



November 2021

Evolving horizons: The Indian chemical and petrochemical industry

Knowledge paper on the Indian chemical and petrochemical industry



Message from the Government of India

डॉ. मनसुख मांडविया
DR. MANSUKH MANDAVIYA



75
आज़ादी का
अमृत महोत्सव

स्वास्थ्य एवं परिवार कल्याण
व रसायन एवं उर्वरक मंत्री
भारत सरकार
Minister for Health & Family Welfare
and Chemicals & Fertilizers
Government of India



MESSAGE

India's vibrant Chemicals & Petrochemicals industry is an attractive destination for investment and it has witnessed a robust growth for more than a decade. The future of chemical manufacturing sector in India offers numerous opportunities and our manufacturing base has been on high growth trajectory. The chemical manufacturing is a crucial segment and it provides basic inputs to a wide range of user industries and it plays a significant role in the output of Indian economy.

Our Hon'ble visionary Prime Minister has given a clarion call to the nation to become Atma Nirbhar (Self-reliant India). Our ministry is taking various steps to unlock the tremendous potential of the sector and to make use of India's technological capabilities & skilled workforce. To bring Chemicals & Petrochemicals industry to a full swing, Government of India has launched various flagship programmes to provide much-needed support to this sector and creating a facilitative environment to attract investments.

The COVID outbreak has compelled industry to move their supplier base and look for alternative locations like India that offer advantages of low-cost labour and favourable investment policies. Realizing the strengths and opportunities of the Indian chemical & petrochemical sector, the global strategic investors are looking at India as a preferred investment destination. I am happy that Department of Chemicals & Petrochemicals, Government of India jointly with the Federation of Indian Chambers of Commerce and Industry (FICCI) is organizing the Second edition of the Summit on "India: Global Chemicals & Petrochemicals Manufacturing Hub" 2021, (GCPMH 2021) from 25th to 26th November, New Delhi.

To stand together as one nation, we must focus on our strengths and leverage opportunities that will help us to sail safely through these tough times. I wish the summit on "India: Global Chemicals & Petrochemicals Manufacturing Hub 2021" a grand success.

(Dr. Mansukh Mandaviya)

कार्यालय: 348, ए-स्कंध, निर्माण भवन, नई दिल्ली - 110011 • Office: 348, A-Wing, Nirman Bhawan, New Delhi - 110011

Tele.: (O): +91-11-23061661, 23063513 • Telefax : 23062358

Message from the Government of India

भगवंत खुबा
ಭಗವಂತ ಖುಬಾ
BHAGWANTH KHUBA



रसायन एवं उर्वरक एवं
नवीन एवं नवीकरणीय ऊर्जा राज्य मंत्री
भारत सरकार
Minister of State
Chemicals & Fertilizers and
New & Renewable Energy
Government of India



24 NOV 2021

MESSAGE

Indian Chemical & Petrochemical Industry plays a significant role in catalysing the growth of manufacturing sector. This sector makes immense contributions to human life and offers enormous employment opportunities. India holds a strong position in the chemical & petrochemical industry at a global level. Driven by the vision of Hon'ble Prime Minister of India, Shri Narendra Modi Ji in making India "Atma Nirbhar" through flagship initiatives like Make in India, Start Up India, Skill India and Digital India, this sector is making rapid progress in making India an important global player. As the industry moves into 2022, the changed economic, social and environmental expectations are anticipated to play an even greater role in shaping its future.

I am glad to note that Department of Chemicals & Petrochemicals, Government of India jointly with the Federation of Indian Chambers of Commerce and Industry (FICCI) is organizing the Second edition of the Summit on "India: Global Chemicals & Petrochemicals Manufacturing Hub" 2021, (GCPMH 2021) from 25th to 26th November, New Delhi. I am sure that the summit will provide the landscape of opportunities available in changed circumstances and explore areas of growth in the industry. This event will not only showcase unique investment opportunities in the sector but would also facilitate national and global stakeholders to deliberate and collaborate in driving this industry towards a more prosperous and sustainable future.

Wishing the Summit on India: Global Chemicals & Petrochemicals Manufacturing Hub, a great success. I hope the deliberations in the summit will be immensely valuable for bringing in improvements in the existing PCPIR Policy, 2007.


(Bhagwanth Khuba)

Chemicals & Fertilizers : Room No. 315, 'A'-Wing Shastri Bhawan, New Delhi-110001 Tel : 011- 23382364, 23383686, 23381768
Fax : 011-23381713, E-mail : mos-mocf@nic.in
New & Renewable Energy : Room No. 202, IIInd Floor, 14 Block, CGO Complex, New Delhi - 110003, Tel. : 011-24360359

Message from DCPC

योगेन्द्र त्रिपाठी, भा.प्र.से.
Yogendra Tripathi, IAS



सत्यमेव जयते

सचिव
भारत सरकार
रसायन और उर्वरक मंत्रालय
रसायन और पेट्रो रसायन विभाग
Secretary
Government of India
Ministry of Chemicals & Fertilizers
Department of Chemicals & Petrochemicals
18th November, 2021

MESSAGE

It is an accepted fact that Chemical industry is knowledge and capital intensive industry and plays a very significant role in the global economic and social development. With Asia's growing contribution to the global chemical industry, India emerges as one of the focus destinations for chemical companies worldwide. The Indian chemical & petrochemical industry has a diversified manufacturing base that produces world-class products. Indian Chemical players have been focusing on sustainable development and are investing in innovative solutions to find solutions to emerging challenges.

