



6th Petchem Feedstock Asia/China Conference
14-15 May 2007
Mission Hills Resort, Shenzhen, China

INDIA'S NAPHTHA TRADE OUTLOOK

Has domestic demand increased
Will there be more exports
Where are the export markets

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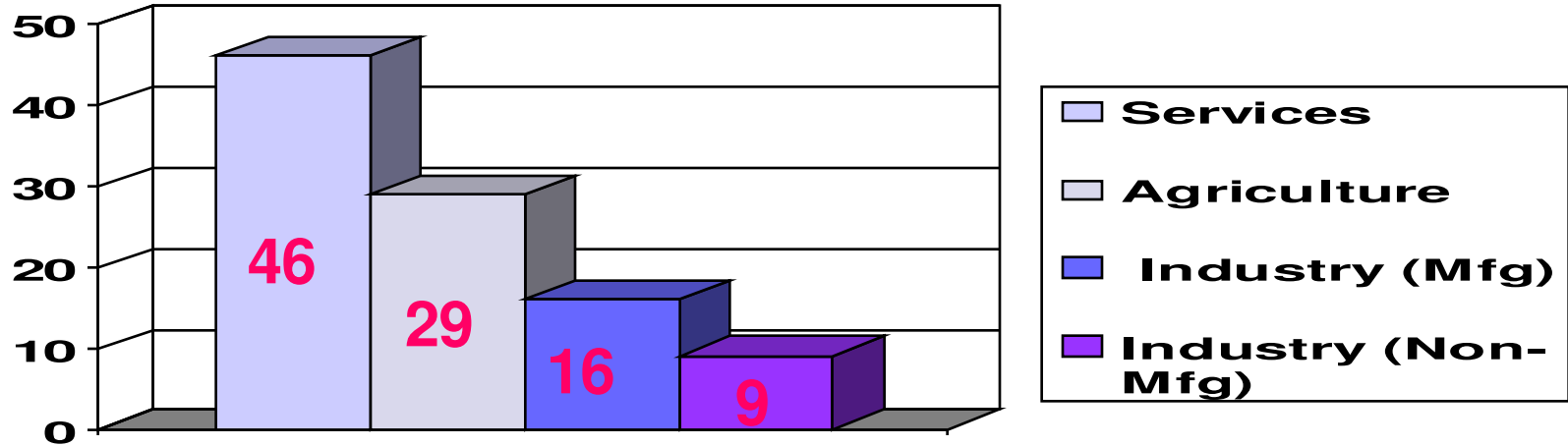
India's Economic Scenario



India Economy

- According to IMF, global GDP growth is higher than past 3 decades.
- China and India are among the star performers.
- The growth is mainly due to buoyancy in services sector, resurgence in agricultural growth and stable manufacturing sector.

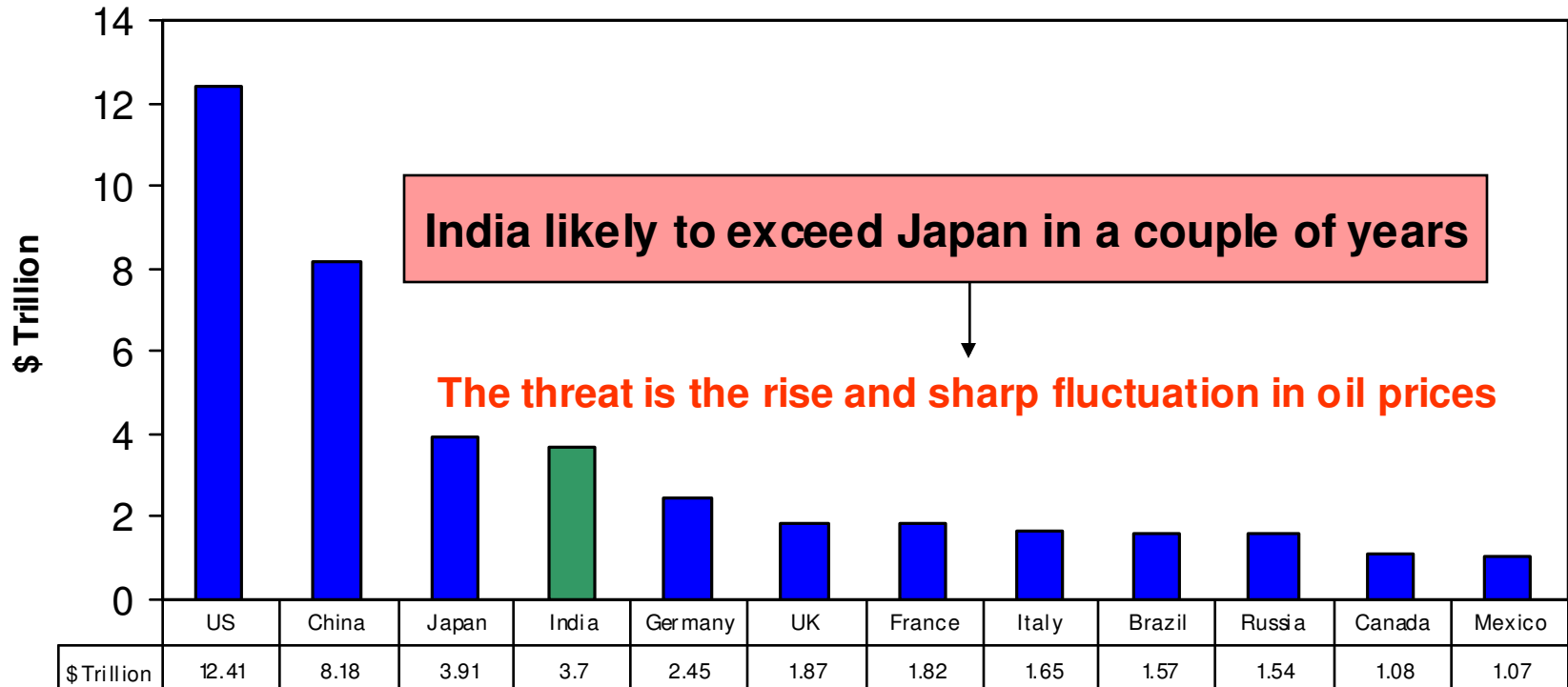
Structure of India Economy



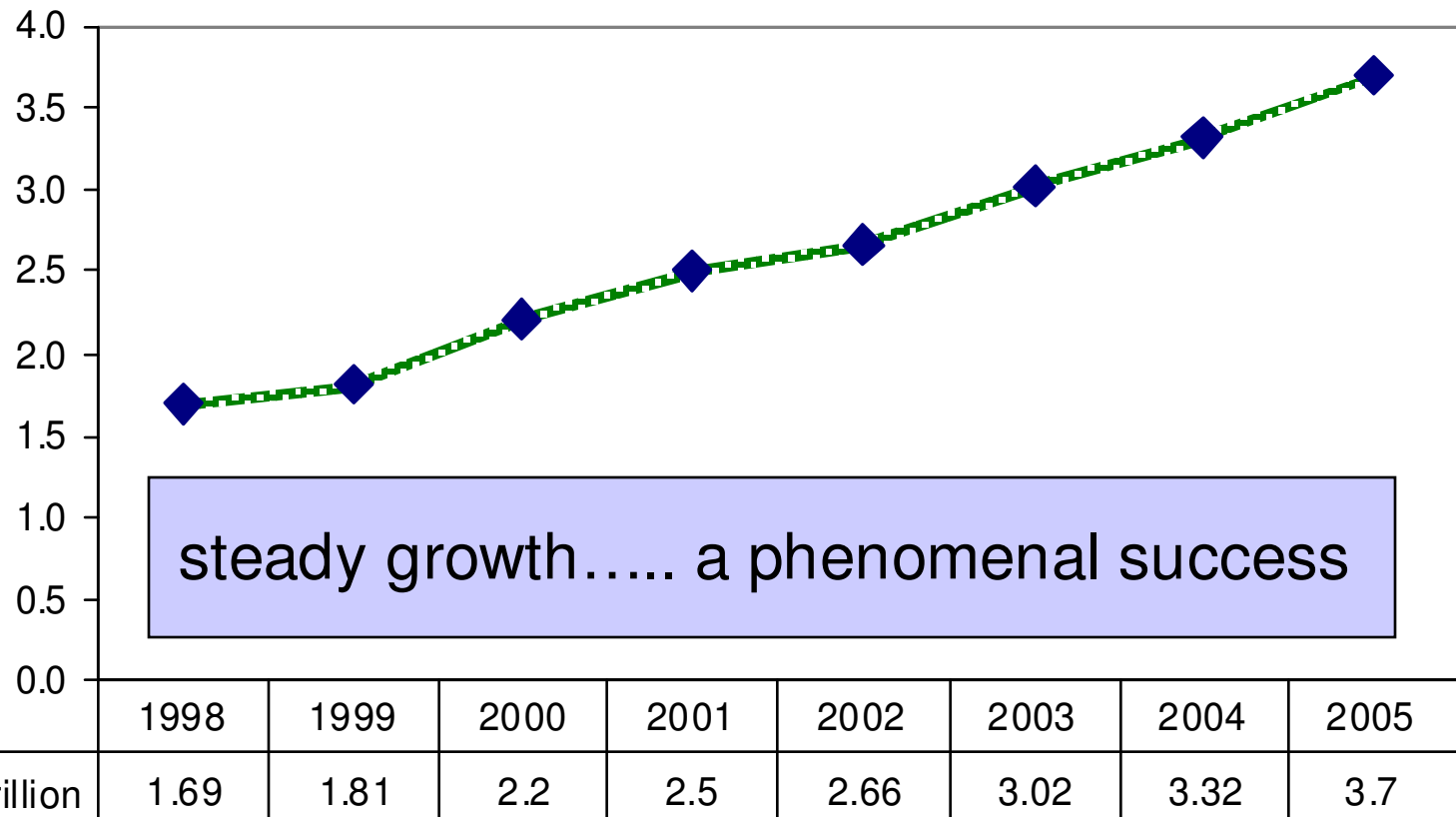
Source : Government of India Publications

