CHAPTER 2

2. FERTILIZER INDUSTRY AND IDENTIFICATION OF ENTERPRISES FOR STUDY

2.1 INTRODUCTION:

The central objective envisaged in various plan frames is to raise the standard of living of the people and to open to them the opportunities for a more varied and richer life. India is predominantly an agricultural country with 75 to 80 percent population living in villages and tilling the soil. The salient features of our economy are low per capita income, low per capita availability of agricultural land (97 cents as compared to 153 cents in Europe, 741 cents in USA and 351 cents in the world as a whole) and speedy growth of population from 353 Million in 1951 to 500 Million in 1975 and 700 Million in 1984. The National Commission on agriculture estimates country's population at 935 Million by close of this century. The low yield per acre, limited availability of land and the increasing population threw a challenge, "How to feed the population and feed it much better than now". This called for a rational policy to reclaim the barren land, increase irrigation facilities, improve soil productivity by adequate use of fertilizers and improved seeds in conjunction with improved farming technology and practices. Amongst the factors which help in increasing the agricultural output, the role of the Chemical Fertilizer is perhaps the most important one. As food is essential for growth of the human body, the fertilizers are to plants. Royal Commission on Agriculture (1928) had foreseen the need for application of chemical fertilizers.

The National Commission on Agriculture has laid down the ambit of Fertilizer use in the following term: "Addition of plant nutrients in form of Fertilizers constitutes one essential step in agriculture production. Because of the narrow land-man ratio which would get still narrower in coming years, the only hopeful means of supplying of agricultural produce would be raising productivity of the land, one of the important inputs for achieving this objective is the Fertilizer."[1]

The Fertilizer Industry in India has, in essence, a very long record, though its development on modern lines is a matter of recent history. The first unit to manufacture Synthetic Nitrogen Fertilizer was set up at Belagula near Mysore in 1941. This was a small plant with 5 TPD ammonia capacity producing Ammonium Sulphate as end product. Next milestone was a 50 TPD capacity Ammonia Plant at Udyogamandal near Alwaye established by the State Government of Travencore under the name of Fertilizers and Chemical Travencore Ltd (FACT) in 1947. This was considered as the largest plant by the then prevailing standards. The product was Ammonium Sulphate and total capacity was 50,000 tonnes of Ammonium Sulphate per annum.

2.2 GROWTH

The 1943 disastrous Bengal Famine came to us as an eye opener and a pointer to the fact that India must embark upon all out drive to increase food production if fast increasing population is to be fed adequately. The fertilizer was the inevitable answer.

The Government of India, on the recommendation of Food Grains Committee 1943, after considering various alternative sites, decided to set up a fertilizer factory at Sindri in Bihar. The role of the chemical fertilizers in raising food production was for the first time thus officially recognised. The Sindri plant had a capacity

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[1]Development of Fertilizers in India - FAI New Delhi 1980 p.33

of 373 TPD of Ammonia corresponding to 1000 Tonnes of Ammonium Sulphate per day and was commissioned in October 1951. The commissioning of the Sindri plant wholly owned by the Government of India carried an historic event as it represented the first major ingress of the Public Sector Undertaking after the independence in the industrial field and thus became precurser of the later industrial policy resolution.

In view of the importance of fertilizers for augmenting production, Government of India decided in 1954 to constitute a committee to consider and make recommendations on various aspects of creation of fresh capacities for manufacture of Nitrogenous Fertilizers. This was the hallmark in vast expansion of fertilizer industry in the Public Sector.

On the basis of the recommendation of the committee, impressive programme of establishing a chain of fertilizer units in the Public Sector was launched. It may be mentioned here that fertilizer being a product of seasonal requirement for farmers, who have a low purchasing and storage capacity, the industry had low rate of return and private sector was not forthcoming in this field. Subsequently, however, with the momentum generated by the 'green revolution' and Government's revised comprehensive fertilizer policy enunciated in 1965, a few units in the private sector were also established. In this wake another development was growth of joint and cooperative sector in the fertilizer industry,Gujarat State Fertilizer Co. (Joint-Sector) and Indian Farmers Fertilizers Cooperatives (a cooperative of farmers). Under the impact of five year plans, further expansion of the Chemical Fertilizer Industry took place. During 1954-56 decisions were taken to (a) expand Sindri & FACT and (b) to establish new plants at Nangal, Rourkela and Neyveli.

