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# An Overview of Fertilizers Consumption in India : Determinants and Outlook for 2020-A Review

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***Abstract***

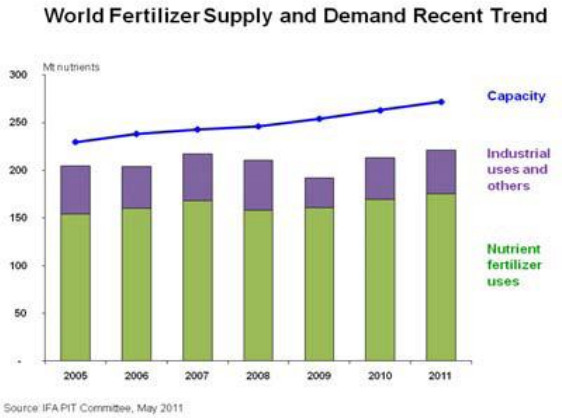
***Plants nutrients supply from the chemical fertilizer is the key to increasing agriculture production by enhancing the land productivity. However, the demand-supply gap of fertilizers in India has increased in recent times, thereby leading to increased dependency on imports .India imports which were about 2 million tonnes in early parts of 2000 increased to 10.2 million tonnes of fertilizers in 2008-09.In view of importance of fertilizers in agriculture growth and the possibility of an emerging demand-supply gap, there is need to forecast future demand. .The paper begins with an overview of fertilizer consumption trends and then identifies important determined of fertilizers in India in 2020-21. India is the second largest consumption in the world after China, consuming about 26.5 million tonnes. However, average intensity of fertilizer use in India remains much lower than most countries in the world but is highly skewed with wide inter-regional, inter-state and inter-district variations. The results show that non-price factors such as irrigation, high yielding varieties were more important than price factors in influencing demand for fertilizers. Of the two price policy instruments, affordable fertilizers prices and higher agricultural commodity prices, the former is more powerful in influencing fertilizer demand. The paper suggested that in order to ensure self-sufficiency in agricultural production in the country, availability of fertilizers at affordable prices should be prioritized over higher output prices. By 2020 fertilizer demands in the country is projected to increase to about 4106 million tones and is expected to grow at a faster rate in eastern and southern region compared with north and west. To meet the increasing fertilizer requirement of the country a conducive and stable policy environment availability of raw materials capital resources and price incentives will play a critical role.***

**1. Introduction:** The role of chemical fertilizers for increased agricultural production in particular in developing country is well established. Some argue that fertilizer was as important as seed in the Green Revolution (Tomich et. Al. 1995) contributing as much as 50% of the yield growth in Asia (Hopper 1993 and FAO 1998). Others have found that one-third of the cereal production worldwide is due to the use of fertilizer and related factors of production (Bumb 1995). Fertilizer consumption in India has been increasing over the years and today India is one of the largest producer and consumer of fertilizers in the world. By 2009-10 total fertilizers consumption in the country was 26.49 million nutrient tones. Importance of fertilizers in yield improvement which is essential for achieving increased agricultural production further increases because there is little scope for bringing more area under cultivation as well as majority of Indian soils are deficient in many macro and micro nutrients. The application of essential plant nutrients particularly major and micro nutrients in optimum quantity and right proportion through correct methods and time of application is the key to increased and sustained crop production. Therefore, it is important to understand fertilizers use behavior in the country over time as well as role of factors influencing fertilizer consumption at the national and regional / state level because intensity of fertilizer use varies from state to state and area to area. Several studies have attempted to examine the role of price and none-price factors in the growth of fertilizer use in India (Raju, 1989; Kundu and Vashist, 1991, Sharma, 1993; Rabobank, 2005) .However, most of these studies pertain to pre- reforms period. Therefore, there is a need to examine the likely impacts of the socio-economic, technical and institutional factors on fertilizers consumption and agricultural growth. Some of the problems of fertilizer consumption vary from region to region and need to be studied in their local context but there are others which confront most stakeholders all over the country. In this paper an attempt has been made to understand the factors affecting fertilizers demand at macro level and forecast demand for fertilizers in the country by 2020. By estimating for fertilizers one can understand the implications of fertilizer price policy including subsidy and agricultural product price for fertilizer use and their interrelationship.

