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**STANDING COMMITTEE ON
CHEMICALS & FERTILIZERS
(2006-07)**

FOURTEENTH LOK SABHA

**MINISTRY OF CHEMICALS & FERTILIZERS
(DEPARTMENT OF CHEMICALS & PETROCHEMICALS)**

DEMAND AND AVAILABILITY OF PETROCHEMICALS

EIGHTEENTH REPORT



**LOK SABHA SECRETARIAT
NEW DELHI**

May, 2007/Vaisakha, 1929 (Saka)

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Presented to Lok Sabha on 17.05.2007

Laid in Rajya Sabha on 17.05.2007



**LOK SABHA SECRETARIAT
NEW DELHI**

May, 2007/Vaisakha, 1929 (Saka)

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**COMPOSITION OF THE STANDING COMMITTEE ON CHEMICALS AND FERTILIZERS
(2006-07)**

Shri Anant Gangaram Geete - Chairman

**Members
Lok Sabha**

2. Shri Ajit Singh
3. Shri Suresh Angadi
4. Shri Afzal Ansari
5. Shri Jaiprakash (Mohanlal Ganj)
6. Shri Sunil Khan
- *7. Shri Shrichand Kripalani
8. Shri Subhash Maharia
9. Shri Punnu Lal Mohale
- \$10. Shri A. Narendra
11. Shri Prasanta Pradhan
- #12. Shri Ramswaroop Prasad
13. Shri P. Chalapathi Rao
14. Shri Ashok Kumar Rawat
15. Shri Anantha Venkata Rami Reddy
16. Shri Narsingrao H. Suryawanshi
17. Shri Mansukhbhai Dhanjibhai Vasava
18. Shri D. Venugopal
19. Shri Bhanu Pratap Singh Verma
- +20. Vacant
21. Vacant

Rajya Sabha

22. Shri Devdas Apte
- %23. Shri Debabrata Biswas
24. Shri B.S. Gnanadesikan
25. Shri Gireesh Kumar Sanghi
26. Shri V. Hanumantha Rao
- @27. Shri Mahendra Sahni
28. Shri Dilip Singh Judev
29. Shri R. Shunmugasundaram
30. Shri Raj Mohinder Singh Majitha
31. Shri T.R. Zeliang

Secretariat

1. Shri M. Rajagopalan Nair - *Additional Secretary*
2. Shri A.K. Singh - *Joint Secretary*
3. Shri A.S. Chera - *Director*
4. Shri A.K. Srivastava - *Deputy Secretary-II*
5. Shri Prem Ranjan - *Senior Executive Assistant*

* Nominated w.e.f. 31.08.2006.

\$ Nominated w.e.f. 25.09.2006

@ Nominated w.e.f. 04.10.2006

Nominated w.e.f. 08.12.2006

+ Consequent upon nomination to the Committee on Transport, Tourism and Culture, Shri Prahlad Joshi, MP (LS) ceased to be Member of the Committee w.e.f. 20.03.2007

% Nominated w.e.f. 03.05.2007

**COMPOSITION OF THE STANDING COMMITTEE ON CHEMICALS & FERTILIZERS
(2005-06)**

Shri Anant Gangaram Geete

-

Chairman

Members

Lok Sabha

- 2 Shri Afzal Ansari
- *3 Shri S. Bangarappa
- 4 Shri Prahlad Joshi
- **5 Shri Sunil Khan
- 6 Sardar Sukhdev Singh Libra
- 7 Shri Tek Lal Mahato
- 8 Shri Punnu Lal Mohale
- 9 Shri A.K. Moorthy
- 10 Shri P. Rajendran
- 11 Shri Anantha Venkata Rami Reddy
- 12 Shri T. Madhusudan Reddy
- 13 Shri Akshyay Pratap Singh
- 14 Shri Narsingrao H. Suryawanshi
- 15 Shri V.K. Thummar
- 16 Shri Bhanu Pratap Singh Verma
- 17 Shri Mansukhbhai Dhanjibhai Vasava
- 18 Shri A.K.S.Vijayan
- 19 Shri Bhal Chandra Yadav
- 20 Vacant
- 21 Vacant

Rajya Sabha

22. Shri B.S.Gnanadesikan
23. Shri Raj Mohinder Singh Majitha
24. Shri Ajay Maroo
25. Shri Gireesh Kumar Sanghi
26. Shri R. Shunmugasundaram
- ***27. Shri Shreegopal Vyas
28. Shri T.R. Zeliang
- \$29. Vacant
- \$\$30. Vacant
- \$\$\$31. Vacant

Secretariat

1. Shri P. Sreedharan - *Joint Secretary*
2. Shri Brahm Dutt - *Director*
3. Shri S.C. Kaliraman - *Under Secretary*
4. Shri Santosh Kumar - *Assistant Director*

* Nominated w.e.f. 14.02.2006

** Nominated w.e.f. 20.01.2006.

*** Nominated w.e.f. 21.04.2006

\$ Consequent upon his expulsion from Rajya Sabha, Dr. Chhatrapal Singh Lodha ceased to be member of this Committee w.e.f. 23rd December, 2005 (vide Rajya Sabha Bulletin Part-II-No-42733 dated 23.12.2005).

\$\$ Shri Raju Parmar ceased to be Member of this Committee w.e.f. 2nd April 2006 after his retirement from Rajya Sabha.

\$\$\$ Become vacant due to sudden demise of Shri Vasant Chavan, MP, Rajya Sabha on 11th July, 2006.

INTRODUCTION

I, the Chairman, Standing Committee on Chemicals and Fertilizers (2006-07) having been authorised by the Committee to submit the Report on their behalf present this Eighteenth Report on 'Demand and Availability of Petrochemicals'.

2. The subject was selected for examination by the erstwhile Standing Committee on Chemicals and Fertilizers (2005-06). The Committee considered the information sought from the Ministry of Chemicals and Fertilizers (Department of Chemicals and Petrochemicals) on the subject and were briefed on the subject by the representatives of the Ministry of Chemicals and Fertilizers (Department of Chemicals and Petrochemicals) at their sitting held on 7th December, 2005. As the examination of the subject remained inconclusive the subject was again selected by the Committee (2006-07) for examination and Report. The present Committee (2006-07) took evidence of the representatives of the Ministry of Chemicals and Fertilizers (Department of Chemicals and Petrochemicals) at their sitting held on 12th February, 2007.

3. The Committee also heard the views of the representatives of the Chemicals and Petrochemicals Manufacturers' Association (CPMA) on 3rd November, 2006.

4. The Committee considered and adopted this Report at their sitting held on 15th May, 2007.

5. The Committee wish to express their thanks to the representatives of the Ministry of Chemicals and Fertilizers (Department of Chemicals and Petrochemicals) and the Chemicals and Petrochemicals Manufacturers' Association (CPMA) for placing their views before them and furnishing the information desired in connection with the examination of the subject.

6. The Committee place on record their deep appreciation for the work done by the Standing Committee on Chemicals and Fertilizers (2005-06) on the subject.

7. The Committee also place on record their appreciation for the invaluable assistance rendered to them by the Officials of the Lok Sabha Secretariat attached to the Committee.

New Delhi;
May 15, 2007
Vaisakha 25, 1929 (Saka)

ANANT GANGARAM GEETE
*Chairman,
Standing Committee on
Chemicals and Fertilizers.*

ACRONYMS

AAGSP	All Assam Gana Sangram Parishad
AASU	All Assam Students Union
AF	Acrylic Fibre
AIDC	Assam Industrial Development Corporation
BCPL	Brahmaputra Crackers and Polymers Limited
BPCL	Bharat Petroleum Corporation Limited
CCEA	Cabinet Committee on Economic Affairs
CIPET	Central Institute of Plastic Engineering and Technology
CSIR	Council of Scientific and Industrial Research
DMT	Di-Methyl Teraphthalate
EDC	Ethylene Di-chloride
EO	Ethylene Oxide
EPDM	Ethylene Propylene Dimer
EVA.	Ethyle Vinyl Acetate
FDI	Foreign Direct Investment
GAIL	Gas Authority of India Limited
GSFC	Gujarat State Fertilizer Corporation
HDPE	High Density Polyethylene
HPCL	Hindustan Petroleum Corporation Limited
HPL	Haldia Petrochemicals
IICT	Indian Institute of Chemical Technology
IOCL	Indian Oil Corporation Limited
IPCL	Indian Petrochemicals Corporation Limited
IRR	Internal Rate of Return
LAB	Linear Alkyl Benzene
LDPE	Linear Low Density Polyethylene
MEG	Mono Ethylene Glycol
MMSCMD	Million Metric Standard Cubic Meter Per Day
MMT	Million Metric Tonnes
MoP&NG	Ministry of Petroleum & Natural Gas

NA	Not Available
NBR	Nitrile Butadiene Rubber
NELP	National Exploration Licensing Policy
NFY	Nylon Filament Yarn
NIY	Nylon Industrial Yarn
NOCIL	National Organic Chemicals Limited
NRL	Numaligarh Refinery Limited
OIL	Oil India Limited
ONGC	Oil & Natural Gas Commission
PBR	Poly Butadiene Rubber
PCPIR	Petroleum, Chemicals and Petrochemicals Investment Regions
PFY	Polyester Filament Yarn
PIB	Public Investment Board
PP	Polypropylene
PPMA	Poly Methylene Methacrylate
PRDF	Petrochemical Research and Development Fund
PSF	Polyester Staple Fibre
PTA	Purified Terephthalate
PVC	Poly Vinyl Chloride
PWMC	Plastics Waste Management Centre
RIL	Reliance Industries Limited
RRL	Regional Research Laboratories
SAN	Styrene Acrylonitrile Rubber
SBR	Styrene Butadiene Rubber
SEZ	Special Economic Zones
TPA	Tonnes Per Annum
UCIL	Union Carbide India Limited
VCM	Vinyl Chloride Monomer

CHAPTER-I

INTRODUCTORY

Petrochemicals are derived from various chemical compounds, mainly hydrocarbons. These hydrocarbons are derived from crude oil and natural gas. Among the various fractions produced by distillation of crude oil, petroleum gases, naphtha, kerosene and gas oil are the main feed-stocks for the petrochemical industry. Ethane and natural gas liquids obtained from natural gas are the other important feedstocks used in the petrochemical industry.

2 Petrochemical Sector comprises manufacturing of Building Blocks, (Olefins, Ethylene, Propylene, Butadiene), Aromatics (Benzene, Toluene, Xylenes); Intermediates (Styrene, Ethylene Dichloride (EDC)/Vinyl Chloride Monomer (VCM), Acrylonitrile, Caprolactum, DMT/PTA, MEG, etc.), Synthetic Fibres, Polymers, Elastomers, and Synthetic Detergent Intermediates. At present, petrochemical products are common men's daily use items and it cover almost every sphere of life; clothing, housing, construction, furniture, automobiles, house hold items, toys, agriculture, horticulture, irrigation, packaging, medical appliances, etc.

3. Petrochemical sector is de-regulated/de-licensed. The items, which require compulsory licenses, are Hydrocyanic acid and its derivatives; Isocyanates and Di-isocyanates; and Phosgene and its derivatives. License is required for manufacture of these products due to their hazardous nature and safety considerations.

4. There is no sectoral cap for Foreign Direct Investment (FDI) in petrochemicals. 100 per cent FDI is generally permitted through automatic route except for proposals attracting compulsory license, items of manufacture reserved for the Small Scale Sector and proposals involving any previous/existing joint venture or technology transfer/trade mark agreement in the same or allied field in India.

5. The Petrochemical industry, which is relatively a new entrant on the Indian Industrial scene, started in the 1970s and registered rapid growth in the 1980s and 1990s. However, between 2000-2006, the growth has virtually stagnated at 6 to 8%.

The reasons for the relatively stagnant growth is due to external factors, (global economic slow-down, increase in prices of basic feedstocks i.e. crude oil/natural gas prices), internal factors (high incidence of taxes and excise duty, accelerated tariff reduction, high cost issues due to infrastructural constraints). The downstream processing industries are sub-optimal in size, removal of import restriction on bilateral and multilateral agreement.

