural productivity (2)

- Crop yields grow with phosphorus concentration up to a plateau
- Profitability increased and then decreased once the critical level of reached
- Welfare change of phosphorus fertilizer is positive if agricultural profitability gains outweigh social gains (environmental costs of fertilizer use)



Source: NC State Extension Publications

Phosphate fertilizers market



Phosphate markets

- **Monoammonium and diammonium phosphate** (HS Code 310530 & 310540)

Ammonia is added to phosphoric acid to produce MAP and DAP

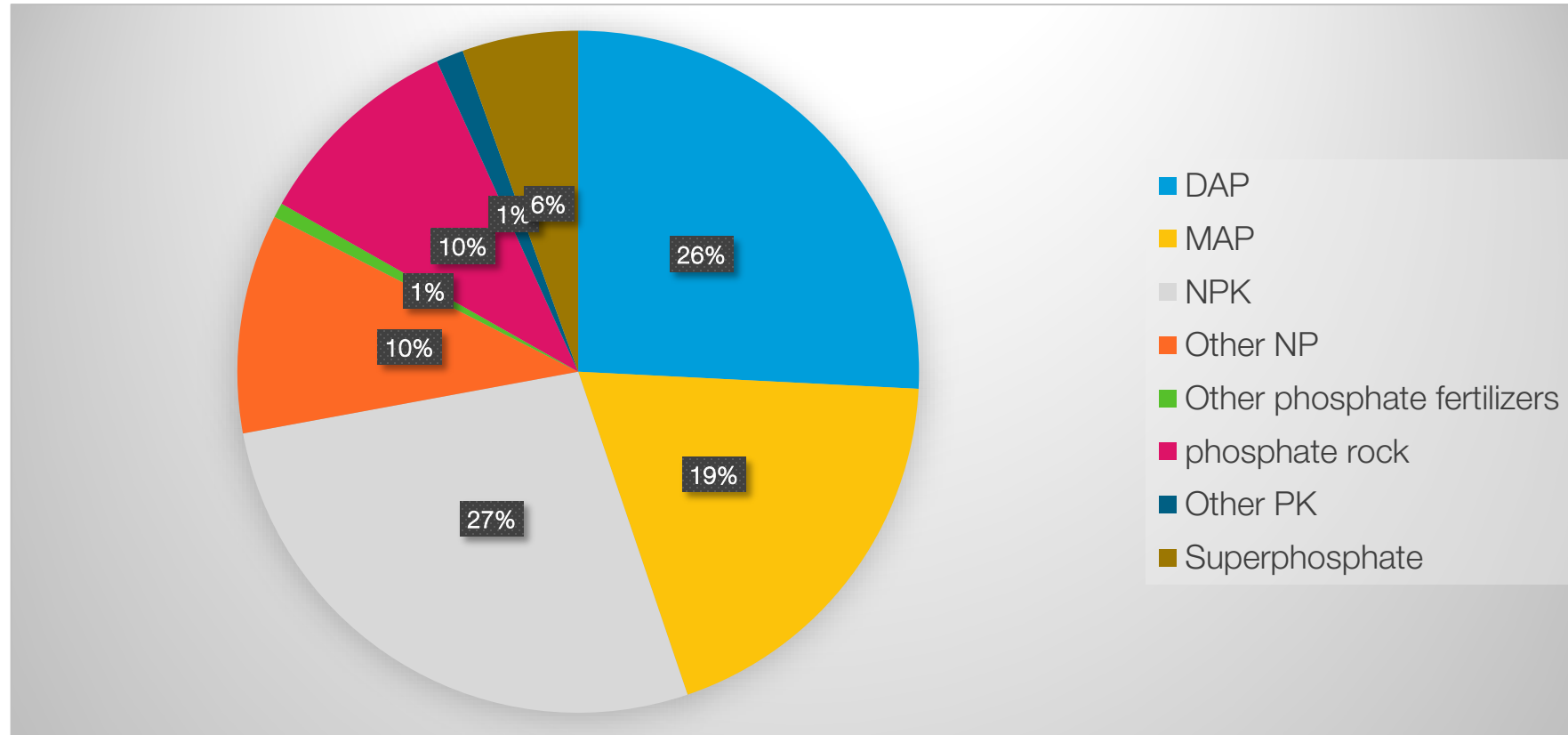
- **Superphosphates** (HS Code 310310, 310311 & 310319)

Superphosphates form a type of very efficient fertilizer due to a high phosphorus content and a higher rate of assimilation than simple phosphates.