## 2. Fertilizer consumption Trends in India

Fertilizer consumption trends expressed in terms of aggregate quantity consumed and intensity of use (i.e. kg per hectare of total cropped area) reflect both demand and supply decision .Therefore, it is essential to understand

fertilizer situation in the country. India is the second largest consumer of fertilizers in the world after China. It accounted for 15.3 % of the world's N consumption. 19% of phosphatic and 14.4 % of potassic nutrients in 2008(FAI, 2010) Fertilizer consumption was around 78 thousand tonnes in 1965-66 and it picked up very fast during the late-1960s and 1970s. At the times of onset of green revolution in 1966-67 consumption of fertilizers was about 1 million tonnes .In 1970-71 total fertilizers consumption increased to 2.26 million tonnes which further increased to 12.73 million tonnes in 1991-92.During 1990s total fertilization consumption fluctuated between 12.15 and 16.8 million tonnes with the exception in 1990-00when fertilization consumption was over 18 million tonnes. Total fertilization consumption reached record level of 26.5 million tonnes 2009-10. The entire requirement of potassic fertilizers is met through imports as India does not have commercially viable source of potash. During 1950s and 1960s about two third of domestic requirement of N fertilizers was met through imports. The level of P imports was very low in the fifties which increased significantly during the sixties and seventies. The fertilizer imports increased significantly in 1977-78 and 1978-79 1984-85 and thereafter. The fertilizer imports increased dramatically in 1977-78 and 1978-79 1984-85 and again in 1988-89 and 1989-90.However during the decade of 1990s imports were at low levels except in 1995-96 and 1997-98. Due to low/no addition in domestic capacity coupled with rise in demand for fertilizers during the last two decades, imports have increased significantly in the 2000s. India imported about 10.24 million tonnes (about 41% of total consumption) of NPK fertilizer nutrients in 2008-09 as against 1.93 million tonnes in 2002-03. The growth of imports was rather slow in the eighties and nineties but accelerated in 2000s. The share of imports in total consumption (N+P+K) declined from 57 per cent in1960s to 43 per cent in 1970s, further to about 24.8 per cent in 1980s, 21.3 percent in 1990s but increased to 26.2 per cent in 2000s. Almost similar trend was observed in case of nitrogenous and phosphatic fertilizers. The share of imports in total consumption was 13.8percent in case of N and 23.8 percent in P during the 2000s. However, in terms of volume of imports, N fertilizer imports declined during the 1980s compared with 1970s, which marginally increased during the 1990s (1.1 million tonnes) and further increased (1.79million tonnes) in the 2000s, while in case of phosphatic fertilizers imports have consistently increased over time from 243.2 thousand tonnes in 1970s to 511.3 thousand tonnes in 1980s, 736.9 thousand tonnes in 1990s and 1.25 million tonnes in 2000s. Rising share of imports is matter of concern as world fertilizer markets are highly volatile and imperfect. So there is need to increase domestic production to insulate from international markets. Sixteen plant sixteen plant food nutrients are essential for proper crop development. Each is equally important to the plant, yet each is required in different amounts. These differences have led to the grouping of these essential elements into three categories; primary (macro) nutrients, secondary nutrients, and micronutrients. Primary (macro) nutrients are nitrogen (N), phosphorus (P), and potassium (K). They are the most frequently required in a crop fertilization programme and are needed in the larger quantity by plants as fertilizer. The secondary nutrients include calcium, magnesium, and sulphur. For most crops these three are needed in lesser amounts than the primary nutrients. The micronutrients such as boron, chlorine, copper, iron, manganese, molybdenum, and zinc are used in small amounts, but they are as important to plant development and profitable crop production as the major nutrients. However, major focus of the Indian fertilizer sector policy has been on primary (macro) nutrients. The changing pattern of three primary nutrients is presented in Figure 4.Nitrogenous fertilizers account for nearly two-third of total nutrient consumption in the country. The share of N was 78.5 per cent in 1950s, which declined to 68.6 per cent in the sixties, 67.9 per cent in the seventies and further to 65.7 per cent in the eighties. However, the share of N increased to 67.9 per cent in the 1990s, which fell to 62.9 per cent in the 2000s.