6. Although the Indian Petrochemical Industry has grown at an average rate of 12 to 13% for the last 15 years, it is small by international standards with only 2-3% of the global Ethylene capacity. However, present global scenario offers the tremendous opportunity of growth to the Indian Petrochemical Industry because in petrochemicals, both production and demand have shifted to the Middle East and Asia. While China and the Middle East have become the major producer/consumer and producer/exporter respectively, India has to ensure that it does not lose out to the Middle East and its Asian neighbours in Asian Petrochemical boom.

7. The Committee note that the Indian Petrochemical Industry registered rapid growth in the 1980s and 1990s. However, between 2000-2006, the growth had virtually stagnated. The Committee also note that the Indian Petrochemical Industry is small by international standards with only 2-3% of the global Ethylene capacity. The Committee, therefore, strongly recommend that the Government should create conducive environment for rapid growth of the Indian Petrochemical Industry so that it can reap the optimum benefit offered by the present global scenario.

(Recommendation Sl. No.1)

CHAPTER-II
DEVELOPMENT OF PETROCHEMICAL INDUSTRIES

I. Historical Background

8. The hydrocarbon sector, of which the petrochemicals sector is a part, started receiving attention of the Government of India from the early 1950s. However, the initial governmental interventions in the hydrocarbon sector were confined to the upstream area of oil and natural gas exploration. Manufacture of petrochemicals in India was initially based on alcohol, derived from the sugarcane molasses and not from petrochemical feedstock. In the 1950s five alcohol based petrochemical plants came up in India in the private sector – one for Low Density Polyethylene (LDPE) in West Bengal, one for Styrene Butadiene Rubber (SBR) in Uttar Pradesh, one for Polyvinyl Chloride (PVC) in Tamil Nadu and one each for Polystyrene in Maharashtra and Andhra Pradesh. With the establishment of Oil and Natural Gas Commission (ONGC), Public Sector Undertaking, in 1956, the availability of petrochemical feedstock such as Naphtha and natural gas increased but the country was not equipped to use these feedstocks as at that time there were no petrochemical complexes based on Naphtha and natural gas.

9. In view of the increasing availability of petrochemical feedstock, the Government initiated a plant for the manufacture of petrochemicals based on domestic feedstock and Dr. G.P. Kane made the first blue print for the petrochemical industry in 1961. The Indian Petrochemical Industry made a modest beginning in the early 60s with the setting up of the first Naphtha Cracker by Union Carbide India Ltd. (UCIL) at Mumbai with an installed capacity of 20,000 tonnes of Ethylene per annum. This was followed by another Naphtha Cracker of 60,000 tonnes Ethylene capacity per annum by National Organic Chemicals Ltd. (NOCIL) at Thane. However, the first Government project came up only in 1978 with the commissioning of a large Naphtha Cracker of 1,30,000 tonnes of Ethylene per annum capacity at Vadodara by the Indian Petrochemicals Corporation Ltd. (IPCL), a public sector undertaking. This laid a firm foundation of the

growth of the petrochemical industry in the country. However, the pace of development in this industry accelerated only in the late 1980s/early 1990s with the initiation of the economic reforms. Delicensing and deregulation allowed the market forces to determine investment and growth and rapid socio-economic changes and growing consumer demand acted as major drivers of the growth of this industry. During the 1990s a significant number of Naphtha/gas based cracker plants were set up in the country, which gave a major thrust to this sector.

II. Olefin Cracker and Aromatic Complexes

10. The following statements give the details in respect of Olefin Naphtha/gas cracker plants and aromatic complexes set up in the country till now:-

Olefin Cracker Complexes

Name & Location of Unit	Feedstock	Ethylene Capacity (tpa)	Start up Year
Oswal (UCIL), Mumbai, Maharashtra	Naphtha	20,000	1967
NOCIL, Thane, Maharashtra	Naphtha	63,000	1968
IPCL, Vadodara, Gujarat	Naphtha	130,000	1978
IPCL, Nagothane, Maharashtra	Natural Gas	(300,000) 400,000	(1992) 1999
RIL, Hazira, Gujarat	Naphtha	750,000	1996
GAIL, Pata, UP	Natural Gas	300,000	1999
IPCL, Gandhar	Natural Gas	300,000	2000
HPL, Haldia, West Bengal	Naphtha	(420,000) 520,000	(2000) 2002
Total		2,498,000	

Aromatic Complexes

Name & Location of Unit	Feedstock	Xylene Capacity (tpa)	Start up Year
BRPL, Bongaigaon, Assam	Naphtha	35,000	1985
IPCL, Vadodara, Gujarat	Naphtha	96,500	1973
RIL, Patalganga, Maharashtra	Naphtha	246,000	1988
RIL, Jamnagar, Gujarat	Naphtha	1,760,000	1999-00
Total		2,137,000	

III. Major Players in the Petrochemical Area

11. The profile of the major players in the private sector, public sector, cooperatives, etc. in the petrochemical area is as follows:-

(i) *Polymers*

Name of the Unit	Capacity (tpa)				
	Low Density Polyethylene (LDPE)	Linear Low Density Polyethylene (LLDPE)/ High Density Polyethylene (HDPE)	Polypropylene (PP)	Poly Vinyl Chloride (PVC)	Polystyrene
Public Sector Undertaking					
GAIL, Pata, UP	0	310,000	0	0	0
Joint Sector Undertaking					
HPL, Haldia, WB	0	560,000	300,000	0	0
Private Sector					
IPCL, Vadodara, Gujarat	80,000	0	100,000	55,000	0
IPCL, Nagothane, Maharashtra	80,000	220,000	60,000	0	0
IPCL, Gandhar, Gujarat	0	160,000	0	150,000	0
RIL, Hazira, Gujarat	0	320,000	400,000	300,000	0
RIL, Jamnagar, Gujarat	0	0	700,000	0	0
Relene Petrochem, Thane, Maharashtra (formerly NOCIL)	0	60,000	0	21,500	0
Oswal Agro Mills, Mumbai, Maharashtra	26,500	0	0	0	0
Oswal Chem & Fert, UP	13,500	0	0	0	0
Chemplast Sanmar, Tamil Nadu	0	0	0	60,000	0

DCW, Tamil Nadu	0	0	0	78,000	0
SRF, Kota, Rajasthan	0	0	0	33,000	0
Finolex, Raigad, Maharashtra	0	0	0	130,000	0
LG, Polymers, AP	0	0	0	0	100,000
Supreme Industries, Nagothane, Maharashtra	0	0	0	0	204,000
BASF, Gujarat	0	0	0	0	90,000
Total	200,000	1,63,000	1,560,000	806,000	394,000

(ii) Synthetic Fibre

12. There are about 45 units in the synthetic Fibre sector, GSFC, (Fibre Division) is the only State Sector Project. Total domestic capacity is as follows:-

Polyester Filament Yarn (PFY)	1,478,860 tpa
Polyester Staple Fibre (PSF)	664,000 tpa
Nylon Filament Yarn (NFY) (Broad Banded Capacity as Synthetic Fibre/yarn)	28,000 tpa
Acrylic Fibre	145,000 tpa

13. Major players in this sector and their capacity are as follows:-

Name of the unit	Capacity (tpa)		
	Polyester Filament Yarn (PFY)/Staple Fibre (PSF)	Nylon Filament Yarn (NFY)	Acrylic Fibre (AF)
Private Sector			
RIL, Hazira Gujarat	360,000	0	0
RIL, Patalganga, Maharashtra	325,000	0	0
Century Enka, Pune	174,600	0	0
Sanghi Polyesters, AP	55,000	0	0
Indo Rama, UP	258,000	0	0

Name of the unit	Capacity (tpa)		
	Polyester Filament Yarn (PFY)/Staple Fibre (PSF)	Nylon Filament Yarn (NFY)/Nylon Industrial Yarn (NIY)	Acrylic Fibre (AF)
Appollo Fibre, Punjab	89,000	0	0
Indian Acrylic, Punjab	0	0	38,500
IPCL, Vadodara	0	0	24,000
Pasupati Acrylon	0	0	30,000
GSFC, Fibre Division	0	6,000	0
Nirlon Ltd.	0	13,200	0
SRF, Chennai, Gawalior	0	22,500	0

(iii) Synthetic Rubber (Elastomers)

Name of unit	Capacity (tpa)	
	SBR	PBR
Private Sector		
IPCL, Baroda	0	50,000
Apar/Apotex	20,800	0

(iv) Surfactant – Linear Alkyl Benzene (LAB)

Name of the unit	Capacity (tpa)
Private Sector	
IPCL, Baroda	43,500
RIL, Patalganga	115,000
Tamil Nadu Petro, Chennai	95,000
Nirma, Maharashtra	75,000
Public Sector	
IOC, Vadodara, Gujarat	120,000
Total	448,500

IV. Demand and Availability (Supply) of important Petrochemicals

14. The details of demand, availability (supply), production, capacity, import and export of important petrochemicals during the years 2001-2002 to 2005-06 is as follows:-

	2001-02	2002-03	2003-04	2004-05	2005-06
SYNTHETIC FIBRES					
Demand	1743	1854	1971	2096	2229
Availability (Supply)	1717	1800	1882	1820	NA
Demand Supply Gap	26	54	88	206	NA
Production	1669	1755	1868	1875	1906
Production as % to demand	95.7	94.7	94.8	89.5	85.5
Capacity	2123	2165	2256	2446	2417
Capacity Utilization	78.6	81	82.8	76.7	78.9
Import	147	189	155	193	NA
Import Value (Rs. Lakh)	93305	116284	101632	133101	NA
Export	98	144	141	178	NA
Export Value (Rs. Lakh)	60067	89004	87844	124689	NA
POLYMERS					
Demand	3675	4106	4592	5141	5760
Availability (Supply)	3826	3795	4107	4177	NA
Demand Supply Gap	-151	311	485	964	NA
Production	3974	4175	4499	4776	4768
Production as % to demand	108.1	101.7	98	92.9	82.8
Capacity	4252	4316	4449	4632	4728
Capacity Utilization	93.5	96.7	101.1	103.1	100.9
Import	420	381	450	416	NA
Import Value (Rs. Lakh)	97986	124808	151960	188241	NA
Export	568	761	843	1015	NA
Export Value (Rs. Lakh)	139432	209074	265812	444641	NA
ELASTOMERS					
Demand	146	157	169	184	203
Availability (Supply)	181	195	258	300	NA
Demand Supply Gap	-35	-38	-89	-116	NA
Production	79	82	87	97	110
Production as % to demand	54.4	52	51.6	52.5	54.3
Capacity	145	145	147	147	148
Capacity Utilization	54.9	56.4	59.3	65.9	74.7
Import	105	123	179	210	NA
Import Value (Rs. Lakh)	57665	67159	99769	140912	NA
Export	3	8	8	7	NA
Export Value (Rs. Lakh)	1564	2863	3599	3797	NA

SYNTH. DETERGENT INTERMEDIATE					
Demand	415	449	486	526	569
Availability (Supply)	393	390	414	431	NA
Demand Supply Gap	22	59	72	95	NA
Production	425	447	453	488	555
Production as % to demand	102.2	99.5	93.2	92.7	97.6
Capacity	409	421	426	566	578
Capacity Utilization	104	106.4	106.6	86.3	96.2
Import	0	0	3	10	NA
Import Value (Rs. Lakh)	166	173	1425	4497	NA
Export	32	58	42	67	NA
Export Value (Rs. Lakh)	13611	20241	13295	27367	NA
PERFORMANCE PLASTIC					
Demand	0	0	0	0	0
Availability (Supply)	106	114	128	140	NA
Demand Supply Gap					
Production	90	95	99	113	127
Production as % to demand					
Capacity	88	115	115	130	137
Capacity Utilization	102.4	82.5	86.5	86.9	92.8
Import	17	20	31	30	NA
Import Value (Rs. Lakh)	21981	18058	24527	31959	NA
Export	1	1	3	3	NA
Export Value (Rs. Lakh)	577	602	1629	2257	NA

(Note: The import and export figures for petrochemicals are available only upto 2004-05. DGCIS, Kolkata who are compiling import and export figures have yet to publish the same for 2005-06).

