Knowledge and Strategy Partner

TATA STRATEGIC MANAGEMENT GROUP

FICCI

INDIA CHEM 2018

4th-6th October 2018
Bombay Exhibition Centre, Mumbai, India



REPORT ON

INDIAN CHEMICALS & PETROCHEMICALS INDUSTRY

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Mr. Deepak C Mehta
Chairman-FICCI National Chemical Committee
CMD, Deepak Nitrite Ltd



Message

Indian Chemical Industry is critical part of Indian economy has the huge potential for growth. A number of multinational and large Indian companies have invested in Indian Chemical sector and Government of India is rendering extensive support to give boost to this industry. With ongoing R & D in the sector the sustained growth of the sector is must.

Indian Chemical sector has a potential to cross USD 300 Billion market by 2025 and promises strong growth across the value-chain. Moving with the competitive world, our vision for "Make in India" is always our first choice.

I am pleased to note that Department of Chemicals and Petrochemicals, Government of India and FICCI are jointly organising India Chem 2018 which will bring focus to this important sector and discuss its issues as also the way ahead.

I wish event all the success.

(Deepak C Mehta)

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Mr. Prabh Das
Chairman-FICCI National Petrochemical Committee
Managing Director & CEO
HPCL-Mittal Energy Limited



Message

It is my privilege to be part of India Chem 2018 and meet the entire industry at this important juncture. The Indian Chemicals and Petrochemical industry has huge unrealised potential which needs to be facilitated. Key drivers for success in the chemical sector include proximity to strong growth markets, greater ease in doing business, and the continued development of petroleum, chemicals and petrochemical investment regions (PCPIRs).

I am sure, India Chem 2018, the largest composite event of the Chemicals & Petrochemicals industry in India with the theme "Chemicals and Petrochemicals – Advantage India" will be the right platform for all the stakeholders of the industry to interact and showcase their potential.

The joint efforts of Department of Chemicals & Petrochemicals, Government of India and FICCI for organizing India Chem 2018 are praiseworthy.

I wish event all the success.

Prabh Das

Mr. Vinay Mathur
Deputy Secretary General



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Message

The Indian chemical industry is a critical part of the Indian economy and has made immense contributions to human life backed by a rich heritage of innovation. The opportunities and the potential of Indian market is well recognized globally and we have become the preferred choice for most of the nation. Our focus is not just to be self-sufficient but to be at par with industrial markets. Moving with the competitive world, our vision for "Make in India" is always our first choice.

India's chemical industry is estimated at $163 Bn in FY18 and it is expected to grow at ~9% per annum to reach $212 Bn by FY21. The growth is expected to be driven by rising demand in end-use segments for Specialty Chemicals and for petrochemicals intermediates.

I am happy to note that Department of Chemicals and Petrochemicals, Government of India and FICCI are jointly organising **10th Edition of mega event "India Chem - 2018" from 4th to 6th, 2018 with theme Chemicals & Petrochemicals Advantage India.**

I wish event all the success.

Vinay Mathur

Vinay Mathur

Foreword



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This report on Indian Chemical and Petrochemical Industry is a part of TATA Strategic Management Group (TSMG) Chemical Practice's endeavour to highlight the opportunities and advantages of investing in Indian Chemical Industry.

India has come long way to become world's sixth largest economy and one of the fastest growing with a decadal growth of more than 7%. India's key advantage over other economies is its demographic dividend and rapidly growing middle class with higher spending power. This makes it a consumption driven economy. Doing business in India has its own challenges, the government has come up with several structural reforms to make it conducive for the foreign companies to invest in India. FDI investments in India almost doubled in four years, USD 23 Bn in FY 2013 to USD 45 Bn in FY 2018.

TSMG conducted a survey to identify key criteria and CEOs concerns of EODB specific to the chemical industry, outcome of this survey is covered in this report.

India's chemical industry is estimated at $163 Bn in FY18 and it is expected to grow at ~9% per annum to reach $304 Bn by Fy2025. The growth is expected to be driven by rising demand in end-use segments for Specialty Chemicals and for petrochemicals intermediates, import substitutions is an option for select few.

Keeping these opportunities in mind, and with favourable regulatory scenario this year's India Chem 2018 theme is to highlight the advantage of investing in India for both overseas and Indian companies.

We are grateful to FICCI for choosing TATA Strategic as Strategy and Knowledge partners for the conference. We thank FICCI and DCPC team for their support in the preparation of this resourceful report. As always, it was very insightful experience for Tata Strategic (Chemicals) team to materialize this report. We hope it acts as a guiding light for all the players interested to invest in the chemical industry of India.



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India As Destination for Investment

In its first upgrade of India's rating in 14 years, global credit rating company Moody's investor services upgraded India's sovereign ratings in November 2017 to Baa2 and changed the outlook from stable to positive. This indeed symbolizes the confidence in continued economic growth, stable government and institutional reforms. Closer look at Indian macro environment through STEEP framework explains the factors contributing to the continued growth and conducive business environment.

Social (Demographic Dividend)

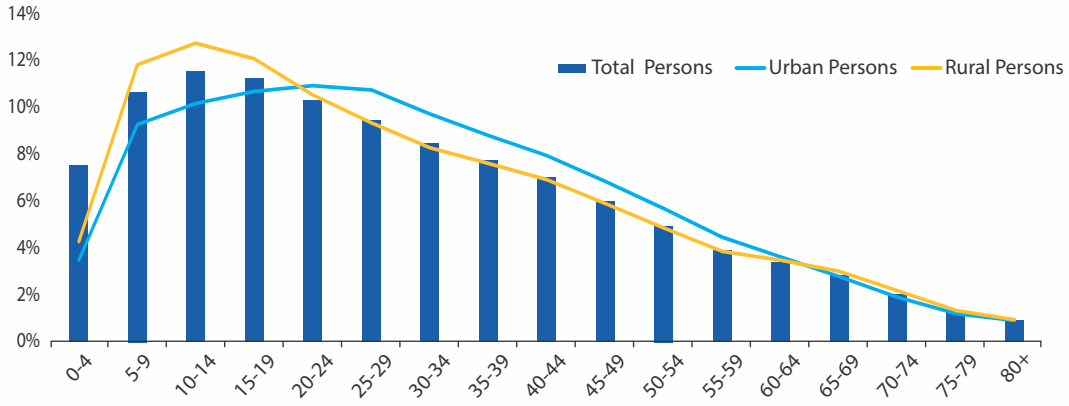
With 1.3 billion population, India is the second most populous country in the world and the youngest too.