The growth in services sector is even better than China due to its relatively well-educated labour force and largest English-speaking population

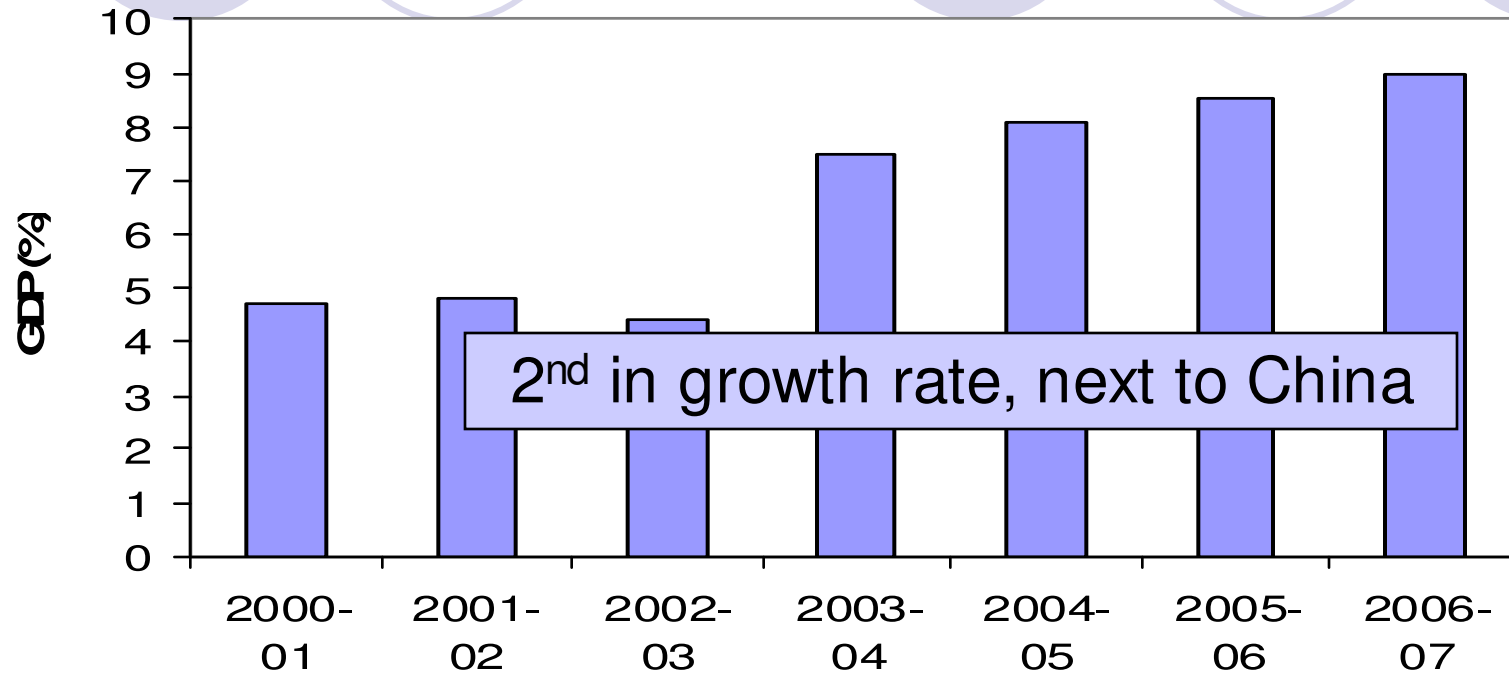
Global GDP (PPP) - 2005



India GDP (PPP)



India GDP (PPP)



Indian Refiners like China receive protection via the structure of import duties on crude and products and therefore expect positive margin even in times of negative margin for operating in the free market

Key Social and Economic Indicators

| | 2002 | 2003 | 2004 | 2005 | 2006 |
|-----------------------------|------|------|-------|-------|-------|
| Population (million) | 1051 | 1069 | 1087 | 1105 | 1110* |
| GDP Growth (%) | 4.4 | 7.5 | 8.1 | 8.5 | 9.0 |
| Inflation Rate (%) | 4.3 | 3.8 | 3.8 | 4.0 | 5.2 |
| Imports (US\$ (bn)) | 61.4 | 78.1 | 111.5 | 142.4 | 181.4 |
| Exports (US\$ (bn)) | 52.7 | 63.8 | 83.5 | 102.7 | 124.6 |

Inflation Rate is brought under control

Key Petroleum Sector Indicators

| | 1998-99 | 1999-00 | 2000-01 | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 |
|-------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| Crude Prodn (kb/d) | 665 | 658 | 645 | 648 | 666 | 654 | 683 | 645 |
| Refinery Th'put (kb/d) | 1336 | 1589 | 1996 | 2152 | 2190 | 2380 | 2566 | 2678 |
| Crude Imports (kb/d) | 597 | 931 | 1351 | 1504 | 1524 | 1726 | 1883 | 2033 |
| Crude Exports (kb/d) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Product Imports (kb/d) | 516 | 438 | 271 | 196 | 154 | 107 | 123 | 179 |
| Product Exports (kb/d) | 24 | 24 | 102 | 159 | 182 | 301 | 362 | 453 |

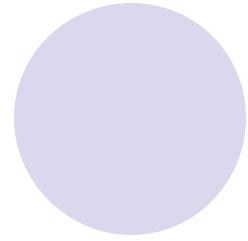
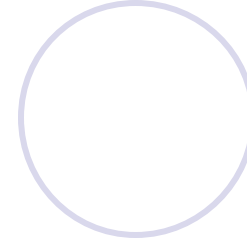
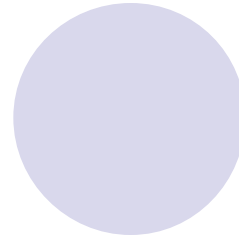
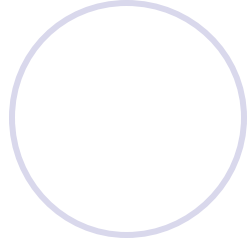
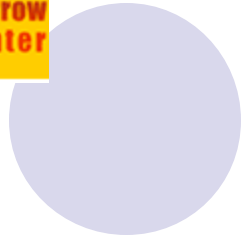
Refinery thru'put doubled in 8 years

Refinery Capacity (mmt)

| | 1998-99 | 1999-00 | 2001-02 | 2003-04 | 2005-06 |
|----------------------------|--------------|---------------|---------------|---------------|---------------|
| IOCL ,Barauni | 3.30 | 3.30 | 4.20 | 6.00 | 6.00 |
| IOCL, Digboi | 0.65 | 0.65 | 0.65 | 0.65 | 0.65 |
| IOCL, Gujarat | 9.50 | 13.00 | 13.70 | 13.70 | 13.70 |
| IOCL, Guwahati | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| IOCL, Haldia | 3.75 | 4.60 | 4.60 | 4.60 | 4.60 |
| IOCL, Mathura | 7.50 | 7.50 | 8.00 | 8.00 | 8.00 |
| IOCL, Panipat | | 6.00 | 6.00 | 6.00 | 6.00 |
| BRPL, Bongaigaon (IOCL) | 2.35 | 2.35 | 2.35 | 2.35 | 2.35 |
| CPCL, Chennai/Narimanam | 7.00 | 7.00 | 7.00 | 10.50 | 10.50 |
| BPCL, Mumbai | 6.00 | 6.90 | 6.90 | 6.90 | 9.00 |
| NRL, Numaligarh (BPCL) | | 3.00 | 3.00 | 3.00 | 3.00 |
| KRL, Kochi (BPCL) | 7.50 | 7.50 | 7.50 | 7.50 | 7.50 |
| HPCL, Mumbai | 5.50 | 5.50 | 5.50 | 5.50 | 5.50 |
| HPCL, V isakhapatnam | 4.50 | 7.50 | 7.50 | 7.50 | 7.50 |
| ONGC, Tatipaka | | | 0.08 | 0.08 | 0.08 |
| MRPL, Mangalore (ONGC) | 9.69 | 9.69 | 9.69 | 9.69 | 9.69 |
| RIL, Jamnagar | | 27.00 | 27.00 | 33.00 | 33.00 |
| TOTAL | 68.24 | 112.49 | 114.67 | 125.97 | 128.07 |

