CHAPTER 2: NUTRIENT-BASED SUBSIDY (NBS) POLICY

2.1 Introduction

A government programme in India called NBS (Nutrient-Based Subsidy) policy aims to encourage farmers to utilise fertilizers in a balanced and intelligent manner. In India, the price of fertilizers was fixed with a fixed subsidy, regardless of how many nutrients they contained. Due to an uneven use of fertilizers and an excess of some nutrients, the soil degraded, and productivity decreased. *Ministry of Chemicals and Fertilizers, 2010*

The government implemented the Nutrient Based Subsidy (NBS) Policy from April 1, 2010, for phosphatic, potassic and complex fertilizers and from May 1, 2010, for Single Superphosphate (SSP) *(Department of Fertilizers, n.d.)*. Prior to the implementation of the NBS Policy, the Government of India set the MRPs for P&K fertilizers at a lower price than the fertilizers' true costs, and it reimbursed the makers and importers for the price gap in the form of subsidies. The subsidy amount is set under the NBS rule. As a result, manufacturers are more susceptible to changes in the cost of raw materials and foreign exchange (forex) rates. NBS, however, also provides manufacturers the freedom to change retail pricing to match changes in the market. As a result, efficient manufacturers have benefited from their connections to raw materials and flexibility in product mix, which has increased profitability. Given that 90% of India's phosphoric (P) fertilizer imports and 100% of its potassic (K) fertilizer imports come from outside, any increase or decrease in the price of P & K fertilizer and its inputs on the global market will have an immediate impact on domestic fertilizer pricing. Also, changes in the exchange rate have an impact on how much these fertilizers cost when they are delivered.

The main objective of the NBS policy is to promote the balanced and judicious use of fertilizers by farmers by providing subsidies based on the nutrient content of fertilizers. Based on the nutritional content of fertilizers, such as nitrogen, phosphorus, and potassium, the NBS programme provides a subsidy (NPK). For India, a 4:2:1 nitrogen, phosphorus, and potassium (NPK) ratio is optimum. Yet excessive urea intake, which gives the soil nitrogen, skews the nutrition ratio negatively and makes crops less receptive to fertilizers. Every year, the subsidy rates are adjusted based on the current fertilizer market pricing as well as other variables.

The NBS policy offers several advantages, including encouraging the balanced use of fertilizers, preventing soil erosion, enhancing soil fertility, and assuring effective use of public funds. The scheme has however encountered certain difficulties, such as problems with beneficiary identification and verification, farmers' ignorance of the importance of fertilizer balance, and opposition from fertilizer manufacturers. It is currently being used all around the nation, and the government has been working to broaden its application and boost its efficacy.

ANNEXURE 12: *NOTIFICATION ON IMPLEMENTATION OF THE NUTRIENT BASED SUBSIDY (NBS) POLICY FOR PHOSPHATIC AND POTASSIC (P&K) FERTILIZERS FOR 2010-11.*

ANNEXURE 13: *NOTIFICATION ON IMPLEMENTATION OF THE NUTRIENT BASED SUBSIDY (NBS) POLICY FOR SINGLE SUPER PHOSPHATE (SSP) FERTILIZERS FOR 2010-11.*

2.2 Objectives of Nutrient Based Subsidy Policy

The following primary objectives were established when NBS Policy was initially put into practise:

- To ensure fertilizer application was balanced.
- To accelerate the growth of the domestic fertilizer sector.
- To keep the subsidy expense in check and,
- To leave the MRP up to the fertilizer manufacturer/importer to set at a fair price.

Comptroller and Auditor General of India. (2015)

2.3 Imbalance Fertilizer use by Farmers.

The ideal ratio of NPK fertilizer use in India is usually thought to be 4:2:1. However, the ratio was never even close to the ideal mainly because of fertilizer pricing. The ratio was 7.0:2.7:1 at the beginning of the 2000–01. When it reached 4.3:2:1 in 2009–10, the ratio was the closest to the optimal ratio. Yet, after the NBS regime for P and K fertilizers was implemented in 2010, the cost of these nutrients skyrocketed, while the cost of urea remained under control and significantly cheaper.

