

# AN ECONOMIC ASSESSMENT OF STRUCTURE AND DYNAMICS OF FERTILIZER SUBSIDY IN INDIA

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*Subsidies, as welfare augmenting instrument of fiscal policy, have been a common feature of economic management in most of the economies. Fertilizer subsidy has probably been one of the most hotly debated issues in the country over the past two decades. In view of this, the present paper analyses the fertilizer subsidy from two different aspects, both important for policy planners in the country. First, who is benefiting from the current system of fertilizer subsidies and secondly what is the impact of recent policy changes on fertilizer consumption and prices and proposed removal of fertilizer subsidies on farm income. Direct transfer of subsidies has the potential to help the poor access basic goods by reducing demand constraints. This paper recommends design solutions for direct transfer of fertilizer subsidies in India. It also evaluates the possible impact on shift in subsidy policies on agriculture and suggests recommendations to ensure easy transition. The objective of this paper is to present the structure of fertilizer subsidy in Indian agriculture and analyses the related issues in the emerging scenario.*

## INTRODUCTION

Agriculture in India is the most important segment of the economy. Growth of Agricultural sector is crucial for Indian economy as it employs two-third of its population and contributes nearly one third of national income. However its importance in the economic, social and political fabric of India goes well beyond what is indicated by its contribution to the economy. The large number of poor agricultural households and their income vulnerability are major concern among policy makers. These concerns have driven both agricultural policies and public expenditures in agriculture in India as well as in other part of the globe. Agriculture is also one of the major sources of export earnings of our country and is crucial for improving the balance of payments. In recent years, the export of agricultural and allied products accounted for about one-fifth of total export earnings of India. India's share of agricultural export has remained very low in many commodities despite inherent strength of Indian agriculture with the exception of few commodities.

Subsidy has its long record in India especially during the regime of the British crown in India. This type of the concept was recommended in the financial administration of the country. The recommendation was given by the Royal commission<sup>1</sup> in the year 1904. The Royal commission was set up to inquire the starving condition of Indian peasant. It was expected from the commission to devise the ways for removing spiteful condition of farmers. That commission observed that agriculture was not only backward, but the several castes and communities were also backward. In the opinion of the commission a large part of the population was subjugated under poverty and that large part was composed of backward community. So a device to see the development of agriculture was directly linked to the development of the backward classes in India. The commission narrated the events regarding to several disasters in agriculture which visited during the periods of 1877, 1878, 1889, 1892, 1897 and 1900. Due to these disasters 1.5 crores people have lost their lives. This made commission to recommend the concept of economic help in agriculture and social reservation in society. Here it is noteworthy that free India is a country where socialistic pattern of

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society is to be established by the Government. Efforts are done in this direction, but inequality is emerging out day by day. A vast chunk of population is forced to live below the poverty line. The number of the people is not less than forty crore. This B.P.L. (Below Poverty Line) needs subsidy.

Now two terms are used in providing economical help in agriculture and in other section of production. One is subsidy and other is supporting price. Subsidy is the monetary help from the state to producer and consumer, where as supporting price is the arrangement from the state. So that producer may not face monetary loss in producing that article. Further it is clear that subsidies are granted in different article of daily use. Through this device the Government maintains its welfare policy towards poor's. It is a known fact that India is a country where majority of its population lives on agriculture since ancient time. So subsidy was first granted in agriculture

The study is attempted at the two levels, firstly, we attempted an analysis of fertilizer subsidies at all India level on the basis of secondary data. This analysis deals with state wise fertilizer subsidies and their inter-relationship with agricultural development across the state. Secondly, we assessed the proposed policy to direct cash transfer of fertilizer subsidies to the beneficiaries. The data required for this analysis was collected from various reports of Indian Government, Annual budget reports and other publications of Government of India.

## **FERTILIZER SUBSIDIES: THE CONTEXT**

Fertilizers<sup>2</sup> are mined or manufactured commercial products and contain one or more elements which essential for plant growth. The role of chemical fertilizers for increased agricultural production, in particular in developing countries, is well established. Some argue that fertilizer was as important as seed in the Green Revolution, contributing as much as 50 percent of the yield growth in Asia (Hopper 1993). Others have found that one-third of the cereal production world-wide is due to the use of fertilizer and related factors of production. One of the most contentious issues surrounding fertilizer subsidies in India is how much of what is paid out actually finds its way into the pocket of the farmer, and how much is siphoned away by the fertilizer companies. Increased fertilizer consumption has been instrumental in the success of green revolution and helped improve agricultural productivity and farm incomes in the country. The subsidies have played an important role in promoting use of fertilizers and contributed to significant increases in yields (Morris et. al., 2007).