15. **Synthetic Fibre**:- Synthetic fibre comprises of Polyester Filament Yarn (PFY), Polyester Staple Fibre (PSF), Acrylic Fibre (AF), Nylon Filament Yarn/Industrial Yarn (NFY/NIY) and Polypropylene Filament yarn. The capacity, production and consumption of synthetic fibre during 2004-05 was 24, 46,000; 18,75,000 and 18,20,000 ton respectively. Report of the Task Force on Petrochemicals projected the demand at 20,96,000 tons during 2004-05. The Gap in projected demand and consumption is about 2,06,000 tons (9.8% of the project demand). In 2004-05 imports of synthetic fibre was 1,93,000 tons and exports 1,78,000 tons. During 2005-06, the production of synthetic fibre was 19,06,000 tons. The gap in projected demand supply balance could be attributed to the increasing crude oil price and the cost push effect in the entire chain.

16. Commodity Polymers:- Commodity polymers comprises of Polyethylene (LDPE/LLDPE/HDPE), Polypropylene (PP), Poly Vinyl Chloride (PVC), Polystyrene. The capacity, production and consumption of commodity polymers during 2004-05 was 47,28,000; 47,68,000 and 41,77,00 ton respectively. Report of the Task Force on Petrochemicals projected the demand at 57,60,000 tons during 2004-05. The gap in projected demand and consumption is about 9,64,000 tons (19% of the projected demand). In 2004-05, imports of Commodity polymers was 4,16,000 tons and exports 10,15,000 tons. During 2005-06, the production of commodity polymers was 47,68,000 tons. Commodity polymers cater to various consumer durable and non-durable sectors, the economic slow down and the high cost of the entire chain from Naphtha to polymer have also contributed to the gap in supply projected demand. The downstream polymer absorption capacity is low as units are small. This has resulted in surplus availability of polymer leading to exports of polymers.

17. Synthetic Rubber (Elastomers):- The major synthetic rubbers are Poly Butadiene Rubber (PBR), Styrene Butadiene Rubber (SBR), Nitrile Butadiene Rubber (NBR), Ethyle Vinyl Acetate (EVA) and Ethylene propylene Dimer (EPDM). The capacity, production and consumption of synthetic rubber during 2004-05 was 1,47,000; 97,000 and 3,00,000 ton respectively. Report of the Task Force on Petrochemicals projected the demand at 1,84,000 tons during 2004-05. The consumption of synthetic fibre exceeded the demand projections made by the Task Force on petrochemicals by 63% in 2004-05. In 2004-05, imports of synthetic rubbers was 2,10,000 tons and exports 7,000 tons. During 2005-06, the production of synthetic rubber was 1,10,000 tons. No new capacities have been added during the last five years. The growth rates in synthetic rubber consumption sectors viz. automobile tyre, consumer durables have increased. The demand of synthetic rubbers was met by imported synthetic rubber.

18. **Synthetic Detergent Intermediates**:- Detergent intermediates consist of Linear Alkyl Benzene (LAB) and Ethylene Oxide (EO). The capacity, production and consumption of synthetic detergent intermediates during 2004-05 was 5,66,000; 4,88,000 and 4,31,000 ton respectively. Report of the Task Force on Petrochemicals projected the demand at 5,26,000 tons during 2004-05. The consumption of synthetic detergent intermediates was lower than the projected demand by 95,000 tons (18%) for 2004-05. In 2004-05, imports of synthetic detergent intermediates was 10,000 tons and exports 67,000 tons. During 2005-06, the production of synthetic detergent intermediate was 5,55,000 tons. Indian Oil Corporation commissioned a Linear Alkyl Benzene (LAB) plant during the year 2005-06 which has led to exports.

19. **Performance Plastics**:- Performance Plastics consist of ABS Resin, Nylon Moulding Powder, Poly Methyle Metha Acrylate (PPMA) and Styrene Acrylonitrile Rubber (SAN). These are small volume when compared to commodity polymers. The capacity, production and consumption of performance plastic during 2004-05 was 1,37,000, 1,27,000 and 1,40,000 tons respectively. No demand estimation was made for the performance plastics. The production during 2005-06 was 1,27,000 tons.

20. Asked about the steps taken to reduce the import of petrochemical products in the country, Department of Chemicals & Petrochemicals stated that at present there are no substantial imports in any sector except elastomers. Imports are only about 10% of the domestic production and these too are for specific grades, which are not produced here. In a liberalized regime reducing imports cannot be part of the Policy. Also because of low level of imports for the petrochemical sector there is no specific need to reduce the imports.

21. Further, asked about the steps taken for increasing the capacity/production of petrochemicals and their export, Department of Chemicals & Petrochemicals stated that in order to strengthen the petrochemical industry in the context of emerging opportunities and challenges, the Government of India constituted a Task Force on Petrochemicals in December, 2000 under the Chairmanship of Shri Montek Singh

Ahluwalia, Member, Planning Commission and the Task Force submitted the Report under the Chairmanship of Dr. G.V. Ramakrishna in April, 2003. The Task Force has identified the broad contours of the National Vision in the petrochemical sector. To give concrete shape to the recommendations of the Task Force, it was felt that a National Policy on Petrochemicals should be evolved. A draft National Policy on Petrochemicals has been finalized.

22. On being asked about the present status of finalization of National Policy on Petrochemicals, Department of Chemicals & Petrochemicals stated as follows:-

“Draft National Policy on Petrochemicals was considered by the Committee of Secretaries on 29.11.2006. The suggestions of COS have been incorporated in the note for Cabinet which is being finalized by the Department.”

23. The Committee note that the Government of India constituted a Task Force on Petrochemicals in order to strengthen the Petrochemical Industry and the Task Force had submitted its Report. In order to give concrete shape to the recommendations of the Task Force, a draft National Policy on Petrochemicals has been evolved which was considered by the Committee of Secretaries on 29th November, 2006. The Committee, therefore, recommend that all necessary formalities should be completed as early as possible so that National Policy on Petrochemicals is finalized at the earliest.

(Recommendation Sl. No.2)

V. State-wise share in Production of Petrochemicals Industry

24. As per Annual Report 2005-06 of the Department, petrochemical industrial units are mainly located in 30-35 districts in 8 States on account of location and availability of raw material. The State-wise share in production of major petrochemicals (2004-05) were as follows:-

(i)	Gujarat	-	59%
(ii)	Maharashtra	-	17%
(iii)	West Bengal	-	12%
(iv)	Uttar Pradesh	-	4%
(v)	Tamil Nadu	-	3%
(vi)	Others	-	5%

25. When the Committee asked why the industries are not spread all over, Department of Chemicals & Petrochemicals stated as follows:-

“It is because historically the industries concentrate around the ports or wherever oil and gas is there. If we had the gas grid and the oil refining national grid, then probably we can disperse them. Now, it is an open deregulated and totally globalised economy. Naturally, the industry will try to concentrate where they have the feedstock advantage or the transport advantage or the gas or Naphtha advantage.”

26. When the Committee asked about the policy of the Government in regard to setting up of new plants in industrially backward areas, Department of Chemicals & Petrochemicals stated that investments in the petrochemical plants are guided by the availability of feedstock/ raw material, infrastructure and easy access to port facility for import & export. The existing petrochemical sector is also delicensed/ deregulated. Governmental Policy is not directed towards spreading petrochemical units evenly over all parts of the country.

27. However, individual state governments have their own industrial policy for inviting investments to their backward areas. The Ministry of Commerce, Government of India is also promoting Special Economic zones (SEZ). Individual industries are, therefore, free to take advantage of these policies if the area is suitable to them from the point of view of the factors mentioned above.

28. Further on being asked whether any survey has been done for installation of more petrochemical projects in the States of West Bengal, Uttar Pradesh, Tamil Nadu, so as to bring these States at par with Gujarat and Maharashtra, Department of Chemicals & Petrochemicals stated as under:-

“No specific survey has been done for installation of more petrochemicals projects in the State of West Bengal, Uttar Pradesh and Tamil Nadu by Department of Chemicals and Petrochemicals. The decisions are generally taken by the respective State Government.”

29. Department of Chemicals & Petrochemicals stated that a Task Force on Petroleum, Chemicals and Petrochemicals Investment Regions (PCPIR) was constituted in the Prime Minister's Office on 20.01.2006, in order to enable quick and coordinated decision an appropriate policy framework for the development of investment regions of requisite scale and level of facilities, with the involvement of world class developers and investors, in the field of petroleum, chemicals and petrochemicals. It considered the inputs of the study conducted by Department of Chemicals & Petrochemicals on promoting Mega Chemical Industrial Estates (MCIE) in the country and formulated the draft policy of PCPIR.

30. In terms of this draft policy, the PCPIR is expected to be a specifically delineated investment region having an area of about 250 sq. kms (with at least 40% area earmarked for processing activities). The concerned state Government, may not acquire the entire, but will notify the same. This region would be a combination of production projects, public utilities, logistics, environmental protection, residential areas and administrative services. The purpose is to encourage global scale investments in

Petroleum, Chemicals and Petrochemicals Sector to accelerate economic growth. Mega Chemicals Industrial Estate (MCIE) as originally is expected to form the processing part of the PCPIRs.

31. Asked about the response of various states in this regard, Department of Chemicals & Petrochemicals stated as under:-

“So far a few States like West Bengal, Tamil Nadu, Gujarat, Andhra Pradesh, etc., have evinced interest in locating a PCPIR.”

32. During evidence dated 12.02.2007, Department of Chemicals & Petrochemicals stated further as follows:-

“Some of the State Governments are moving very fast. They are already announcing PCPIRs, etc., but we are going in terms of having the approval of the Government.”

33. As per the latest written information furnished by the Ministry the PCPIR Policy has been finalized and launched on 8th May, 2007.

34. The Committee note that a Task Force on Petroleum, Chemicals and Petrochemicals Investment Regions (PCPIR) was constituted in the Prime Minister's Office on 20th January, 2006, in order to enable quick and coordinated decision with an appropriate policy framework for the development of investment regions of requisite scale and level of facilities, with the involvement of world class developers and investors in the field of petroleum, chemicals and petrochemicals. While appreciating the fact that the PCPIR Policy has been launched, the Committee hope that the Government would strive to implement the PCPIR Policy to achieve the desired objectives. The Committee also recommend that State Governments should be impressed upon for facilitating land transfer and providing other infrastructural facilities so as to make the PCPIR Policy a big success.

(Recommendation Sl. No.3)

VI. Scale of Operation

35. In the prevailing competitive environment, it is important to reap the economies of scale by selecting the optimal level of production to minimize the production costs.

36. When the Committee asked about the optimal sizes of world-scale petrochemicals plants, Department of Chemicals & Petrochemicals stated that the optimal sizes of world-scale plants have increased over time and are expected to increase further depending on the availability of feedstock and market potential.

