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How urea has been an investment success story

As many as six new plants, and a seventh in the pipeline, have been commissioned at a cost of over Rs 60,000 crore since 2019. And all of these in the “new Green Revolution” states

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As the sun bright after few rainy days, Laborer puts fertilizer at the paddy field in Ludhiana. (Express Photo by Gurmeet Singh)

Amid shortages in di-ammonium phosphate (DAP) and a general lack of manufacturing sector investments, one industry – urea – has actually seen significant installation of new production capacities and progress towards achieving the Narendra Modi government’s goal of *atmanirbharta* (self-reliance).

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Between 2011-12 and 2023-24 (April-March), India's domestic urea production has risen from 22 million to 31.4 million tonnes (mt), even with imports falling from 7.8 mt to 7 mt after peaking at over 9.8 mt in 2020-21. The current fiscal has so far recorded a further 31.7% drop in imports (table 1), which could even end up at below 5 mt – the lowest since the 4.7 mt of 2006-07.

TABLE 1

UREA: PRODUCTION VS IMPORTS (in lakh tonnes)

	Production	Imports		Production	Imports
2011-12	219.92	78.34	2019-20	244.55	91.21
2012-13	225.87	80.44	2020-21	246.03	98.26
2013-14	227.19	70.88	2021-22	250.76	91.36
2014-15	225.93	87.49	2022-23	284.95	75.80
2015-16	244.61	84.74	2023-24	314.09	70.42
2016-17	242.01	54.81	Apr-Nov 23	208.84	47.65
2017-18	240.26	59.75	Apr-Nov 24	205.07	32.55
2018-19	238.99	74.81			

Source: The Fertiliser Association of India

TABLE 2

RECENTLY COMMISSIONED UREA PLANTS (in thousand tonnes)

Company	Plant/Location	Start Date	Capacity	Production
Chambal Fertilisers	Gadepan-III*	Jan 2019	1,270.5	1,384.2
RFCL	Ramagundam**	Mar 2021	1,270.5	1,114.5
Matix Fertilisers	Panagarh***	Sept 2021	1,270.5	1,498.7
HURL	Gorakhpur@	Apr 2022	1,270.5	1,350.1
HURL	Barauni@@	Oct 2022	1,270.5	1,057.2
HURL	Sindri@@@	Nov 2022	1,270.5	1,143.8

Note: Capacity and production are in thousand tonnes. Production is for 2023-24.
 *Kota, Rajasthan; **Peddapalli, Telangana; ***Paschim Bardhaman, West Bengal; @Uttar Pradesh; @@Begusarai, Bihar; @@@Dhanbad, Jharkhand.

Greenfield projects

The above output increase has come mainly courtesy of six new plants: Three of Hindustan Urvarak & Rasayan Ltd (HURL) and the rest of Chambal Fertilisers & Chemicals, Matix Fertilisers & Chemicals and Ramagundam Fertilizers & Chemicals Ltd (RFCL).

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The six plants – the Chambal, RFCL and Matix projects entailed an investment of Rs 6,000-7,000 crore each, while Rs 8,100-8,600 crore for the HURL units built largely

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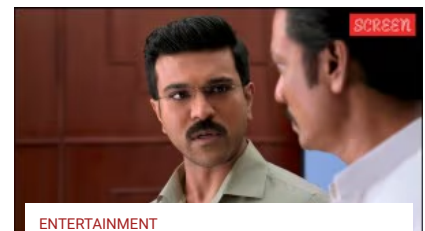
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during the post-Covid period – together produced 7.55 mt of urea in 2023-24 (table 2).

These greenfield plants run on natural gas (mostly imported) with an identical annual production capacity of 1.27 mt. Three of them – Matix, Chambal and HURL-Gorakhpur – produced beyond their rated capacities in 2023-24. They are also relatively energy-efficient, requiring only about 5 giga-calories (GCal) to produce one tonne of urea, as opposed to the earlier units that consume between 5.5 and 6.5 GCal.

Moreover, the new plants are located in the “new Green Revolution” areas of eastern Uttar Pradesh, West Bengal, Bihar, Jharkhand and Telangana, as against the older units such as the National Fertilizers Ltd’s (NFL) Bathinda, Nangal and Panipat catering to farmers in Punjab and Haryana.

“We have a 20% market share in Eastern India. Besides being the sole urea producer in West Bengal, we also supply to Bihar, Jharkhand, Odisha, Assam and Tripura,” said Nishant Kanodia, chairman of Matix Fertilisers. The company’s plant at Panagarh, near Durgapur, produced 1.5 mt at 118% capacity utilisation and consumed 4.856 GCal/tonne in 2023-24, making it the country’s biggest single-unit and most energy-efficient urea manufacturer.

