CHEMICALS

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CHEMICALS

EXECUTIVE SUMMARY

• In terms of volume of production Indian chemical industry stood as 3rd largest producer in Asia and 6th by output in the world. Indian chemical industry could grow at 14 per cent p.a. to reach size of USD350 billion by 2021. Indian chemical industry is sixth in the world and third in Asia in value terms at constant prices

• The chemical industry in India is a key constituent of Indian economy, accounting for about 2.11 per cent of the GDP

• India accounts for approximately 16 per cent of the world production of dyestuff and dye intermediates, particularly for reactive acid and direct dyes

• India is currently the world’s third largest consumer of polymers and third largest producer of agrochemicals
  • India specialty chemical market is expected to reach USD60-70 billion by 2020

• Value of India’s exports of inorganic chemicals have increased from USD0.64 billion in 2013 to USD0.70 billion in 2014, while the organic chemical markets is expected to reach USD6.02 billion from USD5.81 billion during 2014-15

Source: Make in India, TechSci Research
Notes: PCPIR - Petroleum, Chemicals and Petrochemical Investment Regions; E - Estimated
Growing demand

For updated information, please visit www.ibef.org

Source: FICCI, Make in India, Department of Industrial Policy and Promotion (DIPP), TechSci Research
Notes: PCPIR - Petroleum, Chemicals and Petrochemical Investment Regions; E – Estimated

Advantage India

2014

Market size: USD118 billion

Robust demand

- A large population, dependence on agriculture, and strong export demand are the key growth drivers for the chemicals industry
- Per-capita consumption of chemicals in India is lower relative to Western peers and there exists a large latent demand

Attractive opportunities

- Polymers and agrochemicals industries in India present immense growth opportunities
- The size of India’s construction chemical market stood at USD597 million in 2013, which accounted for only 2 per cent of global demand, thereby representing ample growth opportunity

Increasing investments

- Lured by the size and returns of the Indian market, foreign firms have strengthened their presence in India
- From April 2000 to May 2015, total FDI inflows into the Indian chemicals industry (excluding fertilisers) were USD10.49 billion

2021E

Market size: USD235.12 billion

Policy support

- 100 per cent FDI is permissible in the Indian chemicals sector; manufacturing of most chemical products is de-licensed
- The government has been encouraging R&D in the sector
- Setting up of PCPIRs
- The Government of India has launched the Draft National Chemical Policy, which aims to increase India’s chemical sector in the GDP

Market size:

2014: USD118 billion
2021E: USD235.12 billion
MARKET OVERVIEW AND TRENDS

AUGUST 2015
EVOLUTION OF THE INDIAN CHEMICAL INDUSTRY

Establishment (1972-80)
- Basic needs (1950-72)
- Chemical products to protect crops
- Agrochemicals, dyes, pharmaceuticals

Consolidation (1980-92)
- Public sector companies were set up to develop the petrochemical industry
- Plastic and fibres, petrochemical products

Liberalisation (1992-95)
- Consolidation started from largely fragmented firms with small capacities and high cost structures
- Paints, dyes, pharmaceuticals and detergents

Expansion (1995 onwards)
- Major investment plans by both Indian firms and MNCs
- Lower tariff barriers
- Diminishing role of public sector companies
- Petrochemicals, engineering plastic, specialty fibres
- Alliances and partnerships to achieve scale
- Licensing requirements removed except in the case of hazardous chemicals
- Increasing investments by foreign players in India through mergers & acquisition and joint ventures
- Allowed 100 per cent FDI in the chemicals Industry
- To touch USD190 billion by FY18

Source: FICCI, Make in India, TechSci Research
Note: MNC – Multinational Corporation
### MAJOR SEGMENTS OF THE INDIAN CHEMICAL INDUSTRY

<table>
<thead>
<tr>
<th>Segment</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base chemicals</td>
<td>Petrochemicals, man-made fibres, industrial gases, fertilisers, chlor-alkali, and other organic and inorganic chemicals</td>
</tr>
<tr>
<td>Specialty chemicals</td>
<td>Dyes and pigments, leather chemicals, construction chemicals, personal care ingredients and other specialty chemicals</td>
</tr>
<tr>
<td>Pharmaceuticals</td>
<td>Active Pharmaceutical Ingredients (APIs) and formulations</td>
</tr>
<tr>
<td>Agrochemicals</td>
<td>Insecticides, herbicides, fungicides and other crop protection chemicals</td>
</tr>
<tr>
<td>Biotechnology</td>
<td>Bio-pharma, bio-agri, and bio-industrial products</td>
</tr>
</tbody>
</table>

*Source: TATA Strategic Management Group, TechSci Research*
PRODUCT-WISE CLASSIFICATION OF THE INDIAN CHEMICAL INDUSTRY