Refinery Throughput (mmt)

| | 2006-07 | 2007-08 | 2008-09 | 2009-10 | 2010-11 |
|-------------------------|---------------|---------------|---------------|---------------|---------------|
| IOCL, Barauni | 5.16 | 5.20 | 5.22 | 5.25 | 5.25 |
| IOCL, Digboi | 0.66 | 0.66 | 0.66 | 0.66 | 0.66 |
| IOCL, Gujarat | 12.60 | 12.74 | 12.88 | 13.01 | 13.01 |
| IOCL, Guwahati | 0.91 | 0.94 | 0.95 | 0.96 | 0.96 |
| IOCL, Haldia | 5.46 | 5.40 | 5.52 | 6.18 | 6.70 |
| IOCL, Mathura | 8.32 | 8.32 | 8.40 | 8.40 | 8.50 |
| IOCL, Panipat | 9.96 | 10.90 | 13.15 | 13.75 | 14.20 |
| IOCL, Paradip | - | - | - | - | 11.25 |
| BRPL, Bongaigaon (IOCL) | 2.44 | 2.44 | 2.47 | 2.47 | 2.49 |
| CPCL, Chennai/Narimanam | 9.37 | 9.57 | 9.77 | 9.97 | 10.17 |
| BPCL, Mumbai | 11.69 | 11.84 | 11.99 | 11.99 | 11.99 |
| NRL, Numaligarh (BPCL) | 2.04 | 2.25 | 2.40 | 2.55 | 2.55 |
| KRL, Kochi (BPCL) | 7.92 | 7.95 | 7.95 | 7.95 | 9.20 |
| BPCL, Bina | - | - | - | - | 2.10 |
| HPCL, Mumbai | 5.78 | 7.30 | 8.02 | 8.15 | 8.27 |
| HPCL, Visakhapatnam | 7.91 | 9.67 | 9.83 | 10.00 | 10.17 |
| HPCL, Bhatinda | - | - | - | - | 3.15 |
| ONGC, Tatipaka | 0.15 | 0.20 | 0.20 | 0.20 | 0.20 |
| MRPL, Mangalore (ONGC) | 11.82 | 12.11 | 12.11 | 15.36 | 15.86 |
| RIL, Jamnagar | 33.83 | 34.65 | 51.18 | 55.20 | 57.90 |
| Essar Oil, Vadinar | 2.70 | 7.43 | 8.48 | 9.53 | 9.98 |
| TOTAL | 138.71 | 149.56 | 171.18 | 181.56 | 204.55 |

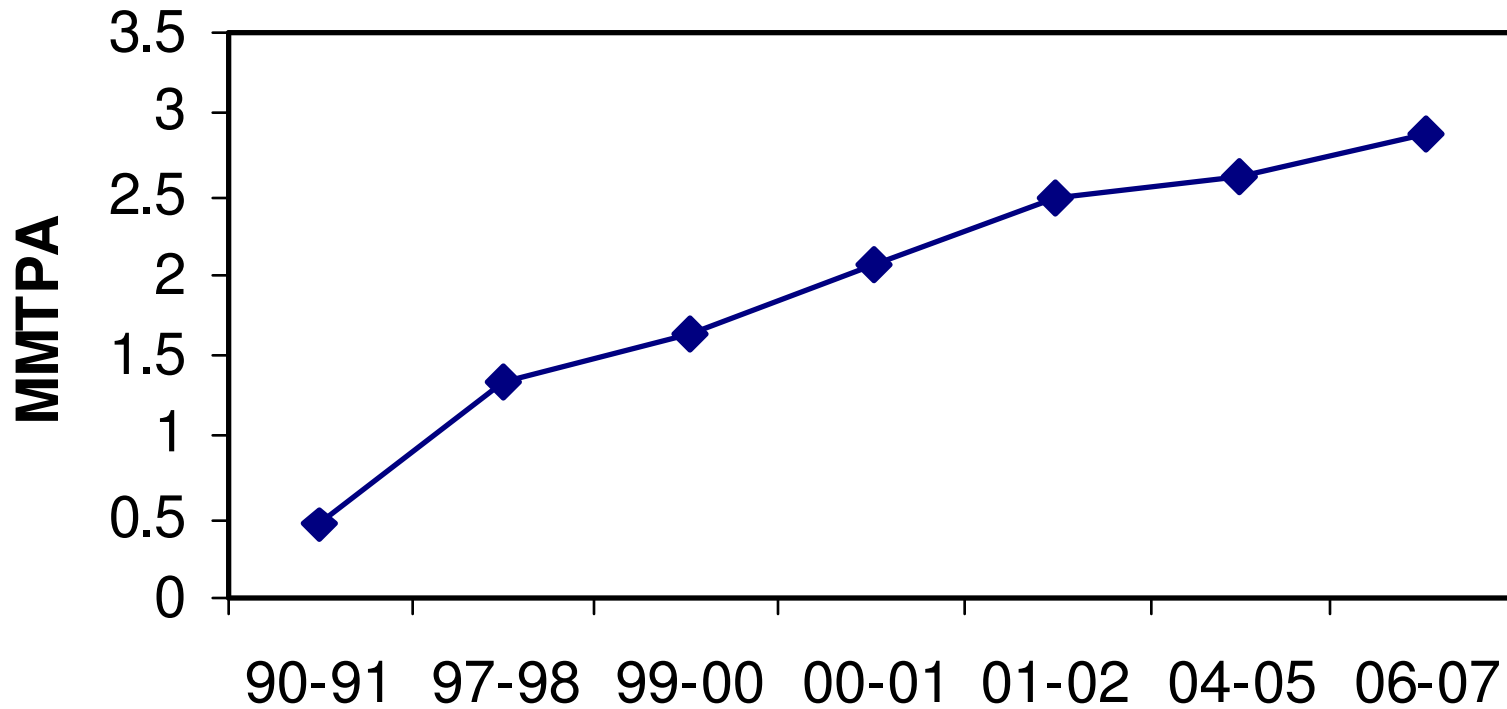


INDIA'S PETROCHEMICAL INDUSTRY

Petrochemical Industry Begins...

- Started in 1978 through IPCL (Indian Petrochemical Corporation Limited), a Government of India enterprise, at Baroda, Gujarat
 - Initial capacity : 0.13 MMTPA (Ethylene)
 - Feedstock used : Naphtha
 - Source of Naphtha : Adjacent Gujarat refinery of IOC
 - Additional demand of naphtha to be met through imports

Petrochemical Industry Expansion !



Huge expansions

Ethylene Capacity today....

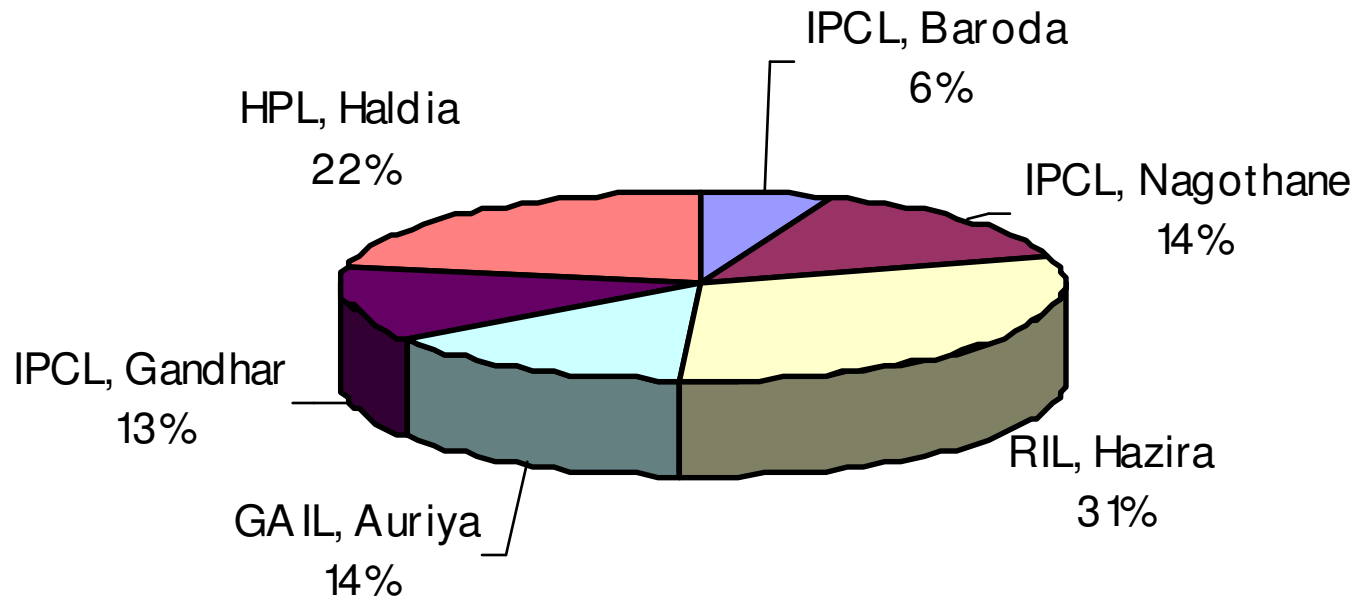
MMTPA

| | | | | |
|-------|------|-----------|--------|---------|
| 1978 | IPCL | Baroda | 0.13 * | 0.17 ** |
| 1990 | IPCL | Nagothane | 0.30 | 0.41 |
| 1997 | RIL | Hazira | 0.80 | 0.88 |
| 1999 | GAIL | Auriya | 0.30 | 0.40 |
| 2000 | IPCL | Gandhar | 0.30 | 0.40 |
| 2000 | HPL | Haldia | 0.42 | 0.63 |
| TOTAL | | | 2.25 | 2.89 |