This followed decisions in 1959 to 1962 for establishing projects at Trombay, Vizag and Gujarat. In 1964, Government constituted Fertilizer Technical Committee to study and recommend possible sites for additional fertilizer production. The committee recommended plants at Gorakhpur, Namrup and Mangalore. A major shift, however, took place in formulating India's Fourth Five Year Plan 1969-74. The chronic deficit in agricultural production and continued dependence on food imports had severely affected the Indian economy. The importance and crucial role of Chemical Fertilizers in increasing agricultural production and recognition of Urea (Nitrogenous Fertilizer) as a prime means of increasing food production resulted in rapid expansion of Urea manufacturing capacity in India. Starting with Durgapur, a series of projects were planned and approved from December, 1964 onward on the basis of new technologies. This included plants at Durgapur, Cochin, Kanpur, Madras, Goa, Haldia, Trombay expansion, Mangalore all based on Naphtha. Chronological growth of fertilizer industry in India is presented in Appendix-II.

The period since 1981 marks another major leap forward in the development of the fertilizer industry in the country. The proposals for several giant scale Nitrogen Fertilizer Units which are counted amongst the world's largest, based on natural and associated gas from the Bombay offshore structure, were firmed up during the period by the Government of India. One of them, The Thal Project of Rashtriya Chemicals & Fertilizers Ltd. at Alibag District in Maharashtra with 2 parallel streams of 1350 TPD of Ammonia each and 3 parallel streams each of 1500 TPD of Urea has already been commissioned. The second Project of Krishak Bharati Cooperative Ltd. at Hazira in Surat, Gujarat, of identical size has also been commissioned.

2.3 GAS BASED PROJECTS

Considering the increased availability of natural and associated gas from Bombay offshore structures, the Government of India had decided to take the gas through pipelines to the northern parts of the country from Hazira onward over a length of 1700 KM and set up six single stream fertilizer plant each of 1350 TPD of Ammonia and 2200 TPD of Urea. The six locations so selected are (1) Vijaipur in Guna District in Madhya Pradesh, (2) Sawai Madhopur in Rajasthan, (3) Aonla at Barelli District in UP, (4) Jagishpur in UP, (5) Babrala in UP and (6) Shahjahanpur in UP.

Out of the six fertilizer projects as above, 3 projects namely Vijaipur, Aonla and Jagdishpur are in various stages of execution. For other three, Letter of Intents have also been awarded to Birlas for Sawai Madhopur, to Tata Chemicals for Babrala and to Caparo Group for Shahjahanpur. The six new gas based fertilizer projects, each with a capacity of 2200 TPD of Urea and costing Rs.600 to 700 crores are under various stages of implemention and expected to be commissioned as under:

Sr. No.	U n i t	Location	Completion in
1.	Vijaipur Fertilizer (NFL)	Vijaipur M.P.	End 1987-88
2.	Aonla Fertilizer (IFFCO)	Aonla (UP)	1988
3.	Jadishpur Fertilizer (Indo-Gulf)	Jagdishpur (MP)	1988
4.	Aravali Fertilizers (Zuaro-Agro)	Sawai Madopur (Rajasthan)	1989
5.	Shajahanpur Fertilizers (Caparo)	Shajahanpur	1990
6.	Tata Fertilizer (Tata)	Babrala (UP)	1990

The total capacity of these plants would be 4.556 Million Tonnes of Urea per year, corresponding to 2115 Million Tonnes in terms of 'N'.

In addition, Government of India, has also sanctioned Nagarjuna Fertilizers & Chemicals at Kakinada (A.P.) with a capacity of 4,95,000 of Urea per year.

