CHAPTER II

Conceptual Framework on Fertilizer Subsidies
And Review of Literature
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Conceptual Frame Work on Fertilizer Subsidies And Review of Literature

Rapid agricultural growth continues to be the key to poverty alleviation and overall economic development. Agriculture accounts for about one-fourth of the Gross Domestic Product (GDP) and is the source of livelihood for nearly two-thirds of the population. The agriculture sector in India has been successful in keeping pace with the rising food demand of a growing population which has crossed the one billion mark. Food grain production more than quadrupled since the early 1950’s from 54 million tones to over 210 million tones in 2004, while population nearly tripled from 360 million to more than one billion during the same period.

As the population increased rapidly and since possibilities for extending the net sown area were nearly exhausted, the incremental output from agriculture had to come from a higher yield per unit area. Hence, the Green Revolution saw an acceleration in the consumption of chemical fertilizers namely Nitrogenous (N), Phosphorus (P) Potash (K). One of the reasons for the problems of soil salinity and alkalinity in agricultural regions in India has been the indiscriminate and faulty use of fertilizers\(^1\). There is a recommended level of fertilizer use for each crop which has the optimum level, the consumption of fertilizers above or below this optimum level result in an imbalance in fertilized use which in term causes environmental problems.

An important component of the agricultural policy in India has been the promotion of modern inputs. Fertilizer consumption in India
picked up after the introduction of high yielding varieties. Recognizing
the importance of fertilizers in increasing agricultural productivity, the
government aimed not only at stabilizing the fertilizers prices but also
keeping them low for the farmer. Subsidy component was introduced
in 1977 to supply fertilizers to the farmer, at a price lower than the
retention price. However, the divergence between the two prices
increased sharply during the eighties due to increase in the cost of
fertilizer production, while the sale price remained stagnant. On the
one hand this has led to a three fold growth in production capacity of
the fertilizer industry during the eighties. On the other this also implied
increasing burden of subsidies on the Central Budget.

The large subsidies, their proliferation and unmitigated growth,
their poor design targeting and extensive leakages, all of these tending
to promote inefficiency and wastage of resources and also to create
adverse implications for income distribution. The unjustified subsidies
leading to heavy macro-economic costs in the form of large fiscal
deficits, pre-emption of resources, pressure on the financial system and
stiffening of interest rates.

The stabilization phase of the New Economic Policy, which
aimed at reducing fiscal deficits, made its first visible impact on
fertilizer subsidy an important component of the fiscal deficit. A 40
percent increase in fertilizer price raised a vigorous debate on fertilizer
pricing with respect to the following.

1) Who gains by the present pricing policy—farmers, fertilizer
industry or the feedstock supplier in the public sector?
2) If fertilizer subsidy is withdrawn and its burden is shifted to the farmer in the form of price increase, what would be the likely impact on fertilizer consumption?

3) If fertilizer use is affected by the price hike, what would be the output response at the macro level and at the micro levels, and what accounts for the differences in the response in different regions? Answers to these questions will be given at a later stage of the write up.

2.1 The Concept of Subsidy

The wide range of general, social and economic services offered by the government at the centre and in the states can, for analytical purposes, be classified into three broad groups. At one end of the spectrum there are pure public goods (services) in the Samuelson sense, characterized by non-rivalry and non-excludability in consumption. At the other end there would be pure private goods characterized by rivalry, excludability and no externality. Then there would be the vast majority of services in the middle category, characterized by rivalry and excludability but also varying degrees of externalities in Musgrave’s notion to describe this class of services as ‘merit goods’. Of these, the concept of subsidy is properly applicable only to the last two.

There are several definitions of subsidy. The concept of subsidy used in the budget document refers to the explicit payments made to producers to alter their price or output decisions or to consumers to
encourage them to consume more because it is "meritorious" to do so. On the contrary the concept has a broader meaning as it includes, in addition to these explicit payments, the implicit subsidies arising from the losses of departmental enterprises. Subsidy may be defined as money granted by state or public body to individuals/ firms or organizations to bring down the cost by way of tax exemption, part payment by government, and so on. Or to bring down the final price of those goods and services, which have large externalities or which lead to distributive justice.

With this background, let us now address what is fertilizer subsidy? In a free market, a manufacturer would have charged the farmer a price that covers his reasonable cost of production and distribution. Since he is allowed to sell at a fixed price only, which is low, the balance is made up as subsidy. In short, on every tone of material produced and sold, what the farmer is unable to pay is made up by the government. Ashok Gulati (1989) defined fertilizer subsidy as the difference between farm gate cost of fertilizers and the price being actually charged from farmers.

Further Ashok Gulati and Anil Sharma defines fertilizer subsidy could be that, if government had not intervened in the system either through Retention Price Scheme (RPS) or through controls on the imports of fertilizers, at what price farmers would have got fertilizers. The difference between what cultivators would have paid under that counter factual free trade scenario and what they are actually paying may be termed as 'economic' subsidy to farmers. As of today, there are four components of fertilizers subsidies, they are
a) Indigenous produced nitrogenous fertilizers.
b) Indigenous produced phosphate fertilizers.
c) Imported fertilizers.
d) Freight on fertilizers.

The retail price of which is kept uniform throughout the country.