By 2020, the median age in India will be just 28 years (Ref. Fig. 1), compared to 37 in China and US, 45 in Europe and 49 in Japan. This demographic dividend can increase the economic growth through multiple channels.

1. Swelling of labor force as more people reach working age. India's working age population will reach 700 Mn by 2030 (annual addition of 12-15 Mn over next decade).
2. Rise of women in workforce will bring changes in lifestyle and family dynamics resulting in changing preference for goods and services
3. India is witnessing a massive shift towards the middle-class society with increase in demand for education, home, better economic security and desire for more durable goods.
4. Rapid urbanization of India. More than 40% of India's population will live in cities and account for more than 60% of consumption.

Impact: Indian economy will continue to be consumption driven with increase in demand for multiple industries.

Figure 1: Age Distribution % by 2030



Source: Office of the Registrar General & Census Commissioner, GOI

Technological (Digital Revolution)

India is undergoing Digital revolution which is by far the biggest mega trend transforming India, both socially and economically.

1. 95% of 1.3 billion people are digitally covered under Aadhaar Scheme, one of the world's largest social security programs.
2. Digital transformation has led to the country of 1.3 billion people having 1.2 billion mobile phones.
3. By 2020, India will have estimated 650 Mn internet users, 520 Mn smartphone users and 320 Mn e-commerce users.
4. In 2016, Reliance Industries entered the mobile, telephone and broadband market and in less than two years created consumer base of 200 million for Jio.
5. Recognizing the potential of smartphone demand, Samsung opened the world's largest mobile factory in India and opened the largest mobile experience center in Bengaluru.

Impact: Digital has facilitated information access and subsequently has changed the consumer behavior. It has opened new growth opportunities for some of the key industries like smartphones & allied industries, entertainment, retail, banking and transportation.

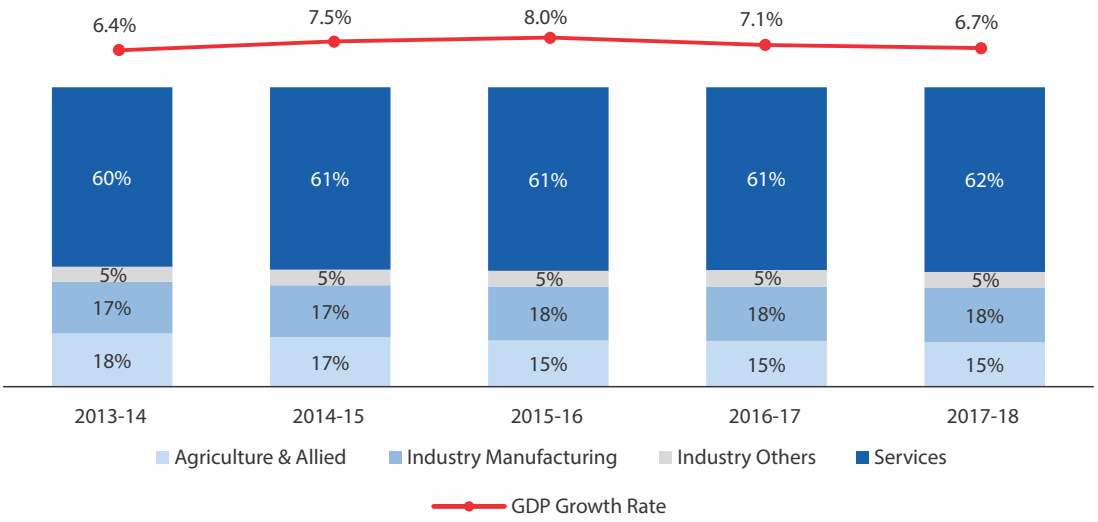
Economical

Indian economy is growing the fastest in the world and has become the sixth largest economy in the world.

India's GDP has been consistently growing at more than 7% since past three years (Ref. Fig. 2) and is expected grow at 7.8% in 2019. In absolute terms, Indian economy will reach US$ 6.7 Tn by 2030 with 6% real GDP growth rate making it 3rd largest economy after China and US.

One of the key economic growth drivers is government's investment boost in infrastructure sector (Government provision of US$ 92 Bn in FY 2018 budget as compared to US$ 61 Bn in FY 2017)

Figure 2: Sector-wise GVA Contribution and GDP Growth Rate (FY14-FY18)



Source: Reserve Bank of India

India's per capita income has risen consistently by 9-12% from FY12 to FY17 year on year. Its per capita income of $1,702 in FY17 is well behind some of the key emerging markets, like China, Russia, Brazil, Indonesia, the Philippines, Mexico, and Turkey. Morgan Stanley expects India's per capita income to rise to $4,135 by 2027. The global firm estimates that digitization will provide a boost GDP growth and forecasts that India will achieve upper-middle income status by 2026-27.

Impact: Increase in per-capita disposable income will result in inflexion point for several aspirational products

Environmental

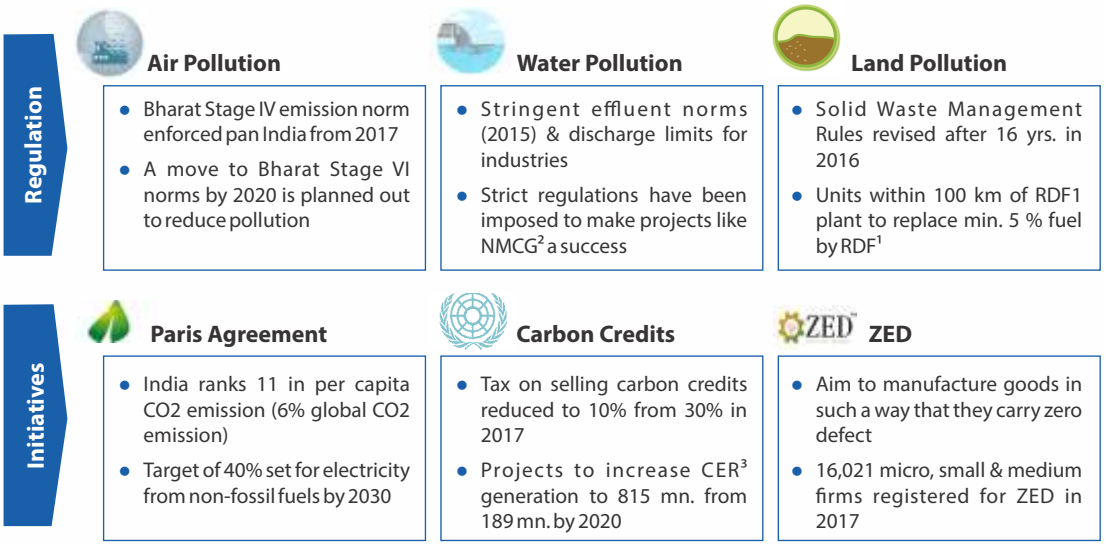
Resource security and environmental pollution regulations must for industries to mitigate impacts of development on environment

India became the 62nd nation to join the Paris Agreement in October 2016. The agreement requires the member countries to make binding commitments to curb carbon dioxide (CO_2)

emissions to keep global average temperatures from rising above 1.5°C as compared to the pre-industrial years.