<table>
<thead>
<tr>
<th>Alkali chemicals</th>
<th>Inorganic chemicals</th>
<th>Organic chemicals</th>
<th>Pesticides &amp; insecticides</th>
<th>Dyes &amp; dyestuffs</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Soda ash</td>
<td>• Aluminum fluoride</td>
<td>• Acetic acid</td>
<td>• Dichlorodiphenyltrichloroethane (DDT)</td>
<td>• Azo dyes</td>
</tr>
<tr>
<td>• Caustic soda</td>
<td>• Calcium carbide</td>
<td>• Acetone</td>
<td>• Malathion</td>
<td>• Disperse dyes</td>
</tr>
<tr>
<td>• Liquid</td>
<td>• Carbon black</td>
<td>• Phenol</td>
<td>• Parathion</td>
<td>• Fast colour bases</td>
</tr>
<tr>
<td>• Chlorine</td>
<td>• Potassium chloride</td>
<td>• Methanol</td>
<td>• Ethicon</td>
<td>• Ingrain dyes</td>
</tr>
<tr>
<td></td>
<td>• Titanium dioxide</td>
<td>• Ortho Nitro Chlorobenzene (ONCB)</td>
<td>• Endosulphan</td>
<td>• Napthols</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Red phosphorus</td>
<td>• Phosalone</td>
<td>• Vat dyes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Phorate</td>
<td>• Reactive dyes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Acephate</td>
<td>• Pigment Emulsion</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Fenvalerate</td>
<td>• Sulphur dyes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Other dyes</td>
</tr>
</tbody>
</table>

Source: TechSci Research
CHARACTERISTICS OF THE INDIAN CHEMICAL INDUSTRY

High domestic demand potential
Focus on new segments such as specialty and knowledge chemicals
Gujarat and Maharashtra have emerged as most favoured zones
Fragmented industry
Increase in focus on R&D

- The industry has changed over time to meet the dynamic needs of an emerging economy
- Strong economic growth and rise in per-capita income has meant a steady increase in demand for chemicals
- Expected to clock a growth of 10-13 per cent over the coming years
- The industry has left behind a low-growth and regulated environment to emerge more mature
- There is strong government support towards R&D; this would benefit the sector
- In 2015, Department of Chemicals and Petrochemicals added three new chemical and petrochemical products under its supervision.

Source: FICCI, TechSci Research
Note: R&D – Research and Development
Total production in the Indian chemical industry was 8,839 MT in FY14, clocking a CAGR of 1.97 per cent from FY07-14.

Favourable demographics and strong economic growth are driving demand for chemicals.

External demand and specialty chemicals have also contributed strongly to the growth of the industry.

India’s growing per capita consumption and demand for agriculture-related chemicals offers huge scope of growth for the sector in the future.

Source: Department of Chemicals and Petrochemicals, TechSci Research
Note: MT - Metric Tonne
With 71 per cent of the total production share, alkali chemicals form the largest segment in the Indian chemical industry in 2014.

During FY15 (April to September 2014), alkali chemicals’ production stood at 3,279 MT.

Production of major chemicals (000' MT)

Production share of major chemicals during FY15*

*Source: Department of Chemicals and Petrochemicals, TechSci Research
Notes: MT - Metric Tonne, Kg - Kilo gram,
CAGR - Compound Annual Growth Rate
Note*: April to September 2014
BASE CHEMICALS ACCOUNT FOR MORE THAN HALF OF THE TOTAL PRODUCTION

- Bulk chemicals account for 39 per cent of the Indian chemical industry, followed by agrochemicals (20.3 per cent) and specialty chemicals (19.5 per cent)
- Pharmaceuticals and biotechnology, accounted for 17 per cent and 4.2 per cent, respectively, of the total production in FY13
- Specialty chemicals are relatively high valued; their demand is rapidly growing, catering to a diverse end-product market
- The Indian specialty chemicals market is estimated to reach USD60 to USD70 billion by 2020, from the current USD23 billion

**Sector-wise Share of Indian Chemical Sales in FY13 (in USD Billion)**

- Bulk Chemicals: 39.0%
- Agrochemicals: 20.3%
- Specialty Chemicals: 19.5%
- Pharmaceuticals: 17.0%
- Biotechnology: 4.2%

**Sector-wise Indian Chemical Production in FY13 (in USD Billion)**

- Bulk Chemicals: 46
- Agrochemicals: 24
- Specialty Chemicals: 23
- Pharmaceuticals: 20
- Biotechnology: 5

Source: FICCI, Department of Chemicals and Petrochemicals, TechSci Research
Total exports of chemicals grew from USD3.5 billion in FY03 to USD29.62 billion in FY14, a CAGR of 9 per cent.

Exports of the Indian chemical industry stood at USD14.94 billion for FY15*.

Export of major chemicals stood at USD3.5 billion in FY03.

Source: Ministry of Commerce, TechSci Research
Notes: FY15* - Upto September 2014
CAGR - Compound Annual Growth Rate
Total imports of chemicals grew from USD3.7 billion in FY03 to USD40.0 billion in FY14, a CAGR of 9.6 per cent.

Total imports of chemicals reached USD23.2 billion in the FY15*.

Import of major chemicals stood at USD3.7 billion in FY03.

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**India’s chemical imports (USD billion)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Value (USD billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY11</td>
<td>30.4</td>
</tr>
<tr>
<td>FY12</td>
<td>37.6</td>
</tr>
<tr>
<td>FY13</td>
<td>38.7</td>
</tr>
<tr>
<td>FY14</td>
<td>40.0</td>
</tr>
<tr>
<td>FY15*</td>
<td>23.2</td>
</tr>
</tbody>
</table>

Source: Ministry of Commerce, TechSci Research
Notes: FY15* - Data for FY15 is up to September 2014, CAGR - Compound Annual Growth Rate.
During FY15, organic chemicals constituted 61.05 per cent of India’s total chemical exports, followed by miscellaneous chemical at 16.12 per cent.

Over FY07–14, organic chemicals exports rose at a CAGR of 16.1 per cent, followed by miscellaneous chemical at a rate of 19.9 per cent during same period.