## 3. Growth Rates in Fertilizer Consumption and Food grains Production

The growth rates in consumption of fertilizers and food grains during different time periods at all-India level are given in Table 1. The table shows that fertilizer consumption increased by more than 19 per cent in the pre-green revolution period (1950-51 to 1966-67) while food grains production increased by only 2.56 per cent. The reason for such high growth unfertilized consumption was that consumption in the base year (1950-51) was very low. This significant increase in total fertilizer consumption increased per hectare fertilizer use formless than one kg in 1951-52 to about 7 kg in 1966-67.In the post-green

revolution period, fertilizer use increased by 9.9 per cent per year during the first phase of green revolution (1967-68 to 1980-81) when spread of high yielding varieties was limited to mainly Punjab, Haryana, western part of Uttar Pradesh and some southern states. Per hectare fertilizer consumption increased from 9.4 kg in 1967-68 to 31.9 kg in1980-81. Increase in fertilizer use along with increase in area under irrigation and high yielding varieties increased food grains production from 95.5 million tonnes in 1967-68 to about 130 million tonnes in 1980-81 at an annual compound growth rate of 2.27 per cent. However, food grains productivity increased at a faster rate (1.87%) in the first phase of green revolution compared with pre-green revolution period (1.45%). During the second phase of green revolution (1981-82 to 1990-91), when technology spread to other parts of the country, total fertilizer consumption increased an annual growth rate of 7.39 per cent. Per hectare fertilizer consumption more than doubled from 34.3 kg in 1981-82 to 69.8 kg in 1991-92.Total food grains production increased by about 2.8 per cent. The impressive growth of consumption of fertilizer in India in the post-green revolution period ensured increase in food grains production from 74.3 million tonnes in 1966-67 to 176.4 million tonnes during1990-91.However, in 1991-92, certain policy reforms were initiated in fertilizer sector as part of macro-economic reforms. The potassic and phosphatic fertilizers were decontrolled w.e.f. August 25, 1992, the low analysis nitrogenous fertilizers viz. calcium ammonium nitrate, ammonium chloride and ammonium sulphate were decontrolled and brought under control several times in the past. These fertilizers were last decontrolled w.e.f. June 10, 1994. These policy interventions led to a serious slowdown in fertilizer consumption in the post-reforms period. Total fertilizer consumption declined from about 12.7 million tonnes in 1991-92 to12.1 million tonnes in 1992-92. Similarly, per hectare fertilizer use also declined from 69.84kg in 1991-92 to 65.45 kg in 1992-93. This reduction was more pronounced in case of phosphatic and potassic fertilizers. Total P consumption fell by about 14 per cent (from3321.2 thousand tonnes in 1991-92 to 2843.8 thousand tonnes in 1992-93) and K by 35 percent (1360.6 thousand tonnes in 1991-92 to 883.9 thousand tonnes in 1992-93). Similar trend was observed in case of per hectare fertilizer consumption. Due to introduction of concession scheme on decontrolled phosphatic and potassic fertilizers in 1992-93, fertilizer consumption started picking up and reached a level of 18.1 million tonnes in 1999-00, declined to 16.7million tonnes in 2000-01 and remained below this level up to 2003-04. Per hectare fertilizer consumption reached a level of 95.89 kg in 1999-00 but remained below this level during the next four years. Last six years viz., 2004-05 to 2009-10 have seen significant recovery unfertilized use in the country and total consumption reached a record level of 26.5 million tonnes and per hectare consumption at 135.25 kg in 2009-10.The impact of slow growth of fertilizer consumption on growth of food grains production and crop output in the post-reforms period is quite evident from growth rates presented in Table1. In post-reforms period (1991-92 to 2009-10) growth rate in fertilizer consumption was 3.98per cent compared with over 8.75 per cent during 1966-67 to 1991-92. Total fertilizer consumption recorded the lowest growth (1.35%) during the 9th five year plan compared with about 7.57 per cent during 10th plan. There seems to be a very high positive association between growth rates of fertilizer consumption and food grains production. During 8th plan period, fertilizer consumption increased at an annual growth rate of about 4.51 per cent and food grains production increased by 1.26 per cent. Fertilizer consumption growth rate fell to1.35 per cent during 9th plan and food grains production growth rate also declined to -2.87 percent. During 10th five year plan, fertilizer consumption grew by 7.57 per cent and food grains production growth rate increased to about 2.52 per cent. In the post-reforms period (1991-92to 2009-10) growth rate in fertilizer consumption turned out to be less than half of what was achieved during the post-green revolution period (1966-67 to 1991-92). Similar trend was observed in case of food grains production. Growth rate in food grains production declined to about half (1.33%) during 1991-92 to 2009-10 compared with 2.65 per cent during 1967-68 to 1991-92.