The definition of fertilizer subsidy may be made further clear from the figure 2.1

**Figure 2.1 Fertilizer Subsidy**

Let $0Y$ be the quantity of fertilizer which is publicly provided, $YB$ the actual cost per unit, $YD$ the efficient cost per unit and $EF$ the cost of per unit recoveries, and $XX$, is the demand curve for the service. The rectangle $ABHG$ measures the total volume of fertilizer subsidy actually required in order to ensure that the market absorbs $0Y$
quantity of this publicly provided service, if the market clearing quantity OY is considered slowly inadequate.

However, ABHG has two components, i.e. a necessary element CDHG which is a genuine allocate subsidy and an additional element ABDC paid to suppliers to cover their inefficiency. Finally, there is a subsidy element GHFE which need not have paid to support consumption level OY, given the state of demand. The measure of subsidy which conceptually corresponds to the rectangle ABFE, in fact combines three distinct elements, i.e. a producers subsidy, the allocative subsidy and a distributive subsidy.

Measurement of fertilizer subsidies\textsuperscript{10} has been conceptually clarified with the help of figure 2.1 and notified the misallocation of subsidy component over the estimation. In this regard, the study conducted by National Institute of Public Finance and Policy(2004) drawn that, the industry share in fertilizer subsidy decreased from an average of 75.46 percent in the triennium ending (TE) 1983-84 to 24.38 percent in TE 1992-93, and further to-27.83 percent in TE 1995-96 (Table 2.1). A negative subsidy in this context indicates that the fertilizer industry was being implicitly taxed in TE 1995-96, with import parity prices so high that the fertilizer industry would have made higher profits if it had sold in the international market rather than in the domestic market under Retention Price Scheme (RPS).
### Table-2.1: Farmer’s share in fertilizer subsidy

<table>
<thead>
<tr>
<th>Particulars</th>
<th>TE 83-84</th>
<th>TE 86-87</th>
<th>TE 89-90</th>
<th>TE 92-93</th>
<th>TE 95-96</th>
<th>TE 98-99</th>
<th>TE 99-00</th>
<th>TE 00-01</th>
<th>TE 01-02</th>
<th>TE 02-03</th>
<th>1999-00</th>
<th>2000-01</th>
<th>2001-02</th>
<th>2002-03</th>
<th>Average of triennium average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea (Rs/tonne)</td>
<td>258</td>
<td>590</td>
<td>700</td>
<td>2002</td>
<td>3669</td>
<td>3033</td>
<td>1936</td>
<td>1800</td>
<td>1932</td>
<td>3049</td>
<td>1098</td>
<td>2269</td>
<td>2432</td>
<td>4450</td>
<td></td>
</tr>
<tr>
<td>DAP (Rs/tonne)</td>
<td>-347</td>
<td>243</td>
<td>93</td>
<td>231</td>
<td>-562</td>
<td>1701</td>
<td>2441</td>
<td>2201</td>
<td>1651</td>
<td>1669</td>
<td>2330</td>
<td>1128</td>
<td>1495</td>
<td>2383</td>
<td></td>
</tr>
<tr>
<td>MOP (Rs/tonne)</td>
<td>438</td>
<td>512</td>
<td>1037</td>
<td>1212</td>
<td>786</td>
<td>2339</td>
<td>3516</td>
<td>3857</td>
<td>3913</td>
<td>3815</td>
<td>4042</td>
<td>3885</td>
<td>3811</td>
<td>3750</td>
<td></td>
</tr>
<tr>
<td>Total subsidy on (N+P+K) (Rs. crore) (per tonne subsidy X consumption)</td>
<td>165.4</td>
<td>842.4</td>
<td>1761.6</td>
<td>3777.2</td>
<td>6977.9</td>
<td>8702.9</td>
<td>7531.7</td>
<td>7520.9</td>
<td>6820.1</td>
<td>6852.3</td>
<td>6121.8</td>
<td>8126.6</td>
<td>6211.9</td>
<td>6218.5</td>
<td></td>
</tr>
<tr>
<td>Fertilizer subsidy as given in the budget (Rs. Crore)</td>
<td>67.4</td>
<td>1916</td>
<td>318.7</td>
<td>4905</td>
<td>5458.7</td>
<td>9697.3</td>
<td>11586</td>
<td>12497</td>
<td>12830</td>
<td>12085</td>
<td>13244</td>
<td>12651</td>
<td>12595</td>
<td>11009</td>
<td></td>
</tr>
<tr>
<td>Share of budgetary subsidy going to farmers (%)</td>
<td>24.54</td>
<td>43.97</td>
<td>53.08</td>
<td>75.62</td>
<td>127.83</td>
<td>89.75</td>
<td>65.01</td>
<td>60.18</td>
<td>53.26</td>
<td>56.68</td>
<td>4622</td>
<td>64.24</td>
<td>49.32</td>
<td>56.49</td>
<td>61.87</td>
</tr>
</tbody>
</table>

**Note:**
- ii) TE 83-84 is triennium average ending 1983-84 and so on.

**Source:** Gulati and Narayan (2003) upto 2001 and updated onwards by NIPFP
This implicit taxation of the fertilizer industry was short-lived, and by TE 1998-99, the farmer’s share had declined to 90 percent, and further to 46 percent by 1999-2000, for the entire period of 1981-82 to 2002-03, the average share of the farmers in the fertilizer subsidy was 62 percent, with the residual 38 percent accruing to industry. These results would lead many of us into believing that significant share of the subsidy goes to the producers of fertilizers. These results reflect that, the subsidy component to the industry is larger and domestic manufacturers are given a cost plus price. This provides very little incentive to domestic manufacturers to cut costs. Instead it provides them ample incentive to inflate them. To understand the true nature of fertilizer subsidy measurement the concept of Retention Price Scheme must be conceptually clarified.