Exports of inorganic chemicals and dyes & dyestuff grew at a CAGR of 12.3 and 19.9 per cent, respectively, during FY07–14.

**Shares in exports of chemicals in FY15 (Upto April to September 2014)**

- **Organic Chemicals**
  - 61.05%
- **Inorganic Chemicals**
  - 16.12%
- **Miscellaneous Chemical Products**
  - 15.70%
- **Tanning or Dyeing**
  - 7.13%

*Source: Department of Chemicals and Petrochemicals, TechSci Research  
Note: CAGR - Compound Annual Growth Rate*
Organic chemicals also dominate imports, with a share of 62 per cent, followed by inorganic chemicals at 18 per cent in FY14.

Over FY07–14, miscellaneous chemical imports rose at a CAGR of 20.1 per cent, followed by organic chemicals at a rate of 20.9 per cent.

Imports of dyes & dyestuff and inorganic chemicals grew at a CAGR of 19.1 and 14.4 per cent, respectively, during FY07–14.

**Shares in imports of chemicals in FY14**

- Organic chemicals: 62%
- Inorganic chemicals: 18%
- Dyes & dyestuffs: 14%
- Miscellaneous Chemical: 6%

*Source: Department of Chemicals and Petrochemicals, TechSci Research
Note: CAGR - Compound Annual Growth Rate*
CHEMICAL INDUSTRY HOLDS A SIGNIFICANT POSITION IN THE ECONOMY

- India’s chemical industry (2013-15)
- 2.11 per cent of national GDP
- Government allows 100 per cent FDI in the chemical sector
- 3rd largest chemical industry in Asia, preceded by China and Japan
- In 2015, Chemical Industry is expected to grow and reach USD100 billion mark
- One of the most diversified sectors, covering more than 70,000 commercial Products*
- 9.2 per cent of total exports and 7.6 per cent of total imports

Source: FICCI, TechSci Research
Notes: Figures mentioned above is taken from Dept. of Chemicals and Petrochemicals;
HIGH GROWTH WOULD LEAD TO RISING GLOBAL POSITIONING

<table>
<thead>
<tr>
<th>Year</th>
<th>Global Chemical Industry (USD trillion)</th>
<th>India Chemical Industry (USD billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015E</td>
<td>USD3.26 trillion</td>
<td>USD100 billion</td>
</tr>
<tr>
<td>2021E</td>
<td>USD5.8 trillion</td>
<td>USD235.12 billion</td>
</tr>
</tbody>
</table>

Notes: CAGR - Compound Annual Growth Rate, E - Estimate

Source: FICCI, TechSci Research

Contribution to global chemical industry would increase

Strong growth outlook for the Indian chemical industry (USD billion)

AUGUST 2015

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Though the sector is spread across the country, there is relatively high concentration along the West coast due to proximity to raw materials and ports.

Gujarat alone is estimated to contribute about 53 per cent of the total production in the country.

About 6,000 chemicals are produced in the state of Gujarat alone.

Gujarat and Maharashtra emerged as the most favored zones for the industry, mainly because of government policies, strategic location, and availability of raw material.

### Regional concentration of basic chemical industry (FY13)

- **Gujarat**: 33.50%
- **Maharashtra**: 20.0%
- **Uttar Pradesh**: 19.70%
- **West Bengal**: 19.70%
- **Himachal Pradesh**: 5.80%
- **Tamilnadu**: 5.30%
- **Andhra Pradesh**: 4.70%
- **Others**: 6.00%

Source: India-Chem, FICCI, TechSci Research, Gujarat Manufacturing Sector Profile
Note: MoU - Memorandum of Understanding
WIDESPREAD CHEMICAL INDUSTRY INFRASTRUCTURE ACROSS INDIA … (2/2)

Source: D&B, TechSci Research

For updated information, please visit www.ibef.org
## CHEMICALS

### KEY DOMESTIC AND INTERNATIONAL PLAYERS IN INDIAN CHEMICAL INDUSTRY … (1/2)

<table>
<thead>
<tr>
<th>Domestic company</th>
<th>Sales in FY15* (USD billion)</th>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tata Chemicals Limited (TCL)</td>
<td>0.8</td>
<td>Soda ash, salt, marine chemicals, caustic soda, cement, etc.</td>
</tr>
<tr>
<td>United Phosphorus Limited (UPL)</td>
<td>0.5</td>
<td>Agrochemicals</td>
</tr>
<tr>
<td>Nirma Ltd</td>
<td>1.2^</td>
<td>Alkyl benzene, alfa olefin sulphonate, sulfuric acid, soda ash</td>
</tr>
<tr>
<td>Gujarat Heavy Chemicals Ltd (GHCL)</td>
<td>0.2</td>
<td>Soda ash</td>
</tr>
<tr>
<td>Gujarat Alkalies and Chemicals Ltd (GACL)</td>
<td>0.2</td>
<td>Caustic soda</td>
</tr>
</tbody>
</table>

*Source: Company Annual Reports, TechSci Research
Notes: * For first six months (April-September), ^ for FY14
# PORTER'S FIVE FORCES ANALYSIS

## CHEMICALS

### Competitive Rivalry
- Chemical industry is highly fragmented with intense rivalry amongst companies
- Since, 100 per cent FDI is allowed hence domestic companies face stiff competition from foreign competitors as well
- International companies may also dump chemicals at low price

### Threat of New Entrants
- Huge capital requirements and patent protection are significant barriers
- Other barriers include - R&D and personnel requirements