OPTIMAL PLANT SIZES

Type of Plant	Optimal Size
Ethylene Cracker	1.00 million tonnes and more
LDPE	400-450 KT
LLDPE/HDPE	600-700 KT
HDPE	450 KT
PP	450 KT
Polyester Staple Fibre	100 KT
Polyester Filament Yarn	100 KT
Acrylic Fibre	50 KT
Nylon Filament Yarn	30 KT
Nylon Tyre Cord Yarn/Fabric	30 KT

37. Further, when the Committee asked about the average size of Petrochemical plants in India, Department of Chemicals & Petrochemicals stated that sizes of the plant for which investments are committed in the near future are:-

Type of Plant	Average Size
Ethylene Cracker	0.8-1 million tonnes
LDPE	80 KT
LLDPE/HDPE	400-500 KT
HDPE	300 KT
PP	400 KT

38. Capacity ranges for crackers and polyolefins in India are as follows:-

Type of Plant	Capacity Range
Ethylene Cracker	63-750 KT
LDPE	80 KT
LLDPE/HDPE	160-225 KT
HDPE	60-200 KT
PP	25-600 KT

39. Synthetic Fibre

SEGMENT	MES (KT)
Polyester Staple Fibre	100
Polyester Filament Yarn	60
Acrylic Fibre	20
Nylon Filament Yarn	15
Nylon Tyre Cord Yarn/Fabric	15

40. The current capacity ranges for Synthetic Fibres are as under:-

SEGMENT	CURRENT CAPACITY RANGE
Polyester Staple Fibre	30-160 KT
Polyester Filament Yarn	3-250 KT
Acrylic Fibre	12-40 KT
Nylon Filament Yarn	5-6 KT
Nylon Tyre Cord Yarn/Fabric	4-11 KT

VII. Future Investment Plan in the Petrochemical Sector

41. Department of Chemicals & Petrochemicals during evidence on 12.02.2007 stated about the future investment plan in the petrochemical sector which is as follows:-

Naphtha/Gas Cracker Complexes

Product/ Company	Raw Material	2004-05 Capacity (KT)	Proposed Ethylene Capacity (KT)	Likely Investment	Likely date of commissioning
IPCL, Baroda	Naphtha	130	0	-	-
IPCL, Nagothane (3)	Gas	400	600	NA	Under Planning
IPCL, Gandhar (3)	Gas	300	600	NA	Under Planning
RIL, Hazira	Naphtha	750	0	-	-
GAIL, Pata (1)	Gas	300	400	Rs. 650 crore*	By 2006
HPL, Haldia (2)	Naphtha	520	670	Rs. 650 crore*	2006-07
Relene petro, Thana	Naphtha	75	0	-	-
Oswal, Mumbai	Naphtha	23	0	-	No production
Oswal, UP	Ethyle Alcohol	15	0	-	-
IOC, Panipat (4)	Naphtha	0	800	Rs. 6300 crore*	By December 2008-09
GAIL, Assam Gas Cracker (5)	Gas	0	220	Rs. 5000 crore*	By 2010-11
GAIL, Kerala Cracker Complex (6)	Gas	0	600	Rs. 7000 crore*	By 2010-11
IOC, Paradip (7)	Naphtha	0	NA	NA	Under Planning
HPCL, Bhatinda (8)	Naphtha	0	NA	NA	Under Planning
Total		2513	4883		

* Included in the Olefin Complex Investment

**Building Block and Commodity Polymer
Capacity Additions (Likely during 11th Plan)**

Company	Ethylene Kilo ton	Propylene Kilo ton	LLD/HD PE Kilo ton	PP Kilo ton	PVC Kilo ton	PS Kilo ton
GAIL, Pata Phase-I	100	0	100	0	0	0
GAIL, Pata Phase-II	-	-	200	300	0	0
Haldia PC WB	150	75	140	75	0	0
IOC, Panipat	800	575	650	600	0	0
Assam Gas Cracker	220	60	220	60	0	0
RIL, Jamnagar	-	900	-	900	0	0
Finolex, Raigard	-	-	-	-	130	0
IOC, Paradip	-	-	-	680	-	0
Total	1270	1610	1310	2615	130	0

VIII. Assam Gas Cracker Project

42. Assam Gas Cracker Project (AGCP) was initiated in pursuance of Assam Accord signed on 15th August, 1985 for all round economic development of Assam. A letter of intent was issued in favour of Assam Industrial Development Corporation to set up the project. A joint venture i.e. Reliance Assam Petrochemicals Limited (RAPL) was constituted. The project could not make breakthrough at that time. Now, Gas Authority of India Limited (GAIL) has been identified as lead promoter with 70% equity participation. Oil India Limited (OIL), Numaligarh Refinery Limited and Assam Industrial Development Corporation (AIDC) will have 10% equity participation each.

43. It was informed by the Department, in their written note that a number of meetings were convened by the Department to monitor the work of implementation of the Assam Gas Cracker Project. Monitoring Committee and Project Steering Committee have been constituted. A joint venture company namely 'M/s. Brahmaputra Crackers and Polymers Limited (BCPL)' has been formed and registered in January, 2007 for implementing this project. The implementation will take 60 months from the 'Zero date' i.e. financial closure. Ministry of P&NG and GAIL have indicated that the financial closure will be carried out subsequent to the decision taken by PIB."

44. As per the media reports, foundation stone laying ceremony of Brahmaputra Cracker and Polymer Limited has been laid by Prime Minister on April 9, 2007 at

Lepetkata, district Dibrugarh, Assam. The cost of project is Rs. 5,460 crore and to be completed in five years.

45. It has been projected by Government of Assam as well as by Central Institute of Plastic Engineering and Technology (CIPET) that about 500 plastic processing industries are likely to come up in the North-Eastern region if the Lepetkata project becomes operational. The Planning Commission has projected that the net benefit from the project would be about Rs.720 crore per annum.

46. On being asked whether any modalities for setting up plastic industries after the setting up of Assam Gas Cracker Project have been explored, Department of Chemicals & Petrochemicals, in their written reply, stated as under:-

“The setting up of the Assam Gas Cracker Project is expected to yield socio-economic benefits to the North Eastern Region especially State of Assam. Downstream plastic industry is expected to come up. Setting up of plastic parks by Government of Assam also expects to attract investment in the downstream plastic industries. A detailed study of potential and modalities of downstream plastic industry is to be carried out by the consultant appointed by the Government of Assam and Joint Venture Company.”

47. About the role of CIPET in the regard, Department of Chemicals & Petrochemicals, in their written reply, stated as under:-

“CIPET’s role for Assam Gas Cracker Project

- CIPET’s has been identified as nodal agency for imparting training. Training will be given to the Faculty & Instructors of Polytechnics & ITIs in the State of Assam for conducting Operator Trade and Diploma Courses in the field of Plastics Technology and to the members of Industries and potential entrepreneurs.
- Also, CIPET would be engaged in curriculum development for plastics processing operators trade courses/ Diploma courses proposed to be offered by ITIs & Polytechnics in Assam.
- CIPET would offer consultancy to ITIs & Polytechnics for infrastructure development to offer plastics technology related courses in ITIs & Polytechnics as per the developed curriculum/ syllabus indicated above in Sl. Nos. 1 and 2. The trainees completing the trade certificate & diploma courses

from these ITIs & Polytechnics would be employed in different downstream industries, which would be set up on completion of Assam Gas Cracker Project and few of them may also start their own small-scale plastics processing unit.

- In addition, CIPET Guwahati is conducting long-term courses in different disciplines of plastics engineering & technology with average intake of about 250-275 students every year & about 500 participants are trained through short-term courses on annual basis. Apart from employment in plastics industries, few CIPET trained students/ participants are encouraged to venture into entrepreneurship.
- CIPET would be setting up a Plastics Waste Management Centre (PWMC) at Guwahati at a cost of Rs.790 lacs. The project has been recently approved by Government of India and would be completed within one year. The envisaged output as per objectives of PWMC is as follow:
 - **Manpower Development:** Training of 750 trainees/ year;
 - **Technology transfer:** Estimated 25 nos. of downstream units to be provided technology.
 - **Empowerment:** Training of local entrepreneurs through short-term training in plastic waste recycling techniques.
 - **Product Development:** Through R&D in the area of recycling process technology development.

48. Few ongoing training activities at CIPET Guwahati are as follows:

- Training of local youth in the field of plastics technology through Tailor-made Courses of duration 3 weeks (10 programmes with total participants of 500) finalized in consultation with a high level delegation from Department of Industries, Government of Assam which had visited CIPET Guwahati.
- A three days awareness programme has been completed in the last week of August 2006 for officials of Industry Department, Government of Assam.
- 03 Training programmes organized for 31 ITI faculties and 120 trainees from Dibrugarh & Jorhat have been trained through these programmes.”

49. The Committee have been informed that the Gas Authority of India Limited (GAIL) has been identified as lead promoter with 70 percent equity participation to implement the Assam Gas Cracker Project with Oil India Limited, Numaligarh Refinery Limited and Assam Industrial Development Corporation each having 10 per cent equity participation in the project. Subsequently, Monitoring Committee and Project Steering Committee have been constituted and a Joint Venture Company, namely, 'M/s Brahmaputra Crackers and Polymers Limited (BCPL)' has been formed and registered for implementing this project. The Committee express their satisfaction that foundation stone laying ceremony of the Brahmaputra Cracker and Polymer Limited has been held on 9th April, 2007. The Committee now desire that all out efforts should be made to make the project complete and functional within stipulated time period as it would lead to setting up of about 500 plastic processing industries and yield socio-economic benefits to the North-Eastern Region especially the State of Assam.

(Recommendation Sl. No.4)

CHAPTER-III

CONSTRAINTS FACED BY PETROCHEMICALS SECTOR**I. Feedstock**

50. Domestic Petrochemical plants uses Naphtha and natural gas components Ethane (C2)/ Propane (C3). India is not having feedstock advantage. Ethylene/ propylene are the main building blocks for the major petrochemicals. The Report of the Task Force on Petrochemicals made the demand projects for the major petrochemicals. Based on the demand projection and the projects already announced the demand supply gap for ethylene and propylene during terminal year 2006-07 X Five Year Plan and 2011-12XI Five year Plan are as follow:

Ethylene Demand Supply Gap

Year	Ethylene Capacity ('000tpa)	Ethylene Demand ('000tpa)	Gap ('000 tpa)	Average Ethylene Cracker size ('000 tpa)	No. of additional Crackers required
2004-05	2500	3911	(-) 1411	700	
2006-07	2750	4943	(-) 2193	700	3
2011-12	4370	8647	(-) 4277	700	6

Propylene Demand Supply Gap

Year	Propylene Capacity ('000 tpa)	Propylene Demand ('000 tpa)	Gap ('000 tpa)
2004-05	1550	2347	(-) 797
2006-07	2200	3017	(-) 892
2011-12	2260	5380	(-) 3120

51. However, on the basis of information received from the Ministry of Petroleum & Natural Gas, Department of Chemicals & Petrochemicals recently stated that the availability of ethylene, which almost matches the domestic demand is indicated in table below:

	2003	2004	2005	2006	2007
Firm Capacity	2501	2543	2603	2730	2765
Speculative Capacity	0	0	0	0	0
Total Capacity	2501	2543	2603	2730	2765
Production	2393	2229	2415	2457	2579
Operating Rate (%)	96	88	93	90	93
Producer Inventory Rise	0	0	0	0	0
Net Exports	(26)	(2)	1	33	0
Consumption	2419	2231	2414	2424	2579

52. Availability is expected to further increase after the extraction of C2/C3 at Dahej. Gujarat after financial year 2009.

53. When asked about the demand and availability of Naphtha and natural Gas (NG) for the petrochemical industry, Department of Chemicals & Petrochemicals stated that domestic Naphtha availability in past alongwith current production of Naphtha is as follows:-

Naphtha Availability in India (Million Tons)

	1990-91	1995-96	2000-01	2005-06 (Estimated)
Refinery Production	4.9	6.0	9.9	14.2
Fractionator	0.6	1.5	1.5	1.5
Total domestic Availability	5.5	7.5	11.4	15.7

Source: Report of Sub-Group on Petrochemicals Report

54. Domestic Naphtha availability has been increasing. The sharp rise in Naphtha production has rendered it surplus in the country and the country has now started exporting significant quantities of Naphtha on net basis as shown below:-

Imports & Exports of Naphtha (Million Tons)

	2002-03	2003-04	2004-05	2005-06 (est)
Imports	2.8	2.4	2.2	2.5
Exports	2.1	2.2	2.9	4.4
Net Import/ Export (-)	0.7	0.2	-0.7	-1.9

Source: Report of Sub-Group on Petrochemicals Report

55. A contributing factor for the increase in Naphtha exports during 2005-06 has been rising imports of LNG and higher availability of gas.

56. Projected refinery capacity additions in the next few years are tabulated in Table below.

Projected Refinery Capacity Additions (MMT)

	2005	2008	2010	2012
Refining Capacity	132.5	158.7	242.3	287.3
Addition in capacity		26.2	109.8	154.8
Additional Naptha Availability		2.9	12.1	17.0

Source: Report of Sub-Group on Petrochemicals Report

57. Depending upon the completion schedule of planned refineries, large quantities of Naphtha would become available. Refineries have two options to deal with these quantities, either market their Naphtha to others – domestically or through exports or use it themselves for adding value to their business. Domestic demand of Naphtha, at present does not appear to be commensurate with the increased availability while exports are generally resorted to as a second best option. Therefore, looking at the surplus availability, several PSU refineries have planned petrochemical complex alongwith their expansion or grassroots refinery projects.