| Period | Growth rate in fertilizer consumption (%) | | Growth rate in food grain (%) | |
|---|---|---|---|---|
| | Total | Per hac. | Production | Yield |
| Pre green revolution period (1950-51 -1966-67) | 19.41 | 18.11 | 2.56 | 1.45 |
| Post green revolution period | 8.75 | 8.49 | 2.65 | 2.53 |
| Phase I (1967-68 – 1980-81) | 9.90 | 9.29 | 2.27 | 1.87 |
| Phase II (1981-82 -1991-92) | 7.39 | 6.61 | 2.77 | 3.13 |
| Post reform period(1991-92 to 2009-10) | 3.98 | 3.69 | 1.33 | 1.38 |
| | 4.51 | 5.63 | 1.26 | 1.10 |
| 8th Five Year Plan | 1.35 | 0.43 | -2.87 | -0.98 |
| 9th Five Year Plan | 7.57 | 7.40 | 2.52 | 2.05 |
| 10th Five Year Plan | | | | |

**Table 1: Growth rate in fertilizer consumption and food grains production**

## 4. Intensity of Fertilizer Use

Looking at the total fertilizer consumption is not a good indicator as there are large differences in total cropped area across states. It would be more appropriate to examine

trends in fertilizer consumption per hectare of cropped area. On per hectare basis, fertilizer consumption was less than 2 kg during the 1950s and increased to about 5 kg in 1965-66. However, after introduction of green revolution in 1966-67, per hectare fertilizer consumption more than doubled in the next five years from about 7kg in 1966-67 to about 16 kg in 1971-72, which further increased and reached a level of 50kg in mid-1980s (Figure 6). Average fertilizer consumption on per hectare basis crossed 100kg in 2005-06 and reached a record level of 135 kg in 2009-10. However, per hectare fertilizer consumption fell during 1973-74 and 1974-75 due to oil shock of 1973 when oil prices quadrupled almost overnight. The next reversal in intensity of fertilizer use came in1992-93 when government decontrolled phosphatic and potassic fertilizers and increased fertilizer prices significantly. The decline in use of fertilizers was the highest (36.3%) in case of potassic and about 16 per cent in phosphatic fertilizers. The total fertilizer consumption (N+P+K) fell by about 6 per cent from 69.84 kg per hectare to 65.45 kg per hectare. Due to severe drought in many parts of the country, per hectare fertilizer consumption declined from91.64 kg in 2002-0.3 to 88.38 kg per hectare in 2003.04. However, during the last five years, intensity of fertilizer use has increased substantially (53%) from about 88 kg in 2005-06 to135 kg per hectare in 2009-10.