### Substitute Products
- Buyers tend to have specific chemical requirements
- There are no direct substitutes for a specific chemical requirement

### Bargaining Power of Suppliers
- Small chemical companies rely on supplies from larger plants, or petrochemical units
- Inputs for a chemical plant cannot be easily substituted

### Bargaining Power of Customers
- Customers have multiple sources of supply
- Chemical companies are bound by long-term contracts
- Niche specialty chemicals have some pricing power

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GROWTH DRIVERS OF THE INDIAN CHEMICAL INDUSTRY

- Huge growth potential for the domestic market
- Rise in GDP and purchasing power
- Low-cost manufacturing
- Skilled science professionals and English speaking workforce
- World class engineering and strong R&D capabilities

Source: TechSci Research
ECONOMIC EXPANSION WOULD CONTINUE TO DRIVE GROWTH IN THE CHEMICAL INDUSTRY

- Being largely an intermediate product, strong economic growth is an important factor in sustaining demand for chemical products.

- Per capita consumption of most of the finished products under chemicals sector is far below the world average; this points to the vast potential for growth in the industry.

- As in a number of other industries in India, strong growth in discretionary income and changing lifestyles are counted as a few of the other major growth drivers of the chemicals sector.

### Real GDP growth

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</thead>
<tbody>
<tr>
<td>Value</td>
<td>9.3%</td>
<td>9.8%</td>
<td>8.7%</td>
<td>10.3%</td>
<td>6.6%</td>
<td>4.7%</td>
<td>5.0%</td>
<td>5.6%</td>
<td>6.4%</td>
<td>6.5%</td>
<td>6.6%</td>
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</table>

### Per capita GDP growth

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<tr>
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</thead>
<tbody>
<tr>
<td>Value</td>
<td>7.7%</td>
<td>8.3%</td>
<td>7.0%</td>
<td>8.7%</td>
<td>5.2%</td>
<td>3.4%</td>
<td>3.7%</td>
<td>4.3%</td>
<td>5.0%</td>
<td>5.1%</td>
<td>5.2%</td>
<td></td>
</tr>
</tbody>
</table>

Source: IMF, TechSci Research
FDI in chemicals (other than fertilisers) stood at USD10,487 million in FY16;

Procedures relating to FDI have been simplified; most of the items in the chemicals sector fall under the automatic approval route for FDI/NRI/OCB investment up to 100 per cent

The USD7.2 billion deal between Reliance Industries Limited and British Petroleum is the most significant deal in Indian chemical sector

### Annual FDI inflow to the chemical industry (excluding fertilizer) (USD Million)

<table>
<thead>
<tr>
<th>Year</th>
<th>FDI Inflow</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY10</td>
<td>362</td>
</tr>
<tr>
<td>FY11</td>
<td>2354</td>
</tr>
<tr>
<td>FY12</td>
<td>4041</td>
</tr>
<tr>
<td>FY13</td>
<td>292</td>
</tr>
<tr>
<td>FY14</td>
<td>878</td>
</tr>
<tr>
<td>FY15</td>
<td>10336</td>
</tr>
<tr>
<td>FY16*</td>
<td>10487</td>
</tr>
</tbody>
</table>

### Share of chemical industry in total FDI inflow (excluding fertiliser)

<table>
<thead>
<tr>
<th>Year</th>
<th>Share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY10</td>
<td>2.30%</td>
</tr>
<tr>
<td>FY11</td>
<td>10.60%</td>
</tr>
<tr>
<td>FY12</td>
<td>11.30%</td>
</tr>
<tr>
<td>FY13</td>
<td>4.44%</td>
</tr>
<tr>
<td>FY14</td>
<td>4.16%</td>
</tr>
<tr>
<td>FY15</td>
<td>4.10%</td>
</tr>
<tr>
<td>FY16*</td>
<td></td>
</tr>
</tbody>
</table>

Source: Department of Industrial Policy & Promotion, Ministry of Commerce and Industry, TechSci Research

Note: * - Up to May 2015
GOVERNMENT SUPPORT TO THE SECTOR IS INCREASING … (1/2)

<table>
<thead>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Project based support to PSUs</td>
<td>29.1</td>
<td>4.3</td>
<td>0.0</td>
<td>5.4</td>
<td>1.9</td>
</tr>
<tr>
<td>Support to autonomous bodies</td>
<td>19.2</td>
<td>0.1</td>
<td>0.2</td>
<td>8.3</td>
<td>27.2</td>
</tr>
<tr>
<td>Other ongoing schemes</td>
<td>44.2</td>
<td>165.8</td>
<td>183.4</td>
<td>292.8</td>
<td>195.6</td>
</tr>
<tr>
<td>New schemes initiated in XI plan</td>
<td>25.0</td>
<td>17.9</td>
<td>10.1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>117.5</strong></td>
<td><strong>188.1</strong></td>
<td><strong>193.7</strong></td>
<td><strong>306.5</strong></td>
<td><strong>224.7</strong></td>
</tr>
</tbody>
</table>

All figures are in USD million

Source: Department of Chemicals and Petrochemicals, TechSci Research
Notes: * - Revised estimate, FY14* - Budget estimate
GOVERNMENT SUPPORT TO THE SECTOR IS INCREASING … (2/2)