Indian government has taken a firm stance to mitigate negative impacts of development on the environment. Key pro environmental regulations and initiatives are undertaken by the govt to curb Air, Water and Land Pollution (Ref. Fig. 3).

[1]Figure 3: Key regulations and initiatives to reduce environmental pollution



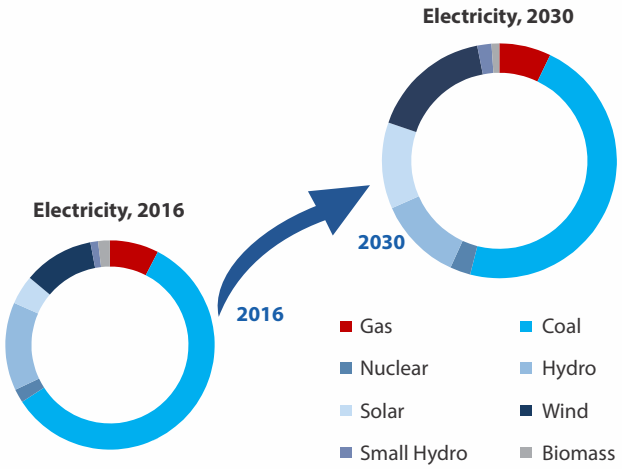
Notes :1) RDF: Residue Derived Fuel 2) National Mission for Clean Ganga 3) Certified Emission Reduction

Resource scarcity is shifting focus of the Indian economy towards energy utilization & renewable resources more than ever. Numerous initiatives were taken by the government to prevent India from being a scarce society with respect to water, food and minerals.

- The Government is encouraging the demand side for water conservation (e.g. drip irrigation for farmers, developing water grid through canals and water harvesting methods.)
- Owing to India's growing population, agricultural productivity is a focus area. Government has set target to double farmers income and productivity by 2022.
- To tackle food scarcity, the Govt. is aiming to enhance the efficiency of its distribution network

- Focus on renewable energy (solar energy etc.) to counter India's high dependence on fossil fuels (Ref. Fig. 4)

Figure 4: Source of electricity consumption by 2030



Source: Industry Reports

Impact: The conventional manufacturing model of India's manufacturing sector which can be largely categorized by a linear 'take, make and dispose' economic model will change, and adoption of the Circular economy will be the key to a self-sustainable future

Political

Stable government, Structural Reforms and Government Spending will accelerate the economic growth

Current government, in its four years of tenure, introduced slew of structural reform to improve overall business environment in India. With the objective of making India a global manufacturing hub through its trademark initiative Make in India. The government assumed the role of being a facilitator instead of a regulator. Stable Government has led to faster decision making which has significantly improved business environment. Some of the key reforms that increased India's attractiveness for investments are:

1. Unified 16 different taxes to the simplified GST (Goods and Services Tax) encouraging interstate trade, improving speed of delivery and reducing costs.
2. Demonetization of higher denomination currencies (INR 500 & 1000) and promoting electronic payments
3. Eased FDI rules and limitations to encourage more overseas investments

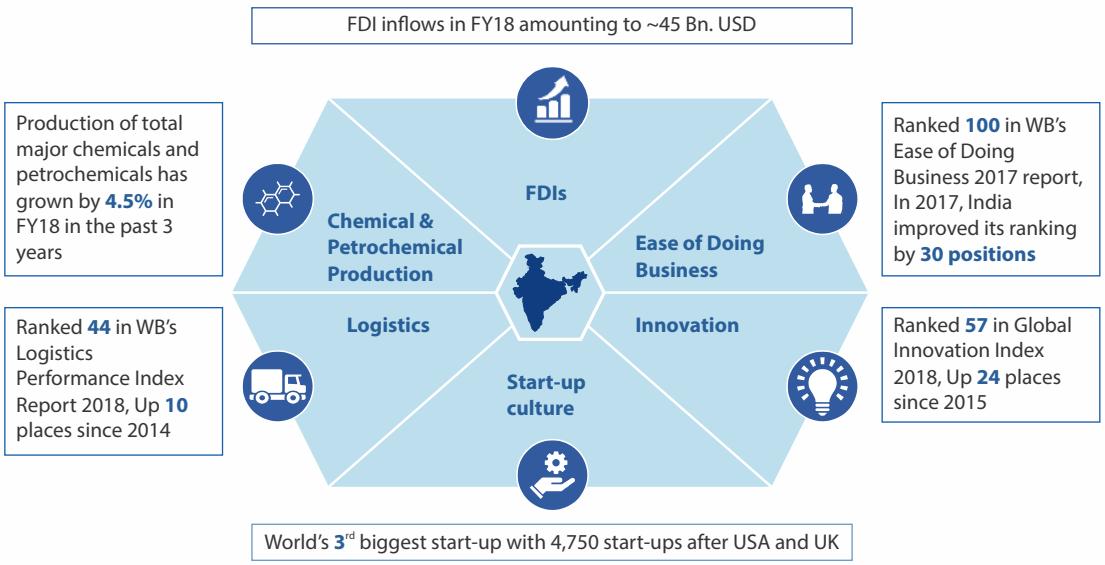
4. Introduced Insolvency Bill for faster debt recovery
5. Amendments in land acquisition act to encourage investments in industries, rural infrastructure, housing and defence
6. Consolidation of 38 Labour Acts by framing 4 Labour Codes, providing simplicity and clarity

Impact: India's EODB ranking changed from 142nd to 100th in past 3 years

Conclusion

India's performance on select criteria are summarized (Ref. Fig 5)