* Capacity while installed ** Capacity at present

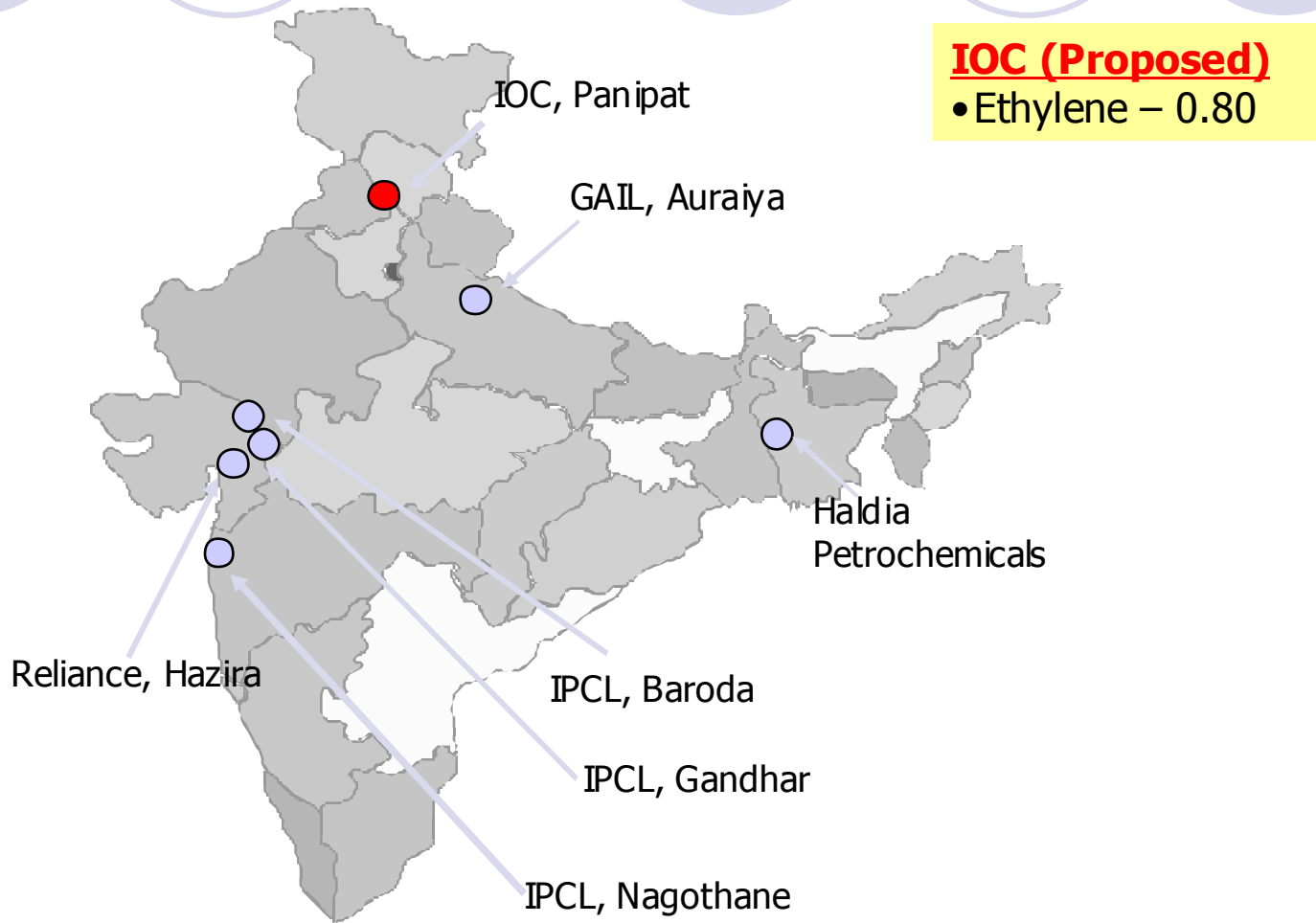
Capacity is further expanded....

Ethylene Capacity today....



Total Capacity 2.89 MMTPA

Petrochemical plants in India



Net trade position in petrochemicals

| (MMTPA) | Capacity | Demand | Status |
|-----------|----------|--------|---------|
| Ethylene | 2.632 | 2.822 | Deficit |
| Propylene | 2.037 | 1.909 | Surplus |
| Butadiene | 0.270 | 0.097 | Surplus |
| Benzene | 1.153 | 0.538 | Surplus |
| Toluene | 0.297 | 0.170 | Deficit |
| Net | 3.080 | 5.537 | Surplus |

2005-06

- Import of ethylene is difficult and expensive as it is gaseous at normal temperature.
- India imports ethylene from Saudi Arabia and Iran.
- India encourages to increase the capacity of ethylene production to avoid the imports.

Net trade position in Polymers

2005-06

| (MMTPA) | Supply | Demand | Surplus / Deficit | Status |
|---------|--------|--------|-------------------|------------------|
| PE | 1.899 | 1.588 | +0.311 | Surplus (16.4%) |
| PP | 1.658 | 1.365 | 0.293 | Surplus (17.6%) |
| PS | 0.319 | 0.188 | 0.131 | Surplus (41.0%) |
| PVC | 0.909 | 1.045 | -0.136 | Deficit (-15.1%) |
| Net | 4.784 | 4.187 | 0.597 | Surplus (12.5%) |

India needs to increase the PVC production to avoid the imports

Import – Export Scenario

2005-06

| IMPORTS (Ethylene, Toluene, PVC) | | EXPORTS (Propylene, Butadiene, Benzene, PE, PP, PS) | |
|-------------------------------------|-----|---|-----|
| Saudi Arabia | 23% | China | 40% |
| Singapore | 11% | Vietnam | 7% |
| USA | 9% | UAE | 6% |
| UAE | 9% | Pakistan | 4% |
| South Korea | 7% | Turkey | 4% |

Player-wise capacity additions

| (MMTPA) | 2007-08F | 2008-09F | 2009-10F |
|-------------------------|--------------|--------------|--------------|
| IPCL³ | 0.995 | 1.010 | 1.010 |
| RIL | 0.975 | 1.050 | 1.081 |
| GAIL | 0.440 | 0.440 | 0.440 |
| HPL | 0.670 | 0.670 | 0.670 |
| TOTAL | 3.080 | 3.170 | 3.201 |

IPCL³ : All three IPCL plants combined

Capacity : For Ethylene only

IOC, ONGC & GAIL are also planning to set up new petrochemical plants. Capacity is likely to increase to 3.952 MMTPA in the year 2009-10

Production forecast

| (MMTPA) | 2006-07E | 2007-08F | 2008-09F | 2009-10F | CAGR |
|-----------|----------|----------|----------|----------|------|
| Ethylene | 2.810 | 2.961 | 3.567 | 3.749 | 8.1 |
| Propylene | 2.134 | 2.249 | 2.669 | 2.744 | 7.8 |
| hdPE | 1.250 | 1.300 | 1.550 | 1.748 | 8.0 |
| ldPE | 0.205 | 0.205 | 0.205 | 0.205 | 1.0 |
| lldPE | 0.590 | 0.610 | 0.770 | 0.838 | 8.0 |
| PP | 1.800 | 1.950 | 2.400 | 2.570 | 8.0 |

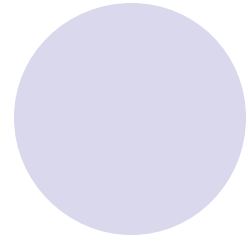
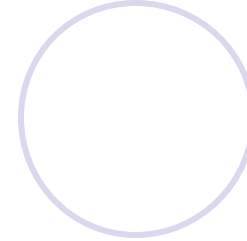
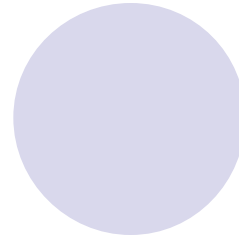
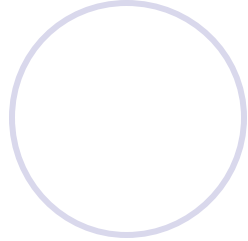
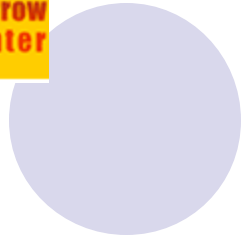
Demand forecast

| (MMTPA) | 2006-07E | 2007-08F | 2008-09F | 2009-10F | CAGR |
|------------------|--------------|--------------|--------------|--------------|------------|
| Ethylene | 2.926 | 3.106 | 3.753 | 3.906 | 8.1 |
| Propylene | 2.099 | 2.199 | 2.617 | 2.700 | 7.8 |
| hdPE | 1.350 | 1.450 | 1.550 | 1.655 | 8.0 |
| ldPE | 0.205 | 0.205 | 0.205 | 0.205 | 1.0 |
| lldPE | 0.650 | 0.700 | 0.725 | 0.766 | 6.0 |
| PP | 1.800 | 2.000 | 2.200 | 2.400 | 8.0 |

Surplus / Deficit forecast

| (MMTPA) | 2006-07E | 2007-08F | 2008-09F | 2009-10F |
|-----------|----------|----------|----------|----------|
| Ethylene | - 0.116 | - 0.145 | - 0.186 | - 0.157 |
| Propylene | 0.035 | - 0.050 | 0.052 | 0.044 |
| hdPE | -0.100 | -0.150 | 0 | 0.093 |
| ldPE | 0 | 0 | 0 | 0 |
| lldPE | -0.060 | -0.090 | 0.045 | 0.072 |
| PP | 0 | -0.050 | 0.200 | 0.170 |