All figures are in USD million

<table>
<thead>
<tr>
<th>Name of the scheme</th>
<th>Non-plan outlay (FY10)</th>
<th>Non-plan outlay (FY11)</th>
<th>Non-plan outlay (FY12)</th>
<th>Non-plan outlay (FY13)</th>
<th>Non-plan outlay (FY14)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secretariat</td>
<td>2.21</td>
<td>2.52</td>
<td>2.79</td>
<td>2.3</td>
<td>2.4</td>
</tr>
<tr>
<td>Central Institute of Plastics Engg. &amp; Technology (CIPET)</td>
<td>0.63</td>
<td>0.10</td>
<td>0.10</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Bhopal Gas Leak Disaster</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>17.5</td>
<td>23.3</td>
</tr>
<tr>
<td>Institute of Pesticide Formulation Technology (IPFT)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Others</td>
<td>0.50</td>
<td>0.54</td>
<td>0.63</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3.34</strong></td>
<td><strong>3.16</strong></td>
<td><strong>3.52</strong></td>
<td><strong>20.4</strong></td>
<td><strong>26.3</strong></td>
</tr>
</tbody>
</table>

*Source: Department of Chemicals and Petrochemicals, TechSci Research*
The government has announced a number of measures to improve competitiveness in the sector.

Share of manufacturing approved by the Cabinet as per the erstwhile Planning Commission would contribute 25% of the GDP by 2025.

Approval is granted for FDI up to 100 per cent in the chemicals sector, excise duty reduced from 14 per cent to 10 per cent, strong laws on anti-dumping to further promote the industry.

The government is continuously reducing the list of reserved chemical items for production in the small-scale sector, thereby facilitating greater investment in technology up-gradation and modernisation.

Policies have been initiated to set up integrated Petroleum, Chemicals and Petrochemicals Investment Regions (PCPIR). PCPIR will be an investment region spread across 250 square kilometres for manufacturing of domestic and export-related products of petroleum, chemicals and petrochemicals.

New initiatives are likely to attract large investments, both domestic and foreign, with requisite improvements in infrastructure and competition.

**Industry-level initiatives**

- The Indian Chemical Council (ICC) is the nodal agency/signatory representing India under the ‘Responsible Care Initiative’
- ICC has prepared codes and guidance for implementation of process safety, employee health and safety, pollution prevention, emergency response, and product safety.
- Member companies of ICC are encouraged to interact with local communities and groups such as students, teachers, fire/police personnel.

**Firm-level initiatives**

- Indian chemical firms have strived to increase their market share through global presence.
- They have in place technical agreements with multinational firms to keep abreast of technological progress in the global chemical industry.

Note: PCPIR - Petroleum, Chemicals and Petrochemicals Investment Regions.
## MILESTONES PROPOSED FOR 12TH FIVE-YEAR PLAN

<table>
<thead>
<tr>
<th>Infrastructure</th>
<th>Feedstock</th>
<th>R&amp;D and technology</th>
<th>Sustainability</th>
<th>Regulations</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Make PCPIRs a reality</td>
<td>• Implementation of strategy for sourcing and allocation of feedstock</td>
<td>• Setting up of technology up-gradation fund of USD100 million</td>
<td>• Development of the first set of chemical usage standards for the industry addressing key issues related to water supply, environmental impact, raw materials supply, safety over lifecycle, and energy use</td>
<td>• Committee to frame regulatory structure and eliminate redundancies</td>
</tr>
<tr>
<td>• Provide infrastructure support to the industry by constructing roads, ports and other similar facilities</td>
<td></td>
<td>• Allocation of 10 percent share of the USD1 billion National Innovation Fund to chemicals</td>
<td></td>
<td>• Setting up of a national chemical inventory</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Government has rationalized and removed various tax exemptions and incentives to improve the administration and to reduce tax disputes</td>
</tr>
</tbody>
</table>

Source: TechSci Research

Note: PCPIR - Petroleum, Chemicals and Petrochemicals Investment Regions
## RECENT MAJOR M&A DEALS IN THE INDIAN CHEMICAL INDUSTRY …

<table>
<thead>
<tr>
<th>Date</th>
<th>Acquirer</th>
<th>Target/ JV partner</th>
<th>Valuation</th>
<th>Synergies/ drivers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inbound</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>April-14</td>
<td>Yanmar Ltd/ Mitsui Ltd</td>
<td>Coromandel International Ltd</td>
<td>-</td>
<td>Manufactures rice transplanters and harvesters</td>
</tr>
<tr>
<td>April-14</td>
<td>Axiall LLC</td>
<td>Shriram Vinyl Polytech Pvt Ltd</td>
<td>USD6 million</td>
<td>Launched new-generation polymer compounds</td>
</tr>
<tr>
<td>December-13</td>
<td>Multiplast Polymer</td>
<td>Soft Clad Laminates</td>
<td>-</td>
<td>Manufacturer of plastic products</td>
</tr>
<tr>
<td>September-12</td>
<td>Chemtura Corporation</td>
<td>Solaris Chemtech Industries</td>
<td>USD142 million</td>
<td>Increase in bromine production capacity</td>
</tr>
<tr>
<td><strong>Outbound</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>September-14</td>
<td>Brenntag</td>
<td>Pioma Chemicals</td>
<td>NA</td>
<td>Specialty chemicals</td>
</tr>
<tr>
<td>April-14</td>
<td>Asian Paints Ltd</td>
<td>Kadisco Chemical Industry PLC</td>
<td>-</td>
<td>Sells paints, coatings &amp; adhesives in Ethiopia</td>
</tr>
</tbody>
</table>
GROWTH VALUE PROPOSITION OF THE INDIAN CHEMICAL INDUSTRY

Critical size of the domestic market

Established process know-how and strong R&D capability

Customised application development

Availability of reliable and competitive feedstock supply

Indian chemicals sector

Source: KPMG International 2011, TechSci Research

For updated information, please visit www.ibef.org
India’s chemical sector has a total market size of USD118 billion (FY13), compared to USD13.5 billion in FY07.