Figure 5: India's Achievements 2017

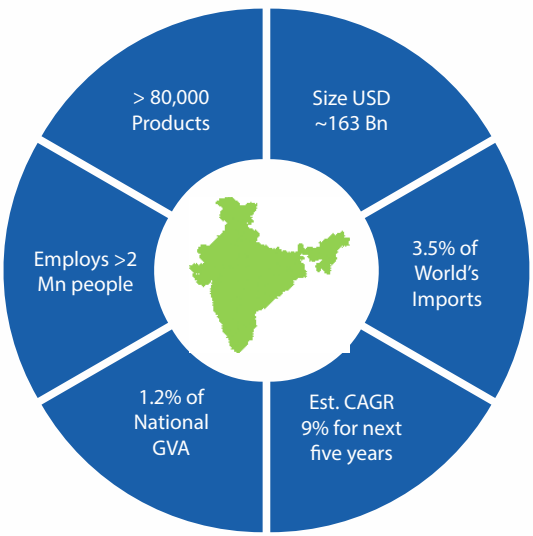


Overview of the Chemical Industry in India

Chemical industry is the mainstay of industrial and agricultural development of the country and provides building blocks for several downstream industries such as textiles, papers, paints, soaps, detergents, pharmaceuticals, varnish etc. Covering more than 80,000 products, this industry services large number of end use application industries. In India it is estimated that more than 2 Mn people are employed in this industry.

Indian chemical industry comprises of both small scale as well as large scale units. With initiatives like **"Make in India"** program gaining steam, investments, innovation and infrastructure are going to be the major thrust areas for chemical industry players. The current per capita consumption of chemical products in India is about 1/10th of the world average, indicating that the demand potential is yet to be realized. Moreover, India has a very strong outlook for the key end user industries. Going ahead, it is estimated that the demand of chemical products is expected to grow at ~9% p.a. over the next five years and is pegged at 1.2X GDP growth.

Figure 6: Indian CPC Industry Overview



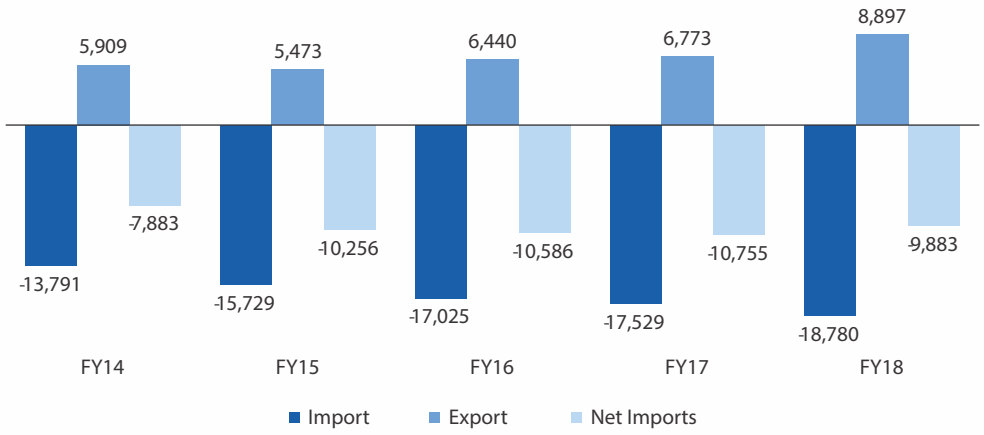
Size and Growth

Globally, chemical industry is estimated at $ 4.7 Tn in 2017 it is also driven by demand from end use industries. Indian chemical industry is estimated to be valued at $163 Bn in 2017 and

contributes 3.4% to the global chemical industry. It ranks 14th in exports and 8th in imports of chemicals (excluding pharmaceutical products) globally.

Net imports have grown at 5.8% between 2014 and 2018 in volume. (Ref. Fig. 7)

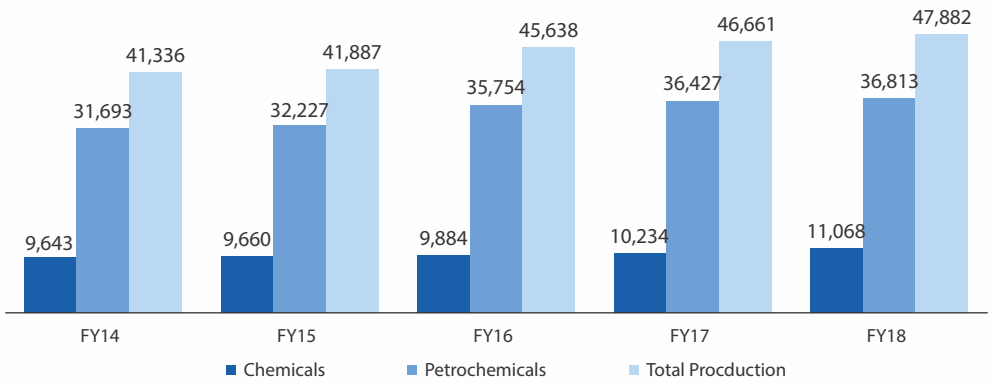
Figure 7: Import – Export Trend of Indian Chemical Industry (In 000 MT)



Source: Chemicals & Petrochemical Statistics at a Glance 2017

Over last year, India's petrochemicals export scenario has considerably improved due to doubling of Ethylene capacity by Reliance Industries. This has not only mitigated import substitutions but helped India to become net exporter of Ethylene. Exports of Benzene and Paraxylene has also substantially grown last year. Production has witnessed 3.7% CAGR between FY14 and FY18. (Ref. Fig. 8)

Figure 8: Chemicals and Petrochemicals Consumption Trends in India (In 000'MT)



Source: Department of Chemicals & Petrochemicals

Production of Petrochemicals have marginally increased by 1.1% over last year and chemicals have grown by 8%. Production growth in chemicals are mainly driven by products of Chlore-Alkali Industry (Caustic Soda, Soda Ash and Liquid Chlorine).

Chemical and Petrochemicals: Advantage India

Indian Chemical and Petrochemical Sector - among the fastest growing in the world

Indian chemical industry is one of the fastest growing in the world. Currently it ranks 3rd In Asia and is 6th largest market in the world with respect to output after USA, China, Germany, Japan and Korea.

Consumption Driven Demand

Indian chemical industry's growth is largely driven by country's consumption growth story. Per capita consumption of chemicals India is 1/10th of world average, and even among developing countries Indian consumption is low. This makes India a very attractive destination to invest and grow. In past two years the absolute consumption of chemicals (Both Petrochemicals and Chemicals) increased by more than 1.2 MM MT.