The phases of expansion of the Nitrogenous Fertilizer Industry in India is summarised as under:

Period		Addition to installed capacity/annum in '000' Tonnes 'N'
Prior to 1951	...	16.7
1951-61	...	229.6
1961-71	...	1268.4
1971-81	...	3221.0
1981-85	...	1165.0
1985-90	...	2660.0
Total :-		8560.7

2.4 DISTRIBUTION OF CAPACITY BUILD UP

The capacity build up in the Nitrogenous fertilizer industry upto 1970's had been mainly in the public sector and in 1980's private and cooperative sector units were also added. Table-6 presents the breakup.

TABLE-6 SECTORWISE LICENCED CAPACITY *

(in '000' MT of 'N')

	1980-81	1981-82	1982-83	1983-84	1984-85
Public ...	2843	2991	3143	2991	3690
Private ...	1399	1694	1694	1772	1746
Co-operatives ...	493	493	488	438	488
Total capacity ...	4735	5178	5325	5201	5924

* Compiled from various issues of Fertilizer statistics - Table 1.01, FAI Delhi

2.5 CAPACITY UTILIZATION, CONSUMPTION AND IMPORTS

The capacity build up in the country over the past three decades has been spectacular, the capacity utilization gives a dismal picture. Table-7 presents overall position in last 3 decades on capacity, production, consumption and imports in terms of Nutrient 'N'. Major imports have been in the form of 'Urea'.

TABLE-7 CAPACITY, PRODUCTION, CONSUMPTION & IMPORT OF NITROGENOUS FERTILIZER IN TERMS OF 'N'

Year	Installed capacity	Production	% capacity utilization *	Consumption	Import	
					Actual	% of consumption*
1955-56	88.7	77	86.5	107.5	53	49.30
1960-61	162	111	68.5	211.7	399	189
1965-66	324	235	72.5	574.8	326	67
1968-69	904	563	62.0	1208.0	844	70
1973-74	1471	1050	71	1829	670	37
1976-77	2625	1862	71	2456	750	29
1977-78	3024	2000	66	2913	758	26
1979-80	3295	2224	67.5	3498	1295	37
1980-81	3901	2164	55	3678	1510	41
1981-82	4357	3153	72	4063	1055	26
1982-83	4735	3229	68	4224	424	10
1983-84	5201	3491	67	5204	656	12.8
1984-85	6688	4317	66.6	5486	2008	36

The above table reveals increase in installed capacity, low capacity utilization, increasing trend of fertilizer consumption and import of Nitrogenous fertilizer to meet the total demand.

* Compiled from various issues of Fertilizer statistics (yearly publication of FAI) and % computed.

The capacity utilization of Central Public Sector Fertilizer Plants was 56.6% in 1983-84 and 56.0% in 1984-85. This has consistantly lagged behind the all India average 67.2% in 1983-84 and 66% in 1984-85. If Public Sector plants can improve their capacity utilization even to the National average of about 66%, we would achieve significant savings in the foreign exchange by reducing our imports correspondingly.***

2.6 PROJECTED CAPACITY VII PLAN

The projected capacity, production and demand of 'N' for Seventh Plan is given below:

TABLE-8 GROWTH IN CAPACITY, PRODUCTION AND DEMAND 1985-90 [1]

('000' tonne)

Item	1985-86	86-87	87-88	88-89	89-90
1. Nitrogen('N')					
1.1 Capacity	5010	6737	7021	8023	9253
1.2 Production	4415	5085	5470	6231	6560
1.3 Demand	6350	7090	7830	8570	9300*
1.4 Gap (1.3-1.2)*	1935	2005	2360	2339	2740**

[1] Fertilizer Statistics, FAI 1986

* to be met through imports

** estimated as per VII plan document

*** Public Enterprise Survey 1984-85 - Vol.I P.104

2.7 PUBLIC SECTOR FERTILIZER PLANTS*

There are two type of enterprises in the public sector fertilizers - one in the form of main producers and other in form of bye product producers such as steel and metallurgical units. The main producers in Group I are:

1. Fertilizers and Chemical (Travancore) Ltd.
2. Fertilizer Corporation of India
3. Hindustan Fertilizer Corpn.Ltd.
4. Madras Fertilizer Ltd.
5. National Fertilizer Ltd.
6. Rashtriya Chemicals & Fertilizers Ltd.