Growth in end-user industries has supported demand for high value, specialty and pharma chemicals. India’s specialty chemical market in FY13 valued at USD23 billion, is expected to grow at CAGR of ~14 per cent per annum to reach USD 90 billion by 2023.

Despite a low share in total production, specialty chemicals accounts for 19.50 per cent of total market size.

Backed by India’s buoyant drug exports; pharma chemicals form 16.90 per cent of overall market value.

Source: FICCI, India Chem 2013, Tata Strategic Management Group
Note: CAGR - Compound Annual Growth Rate
SPECIALTY CHEMICALS: LUCRATIVE OPPORTUNITIES IN THIS SEGMENT

* Specialty chemicals market has expanded at a CAGR of about 12 per cent over FY07–11; the figure is expected to rise by 14.62 per cent from FY13 to reach USD90 billion by FY23, India is also gaining traction as an outsourcing hub
* The Indian middle-class household is expected to grow from 31 million in 2008 to 148 million by 2030, leading to a huge demand for specialty chemicals in automotives, water treatment and construction
* Compared to developed markets, current usage of specialty chemicals in India is very low, with an increased focus on improving products and usage intensity of specialty chemicals, the industry is poised for strong growth in future
* During the 12th Five-Year Plan, an investment of USD7–10 billion is estimated in this segment

**Specialty chemical growth outlook by FY23**

<table>
<thead>
<tr>
<th>Year</th>
<th>Specialty Chemicals (USD billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY13</td>
<td>23</td>
</tr>
<tr>
<td>FY23*</td>
<td>90</td>
</tr>
</tbody>
</table>

CAGR: 14.62%

**Major sub-segments and their growth outlook by FY17**

<table>
<thead>
<tr>
<th>Segment</th>
<th>FY11</th>
<th>FY17*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paints and coatings</td>
<td>3.6</td>
<td>8.2</td>
</tr>
<tr>
<td>Speciality polymers</td>
<td>2.3</td>
<td>5.3</td>
</tr>
<tr>
<td>Construction chemicals</td>
<td>0.6</td>
<td>1.4</td>
</tr>
<tr>
<td>Textile chemicals</td>
<td>0.8</td>
<td>1.5</td>
</tr>
<tr>
<td>Water chemicals</td>
<td>0.6</td>
<td>1.1</td>
</tr>
</tbody>
</table>

Source: FICCI, Dept. of Chemicals and Petrochemicals, TechSci Research, Note: * - Estimates

For updated information, please visit www.ibef.org
**WITHIN SPECIALTY CHEMICALS, CONSTRUCTION CHEMICALS IS LIKELY TO SHINE**

- The size of India’s construction chemical market stood at USD 663.57 million in 2014.
- With the construction sector expected to pace ahead due to strong economic growth, the fundamentals for construction chemicals are sound.
- By 2018, the construction chemicals sector is set to touch USD 1,227.54 million, up from USD 495.68 million in 2012.
- India’s construction chemical sector consists of a variety of products ranging from admixtures to sealants. Admixtures form the largest segment with a 42 per cent share, followed by adhesives & sealants (18 per cent).

**Construction chemical growth outlook (USD million)**

- **2008**: USD 235.24
- **2014**: USD 663.57
- **2018**: USD 1,227.54

**Specialty chemicals segments in 2013**

- Admixtures: 42%
- Adhesives & Sealants: 12%
- Flooring: 14%
- Waterproofing: 14%
- Repair and Rehabilitation: 18%

*CAGR 17.96%*

*Source: FICCI, TechSci Research*
**CHEMICALS**

**KEY GROWTH DRIVERS OF SPECIALTY CHEMICALS**

Water treatment chemicals are widely used in purification of water and also in large power plants, refineries and fertiliser factories.

Construction industry in India has been registering a CAGR of about 17 per cent over the last few years and is likely to gather momentum in the near future. Adoption of advanced coating, ceiling and polymer-based reinforcing material in construction will drive the demand for related chemicals.

Automotive sector in India has been expanding at a CAGR of ~12 per cent over the last five years. Automotive sector growth will drive demand for automotive components and consequently for plastics, paints and coatings used in their production.

Source: TechSci Research
Polymer chemicals

India is currently the world’s third largest consumer of polymers, behind China and the US, with a global share of 5.7 per cent in the 2011; an increase from 3.5 per cent share during 2000

The Indian polymer chemical market has expanded at a CAGR of 10.5 per cent in the last five years

Polymer market is expected to expand at a CAGR of 11.7 per cent over 2005-15 to USD500 million

The sector is expected to grow at a higher rate due to growth in plastic demand resulting from increased usage in packaging, construction and automotive sectors

Due to increasing environmental concerns and cost, replacement of wood, metal and glass by plastic will also augment demand

Source: TATA Strategic Analysis, TechSci Research
Notes: E - Estimates, CAGR - Compound Annual Growth Rate
AGROCHEMICALS: THE FUTURE LOOKS BRIGHT