The fertilizer subsidy seeks to promote fertilizer consumption, increase agricultural productivity and maintain national food security. However, there has been a growing concern about steep increase in the subsidy during last few years and several factors have contributed to higher subsidy bill but more important being steady increase in consumption, sharp increase in prices of imported fertilizers, feedstock and intermediaries, and more importantly unchanged farm gate prices of fertilizers for a long time. The trends in international prices of fertilizers are Between 2007 and 2008, prices of all three major Fertilizers, urea, diammonium phosphate (DAP) and muriate of potash (MOP) increased manifold. On the other hand, fertilizer retail prices remained constant between March 2003 and March 2010 (FAI, 2012). Similarly, prices of fertilizer raw materials and feedstock such as ammonia, sulphur, rock phosphate and phosphoric acid also witnessed a steep increase during the last five years. Since the country is fully dependent on imports for meeting the requirement of potash (MOP) and deficient in phosphatic resources with nearly 90 per cent requirement being met through import of finished phosphatic fertilizers or phosphatic raw materials/intermediates for indigenous

production of phosphatic fertilizers, international prices have direct impact on domestic prices and consequently subsidy.

### Trends in Fertilizer Subsidies

India is the second largest consumer of fertilizers in the world after China, consuming about 26.5 million tonnes. It accounted for 15.3 per cent of the world's N consumption, 19 per cent of phosphatic (P) and 14.4 per cent of potassic (K) nutrients in 2008 (FAI, 2010). Both the intensity of fertilizer usage in terms of nutrients per hectare area and the extent of fertilization as measured by the ratio of fertilized area to total cropped area in many developing countries including India are lower than that in developed countries. 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.

**Table2**  
**Trends in Fertilizer Subsidy (Rs.crore) in India: 2001-02 to 2011-12**

Period	Concession on Decontrolled fertilizers		Subsidy on urea		Total Fertilizer subsidy	Share (%) in total subsidies <sup>1</sup>
	Indigenous P&K	Imported P&K	Indigenous	Imported		
2001-02	3760	744	8044	148	12695	40.4
2002-03	2488	737	7799	1.2	11016	25.3
2003-04	2606	4720	8521	0.8	11848	26.7
2004-05	3977	1165	10243	742	16128	34.6
2005-06	4499	2097	10653	2141	19390	38.8
2006-07	6648	3650	12650	5071	28019	42.0
2007-08 <sup>2</sup>	10334	32598	1640	9935	43319	43.7
2008-09	32957	32598	20969	12971	99495	59.1
2009-10	16000	23452	17580	7000	64033	43.3
2010-11	40766 <sup>3</sup>		15081	6454	62301	35.9
2011-12	36088		20208	13716	70012	33.1

Source: GoI (2011; PIB (2012a) and GoI (2012 b)

Fertilizer subsidies in India have increased significantly during the last decade. In 2008-09, India spent nearly 60 per cent of total subsidies on fertilizers and fertilizer subsidy, at Rs. 99494.7 crore, was more than 3.5 times the total public investment (Rs. 28035 crore at current prices) in agriculture (GOI, 2012). As in many developing countries, use of agricultural subsidies is highly political and very sensitive issue in the country, as it is linked to the food security, livelihood and welfare issues of millions of small and marginal farmers. The government continues to allocate a significant share of budget to agricultural subsidies. The 2012-13 budget allocated Rs. 190015 crore to subsidize food, fertilizers, petroleum, credit, pulses, edible oils, etc., of which the first two accounted for

bulk of resources (about 72 per cent). However, these subsidies have been widely criticized as being inequitable, inefficient and leading to fiscal burden. The Prime Minister's Economic Advisory Council (PMEAC) in its latest Economic Outlook 2012/13 argued for "dismantling of fertilizer subsidy because agricultural input subsidies are progressively losing their relevance, becoming an unbearable fiscal burden and their role in contribution to productivity enhancement is fast disappearing" (PMEAC, 2012).