Deficit of ethylene will continue
but propylene will stop



SECTORAL GROWTH

Ethylene Sectoral: Growth

| (KTPA) | 2004-05 | 2009-10 F | Growth |
|-----------------|-------------|-------------|---------------|
| hdPE | 1087 | 1618 | 49 % |
| ldPE | 213 | 215 | 1 % |
| lldPE | 562 | 838 | 49 % |
| PVC | 245 | 285 | 16 % |
| EO | 54 | 62 | 15 % |
| MEG | 399 | 596 | 49 % |
| Styrene | 0 | 182 | Full Positive |
| Others | 91 | 110 | 21 % |
| Total | 2651 | 3906 | 47 % |
| Surplus/Deficit | -62 | -157 | |

Drives : Styrene, MEG & PE sectors

Deficit will continue

Propylene Sectoral: Growth

| (KTPA) | 2004-05 | 2009-10 F | Growth |
|-----------------|-------------|-------------|-------------|
| PP | 1650 | 2448 | 48 % |
| ACN | 20 | 33 | 65 % |
| Phenol | 48 | 52 | 8 % |
| Others | 138 | 168 | 22 % |
| Total | 1856 | 2700 | 45 % |
| Surplus/Deficit | -12 | +44 | |

Drives : PP & ACN

Deficit will stop

hdPE Sectoral: Growth

| (KTPA) | 2004-05 | 2009-10 F | Growth |
|--------------------|------------|-------------|-------------|
| Raffia | 164 | 210 | 28 % |
| Blow moulding | 162 | 214 | 32 % |
| Injection moulding | 122 | 158 | 30 % |
| Wires & Cables | 34 | 42 | 24 % |
| Films | 222 | 335 | 51 % |
| Pipes | 78 | 155 | 99 % |
| Others | 20 | 13 | (35 %) |
| Total | 802 | 1127 | 41 % |

Drives : Pipes & films

Id/IIdPE Sectoral: Growth

| (KTPA) | 2004-05 | 2009-10 F | Growth |
|----------------|------------|------------|-------------|
| Packaging | 392 | 611 | 56 % |
| Coating | 38 | 55 | 45 % |
| Wires & cables | 63 | 66 | 5 % |
| Plastics | 64 | 101 | 58 % |
| Roto moulding | 43 | 51 | 19 % |
| Others | 79 | 112 | 42 % |
| Total | 679 | 996 | 47 % |
| IdPE | 206 | 233 | 13 % |
| IIdPE | 473 | 763 | 61 % |

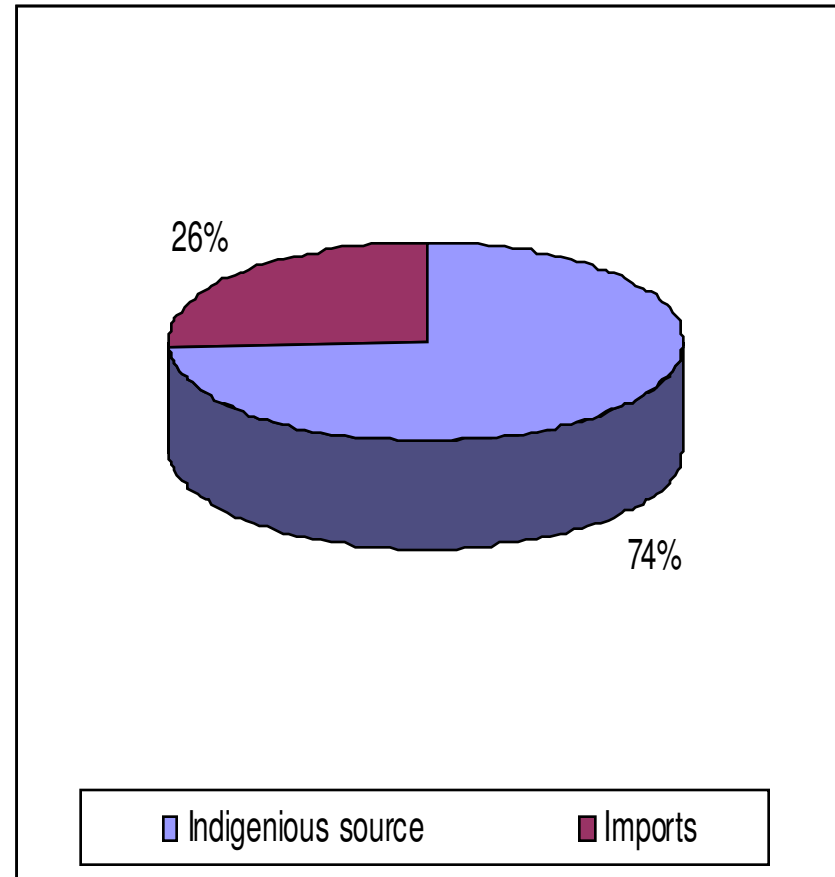
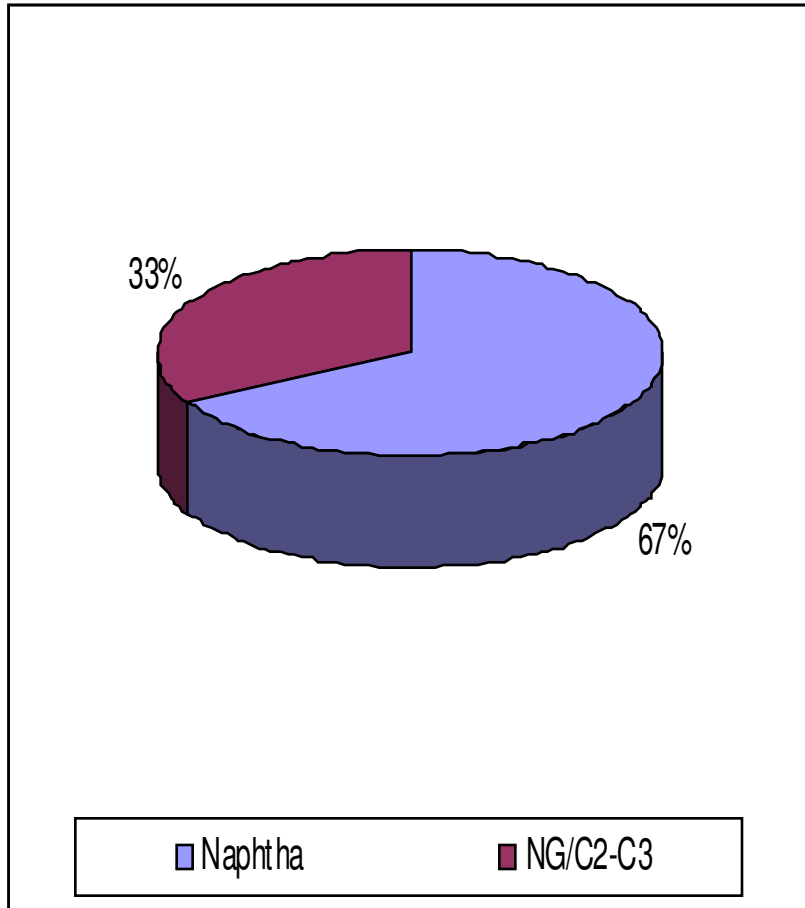
Drives : Packaging & Plastics

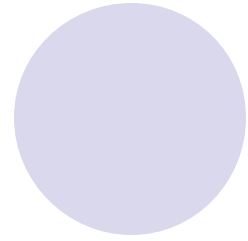
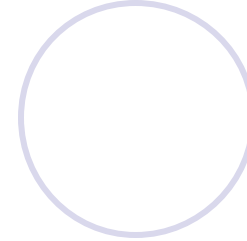
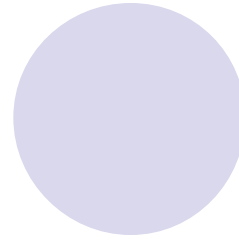
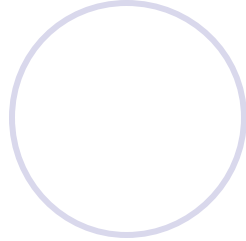
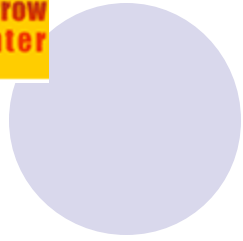
Feedstock Details

In MMTPA

| | | | | |
|------|-----------|-------------|----------------------|----------------------------|
| IPCL | Baroda | Naphtha | RIL, IOC, Imports | 0.63 |
| IPCL | Nagothane | C2-C3 | ONGC, Imports | 0.51 0.27 |
| RIL | Hazira | Naphtha/NGL | RIL | 2.34 |
| GAIL | Auriya | NG | ONGC / GAIL | 0.67 |
| IPCL | Gandhar | NG | ONGC, Imports | 0.32 0.45 |
| HPL | Haldia | Naphtha | IOC, Imports | 0.53 1.03 |

Feedstock Details





INDIA'S NAPHTHA TRADE OUTLOOK

Introduction

- Naphtha is manufactured from crude oil by direct atmospheric distillation and by catalytic cracking of heavy residues.
- Also produced from condensate by fractionation.
- In India, Naphtha is produced by PSU like IOCL, HPCL, BPCL and ONGC. It is also produced by Private players like RIL and soon added by Essar Oil.
- Naphtha is used mainly in Petrochemical and Fertilizer sectors. It is also conventionally used in Power and Steel sectors.

Introduction

- Naphtha business is globally integrated.
- Demand supply fluctuation in one part of world has a far reaching impact on prices.
- Naphtha prices are closely related to crude oil prices.
- India has a large domestic market, yet depends on exports.
- Export competition is expected to increase with Middle East exports.
- Cost of naphtha in ME is almost 30-40% cheaper than that in India.