58. Indian Oil Corporation (IOCL), Oil and Natural Gas Corporation (ONGC), Hindustan Petroleum Corporation (HPCL), Bharat Petroleum Corporation (BPCL), and

Gas Authority of India (GAIL) have plans for setting up Petrochemicals Complex. Probable locations for proposed new plants are Panipat, Dahej, Vizag, Mangalore, Haldia and Paradeep. IOCL, Panipat have implemented crude oil refinery in the second phase, they are commissioning para Xylene and PTA Plant in the next phase, IOCL is implementing a Naphtha cracker project with downstream polymers Polyethylene, Polypropylene and Monoethylene Glycol. Naphtha from PSU sources would mostly be used up, should all these planned projects fructify. The pricing of Naphtha is market driven and benchmarked against the imported prices. In any case, the deficit can be easily met by imports from international oil markets. Therefore, depending upon pricing policy, there would be no constraint in availability of Naphtha.

Natural Gas

59. Past trend and current gas availability for use by petrochemical plants are as follows:-

Gas Production & Availability for Petrochemical Industry

Unit Million Standard Cubic Meter per Day (MMSCMD)

	1990-91	1995-96	2000-01	2004-05
Gross Gas Production	18.0	22.6	29.5	31.813
Used by petrochemicals	0.4	0.5	0.8	1.2

Source: Report of Sub-Group on Petrochemicals Report

60. Petrochemicals plants consumes C2/C3 fraction as feedstock and significant amount of gas is used as fuel in captive power plants for petrochemical plants which also needs to be added to the consumption of gas as feedstock in petrochemical plants while computing the requirement of gas in the petrochemical industry. Gas production seems to have stagnated in the last five years. Power and fertilizer sectors have traditionally been core consumers of natural gas. These two sectors together consume about 70% of the gas consumed in the country today. The balance goes to industrial units where it replaces mostly liquid fuels. Further, gas is increasingly being supplied on priority, to households as piped gas or to automobiles as CNG. In this context, it need to be mentioned that petrochemical industry adds tremendous value to the

feedstock and hence, needs to receive a higher priority compared to sectors like fertilizers for which cheap sources of imports exist.

61. As per Ministry of P&NG, total current domestic production of natural gas is about 72 Million Metric Standard Cubic Meter per Day (MMSCMD). Additional regassified LNG of around 18 MMSCMD is available from PLL- Dahej and Shell-Hazira. Further, current domestic availability of natural gas from the largest domestic source i.e. ONGC is projected to decrease from 53 MMSCMD to around 30 MMSCMD by 2010-11. This shall be offset from increase in domestic availability from private gas sources such as RIL and other NELP fields, as per information available at this stage. GAIL has announced plans for setting up gas based petrochemical complexes at Kochi and Dibrugarh.

62. Import of natural gas in the form of LNG and through transnational pipelines would be major sources of gas availability in future. It is, however, likely that such imports would be of lean gas where the exporting countries may extract important C2, C3 and C4 fraction before supplying the gas. Taking all the above factors into account, the total gas availability in the country may increase to around 244-314 MMSCMD by 2010-11.

63. As against the above total gas availability, the total projected demand of natural gas is 327 MMSCMD by 2010-11. In the near term i.e. 2007-08, it is estimated that as against the total demand of around 185 MMSCMD the gas availability in the country shall be only around 138 MMSCMD. Gas being price sensitive, its demand is likely to vary in line with price and price of available alternatives.

64. Therefore, there appears to be critical constraints limiting the availability of gas for petrochemical projects especially if power and fertilizer sectors continue to receive priority in terms of gas supply. Besides even within the available gas the obtainable fractions for use in petrochemicals are likely to be low. Hence new gas based petrochemical projects can be viable only if it can ensure steady supply of gas with a long term supply contract.

65. The key feedstock issues which are crucial for setting up new petrochemical manufacturing facilities in the country are as follows:-

- Identification of primary feedstock to be utilized for production and ensuring steady supply.
- Dual or multiple primary feed options for the plants necessary for operational flexibility
- Coastal locations for the plants to be preferred for flexibility of import of feed stocks.
- Existing refineries should be encouraged to add value to their hydrocarbon chain.
- As a policy C2/C3 fractions available in the natural Gas and LNG needs to be allocated to petrochemicals project.
- Due weightage also need to be given to propylene derived from refineries.

66. On being asked about the cost of production of ethylene from Naphtha and natural gas, Department of Chemicals & Petrochemicals replied that the cost of production of ethylene from Naphtha is costlier in comparison to Natural gas (NG) mainly due to capped gas prices (APM). In 2004-05 domestic gas based cracker margins were around \$ 700 per ton and during the same period, Naphtha based cracker margin was around \$ 500 per ton.

67. The Committee note that Naphtha and Natural gas are the main feedstocks for the Petrochemical Industry. The Committee were informed that there is surplus availability of Naphtha in the country. However, availability of Natural Gas is not sufficient to meet the demand of Petrochemical Industry whereas power and fertilizer sector receive priority in terms of gas supply. Besides, even within the available gas the obtainable fractions for use in petrochemicals are low. At the same time, production of petrochemicals from Natural gas is cheaper in comparison to Naphtha. The Committee, therefore, desire that the Department should take adequate steps to allocate requisite gas supply to petrochemicals sector.

(Recommendation Sl. No.5)

II. Infrastructure

68. Infrastructure facilities like ports, roads, power, water, telecommunication, storage and transportation play a major role in development of any industry.

69. The Report of the Task Force on Petrochemicals has stated that infrastructure facilities like ports, roads, power, water, telecommunication, storage and transportation, etc. are inadequate to meet the growing demand of the petrochemical industry. Petrochemical industry is energy dependent; therefore, power tariffs play a major role in determining its cost competitiveness.

70. On being asked about the infrastructure bottlenecks in development of petrochemical industry, Department of Chemicals & Petrochemicals stated that petrochemicals complexes are capital and technology intensive. Investments on infrastructure development, efficient port handling facilities as the petrochemicals complexes handles large volumes of gaseous, liquid and solid chemicals, cost of power, commissioning of captive power plant, roads for transportation of products are the major infrastructure bottlenecks in development of petrochemicals. Often these developments are created by the project authority which increases their project investment and affects the competitiveness. Government is bringing out a policy framework on PCPIR to address these issues.

71. On being asked to provide suggestions to improve the supply of power to the petrochemical industry, Department of Chemicals & Petrochemicals stated that promotion of investment on power plants closer to the large investment by private entrepreneurs of petrochemical products for supply of power to the industry as well as supply to local area at the competitive power prices.

72. Department of Chemicals & Petrochemicals further stated that electricity is a concurrent subject. Supply and distribution of electricity to various categories of consumers including petrochemical industries is in the purview of the State Government. However, Central Government supplements these efforts by establishing

power generating stations through Central Power Sector Undertakings. Allocation of power is given to the beneficiary States/UTs from these stations based on an established norm. It is for the State Government and DISCOMs to consider the priority of power to the petrochemical plants under their jurisdiction. Moreover, under the new Electricity Act, 2003, the petrochemical industry is free to set up captive/group captive power plants for their own consumption.

73. When the Committee asked about the number of captive power plants available to Indian petrochemical industries, Department of Chemicals & Petrochemicals stated as under:-

“Naphtha/Natural petrochemical complexes and major polymer manufacturers who have continuous manufacturing operation have installed captive power generation to sustain the production. Some of the smaller units are also operating with DG sets. Most of the units in petrochemical and plastic processing are operating with power back up facilities.”

74. Further, when the Committee asked whether small petrochemical units are satisfied with power supply by State Electricity Boards (SEBs), Department of Chemicals & Petrochemicals replied as follows:-

“Power supply is the subject matter of State Governments. Small units generally complain about the quality of power and frequent power cuts. They have to additionally invest in DG set to maintain the economic level of operation.”

75. The Committee observe that infrastructure facilities like ports, roads, power, water, telecommunication, storage and transportation, etc. are inadequate to meet the growing demand of the petrochemical industry. The Committee, therefore, recommend that necessary steps should be taken by the Department to provide these infrastructure facilities to petrochemical sector.

(Recommendation Sl. No.6)

III. Tax/Duty Structure

76. The Indian petrochemical industry has been witnessing an accelerated customs duty reduction regime during the last decade. The industry is thus faced with a continuous reduction in the level of protection on the one hand, while on the other, customs duty on the dominant feedstock Naphtha (5% for select polymers and 10% for other petrochemicals) has not come down and remains high, squeezing the margins. There are also anomalies in the duty structure across the value addition chain, resulting in instances of inverted duty structure. For example, though the import duty on most building blocks and even some intermediates has been brought down to 5%, the import duty on the feedstock Naphtha is at 10% for the production of non-polymer petrochemicals.

77. The excise duty on polymers and plastic processed articles has been brought down to the median rate of 16%. However, in order to give impetus to the growth of polymers and plastics, there is need to further lower the excise duties on polymers and plastics. Similarly, though the excise duty on Polyester yarn has been brought down to 16% from 24%, there is further need to rationalize the excise duty structure on all synthetic fibres and yarn and provide a level playing field by unifying the excise duties on all types of fibres and yarns.

78. The petrochemical industry is also seriously affected by the levy of high rates of sales tax on both inputs and products. The problem is further compounded by wide variations from state to state and a host of state levies like turnover tax, entry tax, etc.

Tariff Structures for Petrochemicals

79. The customs and excise duty structure on major petrochemicals are as follows:-

Major Petrochemicals Customs & Excise Duty Rates in % 2005-06 and 2006-07

Product	Basic Customs Duty		Basic Excise Duty	
	2005-06	2006-07	2005-06	2006-07
FEEDSTOCK				
Naphtha	10/5*	5/0*	16	16
Propane, Butanes and Natural Gas constituents	10	5	16	16

* Customs Duty on Naphtha for the manufacture of Commodity polymers LDPE, LLDPE, HDPE, Polypropylene, Poly vinyl Chloride (PVC) and Polystyrene (PS) have been reduced from 5% to 0% for Naphtha. For other petrochemicals have been reduced from 10% to 5%.

Building Blocks				
Ethylene	5	5	16	16
Propylene	5	5	16	16
Butadiene	5	5	16	16
Heptene	10	5	16	16
Octene	10	5	16	16
Benzene	5	5	16	16
Toluene	5	5	16	16
Para Xylene	5	2	16	8
Ortho Xylene	5	5	16	16
Intermediates				
Styrene	5	2	16	16
Ethylene Dichloride (EDC)	5	2	16	16
Vinyl Chloride monomer	5	2	16	16
Dimethyle teraphthalate (DMT)/Purified Teraphthalate (PTA)	15	10	16	8
Mono Ethylene Glycol (MEG)	15	10	16	12
Acrylonitrile	5	5	16	8
Caprolactum	15	10	16	16
Synthetic Fibre				
Polyester Staple Fibre (PSF)	15	10	16	8
Polyester Filament Yarn (PFY)	15	10	16	8
Acrylic Fibre (AF)	15	10	16	8
Nylon Filament Yarn (NFY)/ Nylon Industrial (NIY)	15	10	16	8
Commodity Polymers				
LDPE/LLDPE	10	5	16	16
HDPE	10	5	16	16

PP	10	5	16	16
PVC	10	5	16	16
Poly Styrene	10	5	16	16
Nylon		12.5		16
Polyester Chips	15	10	16	8
Synthetic Rubbers (Elastomers)				
Poly Butadiene Rubber	15	12.5	16	16
Styrene Butadiene Rubber	15	12.5	16	16
Surfactant Intermediates				
Linear Alkyls Benzene (LAB)	15	12.5	16	16
Plastic processed Articles	15	12.5	16	16

80. As per the Preliminary material furnished by the Department, the demands from industry associations are as follows:-

- (i) Restriction of petrochemical products as well as processed articles concessional imports through regional bilateral/multilateral trade agreement, wherever there is a domestic capacity existing.
- (ii) Reduction in feedstock import duties to the lowest level possible to attract value addition within the country.
- (iii) Reduction in imports duties on catalyst, proprietary chemicals used in the manufacture of petrochemical, which are not manufactured in India.
- (iv) Rationalization of excise duty on synthetic fibre to a level of the natural fibre-cotton, as these caters to the needs of the common man. Currently cotton attracts an optional excise duty of 4% whereas synthetic fibres attract 16% excise duty.
- (v) Lowering of excise duty on plastic processed articles and polymers from the current level of 16% to 8%.