* India is the third largest producer of agrochemicals globally, market size to reach USD 6.4 billion by FY16
* Agrochemical industry in India is set to grow at a significant pace; increasing population, decreasing per capita availability of arable land and focus on increasing agricultural yield will fuel the demand for agrochemicals
* India’s per hectare agrochemical consumption is set to rise in the coming years, given the above-mentioned factors
* India exports about 50 per cent of its current production; exports are likely to remain a key component of the industry
* Insecticides India Ltd, a leading agrochemical company plans to invest USD 22.9 million in the next two years to expand its production capacity

Agrochemical industry growth outlook (USD billion)

<table>
<thead>
<tr>
<th>Year</th>
<th>Growth Outlook (USD billion)</th>
<th>CAGR: 24.18%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>4.15</td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>6.4</td>
<td></td>
</tr>
</tbody>
</table>

Average crop protection consumption* (kg/ha)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>0.6</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Europe</td>
<td>3.0</td>
<td>4.5</td>
<td>4.5</td>
</tr>
<tr>
<td>Global</td>
<td>3.0</td>
<td>4.5</td>
<td>4.5</td>
</tr>
<tr>
<td>USA</td>
<td>10.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Japan</td>
<td></td>
<td></td>
<td>16.5</td>
</tr>
<tr>
<td>Korea</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: FICCI, India Chem, TechSci Research
Notes: E - Estimates, CAGR - Compound Annual Growth Rate
Note: * - Data is of 2012
TATA CHEMICALS: DIVERSIFYING THEIR WAY TO SUCCESS … (1/3)

* Tata Chemicals Limited (TCL) is one of the leading chemical companies in India, with significant operations in India and Africa
* Second-largest soda ash producer in the world and the largest in India
* A market leader in edible salt; largest STPP player in the country
* Most energy-efficient urea fertiliser manufacturer in India; amongst the most efficient globally
* 1/3rd stake holder in IMACID, Morocco, assured supply of key inputs

Revenue breakup of TATA chemicals (FY14)

- Soda ash 40%
- Vacuum salt 19%
- Complex fertilisers 11%
- Urea 6%
- Cement 21%
- Others 2%
- Other income 1%

Source: Company Annual Report, TechSci Research
Notes: STPP * - Sodium Tripolyphosphate
IMACID - Indo Maroc Phosphore S.A.
CHEMICALS

TATA CHEMICALS: DIVERSIFYING THEIR WAY TO SUCCESS … (2/3)

2009
- Acquires controlling stake in Rallis India Limited

2010
- Acquires South Africa’s Grown Energy

2011
- Tata Chemicals Europe Ltd acquires British Salt, producing approximately half of the UK’s pure salt

2012
- India’s first iodine plus iron fortified salt launched by Tata Chemicals

2013
- Tata Chemicals wins two awards at the Brand Leadership Award 2013 for ‘ Emerging Brand’ and ‘50 Most Talented Brand Leaders of India’

2014-15
- Tata Chemicals was awarded ‘Dun & Bradstreet Corporate Awards 2015’ in the fertilizer’s sector

Source: Company website, TechSci Research
TATA CHEMICALS: DIVERSIFYING THEIR WAY TO SUCCESS … (3/3)

Geographical diversification (FY14)

- Asia: 65%
- America: 18%
- Europe: 12%
- Africa: 5%

Turnover over the years (USD billion)

- FY07: 1.3
- FY08: 1.5
- FY09: 2.8
- FY10: 2.0
- FY11: 2.4
- FY12: 2.9
- FY13: 2.8
- FY14: 2.6

CAGR: 10.41%

Source: Company website, TechSci Research
Notes: CAGR - Compounded Annual Growth Rate,
UNITED PHOSPHORUS LIMITED (UPL): AN AGROCHEMICAL SUCCESS … (1/2)

- UPL is mainly engaged in the business of agrochemicals, other industrial chemicals, and chemical intermediates
- Agrochemicals account for 92 per cent of the total sales of the company, while the industrial chemicals and intermediates segments together account for 8 per cent
- UPL has 21 manufacturing sites – nine in India, four in France, two in Spain, and one each in UK, Vietnam, Netherlands, Italy, Argentina and China
- The company has also strengthened its distribution reach and access to new markets through strategic alliances with agrochemical manufacturers in other countries
- The company is planning to launch innovative technology, farming solutions, and new products through its other arms such as Advanta and Golden Seeds

Total sales (USD billion)

CAGR: 18.99%

Source: United Phosphorus Limited (UPL) Annual Reports, TechSci Research
Notes: CAGR - Compound Annual Growth Rate,
**UNITED PHOSPHORUS LIMITED (UPL): AN AGROCHEMICAL SUCCESS … (2/2)**

- UPL Limited comprises of UPL, Advanta and UEL companies that are listed in the Indian Stock Exchange
- In 2015, UPL Mumbai won the Dun & Bradstreet Corporate Award in the agrochemicals sector

### Income by region - FY15

- Latin America: 28%
- India: 17%
- North America: 19%
- Europe: 14%
- Rest of World: 22%

### EBIDTA (USD billion)

- FY07: 0.12
- FY08: 0.18
- FY09: 0.21
- FY10: 0.22
- FY11: 0.26
- FY12: 0.31
- FY13: 0.32
- FY14: 0.36
- FY15: 0.39

*CAGR: 15.87%*

**Source:** Company Annual report, TechSci Research

**Notes:** EBIDTA - Earnings Before Interest, Taxes, Depreciation and Amortisation
**ASIAN PAINTS: A COLORFUL GROWTH PATH**

- In 1942, Asian Paints started manufacturing in a Mumbai garage; now, with total installed capacity of nearly 1 million kilo-litre, Asian Paints is amongst the largest paint manufacturing companies in the world.