Among the petrochemicals, the growth is mainly derived from import substitution. Each year India imports more USD 13 Bn. worth of petrochemicals, mainly for the want of feedstocks. With better supply chain solutions and technology, there exist an opportunity to manufacture petrochemical intermediates in India.

Location Advantage - Future East West Connect

Indian peninsula is centrally located between the East and the West of Asia. It is also centre of the trans-Indian Ocean routes which connect the European countries in the west and the countries of East Asia.

India could establish close contacts with West Asia, Africa and Europe from the western coast and Southeast and East Asia from the eastern coast. Besides India's proximity to middle east countries provide access to petrochemical feedstocks at low cost.

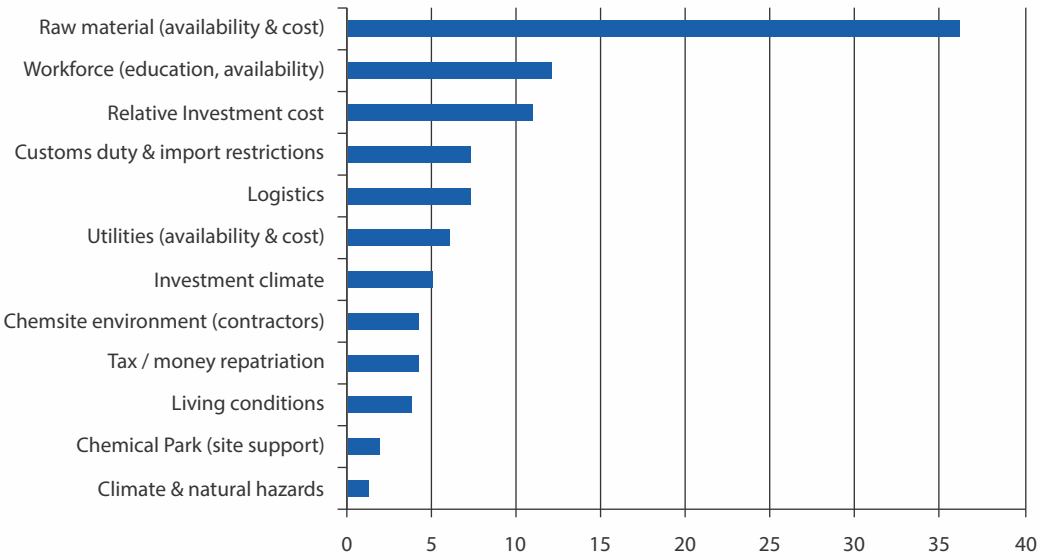
Centre of global maritime trade is expected to move from the Pacific to the Indian Ocean region as India and China will become the largest manufacturing hubs of the world by 2030.

EODB & Regulations

Over the past few years, India has made considerable progress in its business environment, represented by Ease of Doing Business (EODB) matrix. Under its umbrella campaign "Make in India" with the objective of making business environment conducive to invest and grow, government of India implemented several structural reforms such as GST implementation and amending the land acquisition act and increasing transparency.

As a result, India saw quantum leap in its relative position of EODB ranking from 130 to 100 in year 2017. TSMG conducted a survey to gauge the most relevant aspects of EODB for chemical industry (Ref. Fig. 9)

Figure 9: Relevant aspects of EODB



Source: TSMG Survey

Talent availability (Skilled Workforce)

India is one of the leading countries generating skilled workforce. Each year more than 10 million people enter into job market with varying level of skills. Of the total workforce in India about 16% are classified as highly skilled (Managers, Professionals and Technicians) and 58% are classified as medium skilled (Clerical, Service and Sales, Skilled Agriculture and Trade Workers, Plant Assemblers and Machinists).

Chemical Industry in India employs more than 2 million people. Current minimum wage in India falls far below world average. For e.g. Unskilled workers would be paid around USD 6 per man day and skilled workers would be paid in range of USD 9 per man day which is one of

the lowest among major chemical producing countries. Hence, an attractive preposition for global players.

Improving Infrastructure

In the next two decades almost $1.5 Tn investments have been planned for infrastructure. These investments are planned across the sub-sectors Viz. Highway (Bharatmala and NHDP), Railways, Ports & Waterways (Sagarmala), Airports, Industrial Corridors and smart cities.

To support and develop downstream industries, government is working towards the implementation of 4 designated Petroleum, Chemical and Petrochemical Investment Regions (PCPIRs). PCPIRs are expected to operate as Cluster in Cluster mode and are aimed at reducing overall capital expenditure by building common infrastructure of utilities, pipelines and ETPs. Four such PCPIRs in the states of Andhra Pradesh (Vishakhapatnam), Gujarat (Dahej), Odisha (Paradeep) and Tamil Nadu (Cuddalore and Naghapattinam) have been announced. Each cluster has an anchor tenant to support downstream and these are under different stages of implementation.

India Megatrends and Opportunities in Chemicals and Petrochemical Sectors

There are several global mega trends that would have impact on Indian economy, similarly there are several mega trends impacting India and Indian Chemical Industry. We have identified nine trends and their impact on key segments of chemical industry. (Ref. Fig. 11)

1. **Growing per capita consumption**

India's current per capita consumption of most chemicals is 1/10th of global averages. Rising domestic demand from end use industries will drive consumption

2. **Move towards greener solutions**

Stricter environmental regulations from governments driving greener solutions. More and more consumers are now opting for greener solutions

3. **Nanotech and Advanced polymers**

Increased demand of advanced polymers with rising demand from Packaging, New age mobility & Electronic industries have given rise to emerging technologies such as Nanotech

4. **Disruption through 3D printing**

3D printing technologies have caused major changes in business model of Indian Packaging industry. A move from "Mass production" to "Mass customization" has been an emerging trend.