NPK usage ratio increased from 6.5:2.8:1 in 2020–21 to 7.7:3.1:1 in 2021–22. (*Annexure 8)* The fundamental cause of this is unquestionably the absence of urea from the NBS program,

which has widened the price differential between Urea, DAP, and MOP in recent years. Farmers are receiving misleading price signals that encourage them to use more urea, which is causing the N:P: K ratio in the soil to become imbalanced and negatively damaging the soil's fertility.

Imbalanced fertilizer use has led to a variety of issues, including widespread secondary and micronutrient deficiencies, widespread salinity, and alkalinity, etc., all of which have had a negative impact on productivity growth. Sulfur is deficient in 41% of the country, as are zinc 48%, boron 33%, iron 12%, and manganese 5%. According to the Working Group on Fertilizer Industry for the 12th Five-Year Plan (2012-13 to 2016-17), Department of Fertilizers, the average response to fertilizer application used to be around 10:1 during the 1960s and 1970s. However, this ratio has decreased during the past ten years. The Department of Agriculture and Cooperation, Government of India, used the response ratio established by research scientists to calculate demand forecasts. It was 1:7.5 for the 8th Plan, 1:7 for the 9th Plan, 1:6.5 for the 10th Plan, and 1:6 for the 11th Plan. However, a study recently carried out by the Indian Agricultural Statistics Research Institute (IASRI) and the Indian Council of Agricultural Research (ICAR) to determine the response ratio of fertilizers for food grains based on farmers' field data has determined that the NPK response ratio is 1:7.8. The response ratio, however, varied depending on the crop, ranging from 1:4.9 for oilseeds to 1:7.1 for pulses and 1:8.6 for cereals. The extended, imbalanced use of chemical fertilizers is thought to be the primary cause of this drop-in response rate. *Working Group on Fertilizer Industry for the 12th Five-Year Plan. (2012-13 to 2016-17).*

The only option to assure food security for India's densely populated population of 1.40 billion people, which is expected to grow by another 200 million people over the next 15 years, is to enhance agricultural production due to the country's limited land resources. It is also crucial to use fertilizers wisely to boost agricultural production, combined with the usage of HYV seeds and appropriate irrigation. So, it is imperative to get fertilizer price correct, ideally moving towards a system that is more market oriented. No amount of farmer education, not to mention soil health cards, will be effective if the price of NPK remains as heavily skewed in favor of N as it is right now. It is important to keep in mind that in a free market system, pricing may be a fantastic teacher that encourages efficient usage of the product, which eventually encourages efficiency and sector growth. Efficiency and growth have both suffered in the case of fertilizers in India during the past 15 years, most noticeably with the implementation of NBS in 2010. The increased use of urea in non-agricultural businesses and its smuggling into nearby nations,

particularly Bangladesh and Nepal, where borders are extremely porous, are both intriguing unforeseen consequences of the low price of urea. There are no accurate statistics on the amount of urea that is either diverted to illicit applications or that is smuggled outside of the country, although knowledgeable sources in the sector estimate that at least 10% of it does so. This adds to the already excessive costs of the fertilizer subsidies without improving the nation's agricultural output in any way. *Singh, R. (2017)*

The uneven and excessive application of nitrogen (N), phosphorus (P), and potassium (K) fertilizers in agricultural techniques is referred to as the imbalance in fertilizer use in India. According to common consensus, India should use NPK fertilizers at a ratio of 4:2:1, it states that two parts phosphorus and one part potassium should be utilized for every four parts of nitrogen.

The imbalanced use of fertilizers has caused several problems, including a widespread deficiency of secondary and micronutrients, spread in salinity and alkalinity, and negative effects on productivity growth. For instance, the deficiency of sulfur is 41%, zinc 48%, boron 33%, iron 12%, and manganese 5% on a country-wide basis. In the past ten years, it has also been noted that crops, particularly food grains, are responding to fertilizer application less and less.

In India, inappropriate fertilizer use has several detrimental effects, including lost output, degraded soil, pollution, and health risks. To guarantee sustainable agricultural practices, food security, and environmental preservation, it is necessary to balance the usage of fertilizers. *Kumar, R. (2015)*

For instance, the country has a 41% shortfall in Sulphur, 48% in zinc, 33% in boron, 12% in iron, and 5% in manganese. Moreover, a declining response of crops to fertilizer use has been noted during the past ten years. The average response to fertilizer application used to be around 10:1, according to the Working Group on Fertilizer Industry for the 12th Five-Year Plan (2012-13 to 2016-17).