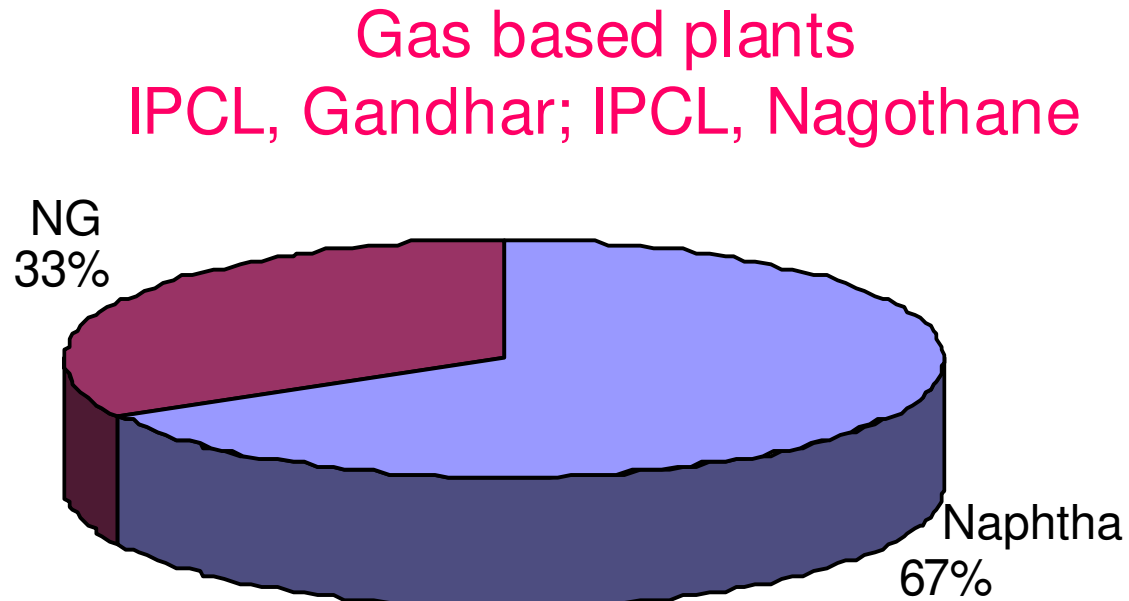
Production

| Company | 99-00 | 00-01 | 01-02 | 02-03 | 03-04 | 04-05 | 05-06 | 06-07E |
|--------------|-------------|-------------|-------------|-------------|--------------|--------------|--------------|--------------|
| IOCL | 3.49 | 3.53 | 3.41 | 3.17 | 3.69 | 3.59 | 3.60 | 3.70 |
| BPCL | 1.93 | 2.11 | 1.86 | 1.93 | 2.15 | 2.04 | 2.00 | 2.20 |
| HPCL | 1.04 | 1.13 | 1.19 | 1.26 | 1.54 | 1.52 | 1.50 | 1.60 |
| ONGC | 0.01 | 0.38 | 0.14 | 0.32 | 0.62 | 1.10 | 1.00 | 1.10 |
| RIL (Pvt) | 1.71 | 2.77 | 2.59 | 2.97 | 3.32 | 6.07 | 5.90 | 5.99 |
| TOTAL | 8.18 | 9.92 | 9.19 | 9.65 | 11.32 | 14.32 | 13.80 | 14.59 |

Consumption

| (MMTPA) | 04-05 | 05-06 | 06-07E |
|--------------------------|--------------|--------------|--------------|
| Petrochemicals | 7.71 | 8.11 | 8.99 |
| Fertilizers | 3.26 | 3.17 | 2.34 |
| Power & Steel | 2.64 | 2.26 | 3.16 |
| Others | 0.32 | 0.30 | 0.30 |
| TOTAL | 13.93 | 13.84 | 14.79 |

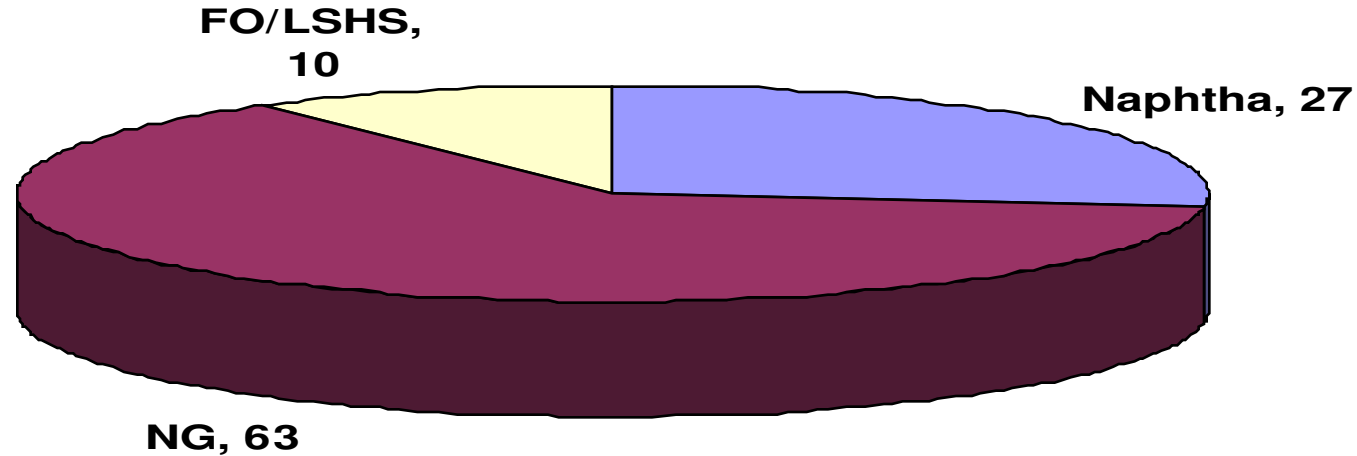
Sales to Petrochemical Sector



Naphtha based plants
IPCL, Baroda; RIL, Hazira; HPL, Haldia

Sales to Fertilizer Sector

Feedstock Analysis



Use of Naphtha is declining after LNG import in 2004
Subsidized rate of fertilizer also compels for switch over to NG

Domestic Sales

Role of Power Industry

- Naphtha is used as a fuel in Power Industry.
- They also use Natural Gas and Coal.
- Naphtha is costliest fuel and NG the cheapest.
- Naphtha based generation may decline very fast.

| | Coal | Gas | Naphtha |
|--------------------------------------|-------|-------|---------|
| Capital Cost (Rs. Million per MW) | 45 | 35 | 30 |
| Gestation Period (Months) | 48-52 | 24-30 | 18-30 |
| Fuel Cost (Paise per KWH) | 104 | 76 | 210 |

Naphtha is becoming more expensive due to rise of crude oil prices

Domestic Prices

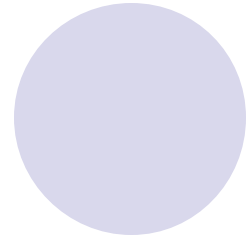
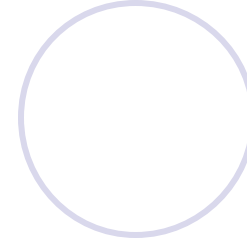
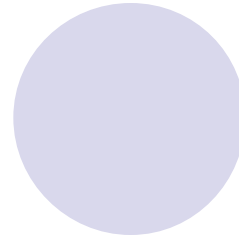
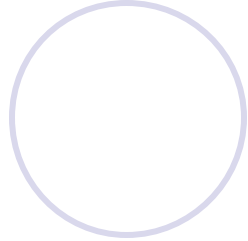
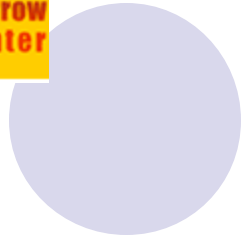
| | 01-02 | 02-03 | 03-04 | 04-05 | 05-06 | 06-07 |
|-------------|-------|-------|-------|-------|-------|-------|
| Rupees / MT | 12000 | 14500 | 15000 | 20000 | 25000 | 27000 |
| US\$ / MT | 252 | 300 | 326 | 445 | 553 | 620 |

Domestic price increasing in line with international price

Exports / Imports

| (MMTPA) | 99-00 | 00-01 | 01-02 | 02-03 | 03-04 | 04-05 | 05-06 | 06-07E |
|---------------|-------|-------|-------|-------|-------|-------|-------|--------|
| Export | 0.58 | 2.88 | 2.52 | 2.07 | 2.18 | 2.93 | 2.90 | 3.00 |
| Import | 1.92 | 3.17 | 3.31 | 2.78 | 2.37 | 2.21 | 2.85 | 3.05 |