5. **Emergence of Technology platforms**

Chemical companies plan to invest 5% of their annual revenues on digitization over the next five years. Online marketplaces likely to be the major trend in India going forward

6. **Evolving B2B Customers' preferences**

Globally, B2B customers are increasingly looking for products with claims. Indian B2B customers requirement moving towards "Fit for Purpose" products & services

7. Alternative feedstock

Indian companies are exploring alternatives like coal gasification, syngas, pet coke etc. CIL has completed a pre-feasibility study for producing 6.76 lakh metric tonne per annum of methanol through coal

8. Mega-mergers & Consolidation

Major deals like Dow -Dupont, Bayer-Monsanto, ChemChina-Syngenta could take innovative farming and crop protection techniques to a new level

9. Access to Strategic Natural resources

Increased vertical integration to ensure access to natural resources has increased focus on feedstock of natural origin

Figure 10: Impact of Key Mega Trends

Key Trends	Bulk Chemicals	Petro-chemicals	Specialty Chemicals	Fertilizers
Growing per capita consumption	✓	✓	✓	✓
Move towards greener solutions			✓	
Nanotech & Advanced polymers	✓		✓	
Disruption through 3D printing		✓	✓	
Emergence of Technology Platforms		✓	✓	
Evolving B2B consumer preferences		✓	✓	
Alternative feedstock: Creating new normal	✓	✓	✓	✓
Mega Mergers & Consolidation		✓	✓	✓
Access to strategic natural resources	✓	✓	✓	✓

Source: TSMG Analysis

As we see all key trends have positive implication on Specialty Chemicals and Petrochemical Intermediates.

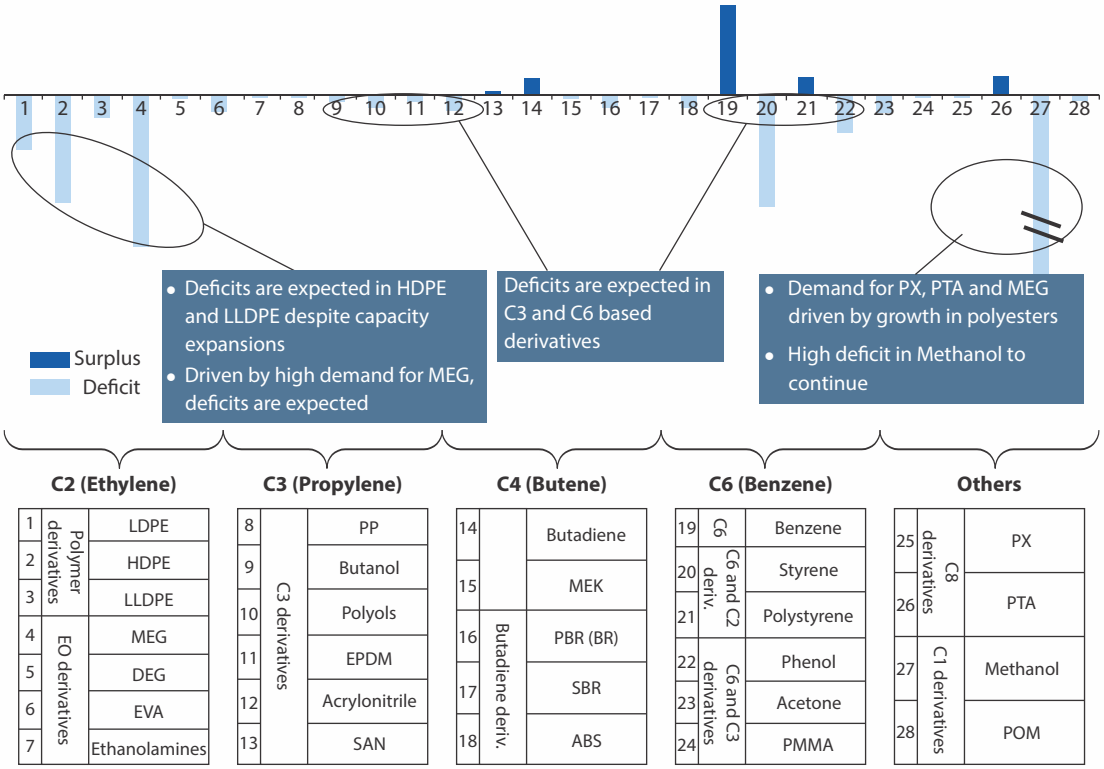
Specialty Chemicals segment has direct implication to several end use industries, the growth expected to be driven by rapid rise in the mid income households. Key end use industries impacted by consumer driven demand are highlighted in the chart below (Ref. Fig. 11). Challenges for Indian players is to get right technology partner or players who will have to develop home grown solutions.

Figure 11: End use Industries in Specialty Chemicals



Other big opportunities these mega trends support is for Petrochemical intermediates as it forms key input material to the downstream specialty chemicals. India is still deficit in majority of the petrochemical intermediates and greatly depends on imports. Though India has become surplus in ethylene capacities, ethylene derivatives and other products like Methanol, Styrene and PVC offer opportunities for Make in India. For example, Deepak Phenolics has set up a plant in Dahej to manufacture Phenol and Acetone both currently being imported in large quantities. As per TSMG estimates several molecules will be in deficit state till FY 2021 considering current capacities (Ref. Fig. 12)

[2]Figure 12: Demand-Capacity gap in FY21 ('000 TPA)



Source: TSMG Analysis

Recent Investments in Indian Chemical and Petrochemical Sectors

Indian Chemical Sector (Other than Fertilizer) attracted FDI investment of USD 1.3 Bn in FY18 which is about 3% of the total FDI inflow. Both Indian and overseas companies are investing in either greenfield or brownfield projects in this industry. Petrochemical upstream sector is highly capital intensive and linked to the availability of crude as feedstock. Hence National Oil Companies (PSUs) are major investors in this sector. Among the private sectors, Reliance is the largest investor in both greenfield and brownfield projects.

It is worthwhile to note that Indian Chemical Companies have started focusing on global markets for investments. Recently, largest Agrochemical company in India, United Phosphorous Ltd. announced the acquisition of Arysta Lifescience for about USD 4.2 Bn. With this acquisition UPL will not only get access to Arysta's global market but will also improve its penetration in Indian Agrochemical market. Possibility of moving certain products to low cost manufacturing base locations will give the possible boost to India.

Some of the key investments announced in Chemical and Petrochemical sectors over past two years in India (Ref. Fig. 13) reflects confidence of the players in India.