**Table 3**

**Share of Major States in Total Fertilizer Subsidy in India, 1992-93 to 2008-09 (in %)**

State	1992-93	1999-2000	2008-09
Uttar Pradesh	23.2	19.5	17.5
Andhra Pradesh	10.6	10.8	11.3
Maharashtra	8.5	10.3	10.2
Madhya Pradesh	6.2	6.6	7.8
Punjab	11.6	8.6	7.7
Gujarat	5.5	5.2	7.0
Karnataka	4.2	6.2	6.5
West Bengal	5.2	6.7	6.4
Bihar	6.0	5.8	6.2
Haryana	5.8	5.3	5.5
Tamil Nadu	5.0	5.4	4.8
Rajasthan	4.2	4.7	4.4
Orissa	1.6	2.0	1.9
Assam	0.2	0.6	1.0
Kerala	0.7	1.0	0.9
Others	0.9	0.5	0.4
Coefficient of variation (%)	96.5	82.1	76.7

Source: Computed from FAI (2012).

The fertilizer subsidy increased by about 560 per cent between triennium ending (TE) 2003-04 and TE2010-11, from Rs. 11432 crore to Rs. 75246 crore (Table 2). The share of fertilizer subsidy in total subsidies varied from about 25 per cent in 2002-03 to about 59 per cent in 2008-09. The fertilizer subsidy reached a peak of Rs. 99495 crore in 2008-09 and then witnessed a declining trend. After two consecutive annual decreases in 2009-10 and 2010-11, fertilizer subsidy started increasing mainly due to rise in world prices of fertilizers and fertilizer prices in 2011 averaged 43 per cent higher than 2010 and are expected to rise in 2012 in response to high energy prices and strong worldwide fertilizer demand driven by rising crop prices (World Bank, 2012a).

### **Pattern of Fertilizer Consumption in India**

At the state level, almost a similar trend of inverse relationship between farm size and intensity of fertilizer use was observed. As the table 3 shows, more than half of the total fertilizer subsidy is cornered by the top five states, namely, Uttar Pradesh, Andhra Pradesh, Maharashtra, Madhya Pradesh and Punjab. Most of these states grow fertilizer-intensive crops such as rice, wheat, cotton and sugar cane. The share of these five states in 1992-93 was about 60%, which declined to 55.8% in

1999-2000 and further to 54.5% in 2007-08. Other major beneficiary states were Gujarat, Karnataka, West Bengal, Bihar, Haryana and Tamil Nadu. Their share in the total subsidy has increased from 31.7% in 1992-93 to 36.4% in 2007-08. The share of less developed states like Rajasthan, Orissa, Assam, Jammu and Kashmir and Himachal Pradesh was low and they accounted for only 6.7% of the total subsidy in 1992-93, which increased to about 7.9% in 1999-2000. The share of major fertilizer consuming states like Uttar Pradesh, Punjab, Haryana and Tamil Nadu has declined during the last one and a half decade, while the share of agriculturally less developed states like Madhya Pradesh, Gujarat, Bihar, Orissa and Rajasthan has increased.

### **Growth and Imbalances in Fertilizer Use**

Fertilizer has to play an important role in future growth of Indian agriculture as the net area available for cultivation is shrinking due to rising demand for new houses, factories, infrastructure and other commercial uses. It seems that practically all increase in farm output in future has to come from the increase in productivity. This would require improved technology and increased application of yield enhancing plant nutrients. A large number of studies have shown that most of the increases in food grain output during the first two decades of green revolution are attributable to chemical fertilizers (Desai and Vaidyanathan 1995). Therefore, growth in fertilizer consumption in the country is of paramount importance to raise agricultural production and to meet future requirements of the Country. Fertilizer consumption trends expressed in terms of aggregate quantities consumed and intensity of use (i.e., kg per hectare of total cropped area) reflect both demand and supply decisions. Therefore, it is essential to understand fertilizer situation in the country.