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In addition, there is a seventh 1.27-mt urea plant coming up in Talcher (Angul district, Odisha) at an estimated cost of Rs 17,080.69 crore. Unlike the six gas-based units producing ammonia with technology licensed from KBR (US) or Haldor Topsoe (Denmark) and urea from Saipem (Italy) or Toyo Engineering (Japan), Talcher Fertilizers Ltd’s project, which is about two-thirds completed, will use coal as the feedstock.

“The coal is from the Talcher mines. Given its high ash content, there is provision for blending it up to 25% with petroleum coke sourced from Indian Oil Corporation’s Paradip refinery. The government is pushing this project, as the feedstock is substantially indigenous (pet-coke is a byproduct of domestic refineries, though they process imported crude oil) and based on a first-of-its-kind technology in India (coal gasification),” an industry source told [The Indian Express](#).

The lump sum turnkey contract for the Talcher plant’s coal gasification and ammonia-urea packages has been awarded to Wuhuan Engineering Company Ltd of China.

Make versus Buy

A basic question with regard to the new plants is whether the investment – totalling some Rs 61,575 crore, inclusive of Talcher – is worth it.

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The landed price of imported urea in India, based on NFL’s last tender, is currently \$370-403 per tonne. On the other hand, natural gas is being delivered to domestic urea plants at an average uniform “pooled” price of \$14.35 per mmBtu (million metric British thermal units) in terms of gross calorific value, which is \$15.9 (1.108 times) on a net calorific value basis.

Taking an energy consumption of 5 GCal/tonne and 0.25 GCal for every one mmBtu, the feedstock cost alone in the urea manufactured by the new plants comes to \$318 per tonne at \$15.9/mmBtu. Adding a \$175 fixed cost – which greenfield projects are



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entitled to for a period of eight years (supposedly to cover all other charges, including interest, depreciation, overheads and profits) – takes the total to \$493 per tonne. It is, thus, cheaper today to “buy” (import) than “make” (produce) urea at home.

But the counter to this argument is that the \$15.9/mmBtu delivered cost of gas is only around \$12.62 after excluding customs duty and other taxes, adding up to 26%. Netting out these levies would bring down the feedstock cost in domestic urea to \$252 and the total to \$427 per tonne.

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Also, the imported bulk urea arriving in vessels has to be discharged at the port, before bagging and reloading for dispatch to the consumption centres. Moving this urea to the northern and eastern hinterlands – which are farther away from the ports than from where the new plants are located – would involve an additional cost of \$30-35/tonne towards stevedoring, bagging, differential transport and interest expenses. That further narrows the gap between “buy” and “make”.

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On top of these are the benefits of creating employment and boosting overall economic activity that accrues from Make-in-India, as compared to simply Import-into-India.

How much to make

With seven terminals for handling imported liquefied natural gas (LNG) and pipelines crisscrossing much of the country, the economics of make-versus-buy urea has undergone a change in the last decade.

The LNG terminals – at Mundra, Dahej and Hazira (Gujarat), Dabhol (Maharashtra), Kochi (Kerala), Ennore (Tamil Nadu) and Dhamra (Odisha) – and pipelines network have made it easier to import and transport gas, instead of urea, to the hinterland. Import of urea now makes more sense for feeding the western and southern markets closer to the ports.

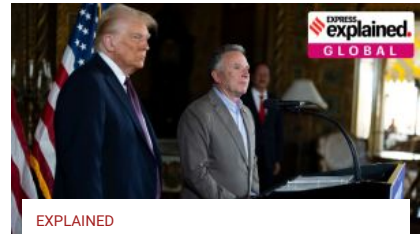
It, then, allows for a different *atmanirbhar* urea strategy of “making” more in Northern and Eastern India, while exploring greater “buy” options for Peninsular India. This could be combined with shutting down some of the older energy-inefficient plants and also curbing urea consumption.

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Between 2011-12 and 2023-24, India's consumption of urea has gone up from 29.6 mt to 35.8 mt, while not much for DAP (10.2 mt to 10.8 mt) and complex fertilisers (10.4 mt to 11.1 mt). The unbalanced consumption growth has been driven by farmgate prices of urea being frozen at Rs 5,360 per tonne (without neem-coating) since November 2012.

A more rational pricing would promote the judicious application of urea by farmers and, in turn, reduce the unsustainable pressure on both “making” and “buying” this nitrogenous fertiliser.

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