[2] *For the projections of Ethylene and its derivatives, it is assumed that not all planned capacities may be operational by FY2021*

Figure 13: List of major investments in FY'17-18

Sector	Investment Greenfield /Brownfield	Investor Company	Investment Value (USD Mn)	Project	Announcement Year
Petrochemical	Greenfield	Saudi Aramco, Indian PSUs	44,000	Mega Refinery	2018
Oil & Gas	Greenfield	ONGC	11,000	Exploration	2018
Petrochemicals	Greenfield	Reliance	9,500	Refinery	2017
Petrochemical	Greenfield	HPCL + GAIL	5,700	Petrochemical Complex	2017
Petrochemical	Brownfield	Sabic	4,300	Petrochemicals (50% stake in OPAL)	2018
Petrochemical	Greenfield	IOCL	1030	Ethylene Glycol & Polypropylene	2018
Petrochemicals	Greenfield	Sanmar	61	H2O2, PVC	2017
Petrochemicals	Greenfield	HMEL	3,000	Petrochemical Complex	2017
Petrochemicals	Brownfield	BPCL	4,000	Refinery	2018
Fertilizer	Brownfield	Yara	402	Acquired Fertilizer business of Tata Chemicals	2017
Specialty Chemicals	Brownfield	Solvay	62	Expansion of Polymer Plant	2018
Specialty Chemicals	Brownfield	Himadri Specialty Chemicals	153	Expansion Carbon Black	2018
Specialty Chemicals	Brownfield	Sudarshan Chemicals	155	Expansion	2017

In Conclusion

1. India's advantage for investments are almost unparalleled, it will become one of the largest consuming economies offering very large captive market for the companies.
    - Opportunities for large scale manufacturing facilities with economies of scale.
2. It is the youngest nation with a large workforce and low cost of manufacturing. Besides, it has a strategic location that provides access to both west and east.
    - Makes India a strategic manufacturing location to supply to other countries

3. With very low per capita consumption, Indian chemical industry provides a large head room to grow. It is fragmented

    - Explore both organic and inorganic growth opportunities. Mainly within specialty chemicals and petrochemicals downstream products

4. End use industries such as automobiles, electronics, packaging, infrastructure etc. are on a growth path providing sustainable growth for years to come.

    - Scope for innovations and customization for sustainable growth

5. Indian democratic environment and stable government focused at providing business friendly environment and infrastructure

    - It is easier to do business in India now, than before

India Advantage – Views from Industry Leaders

Mr. Deepak C Mehta
Chairman-FICCI National Chemical Committee
CMD, Deepak Nitrite Ltd



The significantly growing domestic markets, the upheaval in International markets, particularly with respect to China, augur well with opportunities for the Indian Chemical industry to rapidly grow in size and capability.

India, even today is one tenth the size of China in so far as the Chemical industry is concerned. With improved infrastructure, road connectivity, coal/piped energy and already being the 7th largest, India has achieved the eco-system as formidable player in the chemical market.

As India gains increased traction from major countries, looking at investment in the Indian chemical sector, both driven entrepreneurs and a positive Government need to put their combined vigour to grow the chemical industry multi-fold in the coming decade. We must target to become 3rd largest by 2118.

Deepak Nitrite is already investing into major growth opportunities and we expect to triple our turnover in the next 3-4 years from 1500 crores to 4500 crores.

Mr. Prabh Das

Chairman-FICCI National Petrochemicals Committee
Managing Director & CEO
HPCL-Mittal Energy Limited



I strongly believe that, the social and economic growth of any country is closely related to the growth of its Chemicals & Petrochemicals industry. The Chemical & Petrochemical industry is an enabler, and services the feedstock requirements of a vast spectrum of downstream end-product segments like Agriculture, Infrastructure, Medical, Packaging, Automotive, Appliances, Households etc.

India is no different. The Indian Chemical & Petrochemical industry is poised to contribute to and share the growth story of India - an elephant that's starting to run. The growth of Indian economy is expected to be strong and sustainable, with its large and growing Domestic consumption. The major initiatives undertaken by Government of India like Make in India, Smart Cities, Swatch Bharat and Ease of doing Business etc., will catalyse and provide further impetus to the social and economic growth of India. The business sentiments in the country has certainly improved.

AT HMEL, we are very optimistic and confident of the business prospects for the Chemical & Petrochemical sector. We have made significant investments in India in setting up capacities of 11.3 Million MT per annum in Refining and 467 KT per annum in the building block Polypropylene, in the state of Punjab. With immense opportunities in the horizon for this Industry in India, we have announced further investment of USD 3.0 Billion, in building a 1.2 Million MT per annum Cracker Complex in Punjab, with additional capacity of 1200 KT per annum of Polyethylene and 500 KT per annum of Polypropylene.

I am happy to know that FICCI jointly with the Department of Chemicals and Petrochemicals, Government of India, is organising the India Chem - 2018 themed "Chemical and Petrochemicals - Advantage India", and is publishing the biennial "India Chem Strategy Report", which is very pertinent in the present context.

I wish all the best to the event.

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TATA STRATEGIC MANAGEMENT GROUP

Mr. R.G. Agarwal

Chairman FICCI Sub Committee on Crop Protection Chemicals
Group Chairman – Dhanuka Agritech Ltd.



We will like to inform you that we are the key player in the field of Crop Protection Chemicals.We started our company in the year 1980 with a mega sales of Rs.7 lacs and in the year 2017-18, our sales was Rs.950 crores.

We have made around Rs.85 crores investment in the most modern formulation plant of international standard at Keshwana (Rajasthan).

Crop protection chemicals plays a vital role for our food and health security. Younger people may not be aware while we were getting wheat under PL 480 from USA in 1965, the quality was so bad which was not even suitable for consumption by animals but stand with no option to have it to meet our hunger.

In 1942 Bengal Famine, millions of people died due to Leaf Spot Diseases in paddy and all the paddy fields were destroyed and there were many instances of various famine in the world. In today's high-tech agriculture fertilizer, hybrid seeds, bio-stimulants, drip irrigation, new plant and machinery plays the key role but crop protection chemicals plays the role of insurance. Once farmer has invested his hard earned money in all the above activities then if the attack of insect is not controlled, all his investments and labour can go waste. To increase the Agriculture production, to feed the growing population, has led to a tremendous increase in the use of pesticides. **Our Honorable Prime Minister has also given the vision of doubling the farmer's income by 2022 which is possible and it can change the scenario of overall economy of our country.**

Mr. Janardhanan Ramanujalu

Co-Chairman - FICCI – Petrochemical Industry Committee
VP & Regional Head, SABIC, S. Asia & ANZ



"More than half of Sustainable Developmental Goals (SDGs) 2030 of United Nations will be enabled through Chemistry. The innovations in chemistry are driving the world towards a better sustainable future. At SABIC we have prioritize the sustainable development goals around carbon efficiency, circular economy, renewable energy, portfolio assessment & design and sustainable growth. It is indeed the Chemistry that Matters to all of us. India is at the cusp of significant growth in a sustainable manner; which meets India's commitment towards Intended Nationally Determined Contributions (INDCs)."