2.2 Retention Price Scheme

Pratap narayan\textsuperscript{11} defines RPS means, “A fair price to the producer covering his cost of production besides a reasonable rate of return, subject to prescribed efficiency norms”. Further it has been made clear by Gunwant Desai\textsuperscript{12} and defines that, “RPS has been a mixed bag, and it provides a cushion to industries against external shocks by protecting it from internal competition. It offers a guaranteed return on capital employed and also attracted higher investment which led to substantial expansion of capacity”. In the environment of rising cost of production, the fair price assured to the unit would necessarily tend to be higher than the consumer price leading to payment of subsidy by the government.
Further Vidhya Sagar\textsuperscript{13} defines, "The ex-factory realization for each unit is fixed on the basis of normative costs of production besides equated freight being fixed for each unit. The difference between the net realisation (consumer price minus distribution margin) on the one hand and retention price plus equated freight on the other is mopped up from or paid to each unit by the government.

Ashok Gulati\textsuperscript{14} noted that, "The basic objective has been to keep the farm gate prices at reasonable level." This has to be achieved by.

a) Insulating the farming prices from fluctuations in the world market.

b) Equalizing prices of supplier based on imports and domestic production and the latter from plants with widely different cost of production, and

c) Keeping uniformity in prices all over the country.

2.3 Need for Retention Price Scheme

1. Make fertilizer available to farmers at stable and reasonable prices to encourage increased agricultural production.

2. Give fertilizer producer a reasonable return on their investment to encourage efficiency and growth in the industry.

3. To encourage the intensive use of fertilizer by farmers by making available all types of fertilizer at uniform and affordable prices through out the country and there by achieving self-sufficiency in the production of food grains.

4. To attract investment in a big way, particularly, from the private sector to ensure adequate production for national self-reliance there by.
5. Saving precious foreign exchange and reducing dependence on imports.

6. Ensure that the weaker segments of society are not excluded from mass consumption goods, such as food grains because of higher prices.

Consequently, the scheme was put in place to ensure the fair price to the consumer and reasonable return to the producer and sufficient food grains at affordable prices for the common man.

2.4 Retention Price Scheme in Other Countries

Fertilizer use has been and will continue to be a major factor in the agricultural development strategies of the developing countries. But typically very few nations, even advanced ones, have relied entirely on the free market system to set fertilizer prices. Developing countries have chosen almost uniformly to intervene in the pricing of fertilizers to achieve a variety of national objectives.\(^{15}\)

   a) Sustain agricultural development by cushioning farmers against unfavorable price movement.
   b) Promote initial use by innovative farmers.
   c) Stimulate production of food grains.
   d) Aid selected development projects such as regional development.
   e) Reduce concentration and inequalities in the distribution of farm incomes.
   f) Encourage efficient use.
Further the above idea of RPS has been clarified by World Bank\textsuperscript{16} in its view; RPS means to ensure the farmers about the use of fertilizers at stable and attractive prices. To encourage increased agricultural production through greater fertilizer use, while at the same time ensuring the fertilizer producers to obtain a reasonable return on their investment while increasing production efficiency. Here, ten developing countries have been identified to know in detail the fertilizer price policy and their common objectives which are as follows\textsuperscript{17}.

a) The fertilizer price system should motivate to increase their operating efficiency and optimize capacity utilization and minimize costs. At the same time, firms should minimize the social costs to the economy as a whole and provide optimum social benefits.

b) The price system should induce an optimal allocation of resources in the economies. Optimality involves such factors as the timing of investment, plant, location, technology, size, feedstock, and the relative flow of investment funds among all sectors.

c) The price system should ensure the financial soundness of economically viable enterprises and, to facilitate the measurement of the management performance in different enterprises.

d) The price system should avoid or minimize the burden of substantial subsidies on the government budget.

e) The price systems should impose minimum costs and administrative loads in its budget.
Based on the common objectives of the RPS of the Ten identified countries like Portugal, Brazil, Pakistan, India, Egypt, Nigeria, Columbia, Hungary, Yugoslavia, and Turkey, they are classified on the basis of fertilizer price policy followed in these countries:

1. Actual cost recovery e.g. Egypt, Nigeria
2. Actual cost plus, e.g. Pakistan (Old Plans) Portugal, Brazil.
3. Normative cost plus, e.g. India, Columbia, Pakistan (New Plans)
4. Fixed price based on internal prices of selected countries, e.g. Hungary, Yugoslavia.
5. Soothed world prices e.g.: Turkey.

The Actual Cost recovery system is in practice in Egypt and Nigeria, their RPS reflects actual cost recovery. Under this price system, producers are reimbursed for their cost but receive no profit. The company operates on a no-profit, no-loss basis. Their annual investment needs are met from government budget allocations and depreciation funds of the company. The main disadvantages of this system are that it does not give the necessary incentives for further investments. There is no reward for productive efficiency, and producers do not have incentives to minimize the cost of production.

The Actual cost plus scheme is the existence in Brazil, Portugal, Pakistan (Old Plants). Enterprises are compensated for actual costs of operation plus a reasonable return on invested capital or a set margin on sales. One variant is to base the price on the cost of the most efficient firm in their sector. The main short coming of this system is that, there is no incentive to increase productivity. Since there is no reward for such an increase, the system does not provide adequate
incentives to invest in new production capacity, to expand or rationalize existing capacity or to change the cost structure. The operating costs of raw materials, labor and other inputs are not further reduced.