## 5. Factors Affecting Demand for Chemical Fertilizers in India

The purpose of this section is to estimate three nutrients and total fertilizer demand functions from time series data and to make demand projections for proper planning for production, imports and supply of feedstock's and raw materials. To this end, separate nutrient demand functions were estimated for nitrogen (N), phosphorous (P), potassium (K) and total fertilizers (N+P+K) in the country. The fertilizer demand function is often referred to as a "derived" demand because it is determined to a large extent by the final demand for the crop produced. In general, the demand for fertilizer depends on (a) the price of the crop(s), (b) the price of fertilizer, (c) prices of other inputs that substitute for or complement fertilizer, and (d)the parameters of the production function that describe the technical transformation of the inputs into an output (i.e., the fertilizer response function) (Debertin 1986). Though prices may be important in determining fertilizer consumption, they are possibly less important than other non-price factors such as introduction of new technology, high yielding crop varieties, expanded irrigation, availability of credit, changing cropping pattern, etc., causing the derived demand for fertilizers to shift over time. Specifying a forecasting model is always a challenge, especially the model type and relevant variables. The common models are time series models where the forecast is based on past observations of the variable being forecasted. Causal models and qualitative methods have also been used. Causal models such as simple linear regression models are preferable when projections of the exogenous variables are available. Qualitative methods such as expert opinion are popular when insufficient data is available to estimate a model or when there is need to augment the results of a quantitative method. In a single equation approach, which has been used widely, typically demand function is estimated using time series of total fertilizer use or per hectare use with some price and non-price variables and often a linear trend. This study uses causal model because time series data on fertilizer consumption as well as variables influencing fertilizer use are available. We estimated fertilizer demand model using annual time series data, from 1976-77 to 2009-10 using simple linear regression model using ordinary least squares (OLS) method. We hypothesized that the demand for fertilizer is a function of prices (specifically price of fertilizers and food grains), subsidy, as well as non-price factors such as irrigated area, coverage of high yielding varieties, area under food grains and non-food grains, cropping intensity, rainfall, capital availability, etc. Among a large number of factors considered in the study, the following variables were finally used in the model based on their statistical significance and stability of the functional relationship to estimate demand for the period 2010-11 to 2020-21. The empirical model for the fertilizer use is specified as follows:

$$Fit = b0 + b1\ HYVt + b2\ GIAt + b3\ CIt + b4\ Pfertit + b5$$

$$Pr+wt + b6\ Creditt + Ut$$

Where, Fit is fertilizer consumption; i denotes three nutrients N, P and K and total (N+P+K) fertilizer consumption in thousand tonnes; t denotes year. The following independent variables were hypothesized to influence the consumption positively (+), negatively (-), or either negatively or positively (+/-):

HYV = Percentage of area under HYV to gross cropped area (+)

GIA = Percentage of gross irrigated area to gross cropped area (+)

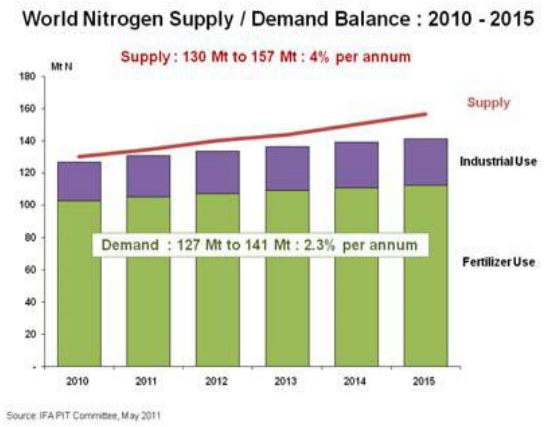
CI = Cropping intensity (%) (+)

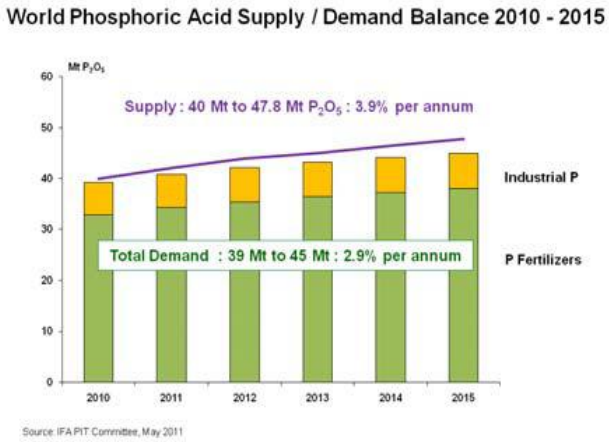
Pfert = Prices of fertilizers are represented by price of N through Urea, average price of P

Through DAP and SSP, price of K through MOP and N+P+K price is the price of N, P and K

and weighted by their consumption shares (-)

