

Fertilizer Sector by 2030

Frank Notes



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The post-pandemic global economic recovery has been affected by the ongoing geopolitical conditions. The global economy continues to remain depressed with significant disruptions in supply chain resulting in food and fuel price shocks. These are also prime contributors to high inflation and subsequent tightening in global monetary policies. However, despite external shocks, India performed unusually well when economy of most of the countries are distressed and registering even negative growth. With 7 percent growth forecast for the year 2022-23, it will be the fastest growing major economy in the world. Indian economy will also become fifth biggest economy in the world overtaking United Kingdom.

India is primarily an agrarian economy where majority of its population is dependent directly or indirectly on agriculture for livelihood. Agriculture has been the only sector that consistently performed well throughout the pandemic. The total food grain production is expected to reach 328 million tonnes for 2022-23, a rise of around 3.8 percent over previous year's output. The horticultural produce too recorded a rise to 342 million tonnes in 2021-22, registering a rise of 2.1 per cent over previous years production. With this performance of agriculture sector, India has become a major exporter of food grains, sugar, fruits, vegetables and other agri-commodities. India exported more than 21 million tonnes of rice and 8 million tonnes of wheat in 2021-22. Such a stellar performance has been possible due to amongst other measures, timely availability of inputs for agriculture.

Central government led by Hon'ble Prime Minister took pro-active steps by a slew of measures which ensured uninterrupted supply of fertilizers and insulated the farmers from volatility of fertilizer markets.

First the pandemic due to COVID-19 and then geopolitical conflict posed serious challenges to supply of adequate quantity of fertilizers to the farmers. India remains heavily dependent on import of fertilizers and fertilizer raw materials. There has been abnormal spurt in prices of these commodities. Very high energy prices also increased cost of production of indigenous fertilizers. The central government acted very proactively to facilitate both production and import of fertilizers. Government facilitated various agreements with foreign companies to supply of raw materials and fertilizers both for phosphatic and potassic fertilizers. But more importantly, allocation for fertilizers subsidy was increased to insulate the farmers from high prices. The fertilizer subsidy bill touched 1.3 lakh crore in 2020-21, 1.4 lakh crore 2021-22 and this year it may touch 2.5 lakh crores. Such a hefty increase in fertilizer subsidy and hence practically no increase in farmers prices, ensured that fertilizer consumption and hence agriculture production were not affected in spite of all round negative impact on other sectors of the economy.

The focus should now shift to make Indian agriculture more productive, reducing its impact on environment and also reducing carbon footprint of fertilizer production. Nitrogen is the primary nutrient most used in agriculture. But its use efficiency remains poor in India which is in the range of 30-40%. The rest escapes to environment (water and air) contributing to greenhouse gases in atmosphere. It will be realistic target to improve nitrogen efficiency from 30-40% to 40-50% in next 10 years by use of better fertilizer products like Nano urea, modified urea and other high efficiency products. It is important that integrated nutrient management which includes use of sufficient micronutrients and organics, is adopted. Adoption of better agriculture systems like precision and protected farming can also help to improve fertilizer use efficiency. This will reduce the nitrogen requirement by 4-5 million tonnes per year from

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present level of 20 million tonnes of nitrogen. Further, there is need for increase in use of bio-fertilizers which will help to fix 2 million tonnes more nitrogen per annum from atmosphere. On the production front, at least part of nitrogenous fertilizers can be produced with green hydrogen/ammonia, thus reducing use of fossil fuels.

Efficiency level of present fertilizer plants is very high and comparable to best plants in the world. Therefore, there is little scope for further improvement of energy efficiency of existing fertilizer plants and hence reduction in carbon dioxide emission. Further improvement, if at all will be very small. We expect that average carbon dioxide emission in ammonia production may reduce from 2.0 tonnes carbon dioxide per tonne ammonia to 1.9 tonnes in next 10 years.

All these measures can help us to reduce our carbon emission by almost half in production and use of nitrogenous fertilizers and contributing towards our NDC commitments made in Paris agreement. Improvement in nitrogen use efficiency will reduce cost of cultivation, reduce fertilizer subsidy and increase income of farmers. These measures will also reduce our dependence on imported natural gas.

In phosphate and potash, India is almost completely dependent on imports. India imports basic raw materials like sulphur and phosphate rock, intermediates like phosphoric acid, ammonia and sulphuric acid and finished products like DAP, complex fertilizers, muriate of potash (MOP) and sulphate of potash (SOP). There are challenges both on availability and price fronts. Events of last three years have increased these challenges. To address these challenges India has adopted multi-pronged strategy.

Indian companies have six joint ventures abroad for production of phosphoric acid. These companies have not only invested in equity of these projects but also provided technical expertise for construction, commissioning and operations. Government has facilitated several agreements between Indian and foreign companies for supply of fertilizers and fertilizer raw materials. But the capacity of phosphoric acid plants in India is not fully utilized due to lack of availability of sufficient quantity of phosphate rock and unfair competition from imports. There is need for investment in phosphate rock mines abroad. Simultaneously, we should exploit our low-grade rock available in Rajasthan and Madhya Pradesh through beneficiation route. There is need to increase use of bio-fertilizers containing phosphate solubilizing bacteria (PSB) which can make fixed phosphate in soil available to the crops.

In case of potash, we face even more serious challenge in recent times due to non-availability of sufficient quantities of MOP in world markets. Again, we have to invest in potash mines to increase potash-mining capacity and secure our supplies. Minor quantity of potash are available from distillery waste, molasses and sea water. Low grade potash deposits are available in Rajasthan which can be exploited through solution mining technology. But all the projects for exploitation of domestic resources need government support in form of viability gap funding. But a beginning has to be made in order to reduce our dependence on imports. Government has to keep the subsidy policies conducive to domestic production in the interest of 'Atmanirbharata' in supply of fertilizers.

This year FAI Annual Seminar is devoted to the theme 'Fertilizer Sector by 2030' and there will be presentation on technologies for green fertilizers, worldwide developments in sustainability area, sustainable agriculture, green financing and optimizing cost of logistics. The presentations and discussion in the Seminar will result in some useful recommendations which will be useful for policy makers and for all those concerned with farm and fertilizer sectors. These recommendations will be published in January issue of this journal. ■