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GROWTH DYNAMICS AND POLICY INTERVENTIONS IN THE INDIAN FERTILIZER INDUSTRY

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Abstract

The fertilizer industry constitutes a vital component of India's agricultural sector, playing a decisive role in enhancing crop productivity, ensuring food security, and supporting rural livelihoods. This paper examines the development and growth of the fertilizer industry in India with special emphasis on trends in production, consumption, and imports, along with an assessment of major policy initiatives undertaken by the Government of India. The study is based on secondary data collected from the Annual Report 2023–24 of the Department of Fertilizers, Economic Survey of India, and other published sources. The analysis reveals a substantial increase in indigenous fertilizer production, particularly urea, supported by policy reforms and revival of production units. However, continued dependence on imports for phosphatic and potassic fertilizers and raw materials remains a major challenge. The paper concludes that while India has made significant progress towards self-reliance in fertilizers, sustained growth will depend on balanced nutrient use, technological innovation, and promotion of sustainable fertilizer practices.

Keywords - Fertilizer Industry, Agricultural Growth, Urea Production, Fertilizer Consumption, Imports, Government Initiatives, India

INTRODUCTION

Agriculture remains a cornerstone of the Indian economy, contributing significantly to national income, employment, and food security. According to the Economic Survey 2023–24, the agriculture and allied sector support nearly 42.3 percent of India's population and contributes about 18.2 percent to the Gross Domestic Product at current prices. The sustained

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growth of agriculture is closely linked with the availability and efficient use of critical inputs such as fertilizers, quality seeds, irrigation, and technology.

Among these inputs, fertilizers play a pivotal role in enhancing soil fertility, increasing crop productivity, and achieving self-sufficiency in food grain production. India is presently the second-largest consumer and third-largest producer of fertilizers globally. Despite substantial domestic production capacity, the country continues to depend on imports for finished fertilizers and essential raw materials. In this context, a systematic analysis of the development and growth of the fertilizer industry is essential to understand its performance, challenges, and future prospects.

Key Aspects of the Fertilizer Industry

The growth of the fertilizer industry in India is influenced by several interrelated aspects:

1. Expansion of indigenous fertilizer production capacity, particularly urea
2. Increasing fertilizer consumption driven by intensive farming practices
3. Continued dependence on imports for phosphatic and potassic fertilizers
4. Government pricing, subsidy mechanisms, and regulatory framework
5. Technological innovations such as Nano fertilizers and coated urea
6. Sustainability concerns related to soil health and balanced nutrient use

These aspects collectively shape the structure and performance of the fertilizer industry.

Objectives of the Study

The present study has been undertaken with the following objectives:

1. To examine the growth and development of the fertilizer industry in India.
2. To analyze trends in production, consumption, and imports of fertilizers.
3. To assess the role of government initiatives in strengthening the fertilizer sector.
4. To identify major challenges and emerging opportunities in the fertilizer industry.

Hypotheses of the Study

Based on the objectives, the following hypotheses are formulated:

H_1: There is a significant increase in indigenous fertilizer production in India over the study period.

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H_2: Government policy initiatives have positively influenced fertilizer availability and efficiency.

H_3: Despite growth in domestic production, India remains significantly dependent on fertilizer imports.

LITERATURE REVIEW AND ANALYSIS

Several studies have highlighted the critical role of fertilizers in enhancing agricultural productivity and ensuring food security in developing economies. Research indicates that the Green Revolution marked a turning point in fertilizer usage in India, leading to substantial increases in crop yields. Scholars have emphasized that fertilizer subsidies have played a crucial role in ensuring affordability for farmers, though concerns regarding fiscal burden and inefficiencies persist.

Recent literature points to imbalanced fertilizer usage, with excessive application of nitrogenous fertilizers compared to phosphatic and potassic nutrients, resulting in soil degradation and declining factor productivity. Studies also highlight India's heavy dependence on imports for Muriate of Potash and key raw materials such as phosphoric acid and rock phosphate, exposing the sector to global price volatility.

Government initiatives such as the New Urea Policy, revival of closed urea plants, Direct Benefit Transfer (DBT), and promotion of Nano fertilizers have been widely discussed in recent research. These reforms are viewed as steps toward improving efficiency, reducing leakages, and promoting sustainable nutrient management. However, scholars argue that long-term self-reliance requires diversification of nutrient sources, technological innovation, and greater emphasis on organic and bio-fertilizers.