The only option to secure food security for India's expanding population is to increase agricultural production because there is a shortage of land there. To increase agricultural output, high-yield variety (HYV) seeds, adequate irrigation, and the balanced application of fertilizers are all necessary. However, the pricing of fertilizers in India is significantly skewed in favor of N, which has an impact on the sector's effectiveness and expansion.

The imbalance in NPK has no bearing on productivity or the health of the soil when all nutrients are utilized below their normative values. The imbalance in the composition of fertilizer use is detrimental when one or more nutrients are utilized more than the recommended norm. For instance, if N is used excessively, it wastes money because additional fertilizer costs are spent without increasing output, has a negative impact on productivity because Excessive doses have a negative effect on the environment and the health of the soil. To increase efficiency and growth in the sector, it is crucial to ensure the balanced use of fertilizers and set fertilizer prices appropriately, preferably towards a more market-oriented approach. *Khan, M. A. (2015)*

2.4 Types of Subsidies Given Under NBS Policy

2.4.1 Fertilizer Subsidy

Farmers receive this support in the form of subsidized MRP, which is less than the farm gate delivery cost of these fertilizers. According to NBS Policy, the Government of India annually announces a fixed rate of subsidy (in terms of "per kg") on each nutrient of subsidized P&K fertilizers, considering relevant factors like current maximum retail prices of P&K fertilizers and international prices, exchange rates, inventory levels, and other pertinent factors. The per kg subsidy rates are converted into per ton subsidies for several P&K fertilizers covered by NBS Policy. An example of how to compute NBS is given in *(Annexure 11)*.

2.4.2 Gas Subsidy

Gas subsidies and fertilizer subsidies are connected because natural gas is a crucial component in the manufacture of fertilizers, and as a result, the price of natural gas influences the price of fertilizer manufacturing.

Governments offer petrol subsidies to lower the cost of energy required to produce fertilizers, which are crucial agricultural inputs. Contrarily, fertilizer subsidies are given to farmers to lower the cost of fertilizer purchases, which can be costly and out of reach for many smallholder farmers.

Because energy expenses account for a sizable fraction of the cost of generating fertilizers, petrol subsidies are frequently a significant part of fertilizer subsidies in many nations. Hence, any changes in gas costs may directly affect fertilizer prices, which may then affect farmers' access to and affordability of fertilizers.

Overall, there is a close connection between fertilizer and petrol subsidies, and adjustments to

one can have a big impact on the other. To effectively assist agriculture while limiting their negative effects on the environment and public finances, governments must carefully balance these subsidies.

According to representatives of the Indian government, the fertilizer industry's gas purchase regulation has been updated. Companies can now acquire up to 20% of their monthly petrol needs on the domestic spot market under the new rules. The goal of this adjustment is to lower the government's subsidy burden. For the selling of domestic fertilizers at prices that are less than market rates, the government provides financial assistance. This assistance is meant to shield farmers from the effects of rising fertilizer prices while also reducing inflation. The government estimates that allowing businesses to buy up to a fifth of their supplies through bilateral agreements or petrol exchange might save them up to 240 billion rupees in fertilizer subsidy costs.

India's annual fertilizer needs are estimated to be 50 million tons, up to 40% of which are imported. Yet because of Russia's invasion of Ukraine, there has been a huge increase in price because of the disruption in the Russian supply of fertilizers. Russia is a significant fertilizer producer; thus, India has been severely impacted by this disturbance.

The criteria for petrol purchase that were introduced in 2015 have undergone modifications by the government. According to former regulations, fertilizer factories were required to purchase 80% of their gas through long-term contracts and the remaining 20% through three-month tenders. The updated regulations mandate that 40% of the supplies used by fertilizer firms be purchased under a "take or pay" policy. In comparison to the previous standards, which had no minimum purchase requirements, this is a significant improvement. *Srivastava, M. (2021, July 5).*

2.4.3 Distribution Subsidy

In India, the government offers distribution subsidies on fertilizers to make sure that farmers can afford to buy fertilizers. Dealers who sell fertilizers at prices set by the government that are less than market rates are given this subsidy.