### **Total Fertilizer Consumption in India**

Fertilizer consumption was around 78 thousand tonnes in 1965-66 and it picked up very fast during the late-1960s and 1970s. At the time of onset of green revolution in 1966-67 consumption of fertilizers was about 1 million tonnes. In 1970-71, total fertilizer consumption increased to 2.26 million tonnes, which further increased to 12.73 million tonnes in 1991-92. The rapid expansion of irrigation, spread of HYV seeds, introduction of Retention Price Scheme, distribution of fertilizers to farmers at affordable prices, expansion of dealer's network, improvement in fertilizer availability and virtually no change in farm gate fertilizer prices for 10 years (1981-1991) were major reasons for increase in fertilizer consumption during 1971 to 1990. Total fertilizer consumption reached a record level of 26.5 million tonnes during 2009-10. With the introduction of the high yielding varieties of wheat and rice in mid-1960s, the fertilizer imports increased significantly in 1966-67 and thereafter. 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. Almost similar trend was observed in case of nitrogenous and phosphatic fertilizers.

### **Fertilizer Consumption Trends at Regional/State Level**

Concerned with the problem of increasing imbalance in use of primary nutrients, government introduced a concession scheme on the sale of decontrolled P and K fertilizers to the farmers in mid-1990s but still prices of these fertilizers were higher than nitrogenous fertilizers. In the late-1990s and early-2000s government hiked the concession rates for P and K fertilizers, which led to increase in their consumption and higher share in total fertilizer use during the 2000s. The eastern

and southern regions generally use less fertilizer while the northern and western regions consumed more. The share of northern zone was the highest (34.1%), followed by west and south accounting for nearly 25 per cent each and the lowest (15.5%) in eastern region. These regional figures mask variability among states. Within each region there are also sharp differences in consumption. Uttar Pradesh (54.6%), Punjab (23.9%) and Haryana (17.4%) accounted for about 96 per cent of north region's fertilizer consumption during 2009-10 while share of remaining three states (Uttarakhand, Jammu & Kashmir and Himachal Pradesh) was 4 per cent. Similarly in eastern region, West Bengal (41.9%) and Bihar (33.4%) used over three-fourth of total consumption in the region. In the southern region, about 96 per cent of the fertilizer consumption was in three states: Andhra Pradesh (46.3%), Karnataka (31.1%) and Tamil Nadu (18.1%). Maharashtra (37.6%), Gujarat (22.1%) and Madhya Pradesh (20.4%) consumed nearly 80 per cent of total fertilizer used in the western region (Sharma and Thaker, 2011).

**Table 5**  
**Growth Rate in Fertilizer Consumption and Food Grains Production**

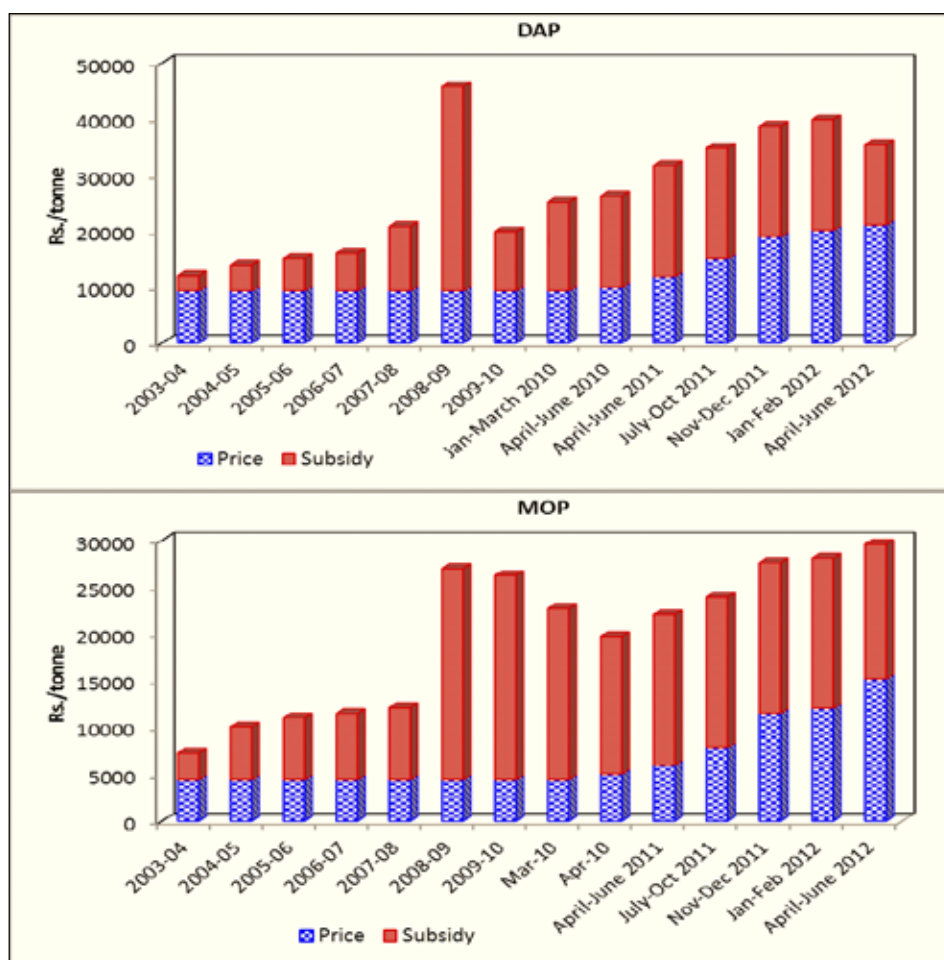
Period	Growth rate in fertilizer Consumption (%)		Growth rate in Food grains (%)	
	Total	Per Ha.	Production	Yield
Pre-green revolution period (1950-51 – 1966-67)	19.41	18.11	2.56	1.45
Post-green revolution period	8.75	8.49	2.65	2.53
Phase I (1967-68 – 1980-81)	9.90	9.29	2.27	1.87
Phase II (1981-82– 1991-92)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

