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**EDITORIAL ANALYSIS**

# India's Fertiliser Challenge — Breaking the Urea Import Trap

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# India's Fertiliser Challenge — Breaking the Urea Import Trap

The Indian Express 21 April 2026 GS3

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## EDITORIAL SUMMARY

*Indian Express*, April 21, 2026 — India's fertiliser sector faces a structural paradox: fertiliser subsidies designed to make farming affordable have simultaneously created overuse, soil degradation, and an import dependency that leaves Indian agriculture exposed to global supply shocks. With urea imports dependent on natural gas feedstock routed through Hormuz-adjacent supply chains, and **MOP (Muriate of Potash) 100% imported**, India's food security has a hidden geopolitical vulnerability. The editorial recommends a transition from price-based to quantity-based subsidy delivery, accelerated nano-fertiliser adoption, domestic gas-based urea expansion, and investment in biofertiliser infrastructure.

## INDIA'S FERTILISER LANDSCAPE — THE DEPENDENCY MAP

### Three Primary Fertilisers

FERTILISER	TYPE	INDIA'S POSITION
<b>Urea</b> (nitrogen — N)	N fertiliser	~60% domestic; 40% imported; 45%+ of domestic production uses imported gas
<b>DAP</b> (Diammonium Phosphate — P)	P fertiliser	~50% imported; India has limited phosphate rock
<b>MOP</b> (Muriate of Potash — K)	K fertiliser	~ <b>100% imported</b> — India has no commercially viable potash reserves

India's **Nutrient-Based Subsidy (NBS) scheme** covers DAP and MOP with variable subsidy linked to international prices. Urea has a **separate fixed-price regime** — urea is sold at a government-controlled price far below market, making it the most overused fertiliser.

## The Subsidy Bill

YEAR	FERTILISER SUBSIDY (₹ CRORE)
2021-22	~1,62,000 crore (spike due to Ukraine war)
2022-23	~2,25,000 crore
2023-24	~1,64,000 crore
2024-25 (estimate)	~1,60,000-1,70,000 crore

India's fertiliser subsidy is the **third largest subsidy** after food and petroleum — a fiscal burden with significant growth implications.

## THE UREA PROBLEM — FIXED PRICE AND OVERUSE

### Why Urea Is Overused

Urea (46% nitrogen) is sold to farmers at a **government-fixed price of ₹242/45 kg bag** — far below the cost of production (~₹700+) and well below international prices. The difference is subsidised by the government.

This pricing structure creates:

- ❶ **Overuse of nitrogen** — farmers apply more urea than optimal because it is cheap
- ❷ **Imbalanced NPK application** — N:P:K ratio in India is skewed toward N (nitrogen); ideal is ~4:2:1, actual is often ~8:3:1
- ❸ **Soil health degradation** — excess nitrogen disrupts soil microbial ecosystem, reduces organic carbon
- ❹ **Groundwater nitrate contamination** — leached nitrates pollute drinking water aquifers
- ❺ **Diversion and black market** — subsidised urea is sometimes diverted to non-agricultural uses (e.g., industrial applications, adulteration)

### The Natural Gas Feedstock Problem

Urea is manufactured from **ammonia**, which is made from **natural gas** (via the Haber-Bosch process). India's domestic urea plants use:

- **Domestic natural gas** (from KG-D6, Bombay High) — limited supply
- **Imported LNG** — from Qatar, USA, Australia

Higher natural gas/LNG prices directly raise urea production costs — which the government must then absorb as higher subsidy. The Ukraine war (2022) and Middle East tensions (2026) that spike gas prices translate directly into India’s fertiliser subsidy bill expanding.

## THE POTASH PROBLEM — TOTAL IMPORT DEPENDENCE

India has **no commercially viable potash deposits**. All MOP (Muriate of Potash) is imported from:

SOURCE	SHARE
Canada (Nutrien, Mosaic)	~30-35%
Russia/Belarus	~25-30% (disrupted post-Ukraine war)
Jordan (Arab Potash)	~15-20%
Others	Remainder

The Ukraine war and resulting sanctions on Russia/Belarus disrupted ~25-30% of India’s potash supply, causing a price spike. India has been seeking long-term supply agreements with Canada and exploring Chile (lithium brine byproduct potash) — but structural vulnerability remains.

**India’s Potash Mining Ambitions:** KABIL (Khanij Bidesh India Limited) — a joint venture of NALCO, HCL, and MECL — is tasked with acquiring potash and other critical mineral assets abroad. Negotiations with Argentina, Chile, and Australia for potash deposits are ongoing.

