

Feeding a Billion, Fuelling the Future

The Evolving Role of India's Fertiliser Sector



The story of India's agricultural success is closely intertwined with the growth of its fertiliser industry. From supporting the Green Revolution to sustaining food security, the sector has played a vital role in raising foodgrain production from 82 million tonnes in 1960-61 to more than 377 million tonnes in 2025-26. Today, over 70 million tons of fertilisers are consumed annually in more than 140 million farmlands. As the world's second-largest fertiliser market, India continues to place nutrient security at the heart of its agricultural strategy, supported by policies aimed at

ensuring affordability, availability and building self-sufficiency.

Today, the fertiliser industry stands at a critical inflection point. Global geopolitical uncertainties, supply chain disruptions, volatile raw material prices, sustainability imperatives, changing agricultural practices and rapid technological advancements are collectively reshaping the sector's future. As India seeks to enhance farm productivity, improve farmers' incomes, strengthen food security and build resilience against climate change, the role of the fertiliser sector becomes even more significant.

About The **AUTHOR**

Mr. S. Sankarasubramanian

is Managing Director and Chief Executive Officer, Coromandel International Limited. He is associated with Murugappa Group for over three decades and brings diverse experience spanning in the areas of finance, strategy and general management.

He is currently serving as Chairman of the Fertiliser Association of India and also represents the company in the boards of Tunisian Indian Fertiliser S.A. (Tunisia), Foskor (Pty) Ltd. (South Africa) and certain subsidiaries of the company



Impact of the Middle East Crisis

The ongoing Middle East crisis has exposed vulnerabilities in global fertiliser supply chains and heightened volatility in key raw material markets. Despite the global turbulence, India's fertiliser sector has demonstrated remarkable resilience. Domestic production, strategic imports, effective policy interventions and close coordination between industry and government have ensured adequate availability of fertilisers across the country.

However, despite its robust institutional framework, several structural challenges continue to merit attention.

One of the key concerns relates to nutrient imbalance. While fertiliser subsidies have played a pivotal role in ensuring nutrient affordability and supporting agricultural growth, differential subsidy mechanisms across nutrients have resulted in pricing distortions between urea, DAP and other phosphatic and potassic fertilisers. Consequently, the nutrient consumption ratio (N:P:K) in India has deteriorated from 4.7:2.0:1 in FY2010 to 9.3:3.5:1 in FY2025, moving further away from the agronomically desirable ratio of 4:2:1. This imbalance has implications for soil

health, nutrient-use efficiency and long-term agricultural sustainability.

Dependence on Imported Raw Materials

Another major challenge is India's dependence on imported raw materials. Fertilisers are among the most globally traded commodities, and disruptions in one region often have far-reaching consequences elsewhere. For India, which remains dependent on imports of key raw materials such as phosphoric acid, rock phosphate, potash, ammonia and sulphur, international developments directly influence domestic availability and affordability.

The experiences of the Covid-19 pandemic, geopolitical conflicts, disruptions in global shipping routes, volatility in energy markets and export restrictions imposed by certain producing countries have reinforced the need for diversification of sourcing arrangements, strengthening overseas resource partnerships and building long-term resilience into supply chains. The Government's Atma Nirbhar Bharat vision has driven several policy initiatives that have significantly accelerated domestic urea capacity additions. The recently announced National Investment

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Policy for Urea 2026 is another significant step towards enhancing India's self-reliance in urea production and reducing dependence on imports. Further, a supportive and stable policy framework remains critical for P&K sector to encourage fresh investments, strengthen raw material linkages, facilitate capacity creation, promote circular economy initiatives for by-product utilisation and improve India's long-term fertiliser security.

Sustainability is emerging as one of the defining challenges for the fertiliser

industry. As agriculture faces mounting pressures from climate change, shrinking land availability, declining soil health and increasing water stress, the sector must find ways to produce more with fewer resources. The challenge is no longer limited to increasing nutrient consumption, but to improving nutrient-use efficiency, reducing environmental impact and preserving long-term soil fertility. Achieving this will require greater focus on balanced fertilisation, integrated nutrient management and the adoption of resource-efficient products and technologies.

Opportunities Ahead

While challenges are substantial, the opportunities before the sector are equally compelling.

One of the most promising opportunity lies in accelerating the shift alternate fertilisers. As Indian agriculture becomes more intensive, diversified and quality-oriented, demand is steadily increasing for water-soluble fertilisers, micronutrients, fortified fertilisers, biofertilisers, biostimulants and customised nutrient solutions. Similarly, nano fertilisers, with its ability to improve nutrient absorption, reduce application rates and minimise losses aligns closely with the objectives of sustainable agriculture. India has already demonstrated leadership in this area, and further research, investments and

adoption can significantly strengthen agricultural productivity. Schemes such as PM PRANAM, which incentivise states to promote integrated nutrient management, can play an important role in encouraging the adoption of alternative fertilisers and nutrient-efficient technologies.

Digital agriculture is another transformative opportunity. Technologies such as precision farming, remote sensing, artificial intelligence and advanced data analytics can help farmers make informed nutrient management decisions based on specific crop and soil requirements. While adoption remains at an early stage, these technologies have the potential to significantly improve productivity, reduce input costs and enhance resource-use efficiency.

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Mechanisation and drone-based application technologies represent another exciting frontier. Drones can improve the speed and precision of fertiliser application, reduce labour requirements and facilitate targeted nutrient delivery.

Reforms Can Accelerate Growth

On the regulatory front, reforms under the Fertiliser Control Order (FCO) can further strengthen the sector's growth prospects. Streamlined regulatory processes, faster product approvals, simplified compliance requirements and science-based regulatory frameworks would accelerate innovation and facilitate quicker access to advanced nutrient technologies for Indian farmers.

The Government's ongoing efforts towards fertiliser digitisation and traceability systems also hold significant promise. Enhanced visibility into fertiliser demand and consumption patterns can improve planning, inventory management and supply chain efficiency. The recently introduced Framework for Fertilizer Sale initiative seeks to integrate AgriStack-based farmer data with fertiliser transactions through a digitally enabled booking and verification mechanism.

Way Forward

India's agriculture future will require a careful balance between affordability, sustainability, innovation and self-reliance. Strengthening domestic manufacturing capacities, securing global resource linkages, promoting balanced nutrition, accelerating technological adoption

The fertiliser industry has successfully supported India's food security journey over the past five decades. The next chapter must focus on nutrient stewardship, sustainability and farmer prosperity. Through collaborative efforts between government, industry, research institutions, start-ups and farmers, India can create a future-ready plant nutrition ecosystem that enhances productivity, improves soil health and strengthens national food security.