- Asian Paints has grown at an excellent pace over the years; a CAGR of 11.18 per cent from FY08–15.

- The company’s seventh and largest decorative paint manufacturing plant with an installed capacity was commissioned in February 2013.

- In 2015, Asian Paints was awarded as the “Most Impactful Companies of the Decade” by CNBC.

- Included in the Asia’s Fab 50 List of companies 2011, 12, 13 and 14.

**Asian Paints geography wise sales (FY15)**

- **Middle East (Egypt, Oman, Bahrain & UAE)**
- **Asia (Bangladesh, Nepal, Sri Lanka, Singapore and Indonesia)**
- **Caribbean (Barbados, Jamaica, Trinidad & Tobago)**
- **South Pacific (Fiji, Solomon Islands, Samoa, Tonga & Vanuatu)**
- **Africa (Ethiopia)**

**Asian Paints sales (USD billion)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Sales (USD billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY08</td>
<td>1</td>
</tr>
<tr>
<td>FY09</td>
<td>1.1</td>
</tr>
<tr>
<td>FY10</td>
<td>1.2</td>
</tr>
<tr>
<td>FY11</td>
<td>1.6</td>
</tr>
<tr>
<td>FY12</td>
<td>1.9</td>
</tr>
<tr>
<td>FY13</td>
<td>2</td>
</tr>
<tr>
<td>FY14</td>
<td>2.1</td>
</tr>
<tr>
<td>FY15</td>
<td>2.1</td>
</tr>
</tbody>
</table>

Source: Company Annual report, TechSci Research
Notes: KL - Kilo Litre, CAGR - Compound Annual Growth Rate

For updated information, please visit [www.ibef.org](http://www.ibef.org)
Established in 1983, India Glycols is the only company that manufactures green technology-based bulk, specialty and performance chemicals and natural gums, spirits, industrial gases, sugar and nutraceuticals in India.

The company operates in five segments, including Chemicals which form the largest segment.

The company exports to more than 40 countries including the US, Japan, and countries in Europe and Latin America.

During FY08–15, the company’s sales have increased at a CAGR of 3.72 per cent to USD431.44 million.

Source: Company Annual Report, TechSci Research
Notes: CAGR - Compound Annual Growth Rate, TTM – Trailing Twelve Months
USEFUL INFORMATION
Indian Chemical Council
Sir Vithaldas Chambers, 16-Mumbai Samachar Marg,
Mumbai – 400023
Phone: 91 22 22047649/ 22846852
Fax: 91 22 22048057
Website: www.icmaindia.com

Alkali Manufacturers Association of India
3rd Floor, Pankaj Chambers, Preet Vihar Commercial Complex,
Vikas Marg, New Delhi – 110092
Phone: 91 11 22432003, 22410150, 55253401
Fax: 91 11 22468249
Website: www.ama-india.org

Indian Specialty Chemical Manufacturers' Association
1156, Bole Smruti, Suryavanshi Kshatriya Sabhagriha Marg,
Off. Veer Savarkar Marg, Dadar (West)
Mumbai – 400 028
Tel: 91 22 2446 5003
Website: www.iscma.in
GLOSSARY

* OCB: Overseas Corporate Bodies

* NRI: Non-Resident Indian

* FY: Indian Financial Year (April to March)
  
  * So FY10 implies April 2009 to March 2010

* NA: Not Available

* STPP: Sodium Tripolyphosphate

* MT: Metric Tonnes

* USD: US Dollar

* Wherever applicable, numbers have been rounded off to the nearest whole number
## Exchange Rates

### Exchange rates (Fiscal Year)

<table>
<thead>
<tr>
<th>Year</th>
<th>INR equivalent of one USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004–05</td>
<td>44.81</td>
</tr>
<tr>
<td>2005–06</td>
<td>44.14</td>
</tr>
<tr>
<td>2006–07</td>
<td>45.14</td>
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<tr>
<td>2007–08</td>
<td>40.27</td>
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<tr>
<td>2008–09</td>
<td>46.14</td>
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<td>2009–10</td>
<td>47.42</td>
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<td>2010–11</td>
<td>45.62</td>
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<tr>
<td>2011–12</td>
<td>46.88</td>
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<tr>
<td>2012–13</td>
<td>54.31</td>
</tr>
<tr>
<td>2013–14</td>
<td>60.28</td>
</tr>
<tr>
<td>2014–15(Expected)</td>
<td>60.28</td>
</tr>
</tbody>
</table>

### Exchange rates (Calendar Year)

<table>
<thead>
<tr>
<th>Year</th>
<th>INR equivalent of one USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>43.98</td>
</tr>
<tr>
<td>2006</td>
<td>45.18</td>
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<tr>
<td>2007</td>
<td>41.34</td>
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<td>2008</td>
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<td>2009</td>
<td>48.42</td>
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<td>2010</td>
<td>45.72</td>
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<td>2011</td>
<td>46.85</td>
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<td>2012</td>
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<td>2013</td>
<td>58.44</td>
</tr>
<tr>
<td>2014</td>
<td>61.03</td>
</tr>
<tr>
<td>2015(Expected)</td>
<td>61.03</td>
</tr>
</tbody>
</table>

Average for the year
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