- **NPKs, also called compound fertilizers** (HS Code 310520, 310551, 310559 & 310560)

Fertilizers that contain the three basic nutrients, nitrogen, phosphorus and potassium in different proportions. There are many kinds of NPK products in the world.

International trade of phosphate products



Source: FAOstat (Share of trade in value for 2019-2020)

Phosphate markets

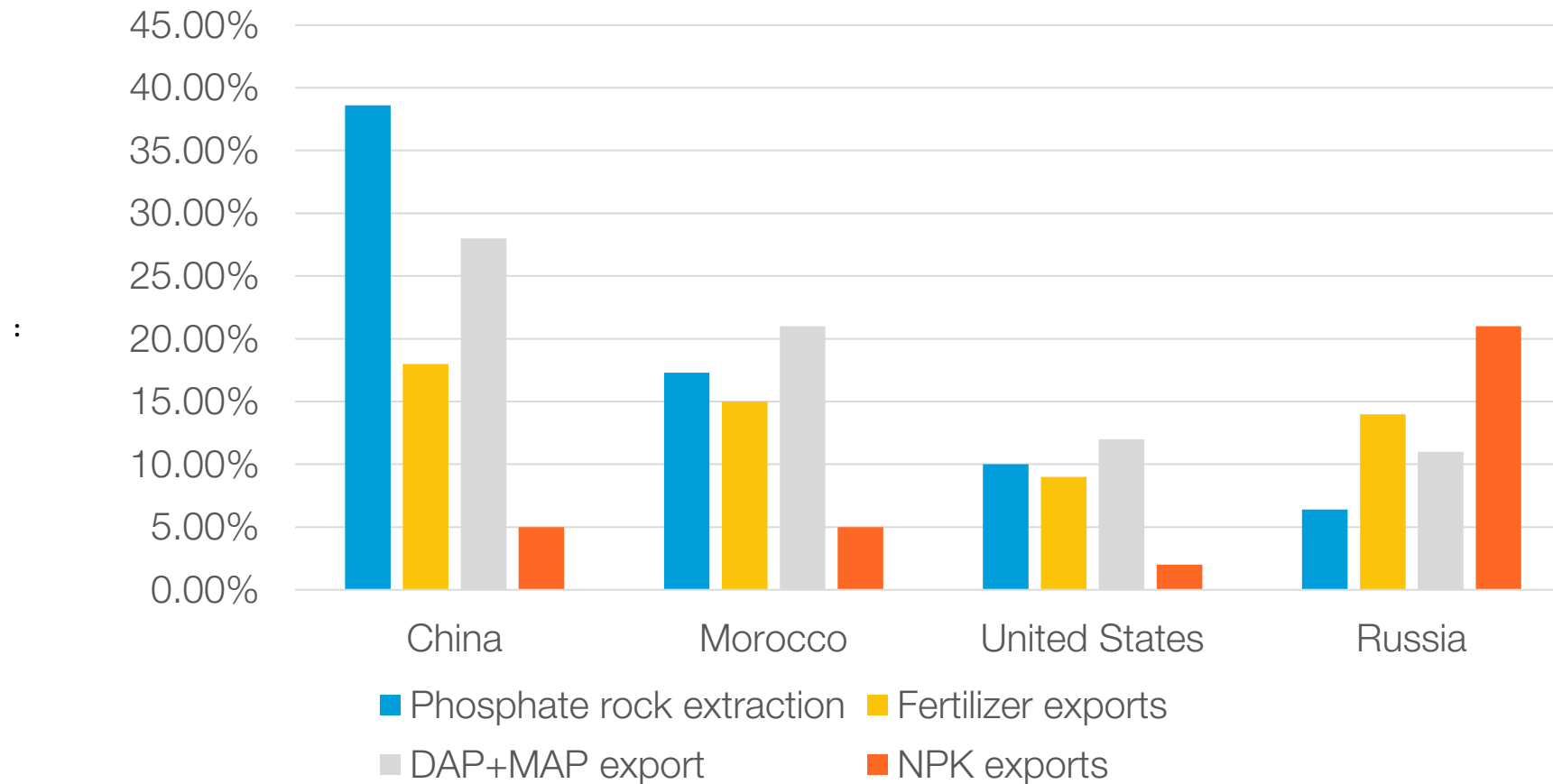
- Phosphate fertilizer production is closely related to phosphate rock extraction. It is an oligopoly market, with few major players.
- This is due to the nature of phosphate rocks (raw material) and deposits, as well as the strategy of countries with important phosphate deposits.
- 5 top phosphate fertilizer producers originate from countries with important reserves:
 - China (GPCG and YTH)
 - OCP Group (Morocco)
 - USA (Mosaic)
 - Russia (PhosAgro)