Export increasing / Import decreasing



DOMESTIC DEMAND

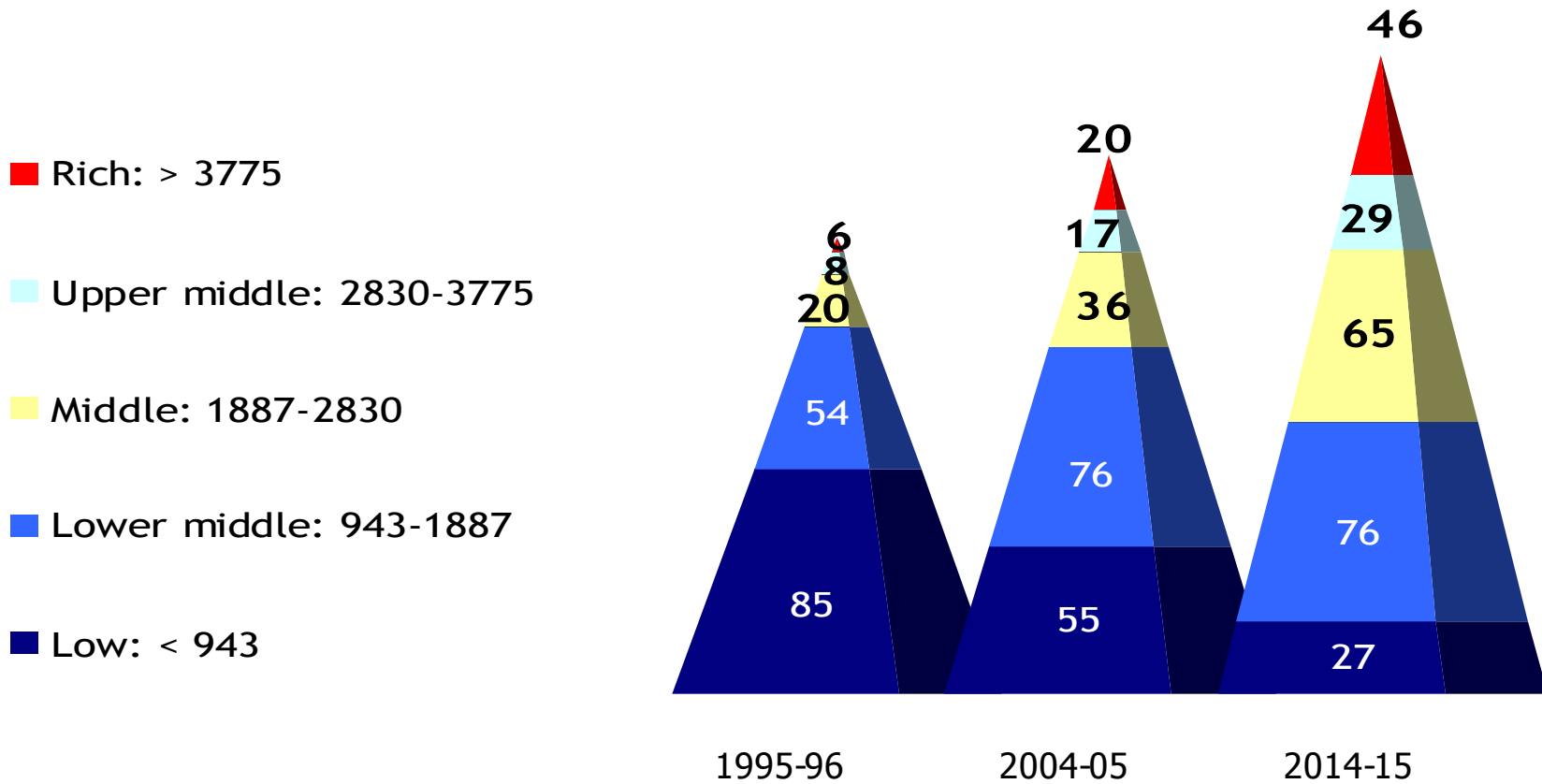
Growth Drivers

- High population → Demand generation
- Growing economy → Increasing consumption
- Increasing income → Better purchasing ability
- Young population → Changing lifestyle
- Industrial growth → Global expansion
- Reduction of tariff barriers → Lowering of input costs
- Economic multipliers → Infrastructure, Agriculture, Retailing, Automobiles

Overview of the Indian Economy

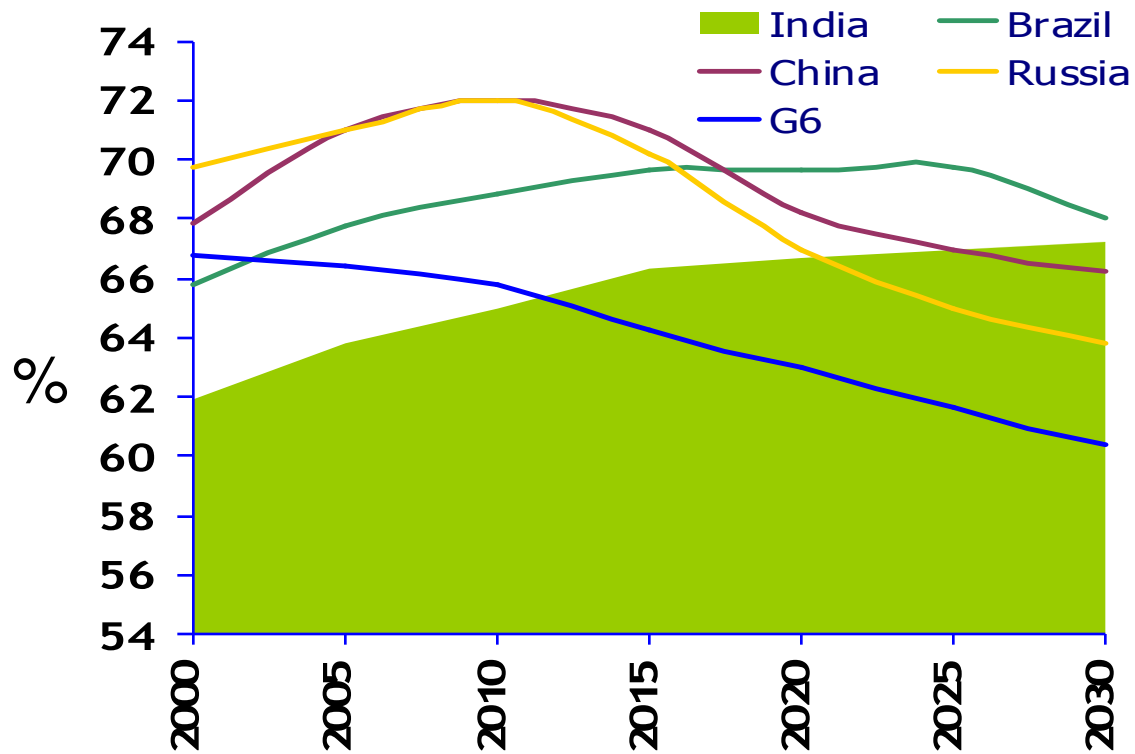
- Vision 2020 targets GDP growth rate of 8.5-9% over next 20 years.
- Higher rate of economic growth means rise in energy demand.
- However, there are certain factors that affect the energy demand:
 - Price of oil products
 - Environmental considerations
 - Increase in efficiency of use
 - Higher contribution of the service sector
 - Impacts of information technology, telecommunication and e-commerce

India income (USD p.m.)



Higher income increases purchasing ability

Working Age Population



India will have increasing working age population

Infrastructure

- Mega high way development projects & port connectivity
- Commercial exploitation of huge off shore natural gas reserves
- revolution in communication technology
- Bharat Nirman Yojna
 - Irrigation and Water supply
- Electrification of villages
 - Aggressive power reforms
 - Two million houses every year

Infrastructure will boost Polymer Consumption

Retail

- **On the Demand Front**

- Brand consciousness among customers
- Rising purchasing power amongst middle class
- Changed consumer lifestyle
- Large young working population
- Increasing working women population

- **On the Supply Front**

- Entry of MNC brands into organized retailing
- Entry of large Indian business groups
- Rationalized real estate markets

Retail boom will boost Packaging consumption

Agriculture

- **Key Focus Areas**

- **Drip Irrigation, Sprinkler irrigation system**
- **Increased plastics consumption**
 - **PVC – main line pipes**
 - **PE – drip laterals**
 - **PP – emitters / micro sprinkler heads**
- **Exploit potential in associated areas of Plasticulture**
- **Packaging for agriculture produce to be encouraged to boost agricultural productivity and reduce damage during transportation and storage**

Modern agriculture will boost higher Polymer Consumption

Automobile

- India is a sourcing hub for Automobiles and components worldwide
- Many Automobile majors have set-up large manufacturing base → Hyundai, Honda, Suzuki, GM, Daimler-Chrysler, Ford, Toyota, FIAT
- Production of 1+ million vehicles for last 2 years consistent
- Plastics consumption – currently ~25 Kgs/ vehicle compared to world average of 50-60 Kgs / vehicle
- Estimated yearly growth is about 8%

Major development in automobile sector will increase higher Polymer Consumption

Demand of Naphtha

| MMTPA | 2006-07E | 2007-08F | 2008-09F | 2009-10F | 2010-11F |
|--------------------------|--------------|--------------|---------------|---------------|---------------|
| Petrochemicals | 8.99 | 9.228 | 10.516 | 13.082 | 13.673 |
| Fertilizers | 2.34 | 1.527 | 1.527 | 1.304 | 1.304 |
| Power & Steel | 3.16 | 2.283 | 2.295 | 1.402 | 1.416 |
| Others | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 |
| Total | 14.79 | 1.338 | 14.638 | 16.088 | 16.693 |

Production

| MMTPA | 2006-07E | 2007-08F | 2008-09F | 2009-10F | 2010-11F |
|----------------------|--------------|--------------|--------------|--------------|--------------|
| IOCL | 3.70 | 4.00 | 4.40 | 4.55 | 5.50 |
| BPCL | 2.20 | 2.20 | 2.20 | 2.25 | 2.50 |
| HPCL | 1.60 | 1.85 | 1.90 | 2.00 | 2.25 |
| ONGC | 1.10 | 1.20 | 1.30 | 1.50 | 1.50 |
| RIL (Private) | 5.99 | 6.35 | 9.00 | 9.60 | 9.59 |
| TOTAL | 14.59 | 15.60 | 18.80 | 19.90 | 21.34 |