The Normative cost plus system\textsuperscript{20} at present is in existence in India, Columbia and Pakistan (new plants). In this pricing scheme, ideally the fair return should be sufficient to attract new capital. Some of the lead papers suggest that, in order to ensure and minimize costs, managers of firms must be held accountable for the inputs they use in meeting their targets. If the consumption of inputs falls below the norm, the managers receive a bonus, proportional to the social value of the resource saved. The main defect of this system is that it induces a firm to “Over Capitalize”, as the firms retention price are based on the amount of capital employed. As per the World Bank Survey (1990) report observation\textsuperscript{21}, the above scheme is an incentive to build “Gold Plated” (assurance of grantee on capital cost over fertilizer production) plants.

To a certain extent, the system provides a perverse signal; costs do not matter as long as capacity utilization and input norms are met. Furthermore, under this system, many firms, appear to be more concerned about justifying their costs to increase the norm and to compensate accordingly than to contain or reduce costs. This system further may also dampen the incentive to innovate if prices are revised downwards after cost reductions are affected to maintain the fair rate of return. The fixed price based on internal price system is in existence in Hungary and Yugoslavia. Here retention price is fixed on the basis of
landed international prices or on the basis of comparable prices of neighboring countries.

Fertilizer prices vary with the ex-factory or import prices depending on whether the product is produced domestically or imported, if the retail prices go above the stipulated maximum, the government subsidies to the consumer by reimbursing the distributors for the difference. The aim is to keep consumer prices at a level that encourage consumption. And further government will also take into account the cost of production in the domestic fertilizer industry, while fixing the retention prices. However, the ex-factory prices paid for fertilizers reportedly do not cover the costs of production of every plant. The main disadvantage of this scheme is that, long term economic viability is questionable and to induce the choice of new investments. This price mechanism does not provide a clear signal to, either fertilizer producers to assign priorities economically or encourage the farmer for more consumption of fertilizer.

The smoothed world price scheme is in existence in Turkey; the prices are set at levels that reflect long-term average international prices, after smoothing for short term fluctuations. In a growing industry such as fertilizers, this approach should reflect long-term marginal cost pricing for internationally efficient producers. One technique is to use of multi-year moving average of international prices. A variant is to use a smoothed international price as a reference point and to provide an incentive for local value added by shadow pricing foreign exchange savings. Another is to use the average domestic fertilizer prices in a representative sample of countries, instead of the smoothed international prices.
With regard to the fertilizer price policy of 10 selected developing countries, the World Bank (1983) referred to reviewed the pricing policies and identified few common problems found in them. They are

a) They are not revised often enough to take into account changes in the price of inputs.
b) They are based on inappropriate depreciation schedules.
c) They are based on subjective judgments about the norms for production costs.
d) They are based on low fixed rates of return or sales margin.
e) They do not account adequately for certain costs such as transportation and distribution.

World Bank also suggested and recommends a few transparent policies to optimize fertilizer consumption and production.

a) More research and information on non-price factors, such as rationalization of old plants and improving the efficiency of the transportation and distribution system as well as of fertilizer use.
b) Prices should be set with greater frequency, taking into account changes in the input and output market.
c) The establishment of a small consultative group for periodic exchange of views on the fertilizer price system in different countries, with particular reference to the modifications achieved.
d) Development of a formula for calculating smoothed international fertilizer prices.
e) When countries modify their fertilizer pricing policies, achieving a smooth transition from old to new policies is important.
and should be the subject of careful planning, taking into account the overall input and output price relationship in agriculture.

All too often, their pricing programs have resulted in high levels of subsidies. To producer and consumers of fertilizers, inefficient allocation of resources, continued operation of uneconomic firms, and difficulties in evaluating the operational efficiency of enterprises. In many developing countries, the burden on government budgets by the ever increasing subsidies has become major concern. After a brief discussion of the fertilizer price policy in various developing countries of the world let us turn back to know the operation and practice of RPS in India.

The Fertilizer Retention Price System (RPS) was introduced in India during 1977 on the recommendation of the Fertilizer Price Committee, under the chairmanship of S.S. Marthe, to examine the existing basis of fertilizer prices and recommend a pricing policy that would ensure a fair, sustained return on investment. RPS was introduced to fix prices of fertilizer manufacturers at which the government buys their entire output. The prices are fixed unit wise after allowing a post-tax return of 12 percent on net worth in addition to all elements of cost arrived at on the basis of a combination of norms and actual.

Under RPS in India, the product prices were fixed for each manufacturing unit based on the norms of capacity utilization, normative consumption of feedstock’s, raw materials and utilities, normative working capacity’s requirement and an assured post-tax return on investment of 12 percent, the manufacturers were expected to
operate within the norms specified. This system was intended to encourage efficiency and penalize inefficiency in operation\textsuperscript{26}.

2.5 Retention Price Scheme and Fertilizer Subsidies

Given the retention price and, if farm gate prices are not raised, it would lead to an increase in subsidy. As such the cost of feedstock becomes very crucial in determining the level of subsidies.\textsuperscript{27} Further emphasis on self-sufficiency in fertilizer production has led to setting up of a large number of new productions of new plants at a huge capital cost. The unit cost of production on these new plants is generally higher which has sharply increased fertilizer subsidy, especially in recent year the system of RPS encourages “Gold Plating” of plants. This occurs as the ex-factory prices are based on capital employed. To a certain extent the scheme provides a perverse signal, mean that, plant costs do not matter as long as capacity utilization and inputs norms are met\textsuperscript{28}. The RPS provides no clue as to which plant ought to be expanded and which one ought to be phased out as the scheme provides a uniform rate of return on capital.