Dr. Raman Ramachandran

CMD - BASF India Limited & Head - BASF South Asia



To achieve the target of USD 1 Trillion manufacturing economy by 2028 from current USD 380 Billion, chemicals and chemical industry will be a key enabler and catalyst. The projected high local demand will provide us a strong platform to also establish ourselves as major supplier of specialty chemicals to the world with right investments. Thus, chemical sector is very strategic to achieving our Country's vision encompassed in Make in India, Swachh Bharat, Housing for All and Power for All.

Industry must work hand in hand with Government to capitalize on the growth potential that the country and sector offers by adapting and leveraging global trends such as innovating sustainable solutions that meets the need of future, manufacturing processes that are benign to environment, leveraging modern tools such as digitalization to be efficient and lastly developing skills to collaborate with partners and academics. We can achieve this by focusing on creating good infrastructure and creating an ecosystem that cultivates innovation and entrepreneurship.

At BASF, we have successfully partnered India's progress for more than 125 years and invested more than 300 million Euros in India in the last 5 years, strengthening our manufacturing and R&D footprint. This speaks volumes about our confidence in India. We will continue to invest in innovation with a motto to "innovate in India for India and World". BASF remains committed to building a sustainable world through chemistry, while growing responsibly.

Mr. R. Parthasarathy

Chairman and Managing Director
Thirumalai Chemicals Limited



Indian chemical and petrochemical industry has come a long way since its early beginnings in late 1950s to reach around USD 200 Bn size thereby contributing 16% to world's third largest economy (based on PPP).

Thirumalai Chemicals Limited has emerged as a leading producer of Phthalic Anhydride, Maleic Anhydride and their derivatives over the last half a century. We have catalysed the growth of a number of important industries in India like Paints, Pigments, FRP and PVC products besides specialty & fine chemicals (including APIs, food ingredients and fungicides). This has contributed significantly to critical sectors like infrastructure, agriculture, human health etc.

Our facility in Malaysia has access to lower cost feedstock & finance and superior infrastructure. While capacities of our products are adequate to meet Indian demand, compelled by loss of market share due to dumping, we are forced to export to utilize capacities. The demand from final end-users of our products is growing in India beckoning us to expand.

Duty levels in India being below the MFN rates besides even lower/ nil duties under FTAs have caused narrowing of duty differentials across the value chains (at times inverted duty structures). Coupled with dumping, they have exerted pressure on margins despite intrinsic efficiencies arising from best technologies. Lower costs of finance, power etc. and improved infrastructure will help meeting this adversity and make us more competitive overseas.

Despite Thirumalai's record of expansions, the challenge is to maintain margins to continue investing in future expansions. Our downstream industries are facing similar challenges. Remedial measures such as Anti-Dumping/ Safeguards have provided temporary relief.

We have the resilience to weather external adversities and have strong export capabilities. However, with the growing demand for our products in India, the questions confronting us are:

Should we Make in India for India (contributing to the USD 0.4 Trillion chemical industry and 5 Trillion GDP by 2025) and for exporting overseas? Should we manufacture overseas?

Shri Sanjiv Singh

Chairman
Indian Oil Corporation Ltd



The Chemical and Petrochemicals sector is critical for overall economic progress as it serves as a catalysing enabler for other major industries like Infrastructure, Agriculture, Automobiles, Textiles, Food Processing, Packaging, Health & Pharmaceuticals, Water, Transportation, Defence among others.

The Chemicals & Petrochemicals industry in India is one of the most diversified , covering thousands of commercial products with current Gross Value Added (GVA) share of 7.21% in Manufacturing and 1.2 % in National GVA. The CAGR over last 8 years in case of major Chemicals is 2.75% and around 5.17% in case of major Petrochemicals. A significant part of product demand is met through imports with net trade deficit being around Rs 72,000 crores in the year 2016-17.

Products of this industry are transforming lifestyle and with newer applications emerging, demand potential is booming and in view of net trade deficit, India today presents excellent opportunities in the sector. Many of the Govt of India schemes like Swacch Bharat Mission, Smart Cities Mission, Make in India have also provided the desired thrust to the sector. India also has the advantage of qualified and affordable work force so essential for the development of the sector.

IndianOil is committed to the development of the Chemicals and Petrochemicals sector in the country and is poised to play a pivotal role. We already have world class facilities to produce major petrochemicals products like Linear Alkyl Benzene (LAB), Polypropylene, Polyethylene, Purified Terephthalic Acid (PTA) and Glycols. Plans are on the anvil to set up new petrochemicals projects at an investment of Rs 35,000 crores.

IndianOil is the nominated anchor tenant to Petroleum, Chemicals and Petrochemicals Investment Region (PCPIR) at Paradip, where we will soon commission a new polypropylene unit of 700 KTA (kilo tonnes per annum) capacity at Paradip Refinery Complex. Further plans are on to set up two more mega projects in the region for producing polyester fibre intermediates, MEG and PTA that will give a boost to the textile industry in the region.

We have also entered the fertiliser industry and under our Joint Venture 'Hindustan Urvarak & Rasayan Limited '(HURL), we are collaborating with Coal India Limited (CIL) and National Thermal Power Corporation (NTPC) to produce urea and ammonia fertilisers at Gorakhpur, Barauni & Sindri plants.

India provides tremendous opportunities and incentive to create further manufacturing capacities in the Chemicals & Petrochemicals Sector. Making India a Chemicals & Petrochemicals production hub would require a global competitive mindset and the industry would do well to leverage efficient utilisation of low cost capital, availability of feedstock at competitive price, access optimal value chain and invest in cutting edge R&D.

I compliment FICCI and the Tata Strategy Group on publishing the India Chem Strategy report and I am sure it will effectively showcase the emerging opportunities and attract investors in this sunrise sector.

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About FICCI

Established in 1927, FICCI is the largest and oldest apex business organisation in India. Its history is closely interwoven with India's struggle for independence, its industrialization, and its emergence as one of the most rapidly growing global economies.

A non-government, not-for-profit organisation, FICCI is the voice of India's business and industry. From influencing policy to encouraging debate, engaging with policy makers and civil society, FICCI articulates the views and concerns of industry. It serves its members from the Indian private and public corporate sectors and multinational companies, drawing its strength from diverse regional chambers of commerce and industry across states, reaching out to over 2,50,000 companies.

FICCI provides a platform for networking and consensus building within and across sectors and is the first port of call for Indian industry, policy makers and the international business community.

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Industry's Voice for Policy Change