Phosphate rock market

	Production	Share	Reserves	Share
China	85.000	38,6%	3.200.000	4,5%
Morocco	38.000	17,3%	50.000.000	70,4%
United States	22.000	10,0%	1.000.000	1,4%
Russia	14.000	6,4%	600.000	0,8%
Jordan	9.200	4,2%	1.000.000	1,4%
Saudi Arabia	8.500	3,9%	1.400.000	2,0%

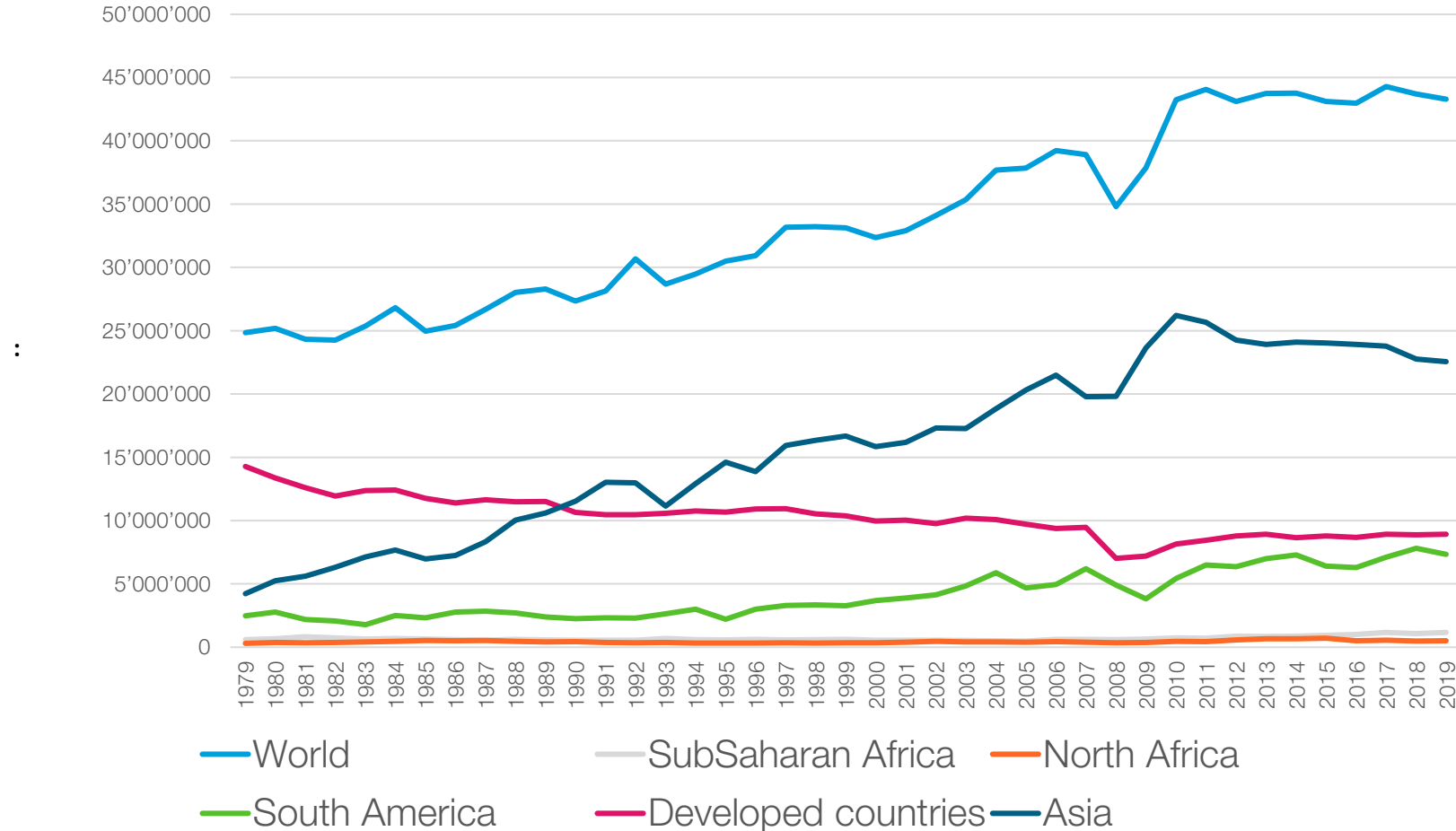
Source: USGS. FY2021. Volume in thousand tons