It does not distinguish between plants that are uneconomic in scale or are unsuitably located or get more expensive feedstock then others as long as the norms are met. Another aspect of this scheme is that it leads to cross subsidization from old to new units since the latter face higher cost then the former one. On the other side, fertilizer subsidy in the central budget mounted enormously from Rs.505 crore in 1980-81 to about Rs.13,244 crore (Table 2.2) during 1999-2000. All this has significant subsidy implications, placing excessive and perhaps
intolerable in certain cases. In this context during 1998 on intention to minimize the burden of fertilizer subsidy on the central budget, which has been growing dramatically over the years, a committee was constituted under the chairmanship of Hanumantha Rao. The government accepted and introduced the recommendations of the Hanumantha Rao committee on fertilizer price policy. The recommendations are29

- Deregulation of fertilizer industry.
- Discontinuation of unit wise RPS for urea plants.
- New pricing methodology based on long run marginal cost of fertilizer.
- Abolisation of allocations under the essential commodity Act.
- New units to get guaranteed price for 15 years, and setting up a Fertilizer Policy Planning Board.

This has placed the fertilizer industry on the road to efficiency by signaling low cost plants to expand their production and high cost plants to contrast, which would help to reduce the overall cost of the industry. Besides, it is much better to free the system from normative cost plus pricing route for individual plant to market oriented system based on demand and supply.30

2.6 Fertilizer Subsidies in India

Fertilizer subsidy is defined as the difference between the fertilizer prices which farmers pay under the administered price system and the price which they would have, otherwise paid to purchase fertilizers from open market in a free market environment31. Similarly for the producer, the subsidies are the difference between the price they
are getting under administered price system and the price which they would have got under the free environment.

Fertilizer subsidy support programme are currently in operation in almost all the developing countries of the world, the overriding objectives being to make fertilizers available to farmer’s prices which the farmers can afford. In this context let us examine the basic objectives relating to fertilizer subsidy.

2.7 Objectives of Fertilizer Subsidies

The following are the objectives of fertilizer subsidies

1) To assure a remunerative and relatively stable price for the farmers for inducing them to increase the production and thereby augment the availability of food grains.

2) To evolve a production pattern with the overall needs of the country.

3) To ensure and bring self-sufficiency in fertilizer production at a reasonable price level.

4) To improve the physical and economic access of the masses to food.

5) To bring timely and adequate supply of fertilizers to meet the requirement.

6) To improve the availability of fertilizer and other inputs which contributes to supply chain integration and increase agricultural productivity.

7) To monitor and enforce regulation on fertilizer sales with particular reference to truth-in-labeling.
8) Facilitation of regional regulatory harmonization and procurement of fertilizers to achieve economics of scale.
9) To protect the small farmers real income.

These objectives make it clear that fertilizers are an integral part of the development strategy followed for the entire food economy of India. Hence, encouraging increased agricultural production to meet the growing demand for food has been the key element of Indian food policy. And fertilizer subsidies are important components of balancing of the interests of consumers and farmers. But in recent years, under the structural adjustment programme the increase in fertilizer subsidies has brought about a wide range of debate.

2.8. Nature and Causes for the Growth of Fertilizer Subsidies

Fertilizer subsidies were introduced as a temporary measure during the seventies. They have now come to stay and form a major component of total budgetary subsidies. Initially subsidies were necessitated due to high cost of imported fertilizer. After 1975-76, both imported and domestic fertilizers were stabilized.

The subsidy on indigenous production started increasing since 1977 under the retention price scheme. Over a period the share of imported fertilizer declined and that of domestic production increased up to 85 percent by 1990-91. This has been made clear from the Table 2.2. The table presents the basic information about the total quantity and percentage changes in production, consumption and import of the
Fertilizer since 1980-81 to 2000-01 under subsidy regime. During the year 1980-81, the production of fertilizer was 3005 MT, the consumption was 5516 MT, the gap was filled by the import of fertilizer to the extent of 2759 MT and the subsidy component was