81. In respect of tariffs and taxes, during the evidence dated 12.02.2007, Department of Chemicals & Petrochemicals in its presentation stated as follows:-

“There is a need to remove anomalies in the duty structure all across the value addition chain.

Customs Duty

- Crude oil attracts 5% to 0%.
- Naphtha for manufacture of polymers 0% and other petrochemicals 5%. To uniform 0%.
- Natural Gas constituents C2/C3 and C4 attracts 5%. To be reduced to 0%.
- Industrial alcohol attracts 10%.
- Proprietary catalyst, chemicals attract peak rate of 12.5%. To be reduced to 5%.
- Capital goods, moulds and dies for plastics, spare parts for maintenance attract 12.5% peak rate. To be reduced to 5%.

Excise Duty

- Polymers and Articles of plastic attract 16%. Needs to be reduced to 8%.
- Synthetic fibre attracts 8% mandatory duty and cotton attracts 4% optional excise duty. Synthetic fibre/Yarn excise duty to be in par with cotton.

Value Added Tax (VAT)

- Rationalization of VAT on plastic articles from various slabs to uniform 4%.”

82. The Committee have been informed that the Indian Petrochemical Industry has been witnessing continuous reduction in the level of protection due to accelerated customs duty reduction. The Committee note that there are also anomalies in the duty structure across the value addition chain resulting in instances of inverted duty structure. The petrochemical industry is also seriously affected by the levy of high rates of Sales Tax on both inputs and products and this problem is further compounded by wide variations from State to State and a host of State levies like turnover tax, entry tax, etc. Considering these aspects, the Committee desire that the Union Government should take necessary steps to rationalize the duty and tax structure.

(Recommendation Sl. No.7)

CHAPTER - IV

HUMAN RESOURCE AND TECHNOLOGY DEVELOPMENT

83. Trained manpower is essential for any industry to grow. While the Indian polymer industry is growing at a phenomenal pace, it is necessary for the downstream processing sector to grow equally fast, if overall growth has to be sustained over the long run. For the downstream sector, a substantial portion of which belongs to the small scale sector, it is important to ensure that skill and manpower availability is not a constraint.

84. Asked about the demand and availability of trained technical manpower in the industry, Department of Chemicals & Petrochemicals stated that the current estimated total employment in plastic industry is 2.5 million. The various technical man-power needed for the plastic industry are Operators (skilled & semi skilled), Technical supervisory, managerial, maintenance and mould making, marketing/ trading and Research and development. Currently initiatives like establishing centres for excellence and increasing the number of technically trained manpower through CIPET, IITs, ITIs and Engineering Colleges who are already having petrochemicals and plastic curriculums. Efforts will also be made to identify new centres to include petrochemical/ plastic processing courses. Currently, CIPET trains about 3372 students annually from their 15 centres. Plastics and allied industries conduct campus interviews for their placement requirements in different areas and sub-disciplines like tool room, design, plastic product manufacturing, testing and quality, CAD/ CAM etc. Nearly 80% of the pass out trainees get employment through Campus interviews and 10% with personal efforts or get observed by sponsored industries. Also it is estimated that about 10% of CIPET alumni venture into their own business establishments and become perspective entrepreneurs.

85. About the level of technology available in the petrochemical industry, Department of Chemicals & Petrochemicals stated that the basic and fundamental technology of production of major petrochemicals, building blocks, intermediates, synthetic fibre and polymers has not undergone major change except the plants have become more compact, increased yield, new and efficient proprietary catalysts, improved energy efficiency, size of reactor capacity, tailor made products for the different end uses and continuous polymerization process. This avoids multiple changes in the production pattern and thus improves productivity and reduces cost. Investment per tonne of capacity has also come down substantially.

86. These changes have also taken place in the down stream-processing sector in fibre/ yarns processing, namely, crimping, texturising, dyeing etc., and the down stream plastic processing industry.

87. During the last decade, consolidation has taken place in the technology driven petrochemical industry. The strategic consolidations were focused to enhance competitiveness to face global competition.

88. The domestic petrochemical plants depend on import of technology and the recently commissioned petrochemical products technology are state-of-the art from the world leaders and plant sizes are also of economic size. The domestic industry is making efforts on grade variation suiting the domestic market requirements, tailor-made formulations, energy conservation, etc.

89. On being asked about the research and development facilities available in the Government as also in private sector for development of petrochemical sector in the country, Department of Chemicals & Petrochemicals stated that the Council of Scientific and Industrial Research (CSIR) provides the umbrella for all R&D activities at Government level. CSIR has a country wide net work of 40 laboratories. Out of this, Indian Institute of Chemical Technology (IICT), Hyderabad and the National Chemical Laboratory, Pune are devoted exclusively to chemicals (including Petrochemicals). In addition to these, some of the Regional Research Laboratories (RRL) at Bhopal,

Bhubaneswar, Jammu, Jorhat and Thiruvananthapuram are also conducting R&D activities in the chemical sector.

90. In private sector, most of the R&D facilities are in house and are devoted to the specific products manufactured by those units. The Indian private sector companies having R&D facilities including RIL, IPCL, BASF India Ltd., Atul Ltd., EXSON Mobile and SABIC.

91. The basic technology for crackers and for production of polymers/ petrochemicals has all been imported and there is no R&D in this area. The private sector R&D effort is devoted for specific product development. Technology is not a constraint as it can also be imported freely. For example, IOC is setting up integrated petrochemical complex at Panipat with imported technology for all its plants.

92. When the Committee asked about the status of research in petrochemicals in the country, Department of C&PC stated as under:-

“Petrochemicals industry in India has been set up based on the imported technical know-how. The units are absorbing and further upgrading the know-how depending on the products market requirements. The research activities in India are mainly in the areas of raw material optimization, catalyst development, grades suitable to domestic markets, energy conservation, safety, process automation, etc. There is no separate budget for the research for the petrochemicals units and units are taking incentives under the existing schemes of the Department of Science and Technology. The product innovation is being done by the downstream plastic processing industry as per the specific and use requirements in sectors like packaging, automotive, electronic and entertainment. The current estimated R&D expenditure by private sector companies is less than 1% of the turn over. Department of Chemicals & Petrochemicals is considering the feasibility of setting up a new scheme of Petrochemicals Research and Development Fund (PRDF) which would cater to the project of R&D, waste management, recycling and development of bio-polymers and degradable polymers. Special focus will be given to support research and development in new and emerging areas of petrochemicals technology.”

93. Further when the Committee asked whether any effort is being made to develop the basic technology for crackers and for production of Polymers/ Petrochemicals indigenously, Department of Chemicals & Petrochemicals replied that the existing

crackers are operating with imported technology. The technical know-how licensors have merged to remain competitive in core business areas. Currently there are only few process licensors in the global scenario. The development of basic technologies for crackers is not in the focus areas. However, some of the units are developing new polymer grades based on the end use applications.

94. Department of Chemicals & Petrochemicals during its presentation on 12th February, 2007 stated that National Programme on Petrochemical Development is proposed to be formulated to improve the existing petrochemical technology and research, in the country and to promote the development of new applications of polymers and plastics. Further, feasibility of setting up a new scheme of Petrochemical Research and Development Fund (PRDF) to cater to the projects of R&D, waste management, recycling and development of biopolymers and biodegradable polymers is proposed to be considered.

95. The Committee are of the opinion that trained manpower and advanced technology are essential for any industry to grow. The Committee were informed that Petrochemicals Industry in India has been set up based on the imported technical know-how. While appreciating the fact that several Institutions like CIPET, IITs, ITIs, Engineering Colleges, etc. are providing training and skill and institutions like Indian Institute of Chemical Technology (IICT), Hyderabad, National Chemical Laboratory, Pune, Regional Research Laboratories, etc. are conducting R&D activities in the petrochemicals sector, the Committee desire that these Institutions should be strengthened to ensure that skill and trained manpower availability should not be constraints to the petrochemicals sector. The Committee also recommend that the proposal of the Government to set up a new scheme of Petrochemical Research and Development Fund should be finalized to cater the requirements of petrochemicals sector.

(Recommendation Sl. No.8)

CHAPTER V

PLASTICS

96. Plastic Processing Industry comprises of small, medium and large scale units spread throughout the country. Presently there are about 22,000 plastic processing units, of which more than 75% are in the Small Scale Sector. The Small Scale Sector accounts for about 25% of polymer consumption. The plastic processing industry's consumption of virgin commodity polymers in 2004-05 is estimated at 4.8 million tons. The industry also consumes recycled plastic, which constitutes approximately 30% of total consumption of 4.8 million tons in 2004-05.

97. The three key segments of the plastic processing sector are injection moulding, blow moulding and extrusion. These processes cater to the requirement of wide array of applications like packaging, automobile, consumer durables, health care etc.

98. The total investments in the Indian plastic processing industry is in the vicinity of Rs.40,000 crores of which more than 50% is in the injection moulding sector. The total employment in the downstream sector is approximately 636000 of which more than a third is in the injection moulding segment. It is estimated that the plastic industry provides employment to around 3.53 million people if the indirect employment generated by the sector is also factored in.

99. During the period 2001-2005 capacity in the plastic processing sector has increased at a CARG of 8%.

Capacity Addition in the Plastic Processing Industry

	Upto 2001	01-02	Addition 02-03	03-04	04-05	Total	Upto 05	CARG %
Machines Added (nos.)	46100	2540	2600	3095	3085	11320	65484	9%
Installed Capacity (kT)	8270	680	615	830	745	2870	11167	8%
Avg capacity per machine (MT)	179	268	237	268	241	254		8%

Processing Capacity Addition 2001-05

Indian Petrochemicals Industry Snapshot

	Unit	
Major raw materials producers	Nos	15
Plastic Processing Units	Nos	22,000
Number of plastic processing machines	Nos	65,484
Processing Industry turnover	Rs.Crore	55,000
Polymer Industry Capital assets	Rs.Crore	85,000
Plastic raw materials production	Million tons	4.9
Plastic raw material consumption	Million tons	4.6
Employment direct/ indirect	Million nos	2
Value of exports	US\$ billion	1.9
Revenue to Government	Rs. Crore	7300

100. The domestic per capita consumption of Polymers in India is at 4.0 kgs (all India average) and 1 kg per capita in North-Eastern Region as against the global average of about 25 kgs. The average growth of polymers in India for the past few years has been more than 10% indicating that there is an underlying potential to grow further.

101. When the Committee asked about the steps proposed to be taken to increase the per capita consumption of polymers in India, Department of Chemicals & Petrochemicals stated as under:-

“Promotion of plastic products in the thrust areas like plastics in agriculture (Plasticulture), water management like plastic pipes, construction applications like door/window frame and insulation panels, Electronics, Electrical and Telecommunication, consumer durable and non-durable products and automobile. It is established globally that ethylene (the main building block for petrochemicals) consumption and polymer consumption in the downstream plastic articles have strong correlations with the growth of Gross Domestic Product (GDP). Polymer consumption has strong backward and forward linkages and an increase in polymer consumption has a multiplier effect on the GDP growth. With the growth of the economy and enhanced allocations for agriculture, irrigation and infrastructure by the Government, the forward linkages of polymer consumption will ensure further increase in GDP growth leading to better quality of life and also an increase in direct and indirect employment opportunities. Further it is proposed to remove the structural constraints like items reserved for small scale sector in a phased manner through a consultation process with the stakeholders.”

102. Department of Chemicals & Petrochemicals further stated that the Ministry of Textiles have set up a committee for the development of Technical Textiles, including Geo-Textiles, in which Department of Chemicals and Petrochemicals is a member. The thrust areas for the plastic industry include modern farming through plasticulture, packaging for processed foods and consumer non-durables, better performing plastics for automobiles and consumer durables, infrastructure development through cost effective plastics and innovative products for tele-communications and information technology services sector. Department of Chemicals and Petrochemicals is considering to set up an Inter-Ministerial Expert Committee to look into the requirement of making the use of plastics in thrust areas and make recommendations to the concerned Ministries. This will be set up subsequent to the approval of the national policy on petrochemicals.