Bye-product producers under Group II are:

1. Neyveli Lignite Corporation
2. Steel Authority of India
3. Hindustan Coppers Ltd.
4. Hindustan Zinc Ltd.

Contribution of the bye-product fertilizer under over all context is not significant. The main product of enterprises under Group-I is Urea.

2.8 INVESTMENT IN PUBLIC SECTOR FERTILIZER PLANTS AND OPERATIONAL LOSSES

The investment growth for the last five years in the public sector is presented in Table-9

TABLE-9 INVESTMENT GROWTH IN FERTILIZER GROUP * IN PUBLIC SECTOR - 1980-85

(Rs.in crores)

Years	Equity	Loan	Total
1980-81	1282	1235	2517
1981-82	1407	1322	2729
1982-83	1680	1265	2945
1983-84	1943	825	2768
1984-85	2063	1317	3380

* Public Enterprises Survey - 1984-85 Vol.I - Page.105

Total investment in the Public Sector upto1984-85 was Rs.42,811 crores out of which Rs.3380 crores are in Fertilizer group of these six public enterprises, which constitute about 8% of the total outlay.

The investment in Public Sector Fertilizer Plants has increased by 35% in the last five years but performance has been very unsatisfactory as reflected by operation losses presented in Table-10 below.

TABLE-10 VALUE AND COST OF PRODUCTION

(Rs. in crores)

Year	Value of production	Cost of production	Losses from operation.
1980-81 ...	882.66	1065.67	- 183.31
1981-82 ...	1292.67	1441.85	- 149.18
1982-83 ...	1383.00	1457.54	- 74.54
1983-84 ...	1462.83	1654.47	- 71.81
1984-85 ...	1829.40	1834.51	+ 2.11

The group has been constantly losing heavily by its direct operation.

2.9 RESTRUCTURING OF FERTILIZER CORPORATION OF INDIA AND NATIONAL FERTILIZER

The Fertilizer Corporation of India was formed in 1961 as a company under the Companies Act, 1956 integrating the then two existing units in the public sector, namely Sindri Fertilizers & Chemicals Ltd., Sindri, Bihar and Nangal Fertilizers and Chemicals Ltd., Nangal, Punjab, bringing them under unified control. FCI was commissioned in 1952 to produce 1000 TPD Ammonium Sulphate Fertilizer (20% N) and subsequently expanded to produce double salt and urea.

The old plant was scrapped in 1978 and naphtha based urea plant having capacity of 600 TPD Ammonia and 900 TPD urea (46% N) with World Bank loan was commissioned in 1979. The total cost of Sindri Modernisation plant was Rs.18,394 lakhs. Nangal Fertilizers and Chemicals was commissioned in 1961 to produce 1000 TPD Calcium Ammonium Nitrate (26% N). Nangal Fertilizer's expansion plant with World Bank loan was commissioned in 1976 to produce 600 TPD Ammonia and 900 TPD Urea. Subsequently, following units were added to FCI.

U n i t		Commissioning year	Total cost Rs. Lakhs	
Trombay Unit	I	Oct. 65	2426	
	II	1966	7809	
	III	71-72		
	IV	75	7581	
	V	1978	17264	
Namrup Unit	I	Jan 69	2426	
	II	1.10.76	7491	
	III	Jan.79	28374	(under commissioning)
Gorakhpur Old Unit		Jan.69	3500	
	I	76	1870	
Durgapur		Oct. 74	8861	
Barauni		Nov. 76	9232	
Ramagundam		Sept.79	220000	
Talcher		Sept.79	220000	
Korba		-	-	(Abandoned)
Haldia		80	44210	

All these plants were taken up for execution as expansion of FCI and commissioned in the years indicated above. The Government of India provided the entire subscribed and

paid up capital and also provided the most of loans required for plant except in case of the Trombay Unit which was financed by the US Agency for International Development and through overdraft facilities by the State Bank of India and Sindri modernization and Nangal expansion programmes which were also financed by the World Bank. Total paid up capital of FCI in 1978 was Rs. 1183.68 Crores. For all the plants except Trombay, Namrup and Gorakhpur the process knowhow was obtained with basic engineering package from foreign consultants and detailed engineering erection and commissioning was entirely done by the Planning & Development Division.