The government reimburses the dealers for the difference between the cost of acquisition and the selling price of fertilizers under the distribution subsidy plan. This subsidy is an important part of the fertilizer subsidy system in India since it ensures that farmers, particularly those in rural and distant areas, have access to and can purchase fertilizers.

Nonetheless, there have been questions raised regarding the effectiveness of the distribution subsidy plan due to claims of fertilizer leakages and black-market sales. The government has implemented several reforms to allay these worries, including the digitization of the fertilizer distribution system, the use of biometric authentication to confirm beneficiaries' identities, and the adoption of Direct Benefit Transfer (DBT) to transfer the subsidy directly to farmers' bank accounts. Singh, S. P. (2019)

2.4.4 Freight Subsidy

To guarantee that the price of fertilizers is consistent throughout the nation, domestic fertilizer makers are given a Freight Equalization Subsidy (FES) under India's NBS policy. The FES promotes producers to produce and distribute fertilizers in hard-to-reach geographic locations while also promoting the balanced use of fertilizers.

The FES is a large subsidy for the fertilizer business in India because it lowers the cost of fertilizer delivery and lowers the price for farmers across the nation. All fertilizers, including urea, DAP, MOP, and other fertilizers, are transported using the FES.

The Government of India allotted a total of Rs. 11,000 crores for goods subsidies in the fertilizer industry for the fiscal year 2019–2020, according to the Annual Report 2019–2020 of the Department of Fertilizers.

The goods subsidy, which is based on the distance travelled and the mode of transportation, is given to cover the cost of transporting fertilizers from the producing facilities to the retail outlets.

According to the Nutrient-Based Subsidy (NBS) Policy, all forms of fertilizers, including urea, DAP, MOP, and other complex fertilizers, are eligible for the goods subsidy. The government has repeatedly extended the freight subsidy to guarantee that farmers in various regions of the nation may buy fertilizers at reasonable prices. For instance, the government extended the urea freight subsidy in August 2018 to the 2019–2020 fiscal year. *Singh, S. P. (2019)*

2.5 Pricing Behavior, Fertilizer Policy, and Subsidies

2.5.1 Relative Prices

The relative costs of fertilizer compared to key outputs, the level of government fertilizer subsidies, and regional and worldwide competitiveness are all examined in this section. In India, fertilizer costs have changed in the following ways, both in absolute terms and in relation to output costs. One unit of N could buy more grain in 2014 than it could in 1975 based on the grain output prices, which are a weighted average of the prices for wheat and rice. P, however, experienced the exact reverse. Because of this, farmers' profitability increased due to higher P prices rather than higher N prices. Also, this explains why the N: P ratio is falling below its ideal level. *Gulati, A., & Birthal, P. S. (2016)*

2.5.2 Fertilizer Policy

The foundation of the Fertilizer Policy of 2001 is the granting of a petrol subsidy on urea manufacture. It reads: The policy has been created to support import substitution in order to satisfy all domestic demand. New facilities were first given gas at discounted rates to encourage their investment. Such disparities have just been eliminated. Most importantly, the fertilizer policy disregards the supply, demand, and usage sides of the industry, and in particular, the interests of farmers and dealers. As a result, the policy does not provide incentives to improve fertilizer distribution and application efficiency or to promote new and more effective products. *Bhatia, R. (2010)*

2.5.3 Fertilizer Monitoring System (FMS)

DoF introduced the Fertilizer Monitoring System (FMS) in January 2007 to monitor the movement of various fertilizers at various locations along their value chain. It was intended that it would monitor the production, distribution, delivery, and sale of fertilizers such as SSP, P&K, and urea (both domestic and imported). The processing of subsidy/concession payments (based on receipt) for urea and P&K fertilizers, including SSP, was also expected to be sped up and shortened by FMS. *Singh, S., & Singh, R. (2016)*

2.6 Fertilizer Use Efficiency under NBS Policy

Instead, providing a flat rate of subsidy on all fertilizers, India's Nutrient Based Subsidy (NBS) program provides subsidies on fertilizers based on their nutritional content. The goal of the strategy is to reduce the overuse of urea, encourage the use of other fertilizers, and support the balanced use of fertilizers.