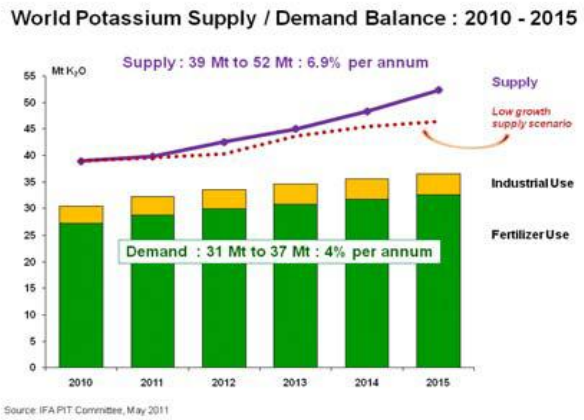
Pr+w = Output price is represented by procurement price of rice and wheat (main users of
fertilizers) and weighted by the share of their production (+)
Credit = Short term production credit per hectare of gross cropped area (Rs.) (+)
Two forms of functions, namely, linear and Cobb-Douglas were tried in this analysis.
The results of linear regression equation were used for interpretation as it was found better when compared with Cobb-Douglas production function.




## 6. Results and Discussion

**Factors Affecting Fertilizer Use:** The regression estimates for total fertilizer consumption equation are reported ; The high R2 value (0.99) indicates that explanatory variables in the model have accounted forever 99 per cent variation in fertilizer use and the model best fits when predicting fertilizer demand. The model was significant at 1 per cent level. All explanatory variables used in the model were statistically significant and had theoretically expected signs. Price of fertilizers was negatively related with fertilizers demand while area under high yielding varieties, irrigation, cropping intensity, price of output, and credit had a positive relationship with fertilizer demand.




The results show that non-price factors were more important determinants of fertilizer use. Among the non-price factors, irrigation was the most important factor influencing fertilizer demand, followed by cropping intensity. The price of fertilizers was the third important determinant of fertilizer use in the country. Price of output is less important compared with input price. The results clearly indicate that increase in area under irrigation, and cropping intensity will accelerate fertilizer consumption in the country. In case of pricing policy instruments, increase in prices of fertilizers would lead to reduction in fertilizer use while output price had a positive impact on fertilizer consumption but was less powerful than input prices. Therefore, it is necessary to prioritize input price policy mechanism over higher output prices as high output price benefits a small proportion of farmers while low input price will increase fertilizer consumption on millions of marginal and small farmers. Table 5 presents results for the N, P and K fertilizer consumption regression analysis. The results from this model suggest that the regression model provided the best fit to the fertilizer consumption data. The R2 value was highly significant at one per cent level of significance with the value ranging from 0.97 for K fertilizers to 0.99 for N fertilizers, indicating that over97 per cent of variation in demand for fertilizers was explained by the explanatory variables included in the model. As expected, technological factors such as high yielding varieties, irrigation, and cropping intensity and agricultural prices had positive impact on N fertilizer consumption. Availability of capital also influenced N consumption positively. Price of fertilizer had a significant negative impact on N fertilizer use. Non-price factors, namely, irrigation and cropping intensity, were more powerful in influencing N consumption compared with price factors. Price of N fertilizers was the third important determinant of fertilizer demand. Between, input price and price of agricultural output, price of input (N fertilizer) was more powerful in influencing the consumption. These

results were very similar to total fertilizer consumption results. For P fertilizers, the variables included in the model explained about 98 per cent of the variation in consumption of phosphatic fertilizers in the country. All the variables included in the model had expected sign (except for credit) and were statistically significant except for high yielding varieties which had expected sign but statistically non-significant. Price factors were more powerful in influencing P consumption compared with non-price factors. The variables included in the K fertilizers consumption model explained about 97 percent of the total variation in fertilizer use. As expected, irrigation and cropping intensity had significant positive impact on K fertilizer consumption. This is logical and expected, as farmers grow fertilizer-intensive crops under irrigated conditions and there is high degree of complementarities between irrigation and fertilizer consumption. Price of K fertilizers was the third important factor affecting fertilizer demand while price of output was less powerful than fertilizer prices in influencing fertilizer demand. The above results clearly indicate that non-price factors such as irrigation, high yielding varieties, and cropping intensity were more powerful in influencing demand for fertilizers compared with price factors. Within price factors, price of fertilizers had an adverse affect on fertilizer consumption and was more powerful than output price. The results suggest that in order to increase fertilizer consumption in the country, policymakers should prioritize non price factors like better irrigation facilities, high yielding varieties, etc. over pricing policy as an instrument. Second, between output and input prices, there is a need to keep fertilizers prices at affordable level as they are more powerful in influencing fertilizer demand than higher output prices.