Table 2.2: Domestic Production, Consumption and Import of Fertilizer

<table>
<thead>
<tr>
<th>Year</th>
<th>Domestic Production</th>
<th>Import</th>
<th>Consumption</th>
<th>Subsidy Rs/Crores</th>
<th>Percentage share of GDP</th>
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<tr>
<td>1980-81</td>
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<td>2759</td>
<td>5516</td>
<td>505</td>
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<td>9045</td>
<td>2758</td>
<td>12546</td>
<td>4389</td>
<td>0.92</td>
</tr>
<tr>
<td>1991-92</td>
<td>9863</td>
<td>2769</td>
<td>12728</td>
<td>4800</td>
<td>1.11</td>
</tr>
<tr>
<td>1992-93</td>
<td>9736</td>
<td>2988</td>
<td>12152</td>
<td>5796</td>
<td>0.92</td>
</tr>
<tr>
<td>1993-94</td>
<td>9047</td>
<td>3166</td>
<td>12366</td>
<td>4400</td>
<td>0.87</td>
</tr>
<tr>
<td>1994-95</td>
<td>10438</td>
<td>2965</td>
<td>13564</td>
<td>5241</td>
<td>0.92</td>
</tr>
<tr>
<td>1995-96</td>
<td>11335</td>
<td>3955</td>
<td>13877</td>
<td>6735</td>
<td>0.57</td>
</tr>
<tr>
<td>1996-97</td>
<td>11155</td>
<td>1975</td>
<td>14308</td>
<td>7578</td>
<td>0.57</td>
</tr>
<tr>
<td>1997-98</td>
<td>13062</td>
<td>3174</td>
<td>16188</td>
<td>9918</td>
<td>0.58</td>
</tr>
<tr>
<td>1998-99</td>
<td>13621</td>
<td>3145</td>
<td>16798</td>
<td>11387</td>
<td>0.49</td>
</tr>
<tr>
<td>1999-00</td>
<td>14289</td>
<td>4075</td>
<td>18070</td>
<td>13244</td>
<td>0.71</td>
</tr>
<tr>
<td>2000-01</td>
<td>15250</td>
<td>2203</td>
<td>19368</td>
<td>13800</td>
<td>0.60</td>
</tr>
</tbody>
</table>


just Rs.505 crores. After the changes in the subsidy policy of the government the proportion of subsidy has increased the production and consumption of fertilizer. The import had lost its hold, and started decreasing as shown in Table 2.2 and after 1989-90; the subsidy trend has significantly come down from 1.11 percent of GDP to 0.60 percent in 2000-01. It does not mean that in absolute terms the production and consumption has decreased. The production of fertilizer has increased
to 15,250 MT, and consumption also increased to 19,368 MT, during 2000-01. Further the subsidy paid to fertilizers increased from Rs 505 in 1980-81 to Rs 13,800 crore in the year 2000-01, even the imported fertilizer has decreased.

It is clear from the table 2.2 that there has been a decrease in the fertilizer subsidy. In support of the above issue, the study conducted on growth of fertilizer industry during pre subsidy and post subsidy period. The study reveals\textsuperscript{35} that the fertilizer subsidy has least influence over the production and consumption during the post-subsidies period. It is made clear from the table 2.3. The production of Nitrogen (N), Potash fertilizer \((P_2O_5)\) was 10 and 9 percent respectively during the pre-subsidy period, and in the post subsidy period, the production has increased to 11.8 percent and 11.5 respectively.

**Table 2.3: Growth of Fertilizer Industry Under Pre and Post Subsidy Period**

<table>
<thead>
<tr>
<th>Installed Capacity(000tonnes)</th>
<th>1970-71 to 1975-76 Pre-Subsidy Period</th>
<th>1975-76 to 1999-00 Post- Subsidy Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>N (Nitrogen)</td>
<td>10</td>
<td>11.8</td>
</tr>
<tr>
<td>(P_2O_5)</td>
<td>9</td>
<td>11.5</td>
</tr>
</tbody>
</table>

**Consumption**

| N                             | 7                                    | 11.0                                   |
| \(P_2O_5\)                    | 11                                   | 16.8                                   |

**Average Consumption of Nutrient per Hectare**

| Average Yield Per/ha          | 4.5                                  | 11.7                                   |

**Source:** Extract from Data Base from Fertilizer Industry Co-ordination Committee Fertilizer Association of India.

Similarly in terms of consumption it was 7 and 11 percent during pre-subsidy period and it has increased to 11 and 16.8 percent during the post-subsidy period respectively. With regard to average
consumption of nutrients and average yield per hectare has significantly gone up. Moreover there are some important factors, which have influenced over the increase in fertilizer subsidy\(^6\). They are

1) Increase in the production of indigenous fertilizers.
2) Increase in the production of fertilizers from new plants having higher capital costs.
3) Increase in freight and distribution margin.
4) Increase in cost of inputs.
5) Decrease in the import of fertilizer.

The fertilizer subsidy accounts for relatively high percentage of national income in India, (table 2.2.) David Hopper vice-president of World Bank opines and comments that fertilizer subsidy in India is increasing enormously which accounted for 1.11 percent of GDP during 1990-91.

Table 2.4: Amount of Subsidies on Indigenous and Imported Fertilizer in India (Rs. Crore)

<table>
<thead>
<tr>
<th>Year</th>
<th>Imported Fertilizer</th>
<th>Indigenous Fertilizer</th>
<th>Total Subsidy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980-81</td>
<td>335</td>
<td>170</td>
<td>505</td>
</tr>
<tr>
<td>1983-84</td>
<td>142</td>
<td>900</td>
<td>1042</td>
</tr>
<tr>
<td>1986-87</td>
<td>197</td>
<td>1700</td>
<td>1897</td>
</tr>
<tr>
<td>1989-90</td>
<td>771</td>
<td>3771</td>
<td>4542</td>
</tr>
<tr>
<td>1992-93</td>
<td>996</td>
<td>2642</td>
<td>3638</td>
</tr>
<tr>
<td>1995-96</td>
<td>1935</td>
<td>4800</td>
<td>6735</td>
</tr>
<tr>
<td>1998-99</td>
<td>333</td>
<td>11,054</td>
<td>11,387</td>
</tr>
<tr>
<td>2000-01</td>
<td>12</td>
<td>13,788</td>
<td>13,800</td>
</tr>
<tr>
<td>2002-03</td>
<td>505</td>
<td>10,510</td>
<td>11,015</td>
</tr>
</tbody>
</table>

Source: Extract from Budget Document of Various Years, Ministry of Finance, Government of India.
A steep increase in fertilizer subsidy occurred in 1984-85, when the cost of imported fertilizer increased tremendously, i.e. from Rs.142 crore in 1983-84 to Rs.721 crore in 1989-90 and Rs.1935 crore in 1995-96. In subsequent years, the production and consumption of domestic fertilizer has gone up, and resulted in increase of fertilizer subsidy. And the subsidies on domestic fertilizers were Rs.10,510 crore and Rs.505 crore on imported fertilizer during 2002-03.