103. In this regard, Department of Chemicals & Petrochemicals during evidence on 12.02.2007 stated as follows:-

“Sir, as regards the per-capita consumption, the Government wants to increase it because plastic are the key drivers of the economy. Historically, the petrochemical sector has been growing more than the GDP all over the world. So, the thrust areas need to be promoted, and we can surely promote it in roads, textiles, technical textiles, pipes, drinking water, irrigation, plastic culture, etc. We need to promote the usage of plastic because it replaces the conventional material, and it becomes cheaper and more energy efficient. This is the way the per-capita can go up.”

104. Downstream plastic processing industry is extremely fragmented and operating with outdated technology, which is inhibiting its international competitiveness.

105. When the Committee asked about the reasons for the use of outdated technology in downstream plastic processing industry, Department of Chemicals & Petrochemicals stated that down stream plastic processing industry was developed prior to 1990 in a protected environment with items being reserved exclusively for the manufacture in small scale sector, investment restriction in plant and machinery, import restrictions and incentives offered by way of turnover exemptions and excise incentives. Due to these policy downstream plastic processing industry were concentrated in small scale sector with fragmented capacities based on the local demand, import substitution. The economic liberalization measures initiated and the industrial policy announced in 1991 deregulated the industrial policy, removed quantitative restriction on imports, tariff reduction (import duty reduction) exposed the industry to global competition. Currently there are about 22,000 plastic processing units in tiny, small and medium scale units spread throughout the country. About 75% of these industries are in Small Scale Sector. Average per unit consumption of polymers in the downstream plastic processing industry is estimated at 179 tons per unit as against China average of 682 tons per unit, Germany 1111 tons per unit and USA 1333 tons per unit. Plants operating with smaller scales of operation have generally older technology have no

motivation to grow because of incentives in taxes/ duties and reservation for exclusive manufacture in small scale sector.

106. Further, when the Committee asked why state of art technology is not being employed in downstream plastic processing industry, Department of Chemicals & Petrochemicals stated that state-of-the-art technology is not being employed in downstream plastic processing industry because of their small size and small investment. Moreover, since these small scale units get excise exemption on turnover they have incentive to remain small, which prohibits them from making higher capital investment which in turn restricts use of state of the art technology.

107. The Committee have been informed that per capita consumption of Polymers in India is 4.0 kgs. as against the global average of about 25 kgs. The Committee have been further informed that Department of Chemicals and Petrochemicals is considering to set up an Inter-Ministerial Expert Committee to look into the requirement of making the use of plastics in the thrust areas like plastics in agriculture, water management like plastic pipes, construction applications like door/window frame and insulation panels, electronics, electrical and telecommunication, consumer durable and non-durable products and automobile. Considering the cost effectiveness and more energy efficiency of plastic products, the Committee desire that all formalities regarding setting up of an Inter-Ministerial Expert Committee to look into the requirement of making the use of plastics in thrust areas be completed expeditiously and steps should be taken to increase the consumption of plastics in order to save other vital resources.

(Recommendation Sl. No.9)

I. Plastic waste Management

108. Plastic waste management in India is through 4 R concept – Reduce, Reuse, Recycle and Recover.

109. Plastic wastes are 100% recyclable and at present about 60% of the plastics consumed are recycled, which is highest in the world where the recycling percentage is around 22%. There are about 2300 units engaged in the operation of recycling of plastic waste. Both Central government and some of the State Government have issued Notifications restricting the thickness of plastic carry bags (minimum thickness of 20 micron) and some of the State Governments have gone upto 70 micron thickness. Department is proposing Schemes to build awareness for proper disposal of plastic waste, mechanism for systematic waste collection and recycling in consultation with Ministry of Environment and Forest and Ministry of Urban Development.

110. During evidence dated 12.02.2007, when the Committee asked whether plastic should be banned or used, Department of Chemicals & Petrochemicals stated as follows:-

“.....we would like to make it very clear regarding whether plastic should be banned or used, before coming to other things, that when we talk of plastics, we do not talk of only carry-bags. Plastic forms a part of our lives right from the computer to aircraft to automobiles. Right from the moment, we get up and to the moment we go to the bed, I do not think there is any activity which is without plastic. Simply, we cannot live without plastic. Plastic *per se* is not hazardous. It is non-management of the waste or mismanagement of the waste or non-recycling of the plastic which is creating problems. Even in that, carry-bags have a very high visibility and littering quality. So, whenever the NGOs and the Government and eco-groups say that do not use plastic, primarily they mean carry-bags, that too which are very thin because collecting less than 20 microns of carry-bags and recycling them is difficult. Even for rag-pickers, it is not economical and also for recycling industry to re-use them. That is the segment where we talk of the packaging to be biodegradable. Computer chips cannot be bio-degradable or parts of automobiles, etc., but the things made of starch are bio-degradable. One thing is that we have to see these things. When we say no to plastic, we say no only to the littering part. We say please separate them, collect them separately and recycle them properly.”

111. On being asked about the steps taken in respect of plastic waste management, Department of Chemicals & Petrochemicals stated as under:-

“We are taking two initiatives. The first one is on research on product development and how many cycles a grade of product can go through. As I told you in the presentation also, the Planning Commission has recently sanctioned a project worth Rs. 750 lakhs to be set up in Guwahati as Recycling Waste Management Centre which will primarily focus on various kinds of products and R&D and on how many times, though the grade comes down, it can be recycled theoretically again and again. In the Petrochemical Policy, we are proposing to have a scheme with Ministry of Urban Development under National Urban Renewal Mission (NURM) which can incentivise the waste segregation and waste management and recycling aspect.”

II. Bio-degradable plastics

112 Production level of biodegradable plastics is 50 KTA vis-à-vis 160 MMT total plastics production (less than 0.1 percent).

113. When the Committee asked about the steps taken by the Government to increase the production of biodegradable plastics, Department of Chemicals & Petrochemicals stated as under:-

“Currently manufacture of Biodegradable polymers and their application areas are under developmental stage and internationally few companies have introduced biodegradable polymer in the market. The prices of these polymers are high in comparison to commodity polymers. In India the development of biodegradable polymers is in the nascent stage. Government is planning to promote research and development activities for the production of biodegradable polymers through the proposed National Policy on petrochemicals.”

114. Further, when the Committee asked whether the Government is making endeavour to develop technology for producing biodegradable plastics at cheaper cost, Department of Chemicals & Petrochemicals stated as under:-

“Development of biodegradable polymers has been identified as one of the core research areas by the Ministry of Science and Technology. It is proposed that Department of Chemicals and Petrochemicals will work towards setting up of Centres of excellence in the existing educational and research institutions for carrying out Research and Development.”

115. Further, during evidence on 12.02.2007, Department of Chemicals & Petrochemicals stated as under:-

“The new policy is that we will promote it; we will have research and make it cost effective. We will try to make such products. We will encourage research on bio-degradable products and ensure that they become less costly and affordable so that they can be used by the industry.”

116. The Committee were informed that plastic *per se* is not hazardous. It is non-management or mismanagement of the waste which is creating problems. Also, production level of bio-degradable plastics is 50 KTA vis-à-vis 160 MMT total plastics production (less than 0.1 per cent). The Committee were also informed that the Planning Commission has recently sanctioned a project worth Rs. 750 lakhs for setting up a Recycling Waste Management Centre in Guwahati. Considering these aspects, the Committee hope that Recycling Waste Management Centre in Guwahati would be set up at the earliest. The Committee also recommend that efforts should be made by the Department to promote research and development activities for the production of cost effective bio-degradable plastics.

(Recommendation Sl. No.10)

New Delhi;
May 15, 2007
Vaisakha 25, 1929 (Saka)

ANANT GANGARAM GEETE
Chairman,
Standing Committee on
Chemicals and Fertilizers.

MINUTES

**STANDING COMMITTEE ON CHEMICALS & FERTILIZERS
(2005-06)**

**FIFTH SITTING
(07.12.2005)**

The Committee sat from 1500 hrs. to 1600 hrs.

Present

Shri Anant Gangaram Geete - Chairman

***Members
Lok Sabha***

2. Sardar Sukhdev Singh Libra
3. Shri A. Venkatarami Reddy
4. Shri Narsingrao H. Suryawanshi
5. Shri V.K. Thummar

Rajya Sabha

6. Shri Raju Parmar
7. Shri Ajay Maroo
8. Dr. Chhatrapal Singh Lodha

Secretariat

1. Shri Brahm Dutt - Director
2. Shri S.C. Kaliraman - Under Secretary

***Representatives of the Ministry of Chemicals & Fertilizers
(Department of Chemicals & Petrochemicals)***

- | | | | |
|----|------------------------------|---|----------------------|
| 1. | Smt. Satwant Reddy | - | Secretary |
| 2. | Dr. J.S. Maini | - | Addl. Secretary & FA |
| 3. | Shri Mukesh Kacker | - | Joint Secretary |
| 4. | Shri G.S. Sandhu | - | Joint Secretary |
| 5. | Shri Kumaresh Chandra Mishra | - | Joint Secretary |

2. At the outset, Hon'ble Chairman welcomed the Members and the representatives of the Ministry of Chemicals & Fertilizers (Department of Chemicals & Petrochemicals) to the sitting of the Committee. He briefly informed that the sitting was convened to have a briefing by the representatives of the Department of Chemicals & Petrochemicals on 'Demand and Availability of Petrochemicals'.

3. Thereafter, the representatives of Department of Chemicals & Petrochemicals made a brief audio-visual presentation highlighting the various aspects relating to the subject, particularly the following:-

- (i) Gap in demand and availability of petrochemicals, particularly ethylene as projected upto the year 2011-12 and establishment of six or seven cracker plants of minimum economic size;
- (ii) Need for enhancing the plastics consumption in the country;
- (iii) Need of R&D for bringing out bio-degradable plastics for minimum damage to environment and other aspects of petrochemicals.
- (iv) Rationalization of customs and excise duties and sales tax in the petrochemicals sector;
- (v) Raising the limit of capital investment in small scale units from Rs. 1 crore to Rs. 5 crore;
- (vi) Need for upgrading plant and machinery;
- (vii) Infrastructure and feedstock problems;
- (viii) Development of Human Resources for downstream plastic processing industry;
- (ix) Amendment in Jute Packaging Material Act (JPMA), 1987; and
- (x) Plastic Waste Management.

4. Thereafter, clarifications sought by the Committee were replied to by the representatives of the Department of Chemicals & Petrochemicals.

The Committee then adjourned.

MINUTES

**STANDING COMMITTEE ON CHEMICALS & FERTILIZERS
(2006-07)**

**THIRD SITTING
(03.11.2006)**

The Committee sat from 1530 hrs. to 1645 hrs.

Present

Shri Anant Gangaram Geete - Chairman

Members

Lok Sabha

2. Shri Jaiprakash (Mohanlal Ganj)
3. Shri Sunil Khan
4. Shri Shrichand Kripalani
5. Shri P. Chalapathi Rao
6. Shri Ashok Kumar Rawat
7. Shri Anantha Venkata Rami Reddy
8. Shri D. Venugopal
9. Shri Bhanu Pratap Singh Verma

Rajya Sabha

10. Shri Devdas Apte
11. Shri Gireesh Kumar Sanghi
12. Shri Dilip Singh Judev
13. Shri R. Shunmugasundaram
14. Shri Raj Mohinder Singh Majitha
15. Shri T.R. Zeliang

Secretariat

3. Shri P. Sreedharan - Joint Secretary
4. Shri Brahm Dutt - Director
5. Shri S.C. Kaliraman - Under Secretary
6. Shri Santosh Kumar - Assistant Director

***Representatives of Chemicals & Petrochemicals
Manufacturers' Association (CPMA)***

1.	Shri K.G. Ramanathan	-	President
2.	Shri Kamal Nanavaty	-	Vice-President
3.	Shri Ujjal De	-	Member
4.	Shri Rakesh Nayyar	-	Member
5.	Shri Sushil Gupta	-	Member
6.	Shri Bimal Narayan	-	Member
7.	Shri N.T. Mathai	-	Secretary

2. At the outset, Hon'ble Chairman welcomed the representatives of Chemicals & Petrochemicals Manufacturers' Association (CPMA) to the sitting of the Committee and invited their attention to the provisions contained in Direction 55(1) of the Directions by the Speaker regarding confidentiality of the Committee's proceedings.