Analysis and Discussion

Key Facts and Figures of the Fertilizer Industry in India

The following facts and figures highlight the scale, structure, and recent performance of the fertilizer industry in India.

1. **Share in Global Scenario:** India is the second-largest consumer and third-largest producer of fertilizers in the world, underscoring its strategic importance in global fertilizer markets.

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2. **Growth in Total Production:** Total fertilizer production increased from 385.39 Lakh Metric Tonnes (LMT) in 2014–15 to 503.35 LMT in 2023–24, reflecting a growth of over 30 percent during the last decade.
3. **Record Urea Production:** Indigenous urea production reached a historic high of 314.09 LMT in 2023–24, compared to around 239 LMT in 2018–19, mainly due to policy reforms and revival of closed plants.
4. **Sector-wise Contribution (2023–24):** The private sector contributed approximately 57.77 percent of total fertilizer production, followed by the cooperative sector (24.81 percent) and the public sector (17.43 percent).
5. **Consumption Level:** Total fertilizer consumption during 2023–24 was about 586 LMT, with urea accounting for the largest share, followed by NPK fertilizers, DAP, and MOP.
6. **Import Dependence:** About 87 percent of urea and 90 percent of NPK consumption is met through indigenous production, whereas 100 percent of Muriate of Potash (MOP) is imported.
7. **Raw Material Imports:** Nearly 90 percent of critical raw materials such as natural gas, phosphoric acid, ammonia, and rock phosphate required for fertilizer production are imported.
8. **Reduction in Urea Imports:** Urea imports declined to about 70 LMT in 2023–24, indicating progress toward self-reliance.
9. **Nano Fertilizers:** More than 1,000 lakh bottles of Nano Urea have been produced, with a substantial share already distributed to farmers, reflecting increasing adoption of advanced fertilizer technologies.
10. **Infrastructure Expansion**: In the last six years, six new and revived urea plants have added approximately 76.2 LMT to domestic urea production capacity.

Fertilizer consumption has also increased, reflecting intensified agricultural activity. While domestic production meets a substantial portion of urea and NPK demand, imports remain essential for DAP and MOP. The introduction of Nano Urea, Nano DAP, and Sulphur Coated Urea is expected to improve nutrient use efficiency and reduce environmental impacts.

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Findings

The major findings of the study, based on analysis of secondary data from government reports and existing literature, are summarized as follows:

1. The Indian fertilizer industry has recorded consistent growth over the last decade, with total fertilizer production increasing substantially and reaching over 503 LMT in 2023–24.
2. Indigenous urea production has achieved a historic high due to policy reforms such as the New Urea Policy and revival of closed plants, significantly reducing import dependence for urea.
3. The private sector has emerged as the dominant contributor to fertilizer production, particularly in complex fertilizers, while cooperative and public sectors continue to play a crucial role in urea manufacturing.
4. Despite improvements in domestic capacity, India remains heavily dependent on imports for phosphatic and potassic fertilizers, especially Muriate of Potash, and for critical raw materials.
5. Fertilizer consumption patterns reveal an imbalance in nutrient use, with excessive reliance on nitrogenous fertilizers compared to phosphatic and potassic nutrients.
6. Government initiatives such as Nano Urea, Nano DAP, One Nation One Fertilizer, and Direct Benefit Transfer have improved fertilizer availability, efficiency, transparency, and sustainability.
7. Promotion of nano and organic fertilizers indicates a gradual shift toward environmentally sustainable nutrient management practices.

Suggestions

Based on the analysis, the following suggestions are offered:

1. Strengthen domestic production of phosphatic and potassic fertilizers to reduce import dependence.
2. Promote balanced fertilizer use through soil health awareness and extension services.
3. Encourage wider adoption of Nano and organic fertilizers to enhance sustainability.
4. Improve logistics and storage infrastructure to minimize supply disruptions.

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5. Continue reforms in subsidy delivery through targeted DBT mechanisms.

CONCLUSION

The fertilizer industry occupies a strategic position in India's agricultural and economic development. The study reveals that India has achieved remarkable progress in expanding fertilizer production capacity, particularly in urea. Government initiatives and policy reforms have played a decisive role in enhancing efficiency and availability. However, persistent dependence on imports for certain fertilizers and raw materials, coupled with environmental concerns, remains a challenge. A balanced approach combining self-reliance, technological innovation, and sustainable nutrient management is essential for the long-term growth of the fertilizer industry.

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