### Table 2.6: Percentage Share of Imported Fertilizer Subsidies

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage Share in total Subsidies</th>
<th>Percentage Share in Non-Plan Expenditure</th>
<th>Percentage Share in Total Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980-81</td>
<td>21.47</td>
<td>2.56</td>
<td>1.52</td>
</tr>
<tr>
<td>1983-84</td>
<td>6.48</td>
<td>0.66</td>
<td>0.40</td>
</tr>
<tr>
<td>1986-87</td>
<td>4.38</td>
<td>0.50</td>
<td>0.31</td>
</tr>
<tr>
<td>1989-90</td>
<td>9.31</td>
<td>1.18</td>
<td>0.83</td>
</tr>
<tr>
<td>1992-93</td>
<td>9.20</td>
<td>1.16</td>
<td>0.81</td>
</tr>
<tr>
<td>1995-96</td>
<td>15.28</td>
<td>1.47</td>
<td>0.73</td>
</tr>
<tr>
<td>1998-99</td>
<td>1.41</td>
<td>0.16</td>
<td>0.31</td>
</tr>
<tr>
<td>2000-01</td>
<td>0.04</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2002-03</td>
<td>1.27</td>
<td>1.17</td>
<td>0.12</td>
</tr>
</tbody>
</table>

Source: Extract from Budget Document of Various Year, Ministry of Finance, Government of India
Table 2.5 and 2.6, figure 2.3 and 2.4 represents the percentage change in fertilizer subsidy, percentage share in non-plan expenditure, and percentage charge in total expenditure of the central government expenditure over a period of 1979-80 to 2002-03. It reveals that, the percentage share of indigenous fertilizer subsidy has a highest percentage of 48.87 during 1988-89 and then onwards it has decreased to 16.23 percent during 2002-03. Similarly the indigenous fertilizer subsidy share in the non-plan expenditure of the central government increased from 2.29 percent during 2002-03, similar to the trend with regard to total expenditure of the central government.

Table 2.6 and figure 2.4 depicts the percentage share of imported fertilizer subsidy to total subsidies, non-plan expenditure and to total expenditure. During the year 1984-85 the percentage share in total
subsidies was 21.29 and 1.67 percent of total expenditure, since then the use of imported fertilizer has decreased and resulted in the fall of subsidy bill. Further the burden of fertilizer subsidy on the central government can also be shown with the help of Table 2.7.

Table 2.7: Amount of Expenditure on Fertilizer Subsidy and Percentage Share of GDP (Rs in Crores)

<table>
<thead>
<tr>
<th>Year</th>
<th>Fertilizer Subsidy</th>
<th>Percentage Share of GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980-81</td>
<td>505</td>
<td>0.41</td>
</tr>
<tr>
<td>1984-85</td>
<td>1927</td>
<td>0.93</td>
</tr>
<tr>
<td>1990-91</td>
<td>4389</td>
<td>0.92</td>
</tr>
<tr>
<td>1995-96</td>
<td>6735</td>
<td>0.57</td>
</tr>
<tr>
<td>1999-00</td>
<td>13244</td>
<td>0.71</td>
</tr>
<tr>
<td>2000-01</td>
<td>13800</td>
<td>0.60</td>
</tr>
<tr>
<td>2003-04</td>
<td>11786</td>
<td>0.70</td>
</tr>
<tr>
<td>2005-06</td>
<td>16254</td>
<td>0.70</td>
</tr>
</tbody>
</table>

Source: Extract from Budget Document, Ministry of Finance, Government of India

Figure No. 2.5 Percentage share of Fertilizer Subsidy in GDP
The table 2.7 and Figure 2.5 depict the percentage share of fertilizer subsidy to GDP; it was 0.41 percent in the year 1980-81; it has increased to 0.92 percent during 1990-91. Then onwards with a fall in the trend it has further started increasing. It shows the non-linear trend with fall in the trend in the recent years.

2.9 Budgetary Subsidies in India

Budgetary subsidies\textsuperscript{37} are used to modify market outcomes, especially to take account of positive externalities, and sometimes, to sub serve certain well-defined redistributive objectives. Budgetary subsidies, as a converse of an indirect tax, constitute an important fiscal instrument for modifying market-determined outcomes. While taxes reduce disposable income, subsidies inject money into circulation. Subsidies affect the economy through the commodity market by lowering the relative price of the subsidized commodity, thereby generating an increase in its demand. With an indirect tax, the price of the taxed commodity increases, and the quantity at which the market for that commodity is cleared falls, other things remaining the same. Taxes appear on the revenue side of government budgets, and subsidies, on the expenditure side.

Budgetary subsidies can have major impact in augmenting welfare of the society\textsuperscript{38} provided these are designed and administered efficiently to serve a clearly stated set of objectives. However, subsidies can also be very costly if they are poorly designed and inefficiently administered. Budgetary subsidies in areas such as
education, health and environment are advocated on grounds that their benefits are spread well beyond the immediate recipients, and are shared by the population at large, present and future. Subsidies are also used with redistributive objectives particularly for ensuring minimum consumption levels of food and other basic needs.