In 1975, Toyo Engineering Co., Japan offered to build two fertilizer plants with Japanese credit and Government decided to float another company namely National Fertilizers Ltd. (NFL) which put up two plants at Bhatinda and Panipat with a capacity of 900 TPD Ammonia and 1350 TPD Urea. These plants were commissioned in October, 1979.

FCI by this time had assumed large proportion with plants all over India, based on different technologies with a total capacity of about 2.2 Million Tonne of nutrient 'N' and was incurring heavy losses. The Government of India, therefore, decided to reorganise Fertilizer Plants under the control of the two companies and finally reorganisation was implemented from 1st Oct.78, consequent to this reorganisation, Fertilizer Corporation of India &National Fertilizers were restructured in five companies as under:

1. Fertilizer Corporation of India Ltd (FCI)
2. Hindusthan Fertilizer Corporation Ltd (HFL)
3. National Fertilizers Ltd (NFL)
4. Rashtriya Chemicals & Fertilizers Ltd (RCF)
5. Fertilizer (Planning & Development) India Ltd (FPDIL)

2.10 SELECTION OF ENTERPRISES FOR THE STUDY AND COVERAGE

Since the Public Sector Fertilizer Enterprises were restructured in October, '78, the four resultant companies have been identified for the study. They are:

1. Fertilizer Corporation of India (FCI)

   Plants:
   - (i) Sindri (Bihar)
   - (ii) Gorakhpur (UP)
   - (iii) Ramagundam (AP)
   - (iv) Talcher (Orrissa)

   Products:- Urea, Ammonium Sulphate, Double Salt, Argon, Sodium hexameta Phosphate, Ammonium Nitrate, Guanidine Nitrate.

2. Hindustan Fertilizer Corporation Ltd (HFC)

   Plants:
   - (i) Barauni (Bihar)
   - (ii) Namrup (Assam)
   - (iii) Durgapur (WB)
   - (iv) Haldia (WB)

   Products:- Urea, Ammonium Sulphate & NPK.

3. National Fertilizers Ltd (NFL)

   Plants:
   - (i) Nangal (Punjab)
   - (ii) Bhatinda (Punjab)
   - (iii) Panipat (Haryana)

   Products:- Urea, CAN, Methanol, Heavy water, by product sulphur.

4. Rashtriya Chemicals & Fertilizers Ltd (RCF)

   Plants:
   - (i) Trombay (Maharashtra)

   Products:- Urea, Methanol, Methylamines, Argon, Ammonium Bi carbonate, Ammonium Nitrate, Suphala.

Madras Fertilizer, a joint venture in which Central Government has major share is selected to provide a comparison for the purpose of establishing a proper co-relation to the extent possible.

The selection brings to focus the following:

a) Main products:- Urea in all cases.

b) Feed Stock:- NFL - fuel oil for all plants
HFC - Naphtha (except Namrup gas based).
FCI - Sindri fuel oil, Garakhpur Naphtha, Ramagundam and Talcher (coal based).
RCF - Gas

c) Location:- Eastern, Northern, Western and Southern for comparison.

d) Size:- All the plants are based on 600 to 900 Tonnes per day of Ammonia and 1000 to 1500 MT per day of Urea.

e) Technology:- Technology adopted is more or less of same generation.

f) Profitability Profile:- Selection covers profit making as well as loss incurring enterprises.

Coverage

The period covered for the study is five financial years 1980-81 to 1984-85 which would provide a fair basis for conclusions. The findings of the study will, by large, be applicable to other public enterprises as well.