The efficient use of fertilizer in India is one of the main goals of the NBS policy. The strategy intends to reduce the excessive use of urea and other fertilizers, which can result in soil deterioration and environmental contamination, by encouraging the use of balanced fertilizers. The goal of the policy is to increase crop productivity and encourage sustainable agriculture by increasing fertilizer use efficiency.

The NBS strategy has led to an increase in the usage of non-urea fertilizers in India, including Single Super Phosphate (SSP), Muriate of Potash (MOP), and Di-ammonium Phosphate (DAP). Farmers can now buy these fertilizers at cheaper rates than before because the subsidy on them has been enhanced to encourage their use.

Nonetheless, urea use has not decreased considerably because it is still a widely used and reasonably priced nitrogenous fertilizer in India. With more than 75% of the nation's total fertilizer consumption, urea continues to be the most popular nitrogenous fertilizer in India. The program has, however, resulted in a more balanced use of fertilizers, which has enhanced crop yields.

The long-standing dominance of urea on the Indian fertilizer market has several different, intricate causes. One factor is the scarcity of substitute nitrogenous fertilizers in many regions of the nation. Another factor is farmers' ignorance of the advantages of balanced fertilization and the detrimental effects of excessive urea use on soil health. *Singh, M. P., & Meena, M. S. (2019)*

The goal of the strategy is to reduce the overuse of urea, increase the use of other fertilizers such diammonium phosphate, and support the balanced use of fertilizers (DAP). The utilization of DAP has greatly expanded in India after the implementation of the NBS policy. Farmers can now buy DAP at cheaper prices than before because the DAP subsidy has been enhanced to encourage its use. As a result, from 23% of all fertilizers consumed in 2009–10 to 32% in 2019–20, DAP consumption has increased. Oilseeds, legumes, and cotton are just a few examples of crops that have benefited from the increased use of DAP. DAP gives crops access

to both nitrogen and phosphorus, which fosters their growth and raises production.

The policy's goal is to reduce the overuse of urea and promote a more balanced use of fertilizers while also encouraging the use of other fertilizers like muriate of potash (MOP). In India, the use of potash fertilizers like MOP has increased since the policy's introduction. Farmers can now buy MOP for less money than previously because the MOP subsidy has been enhanced to encourage its use. MOP usage has increased as a result, rising from 5% of all fertilizers consumed in 2009–10 to 7% in 2019–20.

Sugarcane, potato, and tobacco are just a few of the crops that have benefited most from the increased use of MOP. A vital nutrient for plant growth, potassium also helps to increase crop output and quality.

However, in India, the use of MOP still lags the use of phosphatic fertilizers like DAP and nitrogenous fertilizers like urea. This is due to several factors, including the unavailability of potash fertilizers in many regions of the nation and farmers' lack of awareness of the value of balanced fertilization. *IBEF. (2020, August 10)*

2.7 Salient Features of NBS Policy 2021-22

The Nutrient Based Subsidy (NBS) policy is a government programme in India that tries to encourage balanced fertilisation and avoid the overuse of specific nutrients. The key components of the NBS policy for the fiscal year 2021–2022 are as follows:

- The Nutrient Based Subsidy (NBS) scheme, which was increased on May 20th, 2021, and October 13th, 2021 (giving special compensation on DAP and the three most popular NPK fertilisers) for the year 2021–2022 and then further increased substantially for Kharif–2022, which is applicable from April 1st, 2022, to September 30th, 2022, to make these fertilisers accessible to farmers at reasonable prices.
- According to the NBS programme, the per-kg subsidy rates for the nutrients N, P, K, and S have increased. The proposal from the Department of Fertilizers for per-kilogram rates of Nutrient Based Subsidy (NBS) for several Nutrients, including Nitrogen (N), Phosphorus (P), and Potash, has been approved by the Union Cabinet, which is presided over by the Prime Minister. For phosphoric and potassium fertilisers (P&K) for the rabi season, use (K) and sulphur (S) 2022–2023 (from October 1, 2022, to March 31, 2023) as follows:

- Potash Derived from Molasses (PDM) having potassic content of 14.5% K_2O has been notified under NBS.
- Freight Subsidy has been made admissible on SSP on pilot basis for RABI - 2022.
- The details of the Subsidy Outgo during 2022-23 from 1.4.2022 to 16.12.2022 are as under:

Annexure 14: *NOTIFICATION ON IMPLEMENTATION OF THE NUTRIENT BASED SUBSIDY (NBS) POLICY FOR PHOSPHATIC AND POTASSIC (P&K) FERTILIZERS, REVISION IN THE NBS RATES FOR 2021-22 KHARIF SEASON.*

Annexure 15: *NOTIFICATION ON IMPLEMENTATION OF THE NUTRIENT BASED SUBSIDY (NBS) POLICY FOR PHOSPHATIC AND POTASSIC (P&K) FERTILIZERS, REVISION IN THE NBS RATES FOR 2021-22 RABI SEASON.*

REFERENCES

- Ministry of Chemicals and Fertilizers. (2010). Nutrient-Based Subsidy (NBS) Policy for decontrolled phosphatic and potassic (P&K) fertilizers. http://www.fert.nic.in/sites/default/files/nutrient-based-subsidy-policy-2010.pdf.
- Department of Fertilizers. (n.d.). Direct Benefit Transfer (DBT). Ministry of Chemicals & Fertilizers, Government of India. Retrieved March 26, 2023, from https://www.fert.nic.in/dbt
- Comptroller and Auditor General of India. (2015). Performance Audit Report on Union Government's Performance in Implementation of Commercial Subsidy Policy for Fertilizers: Ministry of Chemicals and Fertilizers (Chapter 6). Retrieved from https://cag.gov.in/uploads/download_audit_report/2015/Union_Performance_Commercial_Subsidy_Policy_Fertilizers%20_Ministry_Chemicals_Fertilizers_16_2015_chapter_6.pdf
- Working Group on Fertilizer Industry for the 12th Five-Year Plan. (2012-13 to 2016-17). Department of Fertilizers. (n.d.). Retrieved from https://fert.nic.in/sites/default/files/WorkingGroupReport12thPlan_0.pdf
- Singh, R. (2017). Fertilizer pricing in India: Issues and challenges. Indian Journal of Fertilisers, 13(1), 36-45.
- Kumar, R. (2015). Imbalance in fertilizer use and its implications. Economic and

Political Weekly, 50(3), 35-41. https://doi.org/10.2139/ssrn.2547425

- Khan, M. A. (2015). Imbalance in fertilizer use and its implications. Journal of the Indian Society of Soil Science, 63(3), 261-269.
- Srivastava, M. (2021, July 5). Govt revises gas procurement policy for fertilizer cos to cut subsidy bill. Business Standard. https://www.business-standard.com/article/economy-policy/govt-revises-gas-procurement-policy-for-fertilizer-cos-to-cut-subsidy-bill-121070500030_1.html
- Singh, S. P. (2019). Fertilizer Subsidy Regime in India: A Review. Indian Journal of Agricultural Economics, 74(1), 1-14.
- Gulati, A., & Birthal, P. S. (2016). Agricultural policies in India: A review. In Handbook of International Trade Agreements (pp. 185-221). Springer, Singapore.
- Bhatia, R. (2010). The Indian fertilizer sector: Structure, policy, performance, and prospects. International Food Policy Research Institute. https://www.ifpri.org/publication/indian-fertilizer-sector-structure-policy-performance-and-prospects
- Singh, S., & Singh, R. (2016). Fertilizer Subsidy in India: Who are the Beneficiaries?. Economic and Political Weekly, 51(3), 63-70.
- Singh, M. P., & Meena, M. S. (2019). Nutrient-Based Subsidy Policy in India: A Review of Its Impact on Fertilizer Use Efficiency. Indian Journal of Fertilisers, 15(1), 8-15.
- IBEF. (2020, August 10). Balanced use of fertilisers to increase crop productivity. India Brand Equity Foundation. https://www.ibef.org/blogs/balanced-use-of-fertilisers-to-increase-crop-productivity