## SOLUTIONS — THE TRANSITION PATH

### 1. Nano-Urea — India’s Innovation

**Nano-urea** — developed by **IFFCO (Indian Farmers Fertiliser Cooperative)** — is a liquid formulation of nitrogen in nanoparticle form:

NANO-UREA	CONVENTIONAL UREA
500 ml bottle	One 45 kg bag
Foliar spray (leaf application)	Soil broadcast
~30-50% reduction in nitrogen requirement	Full dose required
Higher efficiency — direct plant uptake	Much nitrogen lost to leaching/volatilisation
Reduces import dependence	Import-linked

IFFCO’s **nano-urea plant** in Kalol, Gujarat is operational. The Government of India has mandated nano-urea in some procurement schemes. However, farmer adoption remains limited due to:

- Habit and familiarity with conventional urea
- Need for spray equipment
- Mixed field trial results across soil types

## 2. Nano-DAP

IFFCO has also developed **nano-DAP** — reducing phosphorus requirements per hectare. India’s DAP import dependence makes this strategically important.

## 3. Biofertilisers

**Biofertilisers** use microorganisms to fix atmospheric nitrogen or solubilise soil phosphorus:

- **Rhizobium** — nitrogen fixation in legume root nodules
- **Azospirillum/Azotobacter** — free-living nitrogen fixers
- **Mycorrhizal fungi** — phosphorus solubilisation
- Can reduce chemical fertiliser use by 20-30% in certain crops

The **National Project on Management of Soil Health and Fertility** and PM-PRANAM (Promotion of Alternate Nutrients for Agriculture Management) incentivise states that reduce fertiliser consumption.

## 4. PM-PRANAM Scheme

**PM-PRANAM** (launched 2023) incentivises states to:

- Reduce chemical fertiliser use
- Promote organic and biofertiliser alternatives
- Receive 50% of the subsidy savings as grants for alternative nutrient use

## 5. DBT in Fertiliser — Direct Benefit Transfer

The government has implemented **DBT for fertilisers** — digital tracking via POS machines at retail outlets — to ensure subsidised fertilisers reach actual farmers (not diverted to industry). However, switching to a fully farmer-directed DBT (cash transfer) remains politically contentious.

### CRITICAL MINERAL DIMENSION — PHOSPHATE AND POTASH

The **National Critical Minerals Mission** (2025) identifies phosphate and potash as critical minerals for food security. India's strategy:

- **KABIL acquisitions** — overseas potash and phosphate assets
- **Rajasthan phosphate deposits** — Jhamarkotra (largest in South Asia) — RSMML mining
- **Recycling agricultural waste** — recovering phosphorus from sewage sludge (emerging technology)

### UPSC RELEVANCE

PAPER	ANGLE
GS3 — Agriculture	Fertiliser sector, subsidy, soil health, nano-fertiliser
GS3 — Economy	Subsidy reform, CAD, import dependence, fiscal cost
GS3 — Environment	Soil degradation, groundwater nitrate, NPK imbalance
GS2 — Governance	DBT in fertiliser, PM-PRANAM, NBS scheme
Mains Keywords	Urea subsidy, nano-urea, IFFCO, NBS, PM-PRANAM, KABIL, potash import, DAP, Haber-Bosch, biofertiliser, DBT fertiliser

### KEY FACTS

- **Urea price:** ₹242/45 kg bag (government-fixed) vs. ₹700+ production cost
- **Fertiliser subsidy:** ~₹1.6-2.2 lakh crore/year — third largest GoI subsidy
- **MOP:** 100% imported — no domestic potash reserves
- **DAP:** ~50% imported; phosphate rock imported from Morocco, Jordan

- **Nano-urea:** IFFCO innovation; 500 ml replaces 45 kg bag; 30-50% N reduction
- **IFFCO:** Indian Farmers Fertiliser Cooperative — world’s largest fertiliser cooperative
- **PM-PRANAM:** Incentivises states to reduce chemical fertiliser use; launched 2023
- **KABIL:** Khanij Bidesh India Limited — JV of NALCO, HCL, MECL; acquires critical mineral assets abroad
- **Haber-Bosch process:** Industrial nitrogen fixation using natural gas to produce ammonia → urea
- **NPK imbalance:** India’s actual ratio ~8:3:1 vs. ideal ~4:2:1 — excess nitrogen damages soil
- **Jhamarkotra:** Rajasthan phosphate deposit — largest phosphate deposit in South Asia; mined by RSMML


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