3. Thereafter, the President, CPMA introduced himself and his colleagues to the Committee. He also made a brief presentation regarding Demand and Availability of Petrochemicals in the country.

4. During the course of evidence, the following issues came up for discussion:-

- (1) Demand and supply of petrochemicals/downstream products;
- (2) Import duty on polymers in India, China and ASEAN countries;
- (3) Feedstock position and its share in polymer production;
- (4) Need for upgradation of technology in downstream industry;
- (5) Infrastructure bottlenecks;
- (6) Duty differential on feedstock and final product;
- (7) Excise duty and sales tax on petrochemicals;
- (8) Saving of feedstock and diverting it to petrochemical sector;
- (9) Plastic waste disposal; and
- (10) Cost of power and fuel for petrochemical industry.

5. A verbatim record of the proceedings has been kept.

The Committee then adjourned.

MINUTES

**STANDING COMMITTEE ON CHEMICALS & FERTILIZERS
(2006-07)**

**SEVENTH SITTING
(12.02.2007)**

The Committee sat from 1500 hrs. to 1615 hrs.

Present

Shri Anant Gangaram Geete - Chairman

***Members
Lok Sabha***

2. Shri Jaiprakash (Mohanlal Ganj)
3. Shri Sunil Khan
4. Shri Prasanta Pradhan
5. Shri Ramswaroop Prasad
6. Shri P. Chalapathi Rao
7. Shri Narsingrao H. Suryawanshi
8. Shri Bhanu Pratap Singh Verma

Rajya Sabha

9. Shri Devdas Apte
10. Shri Gireesh Kumar Sanghi
11. Shri V. Hanumantha Rao
12. Shri Dilip Singh Judev

Secretariat

1. Shri A.K. Singh - Joint Secretary
2. Shri Brahm Dutt - Director
3. Shri A. K. Srivastava - Assistant Director

**Representatives of Ministry of Chemicals & Fertilizers
(Department of Chemicals & Petrochemicals)**

1.	Dr. J.S. Maini	-	Additional Secretary & FA
2.	Shri K.C. Mishra	-	Joint Secretary
3.	Shri B.P. Pandey	-	Joint Secretary
4.	Shri G.S. Sandhu	-	Joint Secretary
5.	Shri P.V. Rajeev Sebastian	-	Economic Advisor
6.	Shri Ashok Vishandass	-	Deputy Director-General
7.	Shri Surjit Bhujabal	-	Director
8.	Ms. Harmeet Singh	-	Director
9.	Shri M.P. Singh	-	Director

Representatives of the other Ministries/Departments

1.	Shri S.K. Prasad	-	Additional Director General of Foreign Trade
2.	Shri S.L. Govindwar	-	Advisor, Department of Bio-technology
3.	Dr. Suman Govil	-	Advisor, Department of Bio-technology
4.	Shri R.K. Pahwa	-	Director, Central Electricity Authority, Ministry of Power
5.	Shri V.K. Minocha	-	Director, Ministry of Environment & Forests
6.	Shri D.D. Basu	-	Senior Scientist, Central Pollution Control Board
7.	Shri M.K. Anand	-	Director, DGAD, Department of Commerce

2. At the outset, Hon'ble Chairman welcomed the Members to the sitting of the Committee and briefed them about the subject 'Demand and Availability of Petrochemicals'. After that representatives of the Department of Chemicals & Petrochemicals and others were called in and were welcomed by the Hon'ble Chairman.

3. Thereafter, representatives introduced themselves to the Committee and made a brief presentation regarding the subject.

4. During the course of evidence, the following issues came up for discussion:-

- (i) National Policy on Petrochemicals;
- (ii) Draft Policy on Petroleum, Chemicals and Petrochemicals Investment Region (PCPIR);
- (iii) Availability of feedstock/raw material to Petrochemical industries;
- (iv) Spread of Petrochemical industries in the industrially backward regions of the country;
- (v) Duty differential on feedstock and products;
- (vi) Use of Plastics;

- (vii) Recycling of plastic waste and its disposal;
- (viii) Development of bio-degradable plastics;
- (ix) Shortage of qualified manpower in plastic industry;
- (x) Generation of energy from waste; and
- (xi) R&D in respect of Petrochemical sector.

4. A verbatim record of the proceedings has been kept.

The Committee, then, adjourned.

MINUTES

**STANDING COMMITTEE ON CHEMICALS AND FERTILIZERS
(2006-07)**

**ELEVENTH SITTING
(15.05.2007)**

The Committee sat from 1500 hrs. to 1615 hrs.

Present

Shri Anant Gangaram Geete - Chairman

***Members
Lok Sabha***

2. Shri Suresh Angadi
3. Shri Sunil Khan
4. Shri Subhash Maharia
5. Shri Prasanta Pradhan
6. Shri Anantha Venkatarami Reddy
7. Shri Bhanupratap Singh Verma

Rajya Sabha

8. Shri Devdas Apte
9. Shri Debabrata Biswas
10. Shri Gireesh Kumar Sanghi
11. Shri V. Hanumantha Rao
12. Shri R. Shunmugasundaram

Secretariat

1. Shri A.K. Singh - Joint Secretary
2. Shri A.S. Chera - Director
3. Shri A.K. Srivastava - Deputy Secretary-II

2. At the outset, Hon'ble Chairman welcomed the Members to the sitting of the Committee. ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** **

3. Thereafter, the Committee considered the draft Report on 'Demand and Availability of Petrochemicals'. After some discussion, the draft Report was adopted by the Committee without any amendment.

4. **
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5. The Committee authorised the Chairman to make consequential changes, if any, arising out of the factual verification of the Reports by the Ministry of Chemicals and Fertilizers (Department of Chemicals & Petrochemicals ** ** **) and present the same to both the Houses of Parliament in the current Session.

The Committee, then, adjourned.

STATEMENT OF RECOMMENDATIONS/OBSERVATIONS OF THE COMMITTEE

Rec. Sl. No.	Para No.	Recommendations/Observations
1	7	<p>The Committee note that the Indian Petrochemical Industry registered rapid growth in the 1980s and 1990s. However, between 2000-2006, the growth had virtually stagnated. The Committee also note that the Indian Petrochemical Industry is small by international standards with only 2-3% of the global Ethylene capacity. The Committee, therefore, strongly recommend that the Government should create conducive environment for rapid growth of the Indian Petrochemical Industry so that it can reap the optimum benefit offered by the present global scenario.</p>
2	23	<p>The Committee note that the Government of India constituted a Task Force on Petrochemicals in order to strengthen the Petrochemical Industry and the Task Force had submitted its Report. In order to give concrete shape to the recommendations of the Task Force, a draft National Policy on Petrochemicals has been evolved which was considered by the Committee of Secretaries on 29th November, 2006. The Committee, therefore, recommend that all necessary formalities should be completed as early as possible so that National Policy on Petrochemicals is finalized at the earliest.</p>
3	34	<p>The Committee note that a Task Force on Petroleum, Chemicals and Petrochemicals Investment Regions (PCPIR) was constituted in the Prime Minister's Office on 20th January, 2006, in order to enable quick and coordinated decision with an appropriate policy framework for the development of investment regions of requisite scale and level of facilities, with the involvement of world class developers and investors in the field of petroleum, chemicals and petrochemicals. While appreciating the fact that the PCPIR Policy has been launched, the Committee hope that the Government would strive to implement the PCPIR Policy to achieve the desired objectives. The Committee also recommend that State Governments should be impressed upon for facilitating land transfer and providing other infrastructural facilities so as to make the PCPIR Policy a big success.</p>

Rec. Sl. No.	Para No.	Recommendations/Observations
4	49	<p>The Committee have been informed that the Gas Authority of India Limited (GAIL) has been identified as lead promoter with 70 percent equity participation to implement the Assam Gas Cracker Project with Oil India Limited, Numaligarh Refinery Limited and Assam Industrial Development Corporation each having 10 per cent equity participation in the project. Subsequently, Monitoring Committee and Project Steering Committee have been constituted and a Joint Venture Company, namely, 'M/s Brahmaputra Crackers and Polymers Limited (BCPL)' has been formed and registered for implementing this project. The Committee express their satisfaction that foundation stone laying ceremony of the Brahmaputra Cracker and Polymer Limited has been held on 9th April, 2007. The Committee now desire that all out efforts should be made to make the project complete and functional within stipulated time period as it would lead to setting up of about 500 plastic processing industries and yield socio-economic benefits to the North-Eastern Region especially the State of Assam.</p>
5	67	<p>The Committee note that Naphtha and Natural gas are the main feedstocks for the Petrochemical Industry. The Committee were informed that there is surplus availability of Naphtha in the country. However, availability of Natural Gas is not sufficient to meet the demand of Petrochemical Industry whereas power and fertilizer sector receive priority in terms of gas supply. Besides, even within the available gas the obtainable fractions for use in petrochemicals are low. At the same time, production of petrochemicals from Natural gas is cheaper in comparison to Naphtha. The Committee, therefore, desire that the Department should take adequate steps to allocate requisite gas supply to petrochemicals sector.</p>

Rec. Sl. No.	Para No.	Recommendations/Observations
6	75	<p>The Committee observe that infrastructure facilities like ports, roads, power, water, telecommunication, storage and transportation, etc. are inadequate to meet the growing demand of the petrochemical industry. The Committee, therefore, recommend that necessary steps should be taken by the Department to provide these infrastructure facilities to petrochemical sector.</p>
7	82	<p>The Committee have been informed that the Indian Petrochemical Industry has been witnessing continuous reduction in the level of protection due to accelerated customs duty reduction. The Committee note that there are also anomalies in the duty structure across the value addition chain resulting in instances of inverted duty structure. The petrochemical industry is also seriously affected by the levy of high rates of Sales Tax on both inputs and products and this problem is further compounded by wide variations from State to State and a host of State levies like turnover tax, entry tax, etc. Considering these aspects, the Committee desire that the Union Government should take necessary steps to rationalize the duty and tax structure.</p>
8	95	<p>The Committee are of the opinion that trained manpower and advanced technology are essential for any industry to grow. The Committee were informed that Petrochemicals Industry in India has been set up based on the imported technical know-how. While appreciating the fact that several Institutions like CIPET, IITs, ITIs, Engineering Colleges, etc. are providing training and skill and institutions like Indian Institute of Chemical Technology (IICT), Hyderabad, National Chemical Laboratory, Pune, Regional Research Laboratories, etc. are conducting R&D activities in the petrochemicals sector, the Committee desire that these Institutions should be strengthened to ensure that skill and trained manpower availability should not be constraints to the petrochemicals sector. The Committee also recommend that the proposal of the Government to set up a new scheme of Petrochemical Research and Development Fund should be finalized to cater the requirements of petrochemicals sector.</p>

Rec. Sl. No.	Para No.	Recommendations/Observations
9	107	<p>The Committee have been informed that per capita consumption of Polymers in India is 4.0 kgs. as against the global average of about 25 kgs. The Committee have been further informed that Department of Chemicals and Petrochemicals is considering to set up an Inter-Ministerial Expert Committee to look into the requirement of making the use of plastics in the thrust areas like plastics in agriculture, water management like plastic pipes, construction applications like door/window frame and insulation panels, electronics, electrical and telecommunication, consumer durable and non-durable products and automobile. Considering the cost effectiveness and more energy efficiency of plastic products, the Committee desire that all formalities regarding setting up of an Inter-Ministerial Expert Committee to look into the requirement of making the use of plastics in thrust areas be completed expeditiously and steps should be taken to increase the consumption of plastics in order to save other vital resources.</p>
10	116	<p>The Committee were informed that plastic <i>per se</i> is not hazardous. It is non-management or mismanagement of the waste which is creating problems. Also, production level of bio-degradable plastics is 50 KTA <i>vis-à-vis</i> 160 MMT total plastics production (less than 0.1 per cent). The Committee were also informed that the Planning Commission has recently sanctioned a project worth Rs. 750 lakhs for setting up a Recycling Waste Management Centre in Guwahati. Considering these aspects, the Committee hope that Recycling Waste Management Centre in Guwahati would be set up at the earliest. The Committee also recommend that efforts should be made by the Department to promote research and development activities for the production of cost effective bio-degradable plastics.</p>