INDIAN FERTILISER INDUSTRY

Nano urea offers huge potential; farmer acceptability the key

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Highlights

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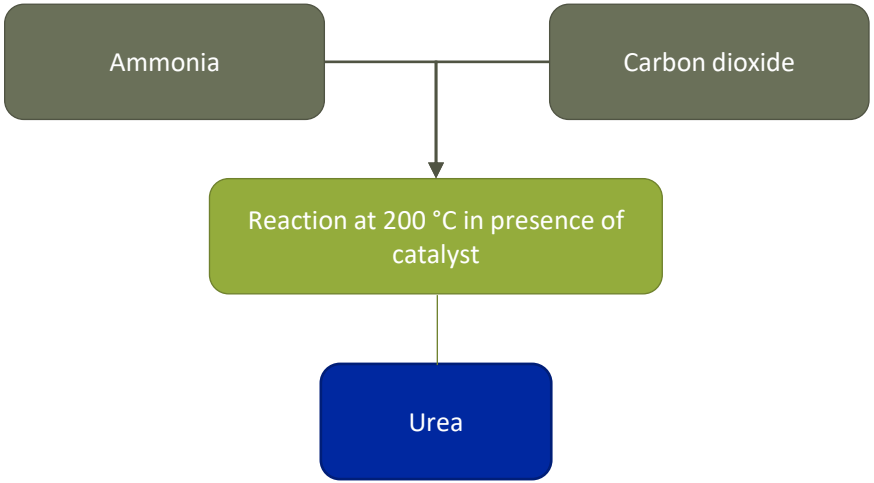
Nano urea is touted to be more efficient and has the potential to replace conventional urea. It will also help in reducing import reliance and will be easier to handle and transport. For FY2022, the subsidy saved on account of nano urea sales is expected to be around Rs. 1000-1500 crore and if the results are effective and the production goes as planned, after acceptance of the product in the market, subsidy requirements are likely to go down considerably, apart from foreign currency savings due to lower imports.

- Urea is one of the most used fertilisers in the country and around 20% of the total consumption is imported.
- Amid rising energy prices, the overall subsidy burden for both manufactured urea as well as imported urea has increased sharply.
- IFFCO has developed capabilities to produce Nano urea and has patented the technology for the same.
- It is estimated that one bottle of nano urea can displace a bag of conventional urea. During FY2022, IFFCO sold around 2.15 crore bottles of nano urea. Accordingly, the expected savings in subsidy was around Rs. 1,000-1,500 crore.
- Not only subsidy savings, this will help in reducing the reliance on LNG/urea imports, will also help in saving freight costs and improve the handling and efficiency of usage. However, farmer acceptance remains the key.
- At full scale of the announced projects so far, and assuming the product is fully accepted by the farmer, ICRA expects that this has the potential to replace a large quantum of conventional urea and can help in saving the subsidy budget substantially. At current prices, subsidy per bag of domestically manufactured urea is at around Rs. 1800-2000.

Conventional urea

Production



Background

Urea is a source of nitrogen. Conventional urea contains 46% nitrogen which is an important nutrient for crop growth and development. It is also considered to be an important raw material for chemical industry.

Given its low retail price, it is the most consumed fertiliser in India. Moreover, since the capacities are not sufficient, India imports a sizeable portion of urea from international manufacturers

- During FY2022, India imported nearly 9.1 MMT of urea, amounting to around Rs. 40,000 crore. India is heavily dependent on imports for fertiliser needs.
- Conventional urea has around 25% efficiency and plants absorb urea through roots. However, urea also has disadvantages like greenhouse gas emissions and its excess use makes the soil acidic.

Source: Industry, ICRA Research

Nano urea

Definition

Nano urea is in form of nanoparticles, It provides nitrogen(most important macronutrient for plants) to plants as an alternative to the conventional urea.

Nitrogen

A 500 ml bottle of nano urea has 40,000 ppm of nitrogen, which is equivalent to nitrogen nutrient provided by 1 bag of 45 kg of conventional urea.

Efficiency

Nano urea has high efficiency of around 85%, being bio-available to the plants because of the ultra small particles (20-50 nano meter) that offers more surface area and number of particles per unit area than conventional urea.

Source: Industry, ICRA Research

Key differences between nano urea and conventional urea

Nano urea

Higher efficiency
Efficiency of liquid nano urea can be 85-90%

Retail selling price of Nano urea
A 500 ml bottle of nano urea, at current pricing costs Rs. 240/-

Storage and transportation
A 500 ml bottle of nano-urea replaces a bag of 45 kg of normal urea. Accordingly, storage and transportation costs are much lower

Uptake
When sprayed on leaves, nano urea enters through stomata and other openings and is assimilated by the plant cells. Nano-urea is mixed with water and sprayed on crop leaves, thereby increasing water requirement.

Subsidy requirement
This is not a subsidised product

Environmental footprint
Reduced loss of nutrients from agriculture fields in the form of leaching and gaseous emissions

Conventional urea

Lower efficiency
Conventional urea has 25% efficiency

Retail selling price of conventional urea
A 45 kg bag of regular urea costs around Rs. 242/-

Storage and transportation
Conventional urea requires large space and high transportation cost compared to nano urea

Uptake
Conventional urea is absorbed through roots

Subsidy Requirement
At current prices, a bag of domestically manufactured urea attracts subsidy of Rs. 1800-2000

Environmental footprint
Low use efficiency of urea causes conversion to NOx emissions, leaching into rivers/lakes and drinking water

Both the products are likely to co-exist - conventional urea to be used at the time of basal application when there is no foliage, and for subsequent applications, nano-urea can be used for foliar spray

Nano urea and conventional urea production capacity

Several conventional urea plants being revived

- **Three plants of HURL of 1.27 MMTPA capacity each** are under various stages of construction under the New Urea Investment Policy-2012 (NIP-2012); the Gorakhpur plant has been commissioned, while Sindri and Barauni are expected to be commissioned shortly.
- **Ramagundam Fertilizer Corporation Limited's (RFCL)** urea plant started operations in June 2021, and production was revamped by the end of FY2022
- **Talcher coal gasification-based** urea plant expected to be operationalised by mid-CY2025 with award of LSTK contracts done for the coal gasification and ammonia urea package. Policy dispensation is being finalised, assuring 12% post-tax equity internal rate of return (IRR).
- **Matix fertiliser:** Plant started production in early September 2021 with capacity utilisation reaching 100% of rated capacity in early October 2021.