Phosphate product exporters



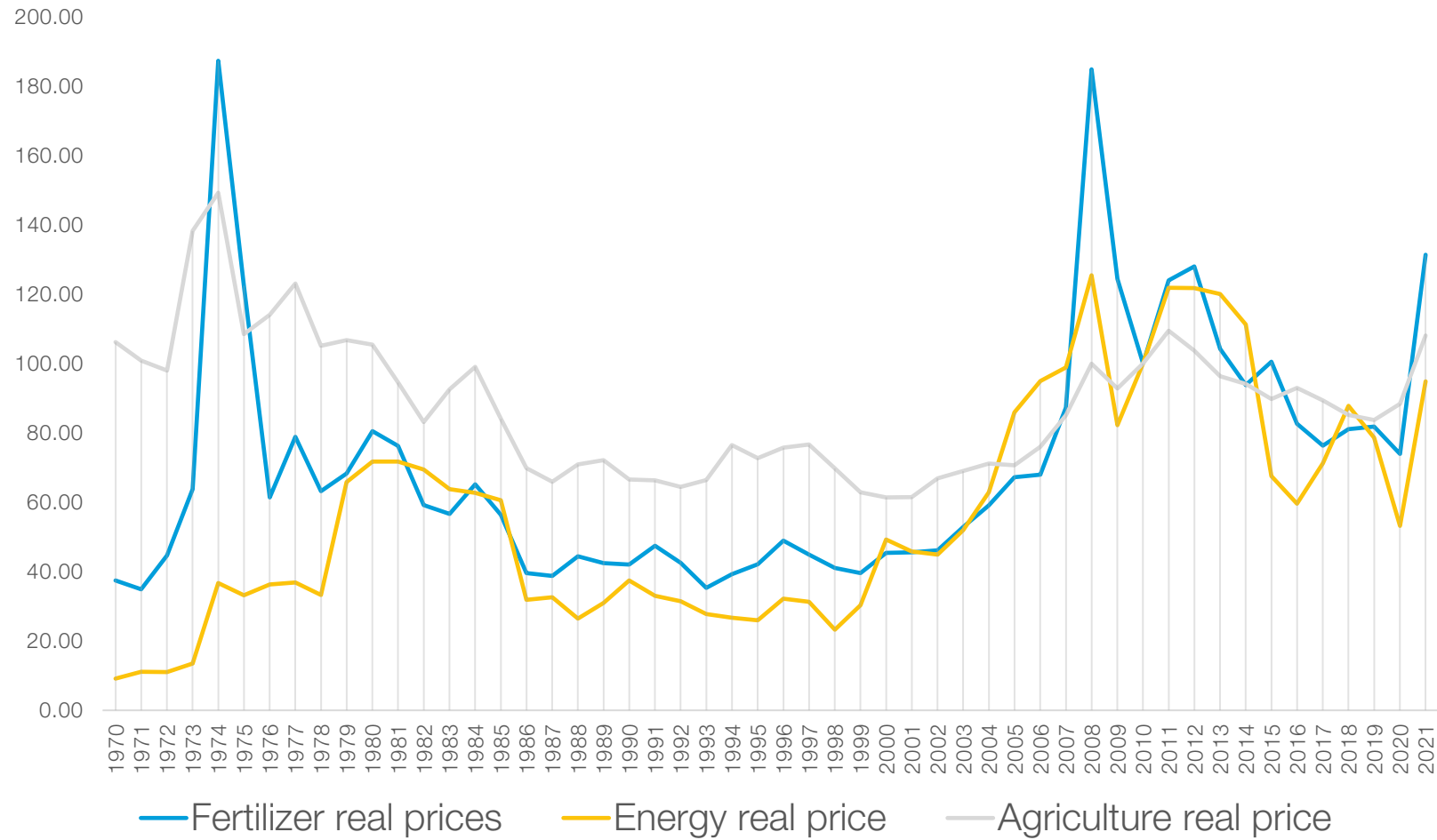
Source: FAOstat. FY2019-2020. Share in total trade (in value)

