

1. India's Fertilizer Drain: Urea of Darkness

Context:

- With falling farm yields, exacerbated by climate effects, doubling farmers' real income by FY23 will be difficult, which means continuing to subsidise fertiliser will work against the government's stated goal for the Agriculture Sector.

India's Experience with Fertiliser:

- India's experience with fertilisers, in the later part of the Green Revolution, prompted it to adopt a policy of subsidising fertilisers.
- In 1977, the country had a total NPK (nitrogenous, phosphatic and potassic) fertiliser consumption of 4.3 million metric tonnes (mmt) and per hectare usage of 24.9 kg. by FY19, total consumption had risen to 27.3 mmt and per hectare usage stood at 137.6 kg.

Fertiliser usage and Food Production:

- Increased fertiliser usage also meant a concomitant spurt in agricultural production. Total food grain production reached 284.95 mmt in FY19, an over-three-fold increase from the production in 1977-78.
- Increased food grain production has been a boon for food security, with per capita availability increasing from 155.3 kg in 1976 to 180.3 kg in 2018.
- Looking at the gains, continuing with the fertiliser policy would not only seem sensible, but also given food grain requirement is going to go up, and the climate crisis impact predicted to be quite severe for India, fertiliser policy is Necessary.

Implications of fertiliser policy on Agriculture:

- India subsidising **primarily urea (N of NPK)**, there is rampant overuse of urea. Imbalance in the consumption of fertilisers has led a worsening of soil quality that has resulted in falling crop response to fertilisers, which, in turn, has caused **farm productivity and farmers' profitability** to be adversely affected.
- The **crop response ratio for fertiliser is also fallen** to 3.7kg grains/kg fertiliser in 2005, from 13 kg/kg fertiliser in 1970. Low crop response ratio means lower yields
- Ironically, falling productivity, in the face of hugely subsidised urea—urea accounts for 64% of the government's subsidy for fertiliser, with 77% of its price being subsidised—has led to worse overuse, drastically skewing the ideal usage ratio, and altering the soil chemistry further.

- To be sure, there could be other factors at play, too—indeed, but the link between fertiliser overuse and the decline in soil productivity is a strong one.
- With falling farm yields, exacerbated by climate effects, doubling farmers' real income by FY23 will be difficult, which means continuing to subsidise fertiliser will work against the government's stated goal for the agriculture sector.

Implications of fertilizer policy on Industry:

- With no proper incentives, domestic urea production rose just 4.4 mmt between 2000-01 and 2018-19, given urea production stood at 23.9 mmt while consumption was at 32 mmt in 2018-19, India, thus, is a major urea importer.
- The average cost of production for all domestic urea capacity stands at \$332.2/metric tonne. Given the global urea price stood at \$284.6/metric tonne, domestic urea production is simply uncompetitive. The fixed costs of the urea industry have been kept constant in nominal terms since 2002-03. While several committees have recommended a review and even the Cabinet has passed a decision to pay Rs 350/metric tonne as Interim Relief.

Imbalance use of Fertiliser:

- With the sharply increased share of urea subsidy in the total fertiliser subsidy—and the fact that nearly 77% of the cost of domestic urea production is subsidised, while for P&K fertilisers it was just 30-35%—there is rampant overuse of urea as the difference in prices of urea and P&K fertilisers is now quite large.
- Over time, the phosphatic and potassic content of the soil is affected greatly even as nitrogenous content is thrown off balance. The indicated N:P:K usage for Indian soil is 4:2:1. While it stood at 7:2.7:1 in 2000-01, it was still askew at 6.1:2.5:1 in 2017-18.

Implications of overuse of Fertiliser on Environment:

- Given Indian soils have relatively low nitrogen use efficiency (average of 22% estimated in 2008), the bulk of the urea applied **contaminates ground- and surface water and the atmosphere**. So, the current fertiliser policy is subsidising pollution.
- The bulk of **the applied urea is lost as ammonia (NH₃)**, dinitrogen (N₂) and NO_x (nitrogen oxides)—while the ammonia gets converted to nitrates, increasing soil acidity, NO_x gases are major air pollutants.
- Nitrate contamination of groundwater, which leads to conditions such as **Methaemoglobinaemia (commonly known as blue baby syndrome)**, has reached far beyond WHO safe limit in Punjab, Haryana and Rajasthan.

Conclusion:

- Instead of subsidising fertilisers, make direct cash transfers to farmers. With fixed amounts, farmers will likely temper their usage of fertilisers in the interest of soil health as prices of fertilisers will be decontrolled.
- The government needs to get sensible, else the health of the soil, citizens (including farmers) and the industry will suffer greatly.