**7. Summary and Conclusions:** With the limited arable land resources, and burden of increasing population, development of new technologies and efficient use of available technologies and inputs will continue to play an important role in sustaining food security in India. It is expected that India's available arable land might drop below the current level of about 140 million hectares, if the use of farmland for commercial/non-agricultural purpose is not restricted in the near future. Therefore, the only way to improve food production is to increase crop yields through the scientific use of fertilizers along with other inputs like high yielding variety seeds, irrigation, etc. using the limited arable land, with an emphasis on protecting the environment. The Government of India has been consistently pursuing policies conductive to increased availability and consumption of fertilizers in the country. Over the last four and half decades, production and consumption of fertilizers has increased significantly. The country had achieved near self-sufficiency in N and P, with the result that India could manage its requirement of these fertilizers from indigenous industry and imports of all fertilizers except were nominal. However, during the last 5-6 years there has been a significant increase in imports of N and P as well because there has not been any major domestic capacity addition due to uncertain policy environment. Indian imports, which were about 2 million tonnes in early part of 2000, increased to 10.2 million tonnes of fertilizers in 2008-09.India was the third largest producer of fertilizers in the world next to China and USA and the second largest consumer after China during 2008. The overall consumption of fertilizers in the country has increased from 65.6 thousand tonnes in 1951-52 to 26.49 million tonnes in 2009-10. Accordingly, per hectare consumption of fertilizers, which was less than one kg in1951-52, has gone up to the level of 135 kg in 2009-10. The average intensity of fertilizer use in India at national level is still much lower than in other developing countries but there are many disparities in fertilizer consumption patterns both between and within regions of India. The intensity of fertilizer use varied greatly from about 48 kg per hectare in Rajasthan to as high as 237 kg per hectare in Punjab. The fertilizer use has generally been higher in northern (91.5 kg/ha average) and southern (85.3 kg/ha average) region and lower in the eastern (44.7kg/ha) and western region (40.7 kg/ha). In the TE2009-10, 112 out of 538 districts (20.8%)consumed more than 200 kg per hectare, 76 districts between 150-200 kg, 105 districts between 100-150 kg and 127 districts between 50-100 kg/ha. About 22 percent of the districts had less than 50 kg/ha fertilizer use much lower than recommended levels. Between the TE2002-03 and TE 2009-10, number of districts using more than 200 kg/ha more than tripled from 36 in TE 2002-03 to 112 in TE 2009-10. Further about 18 per cent of the districts in the country account for half of total fertilizer use while bottom half of the districts account for only 15 per cent of total fertilizer used in the country. Therefore, there is a need have two pronged strategy, (i) to monitor districts with high intensity of consumption and take corrective actions to reduce environmental degradation and (ii) to promote fertilizer consumption in low-use districts to improve crop productivity. While examining major determinants of fertilizer use, it was found that non-price factors such as irrigation, high yielding varieties, were more important in influencing demand for fertilizers. Of the two price policy instruments, affordable fertilizer prices and higher agricultural commodity prices, the former is more powerful in influencing fertilizer consumption. The high product price support policy benefits the large farmers who have net marketed surplus while low input prices benefit all categories of farmers. Therefore, in order to ensure self-sufficiency in food grains production in the country, availability of fertilizers at affordable prices to the producers

is of utmost importance. The government should give due importance to non-price factors like better seeds, irrigation, credit, etc. to increase fertilizers in the country. For this, more investment in irrigation, agricultural research and development, extension services and infrastructure are indispensable in the context of a country like India. The results also suggest fertilizer subsidy to be more appropriate means to achieve the stated objectives compared with price support policy. However, there is a need to contain and target these subsidies in a better way. By 2020, fertilizer demand in the country is projected to increase to about 41.6 million tonnes – 23 million tonnes of N, 11.5 million tonnes of P and 7.1 million tonnes of K. The projected fertilizer demand in eastern and southern region is expected to grow at a faster rate compared with north and west. To meet the projected demand of about 41.6 million tonnes in 2020, additional capacity will be needed. Overall, a conducive and stable policy environment, availability of raw materials, capital resources, and price incentives will play a critical role in meeting the fertilizer requirements of the country.

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