Agricultural Phosphate consumption



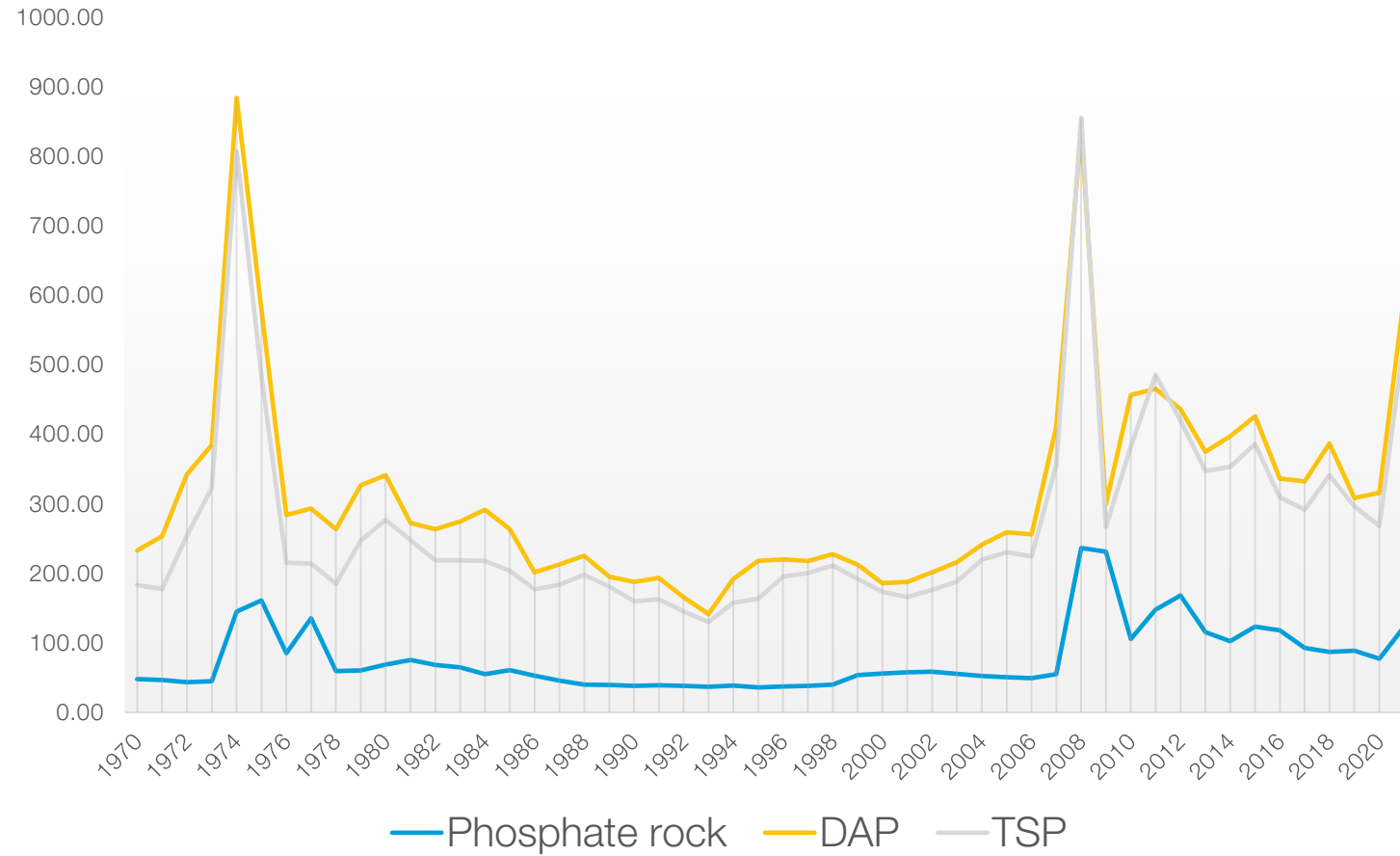
Source: FAOstat. In tons

Phosphate prices



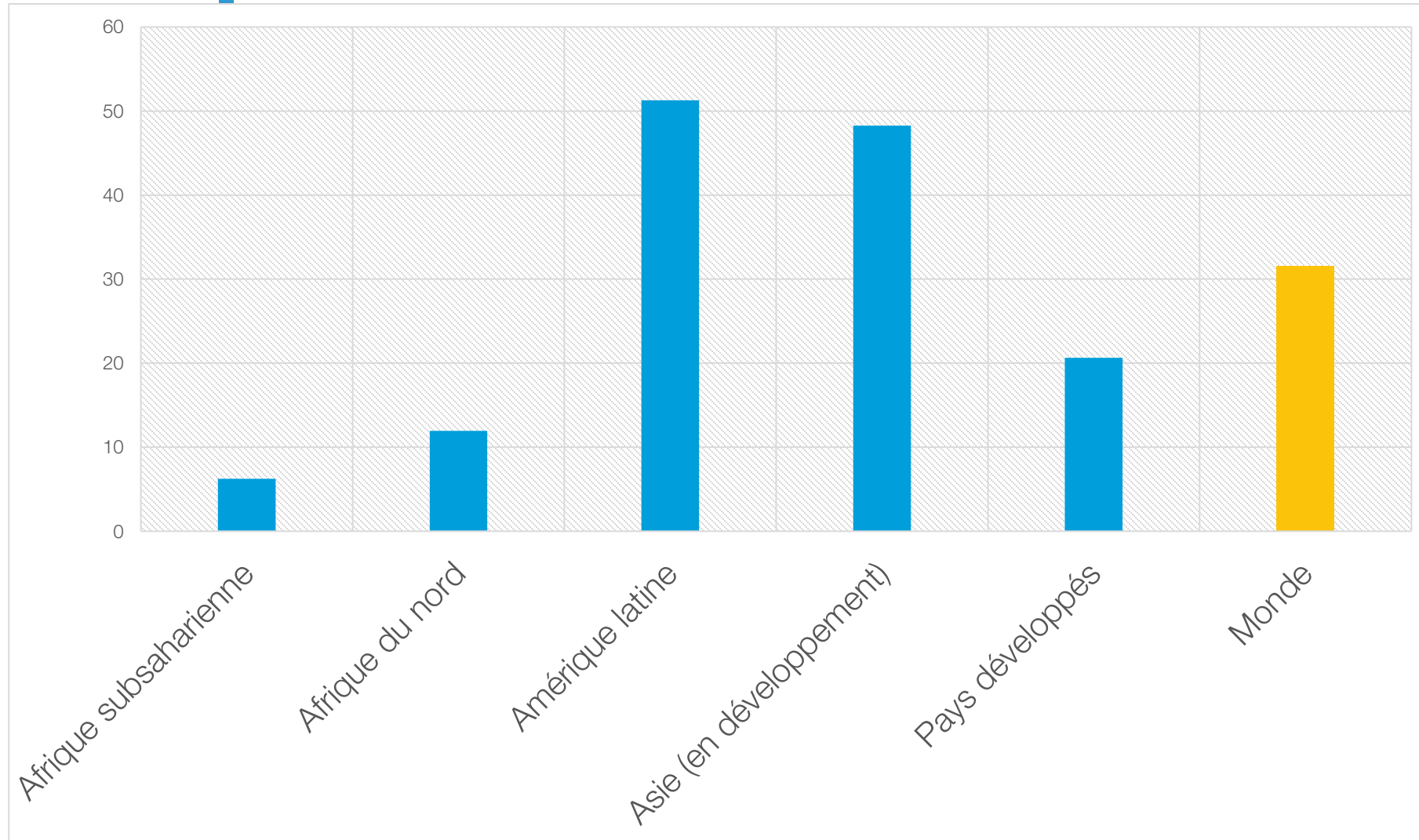
Source: World Bank. "Pink Sheet" Data

Phosphate prices (2)



Source: World Bank. "Pink Sheet" Data

Phosphate fertilizer consumption per hectare of arable land



Source: Author's calculations based on FAOstat data FY2019

Conclusion



The paradox(es) of phosphate (1)

- 1st paradox: we need more phosphate as human population grows, but we consume less. How can we explain this situation?
- 2nd paradox: prices are going up while average consumption is stagnant.
- 3rd paradox: Africa has become a major player in P fertilizer production. How come its farmers still have a limited access to it?

The paradox(es) of phosphate (2)

- **Mr. Michael Wurmser**, Norge Mining. Phosphates in Norway: Analysis of recent new deposit findings
- **Ms. Laura Cross**, International Fertilizer Association. Outlook of the fertilizer market
- **Mr. Kaushik Majumdar**, African Plant Nutrition Institute. The role of phosphorus in smallholder production systems and its sustainable management to improve crop yields
- **Ms. Jihane Ajiti**, Office Chérifien des Phosphates, Morocco. Review of the industrial development of the OCP group and of its development projects in Africa
- **Ms. Malathy Parasuraman**, Ministry of Agriculture, Sri Lanka. Present status and future trend of phosphorus industry in Sri Lanka

Thank you!