Defining budgetary subsidies is not a straight forward proposition. It has been used by economists with different meanings and connotations in different contexts. The dictionary (concise oxford) defines “Budgetary subsidies are taken as unrecovered costs of public provision of non-public goods.” In the present exercise, budgetary subsidies will be treated as unrecovered costs in the public provision of goods and services that are essentially private in nature.

Further the above concept has been simplified by authors, K.T.Arrrow, (1985)39 defined that “Budgetary subsidies are measured as the excess of the costs of providing a service over the recoveries from that service”. Further Sandmen, (1987) , defined that Budgetary subsidies are financial aid for financial transfers from the exchequer to pre-determined sections of the population or sectors of the economy with a view to improve the distribution of income or reducing the cost of production or price.

It is understood by these conceptual definitions, that budgetary subsidies arise when the budgetary cost of providing the goods and services is more then the recovery made by the user/ beneficiaries of the services.
2.10 Objectives of Budgetary Subsidies

1. It is administered in the form of direct price support or reduced tax liabilities to provide for the production of domestic production.
2. To achieve non-commercial objectives.
3. To reduce the cost or price of consumption. Price of those commodities that has externalities or help achieving distributive justice.
4. To finance operational losses of public sector enterprises through Ex-post transfers.
5. For price restraint in respect of essential and strategic items of consumption.
6. They intended to encourage the consumption of goods or services by individual firms/organizations.
7. Promoting self-reliance and to increase the capacity to undertake research and innovation and to provide employment opportunities.

2.11 Fertilizer Subsidies and Central Budget.

A subsidy on fertilizer by central government depicts the phenomenal increase during the period resulted in the shortage of funds for production and massive fiscal deficit and deficit finance\(^4\). It has reduced the investment in an alternative enterprise and consequently decreased the national income, and created international inequalities. The recent empirical studies drawn that, the economic analysis of fertilizer subsidies is outlived their aim and have become
unsustainable and it has lead to over burden on the Central Budget and further lead to rise in the burden of revenue deficit, and has created fiscal imbalance in the economy. 42

The magnitude of fertilizer subsidy and its growth can be seen from the Table 2.7. It is evident from the table that the fertilizer subsidies are not only significant in magnitude but also they are very fast growing, having risen by over 50 percent in nominal terms between 1980-81 and 1985-86. The growth between 1980-81 and 1989-90 was still brisk. The subsidy increased from Rs.505 crore to Rs.4542 crore. Just within a period of 10 years. It has crossed to Rs.13, 244 crore in 1990-2000. It was almost three times greater than earlier subsidy amount at the end of 2000. The burden in terms of percentage to GDP was very sharp during the reforms year then before pre reform period. During the period 1980-81, the fertilizer subsidy share was 0.41 percent of GDP, but during 1990-91 it has gone up to 1.11 percent of GDP, after that, its share was in between one percent of GDP, at the end of 2006 it has 0.70 percent of GDP.

2.12 Growth in Fertilizer Subsidies

The Growth of fertilizer subsidies is shown in Table 2.8 and figure 2.6, depicts that there has been an increasing trend in the total fertilizer subsidy, which rose from 27.2 percent per annum during the1980s, while during the 1990s; it has increased at the rate of 13.1 percent per annum. The average increase in the level of subsidy was considerably higher during the 1990s then that during the 1980s. The
share of fertilizer subsidy in total subsidies was 35.6 percent during 1980-81 and it has exceeded to 38.3 percent during 1990-91. But its share has declined to 28.5 percent in 1999-2000.

**Table 2.8: Trend of Fertilizer Subsidies Under Central Budget**

<table>
<thead>
<tr>
<th>Period</th>
<th>Fertilizer Subsidy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980s</td>
<td>27.2 point to point compound growth rate percentage-per annum</td>
</tr>
<tr>
<td>1990s</td>
<td>13.1</td>
</tr>
<tr>
<td>1980-81</td>
<td>432 Absolute increase per year (Rs in crore)</td>
</tr>
<tr>
<td>1990-91</td>
<td>984</td>
</tr>
<tr>
<td>1999-2000</td>
<td>35.6 Share in total subsidies (percentage)</td>
</tr>
<tr>
<td>1999-2000</td>
<td>38.3</td>
</tr>
<tr>
<td>1999-2000</td>
<td>28.5</td>
</tr>
</tbody>
</table>

Source: Extract from Economic Survey, Various Issues, Ministry of Finance, Government of India

**Figure 2.6: Trend of Fertilizer Subsidies under Central Budget**

- point to point compound growth rate(percentage)
- per annum
- Absolute increase per year(Rs. in crore)
- share in total
This trend needs to be reformed, because of WTO commitments the quantitative restrictions on fertilizer imports may have to be removed in the successive years. Even though, the fertilizer subsidy is mounting up, and has continuous share over the percentage of GDP, it had 100 billion shares in subsidy bill during 1998-99, it has increased to 162 billion at 2005-06 (Table 2.7) and it would surely haunt by government to rationalize the regime of subsidy during these days.
References


32. Saikia, Santanu(1992): "Rate of Return for Fertilizer Units to be Raised to 16%", The Economic Times, Oct 28, P.1, Col.28.