Source: Fertilizer Association of India (2012)

### **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-6. 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 a high growth in fertilizer 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 from less 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. 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.

**Figure 1: Trends in price and subsidy<sup>3</sup> of DAP and MOP during pre- and post-NBS period: 2003-04 to June 2012**



Source: Vijay Paul Sharma (September 2012), GoI(2012c) and Industry Sources

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. 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 during 1990-91. 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. 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 in fertilizer 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.

## **IMPACT OF RECENT POLICY CHANGES ON FERTILIZER PRICES, SUBSIDY AND CONSUMPTION**

In this section, we provide a snapshot of the recent policy changes such as Nutrient Based Subsidy (NBS) policy and direct transfer of subsidy to farmers, as well as provide some data on fertilizer prices, subsidy and consumption trends. We focus on DAP, MOP (decontrolled fertilizers) and urea (under government control).

### **Nutrient Based Subsidy (NBS) Scheme**

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 Super Phosphate (SSP). Under the NBS, the market price is determined based on supply and demand factors and government pays a fixed subsidy. Additional subsidy for fortified fertilizers with secondary and micro-nutrients as per Fertilizer Control Order (FCO) has also been allowed under NBS. The fertilizer companies are required to print Maximum Retail Price (MRP) along with applicable subsidy on the fertilizer bags. It was also decided to mark-up the maximum retail prices (MRPs) of urea by 10% (from Rs 4,830 per tonne to Rs 5,310 starting 1 April) and decontrol the prices of non-urea fertilizers. The average subsidy on DAP varied from Rs. 2134 per tonne on indigenous DAP in 2003-04 to Rs. 36488 per tonne in 2008-09 (Rs. 53056/tonne the highest in September 2008) in pre-NBS era. In case of MOP, average subsidy varied from Rs. 2822 per tonne in 2003-04 to Rs. 22528 per tonne in 2008-09 (Rs. 29804/tonne the highest in March 2009).

After introduction of NBS policy in April 2010, which moved from 'fixed-price floating subsidy' regime to 'fixed-subsidy-floating price', the prices of phosphatic and potassic fertilizers registered a sharp increase particularly during the last one year. For example, price of DAP more than doubled between March 2010 and June 2012, from Rs. 9350 per tonne to more than Rs. 24000 per tonne, while subsidy declined from Rs. 19763 per tonne in 2011-12 to Rs. 14350 per tonne in 2012-13. In case of MOP, prices witnessed a very sharp increase in post-NBS period and price of MOP increased from Rs. 4455 per tonne in March 2010 to about Rs. 17000 per tonne in June 2012, an increase of about 280 per cent. The share of subsidy in total cost (retail price + subsidy) of DAP fertilizer was the highest (79.6%) during 2008-09 and has declined in the post-NBS era (about 40% during April-June 2012).