Nano urea capacity addition

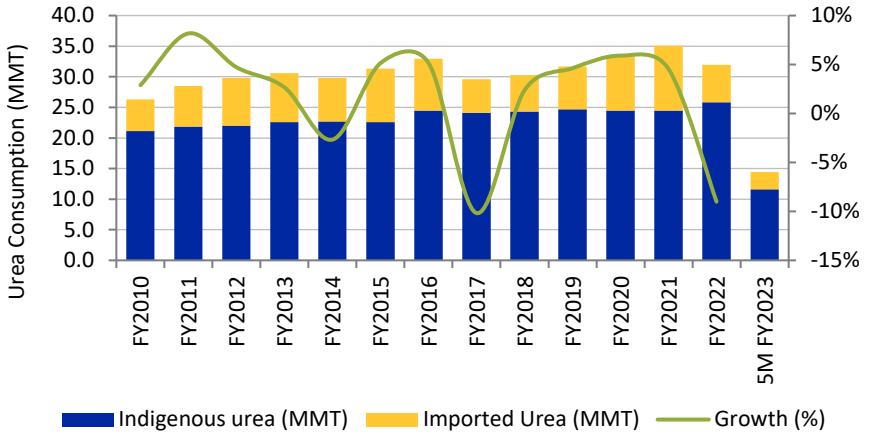
Location	Production capacity (in million bottles per annum)	Commercial production date
Iffco Kalol	50	Aug-21*
Iffco Phulpur	60	Sep-22
Iffco Aonla	60	Apr-23
Iffco Bengaluru	60	Mar-24
RCF Trombay	50	Mar-24
NFL Nangal	50	Jul-24
Iffco Deoghar	60	Nov-24
Iffco Assam	50	Nov-25
Total	**440**	

Source: ICRA Research
** - Commissioned*

- Current production of country's conventional urea is around 260 lakh tonne and 90 lakh tonne urea is imported to meet domestic market demand. The existing capacity for production of nano urea is around 1.5 Lakh bottles per day. By 2025, India is likely to have a capacity to produce 44 crore nano urea bottles per annum, which will be equivalent to 190-200 lakh tonne of conventional urea.

Conventional urea consumption and subsidy requirement

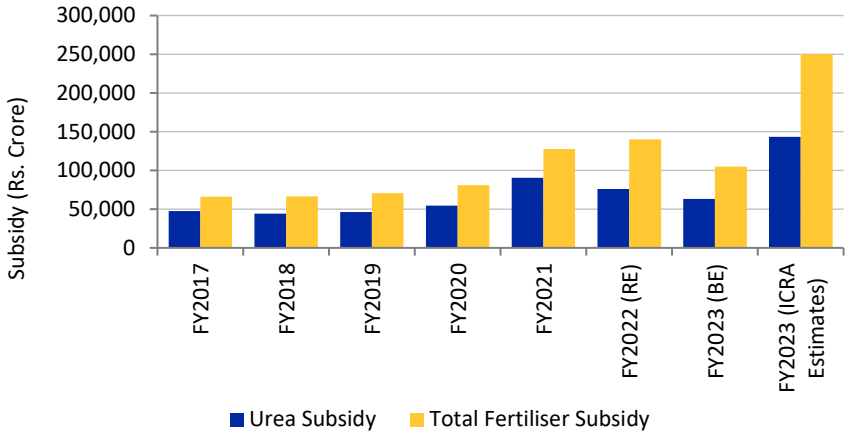
EXHIBIT – Urea consumption in India (MMT)



Source: fert.nic.in, ICRA research

- Urea consumption has remained at around 34-35 MMT per annum and around 20% of the consumption is met through imports. Going forward, with commissioning of new urea plants (HURL, Talcher and capacity ramp-up of Ramaghundam and Matix) the import dependence is likely to decline.

EXHIBIT – Urea subsidy requirement over the years



Source: Indiabudget, ICRA research

- Urea subsidy has been witnessing an increase, primarily on account of increase in gas prices. In the current fiscal as well, the subsidy is likely to remain elevated, given the high pooled gas price (as on date, it is around USD 23/mmbtu). Moreover, with increase in domestic gas prices, the pooled price is likely to go up further by $1.0/mmbtu.

Nano urea could substantially save subsidy budget of the Government

Sales in FY2022

IFFCO sold around 2.15 crore bottles in FY2022, which is equivalent to 9.67 lakh MT of conventional urea

Subsidy saved FY2022

This is expected to have resulted in a saving of around Rs. 1000-1500 crore of subsidies

Expectations – FY2023

While this will be the first full year of production for the IFFCO's Kalol unit, the focus will be to increase awareness about the product to improve farmer acceptability

Long term benefits

Assuming farmer acceptability, and around 40% capacity utilisation for nano urea from FY2027, the subsidy savings could be close to Rs. 30,000 crore every year, along with reduction in imports and foreign currency savings

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Thank You!