Refinerywise Production : 2011-12

| Existing Refineries | Refinery Capacity | Naphtha Production |
|--------------------------------|-------------------|--------------------|
| IOCL, Barauni | 10.00 | 0.08 |
| IOCL, Digboi | 1.00 | 0.01 |
| IOCL, Gujarat | 25.00 | 2.43 |
| IOCL, Guwahati | 1.50 | 0.09 |
| IOCL, Haldia | 11.00 | 0.73 |
| IOCL, Mathura | 11.00 | 0.71 |
| IOCL, Panipat | 12.00 | 0.64 |
| BRPL, Bongaigaon (IOCL) | 4.20 | 0.29 |
| CPCL, Chennai/Narimanam (iocl) | 10.50 | 1.16 |
| BPCL, Mumbai | 12.00 | 2.00 |
| NRL, Numaligarh (BPCL) | 6.00 | 0.22 |
| KRL, Kochi (BPCL) | 13.50 | 1.32 |
| HPCL, Mumbai | 7.90 | 0.80 |
| HPCL, Visakhapatnam | 8.33 | 0.64 |
| ONGC, Tatipaka | 0.08 | - |
| MRPL, Mangalore (ONGC) | 9.69 | 0.17 |
| RIL, Jamnagar | 50.00 | 5.00 |
| TOTAL | 190.80 | 16.39 |

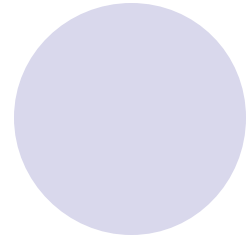
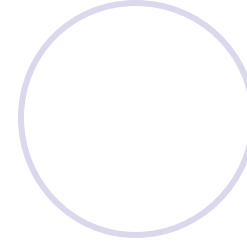
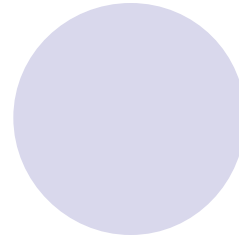
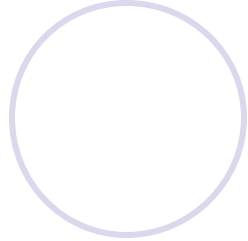
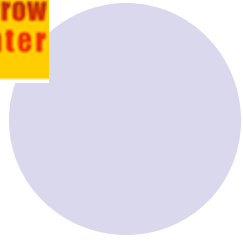
| New Refineries | Refinery Capacity | Naphtha Production |
|---------------------------|-------------------|--------------------|
| IOCL, Paradip | 12.00 | 1.00 |
| HPCL, Bhatinda | 9.00 | 0.41 |
| BPCL, Bina | 6.00 | 0.41 |
| BPCL, Allahabad | 7.00 | 0.48 |
| Essar Oil, Vadinar | 24.00 | 2.06 |
| Nagarjuna Oil Corporation | 12.00 | 0.82 |
| TOTAL | 70.00 | 5.18 |

Out of 21.34 MMT, India is optimistic at 18.11 MMT
due to uncertainties on IOCL, Paradip,
BPCL, Allahabad, Nagarjuna and Essar's full capacity

Present level 14.6 MMT

Demand & Supply : Naphtha

- From 2004-05 to 2009-10, Naphtha supply will increase from 14 to 18 MMTPA at a CAGR of 4.6%
 - During this period, Naphtha demand will increase marginally
 - With Naphtha-based Fertilizer & Power plants shifting to Natural Gas, Naphtha will be surplus all the time
- ✓ Export of Naphtha is likely to increase from present level of 3 MMTPA to 7 MMTPA



EXPORT MARKET

Export

- The surplus production of Naphtha in India has resulted in increasing Exports that have risen at a CAGR of 24.80%.
- The export has further increased because some of the petrochemical units are importing Naphtha due to their requirement of low aromatic naphtha.

Export



- Export Preference:
 - Longer Indian coastline.
 - Demand in world market fetching better prices.
 - Avoidance of various onland logistics problems.
 - EXIM benefits such as DFRC (Duty Free Replenishment Certificate) and EPCG (Export Promotion Capital Goods).

Export



DFRC:

Through DFRC the Exporters can import feedstock (e.g. crude oil) related to Naphtha production without payment of duty.

EPCG:

Under EPCG the license holder can import capital goods like plant, machinery, catalysts, spares etc at a concessional rate of custom duty and without paying any special duty.

Export



- **Naphtha is exported to China, South Korea, Singapore, Thailand, Norway, Nigeria, Hong Kong and some parts of Europe.**
- **Major international players in India are Vitol Asia Pte Ltd., Itochu, Glencore, Samsung, Totsa Total, Projector SA, Petrodiamond, Petronas and Mitsui.**

Naphtha Exports by PSU

| Qty (MMT) | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 |
|-----------|---------|---------|---------|---------|---------|
| IOCL | 0.079 | 0.031 | 0.241 | 0.24 | 0.25 |
| BPCL | 0.483 | 0.401 | 0.418 | 0.42 | 0.45 |
| HPCL | 0.592 | 0.730 | 0.767 | 0.80 | 0.80 |
| ONGC | 0.457 | 0.796 | 1.177 | 1.24 | 1.35 |
| TOTAL | 1.611 | 1.958 | 2.603 | 2.70 | 2.85 |

ONGC & IOCL have maximum growth

Export

| | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 |
|--------------|---------|---------|---------|---------|---------|
| Qty (in MMT) | 1.61 | 1.96 | 2.60 | 2.70 | 2.85 |
| Million \$ | 403 | 531 | 976 | 1493 | 1767 |

Export qty is in increasing trend

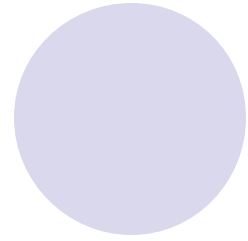
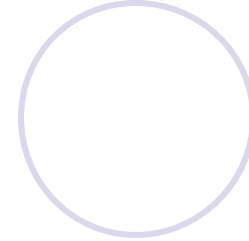
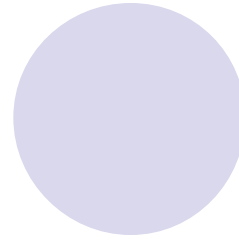
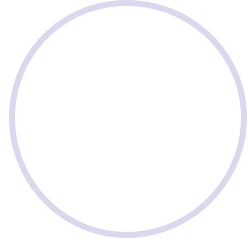
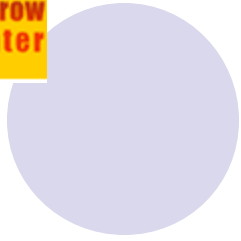
Import

- Import of Naphtha is continued due to the requirement of specific Low aromatic Naphtha (LAN) by some consumers.
- LAN is preferred as Higher aromatics need higher temperature to reform and Aromatics burn with smoke and release fine soot of carbon that deposits over catalyst and reduces production.
- HPL (Haldia Petrochemicals) and IPCL (Indian Petrochemicals, Baroda) are the main importers.

Import

| | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 |
|--------------|---------|---------|---------|---------|---------|
| Qty (in MMT) | 2.78 | 2.37 | 2.21 | 2.85 | 3.05 |
| Million \$ | 781 | 634 | 886 | 1300 | 1321 |

Import qty is more or less stable



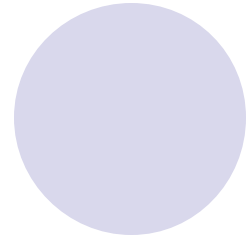
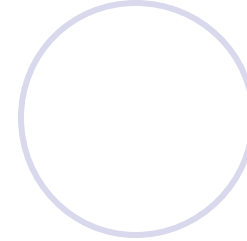
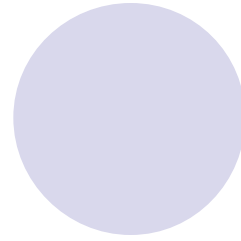
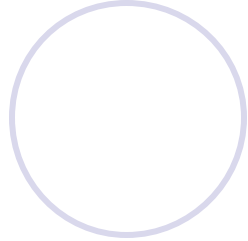
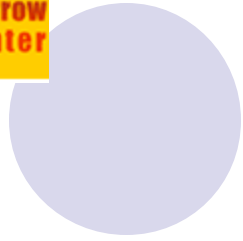
Conclusion

Conclusion

- **Naphtha production in India exceeds domestic demand in 2004-05 for the first time.**
- **India still depends on Import of Naphtha due to inadequate domestic availability of Low Aromatic Naphtha required by some petrochemical units.**
- **Growth of domestic demand is slow due to imports of LNG since 2004 (Fertilizer & Power Plants are switching over to LNG from Naphtha due to low cost).**
- **New finds of domestic NG will also have a negative growth.**

Conclusion

- **Naphtha consumption is increasing mainly due to growth in petrochemical sectors.**
- **Domestic production is likely to be always above domestic demands and therefore export has to be continued.**
- **India is in the field of extensive Export business for more than 6 years. Producers are preferring Export due to several EXIM benefits.**
- **India has got excellent Export infrastructure.**
- **ME exports may be a threat to India's exports.**



THANK YOU