In case of MOP, share of subsidy in total cost was as high as 83.5 per cent in 2008-09 and declined significantly during the last two years due to reduction in subsidy under the NBS scheme. The partial decontrol of fertilizer sector which has led to sharp increase in prices of phosphatic and potassic fertilizers and relatively cheaper nitrogenous fertilizers resulted in sharp fall in demand and consumption of phosphatic and potassic fertilizers. The sale of urea increased by 4.4 per cent during 2011-12 compared with 2010-11 while sale of DAP declined by 2.9 per cent and MOP by nearly 23 per cent. This has led to deterioration in the N:P:K ratio, which will adversely affect the productivity of soil. A similar trend was observed after decontrol of phosphatic and potassic fertilizers in August 1992, when the prices of the phosphatic and potassic fertilizers registered a sharp increase and



nitrogenous fertilizers became relatively cheaper, a sharp decline in consumption of phosphatic and potassic fertilizers skewed the NPK balance from 5.9:2.4:1 (normally accepted ratio being 4:2:1) in 1991-92 to 9.7:2.9:1 in 1993-94 (FAI, 2012). Therefore, there is a need to check spiraling prices of phosphatic and potassic fertilizers and increase urea prices to maintain NPK balance.

### **Policy on Direct Cash Subsidy**

In the budget for 2011-12, the Government declared its intention to move towards the system of direct cash transfer for disbursement of subsidy especially, for the people living below the poverty line. The rationale behind putting into place such a mechanism was that it will reduce adulteration and wastage, do away with black marketing and hoarding and most importantly ensure that the subsidy reaches the targeted beneficiaries. The government is also hopeful that direct transfer of cash will eventually lead to a reduction in its subsidy bill as it will bring about more efficiency in the distribution system than the current system of indirect subsidy, which is plagued with leakages. A task force has been set-up to work out the modalities for the proposed system. In order to direct the cash subsidies to the beneficiaries the Government plans to use the Aadhar based identification and smart cards with recharging facilities. The task force set up by the government has proposed a step by step approach to make the transition to the new system of cash transfer.

The fundamental requirement in delivering fertilizer subsidies as direct cash transfers is the accurate identification of its target group. In the Indian context, there is the important distinction to be made between farm land owners (mostly absentee) and actual cultivators (or tenants). However, since tenancy has been abolished across most parts of India, existing land regulations and records recognize only the land owner and do not acknowledge the rights of tenants. In the absence of any legally certified record that establishes the identity of the actual cultivator, it becomes impossible to administer a cash transfer scheme for fertilizer subsidies. It is for this reason that the largest beneficiaries of the recent loan waiver scheme were the absentee landlords (crop loans are given based on the existing land records which acknowledge only the landlords). In view of the problems in identification based on cultivation status, the most effective proxy for targeting farmers will be their income levels, established based on some relatively accurate database, like the PDS card issued. It can be mandated that only the Below Poverty Line (BPL) farmers will be eligible for fertilizer subsidies. The cash subsidy can then be delivered to their UID-Linked account. Another option to deliver the subsidy would be to use time-dated (so that it would not be used after the season) and UID-linked bar-coded vouchers. The vouchers could be issued to eligible farmers who would then pay the market price and get the subsidy redeemed to their UID-linked bank account when the bar-code is swiped. With appropriate controls to restrict the amounts that can be transferred to any UID-linked account, the extent of subsidy delivered to any one farmer can be restricted. Though the accurate identification of the beneficiary farmers to be given the vouchers in the first place will remain a problem, any leakages arising from too liberal a coverage (of beneficiaries) can be substantially limited with the subsequent aforementioned controls.

