

2. Urea Import – Economy

Nearly 90% of the urea consumed in India is import-dependent

1.Introduction

1. Urea has been the cornerstone of India's agricultural productivity since the Green Revolution, supplying essential nitrogen for crop growth.
2. However, excessive dependence on urea has created economic, environmental, and structural challenges.
3. Addressing these issues is critical for ensuring sustainable agriculture and reducing import dependence.

2.Role and Importance of Urea in Indian Agriculture

Chemical Nature and Properties

1. Urea is a nitrogenous fertilizer with the chemical formula $\text{CO}(\text{NH}_2)_2$.
2. It contains about 46 percent nitrogen, the highest among solid fertilizers.
3. Its high nutrient concentration and low cost make it widely preferred.

Agricultural Significance

1. Urea promotes vegetative growth, especially in staple crops like rice, wheat, and maize.
2. It enhances protein synthesis in plants, improving crop yield and quality.
3. It has been instrumental in achieving food security in India.

3.Extent of Urea Dependence in India

High Consumption Levels

1. Urea accounts for around 56 percent of total fertilizer consumption in India.
2. It constitutes nearly 80 percent of nitrogenous fertilizer use.

Import Dependence

1. More than one-fifth of India's urea requirement is met through imports.
2. Over 80 percent of domestic production depends on imported natural gas.

Energy Linkage

1. Urea production is energy-intensive and heavily reliant on natural gas as feedstock.
2. Limited domestic gas availability increases production costs and vulnerability.

4.Reasons for Urea Imports

High Agricultural Demand

1. India's large agrarian base and cultivation of nitrogen-intensive crops drive high demand.
2. Urea remains the most affordable and accessible fertilizer due to heavy subsidies.

Insufficient Domestic Production Capacity

1. Existing plants are often outdated and inefficient.
2. Establishing new plants requires high capital investment and long gestation periods.

Dependence on Natural Gas

1. Limited domestic availability of natural gas constrains expansion of production capacity.
2. Imported gas increases production costs.

Cost Competitiveness of Imports

1. In certain situations, importing urea is cheaper than domestic production.
2. Global price dynamics influence procurement decisions.

5.Key Concerns Associated with Urea Use

Fiscal Burden on Government

1. Heavy subsidies on urea significantly increase the fertilizer subsidy bill.
2. This creates pressure on public finances and limits fiscal space.

Imbalanced Fertilizer Use

1. Excessive nitrogen use compared to phosphorous and potassium disturbs the N -P -K ratio.
2. This imbalance reduces soil productivity and crop efficiency.

Low Nitrogen Use Efficiency

1. A significant portion of applied nitrogen is lost through volatilisation, leaching, and denitrification.
2. This reduces the effectiveness of fertilizer use.

Soil Degradation

1. Continuous overuse leads to soil acidification and micronutrient deficiencies.
2. Long-term soil fertility declines, affecting agricultural sustainability.

Environmental Impact

1. Runoff of nitrates leads to water pollution and eutrophication.
2. Emission of nitrous oxide contributes to greenhouse gas accumulation.

External Vulnerability

1. Dependence on imports exposes India to global price volatility and supply disruptions.
2. Energy dependence further aggravates strategic vulnerability.

6. Government Initiatives

Neem-Coated Urea (NCU)

1. Mandatory neem coating reduces nitrogen loss and improves efficiency.
2. It also prevents diversion of urea for non-agricultural uses.

Nutrient-Based Subsidy Scheme (NBS)

1. Encourages balanced use of fertilizers by subsidising phosphatic and potassic fertilizers.
2. Aims to reduce overdependence on urea.

Direct Benefit Transfer (DBT) in Fertilisers

1. Subsidy is transferred to companies after sale, improving transparency.
2. It reduces leakages and diversion.

Promotion of Nano Urea

1. Nano urea reduces the requirement of conventional urea while maintaining yield.
2. It improves nutrient use efficiency and reduces environmental impact.

Soil Health Card Scheme

1. Provides farmers with information on soil nutrient status.
2. Encourages scientific and balanced fertilizer use.

7. Recommendations and Way Forward

Shift Towards Green Urea Production

1. Reorient policies to promote domestic green urea using renewable energy sources.
2. Reduce dependence on imported natural gas.

Integration of Carbon Capture Technologies

1. Incorporating CCUS in urea plants can ensure a sustainable CO₂ supply.
2. It also contributes to emission reduction.

Enhancing Nitrogen Use Efficiency

1. Promote precision farming and advanced fertilizers such as nano urea.
2. Encourage adoption of organic and bio-fertilizers.

Structural Reforms in Fertilizer Sector

1. Gradual decontrol of urea pricing can improve efficiency and reduce subsidy burden.
2. Market-based mechanisms can encourage innovation and competition.

Promoting Balanced Fertilization

1. Strengthen awareness programmes to correct N -P -K imbalance.
2. Encourage integrated nutrient management practices.

Conclusion

While urea has been central to India's agricultural success, its overuse and import dependence pose serious challenges. A shift towards balanced fertilization, improved efficiency, and sustainable

production is essential. Comprehensive policy reforms and technological innovations can ensure long-term agricultural sustainability and reduce economic and environmental risks.

Source - <https://www.thehindu.com/data/indias-dual-dependence-on-west-asia-for-urea-production/article70768950.ece>