### **Ensuring Availability**

As this Business line story documents, the success or otherwise of the fully decontrolled regime will critically depend on curbing speculative tendencies in the market and thereby ensuring adequate availability of stocks. I have blogged about the strong incentives to game the market in the case of a similar strategy to deliver PDS through private shops by abolishing the dual-price system. This is

more so in the case of DAP and MoP, the two most consumed fertilizers after urea, due to their use-pattern and import dependency. Fertilizers prices are especially vulnerable to market manipulation given the limited number of manufacturers, large share of imports, and narrow consumption window. For example unlike urea which is applied throughout the crop cycle, DAP is a nutrient required for root establishment and which farmers apply primarily as a basal dressing just before sowing (for wheat DAP is to be applied only during planting in November-December). Given this, there is the strong possibility of demand spikes and price rises unless adequate and timely availability is ensured during such times. It also means that the bulk of Indian imports should be concentrated in October-December, when the demand in other major users/importers is low due to severe winter. Further, underlining the sensitivity of global market prices to India's imports, India formed 40% of global DAP imports in 2009, 58% of phosphoric acid, and 31% of rock phosphate.

### **Cushioning against Price Volatility**

Decontrolled prices mean that the domestic farm-gate fertilizer prices will now be substantially determined by international markets, especially since many of these fertilizers are predominantly imported, one way or the other. Given the widespread political opposition to decontrolling the similarly global market dependent petroleum prices, the Union Government will face strong pressures to intervene especially during periods of oil price spikes. Further, despite the generous subsidies to placate the powerful fertilizer companies and also discourage them from raising their MRP, the incentives to indulge in price gouging will continue to be strong. However, in due course of time, a more closely integrated pan-national market for such products, as against the highly fragmented and localized existing markets, coupled with more easy access to market information for farmers, will limit/contain the possibilities for such price manipulation. In order to off-set any volatility in global market prices, there have been calls to maintain a strategic reserve of DAP and MoP. While this may be politically attractive, it poses numerous problems of incentive distortions and administration challenges that bedevil existing programs like the PDS.

### **SUMMARY AND CONCLUSION**

Fertilizer is the single most important input underlying the growth in food and other crops during last four decades and it holds key to future growth in agricultural output in the country. Fertilizer use has witnessed spectacular growth in some parts of the country but its use is quite low in many states where it offers considerable scope to raise agricultural production. Some researchers assert to the extent that these subsidies are causing adverse impact on production. On the other hand there is concern about decline in production if subsidies are curtailed. Thus, if subsidy on fertilizer is taken away in one go it is going to cause very serious adverse effect on food grain production and consequently on food security. Our food grain production is growing at a very slow rate compare to growth rate in demand and there are serious concerns to accelerate growth in food grain production. On the other hand ballooning subsidy bill is a matter of concern and, slow growth in fertilizer production is another matter of serious concern. One way out to keep some check on further growth of subsidy without adverse impact on food grain and agricultural production is to increase fertilizer prices at a rate lower than the increase in food grain prices received by farmers.

Though subsidy has contributed to an increase in use of fertilizers that has helped in achieving self-sufficiency in food grains production but in some cases it has resulted in an overuse, which

has an adverse effect on productivity. The findings indicate that withdrawal of subsidies will make farming unprofitable, particularly for small and marginal farmers and in less developed states/regions. Therefore, there is a rationale for subsidizing fertilizers in case of small and marginal farmers as well as less developed regions. Sharp increases in both domestic and imported fertilizer prices as well as raw material/feedstock, rising imports and reduction in subsidy on phosphatic and potassic fertilizers have made markets more volatile and, to the extent that higher prices have led to a decrease in consumption of phosphatic and potassic fertilizers and deterioration in the N:P:K ratio.

## References / Notes

- 1 P.N-86,Economic History of India-G.Kaushal
  - 2 DAP (diammonium phosphate), standard size, bulk, spot, f.o.b. US Gulf ; MOP (muriate of potash), standard grade, spot, f.o.b. Vancouver and Urea, bulk, spot, f.o.b. Black Sea
  - 3 Subsidy on DAP for the period 2003-04 to 2007-08 is average of imported and indigenous DAP
  - 1 Share is computed from subsidy figures given in various issues of Expenditure Budget Vol. I, Ministry of Finance, Government of India
  - 2 Subsidy figures for 2007-08 and 2008-09 include both cash and bonds for both urea and decontrolled fertilizers
  - 3 Data on subsidies on sale of decontrolled fertilizers for 2010-11,2011-12 and 2012-13 is total of imported and indigenous P&K fertilizers as separate data is not available after NBS
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