Government of India is giving thrust on "Ease of Doing Business" by streamlining regulations, processes and ensuring transparent decision making. Industry players and associations work actively with the government to address sectoral issues. Supportive government measures coupled with skill-development programs and technology upgradation plays a significant role in dovetailing the PCPIRs with the national infrastructure. These measures helps in developing India as a global hub for petroleum, chemicals and petrochemicals processing and manufacturing.

Going forward, the Summit on Global Chemicals & Petrochemicals Manufacturing Hubs in India 2021, jointly organized by the Department of Chemicals and Petrochemicals, Government of India and FICCI, will further ensure close co-operation amongst all the stake holders. It is an appropriate forum to deliberate pertinent issues related to the industry, showcase potential opportunities, exchange knowledge & network and lay the foundation for making Indian Chemical & Petrochemical Industry, the hub for both domestic and international markets.


(Yogendra Tripathi)

कक्षा संख्या 501, 'ए' विंग, शास्त्री भवन, डॉ राजेन्द्र प्रसाद रोड, नई दिल्ली - 110 001
Room No. 501, 'A' Wing, Shastri Bhavan, Dr. Rajendra Prasad Road, New Delhi - 110 001
दूरभाष / Tel.: 011-23384196, 23382467, फैक्स / Fax : 011-23387892, ई-मेल / E-mail : sec.cpc@nic.in

Message from FICCI

The Indian chemical and petrochemical industry plays a crucial role in the development of the country's industrial and agricultural sectors, and has reached significant milestones in terms of capacity additions and value growth in the last 70 years. More than 80,000 varieties of chemicals and petrochemicals are manufactured in the country and the industry employs over two million people.¹ India is known for the export of specialty chemicals and specific agrochemicals, dyes, and pigments. Huge investment opportunities exist across all the chemical and petrochemical segments in India.

The Government of India's vision of making the country a USD 5 trillion economy is propelling its manufacturing competitiveness, supported by favourable industrial and investment policies. The Department of Chemicals and Petrochemicals (DCPC) is proactively addressing the present challenges and implementing several flagship initiatives to improve the overall competitiveness, quality, and output of the industry. The DCPC and the Government of India, in association with FICCI, are jointly organising the summit on '**Global Chemicals and Petrochemicals Manufacturing Hubs in India 2021**'. I hope that this summit will provide an overview of this fast-growing sector of the Indian economy, and attract delegates and visitors not only from India but also all the major chemical and petrochemical producing countries.

I am sure the participants would benefit immensely from this endeavour. I wish the event great success.



Dilip Chenoy

Secretary General, FICCI

A handwritten signature in dark ink, appearing to read 'Dilip Chenoy'.

¹ <https://www.investindia.gov.in/sector/chemicals>

Foreword

The Indian chemical and petrochemical (CPC) industry has grown significantly in the last 75 years, demonstrating its importance for the growth of the agricultural and industrial sectors. This knowledge paper discusses the evolution of the Indian CPC industry and its growth potential in the next five years to become worth USD 300 billion by 2025. It also analyses the investment opportunities in the chemical segments and the Government's progressive efforts to promote investments and improve the country's Ease of Doing Business (EoDB) ranking.

PwC's purpose is to build trust in society and solve important problems. In this context, associating with FICCI as a knowledge partner and contributing to this industry initiative is a privilege for us and an opportunity to live our purpose.

I wish the summit on Global Chemicals and Petrochemicals Manufacturing Hubs in India 2021 a grand success.



Deepak Mahurkar

Partner and Leader

Oil and Gas Industry Sector

PwC India

Foreword

The chemical and petrochemical (CPC) industry plays a pivotal role in a country's industrial and agricultural development. The Indian CPC industry is one of the fastest growing in the world and has reached significant milestones in terms of capacity additions and value growth post the country's independence. The growth is largely driven by the country's rising consumption needs. Several global megatrends are impacting the Indian economy and subsequently, the Indian CPC industry. Some of the key trends that are emerging and shaping the country's CPC industry are shifts in customer preferences, increasing per capita consumption, innovation and sustainability, and increasing M&A activities.

India is very well positioned for multi-year growth over the next few years across the entire CPC value chain. The Govt's various measures have improved India's performance in the EoDB rankings. A special focus on manufacturing will help increase the CPC's industry's share in our GDP. The Govt is also working towards the implementation of designated Petroleum, Chemical and Petrochemical Investment Regions (PCPIRs) to support and develop downstream industries.



Manoj Mehta

Director and Head – Chemicals, Petrochemicals,
Agrochemicals and Civil Aviation, FICCI

A handwritten signature in blue ink that reads "Manoj Mehta".

Executive summary

India's economic growth story has been promising even during past global crises and various geopolitical setbacks. The country is poised for a robust growth trajectory in the next decade, outpacing some of the developed and developing economies in the world. India is perceived as a competitive and high-quality manufacturing destination in the international market. The Government of India's (GoI) vision of making the country a USD 5 trillion economy is propelling its manufacturing competitiveness, backed by favourable industrial and investment policies.

The Indian CPC industry has outperformed in the past and holds tremendous potential to continue this performance in the coming decade. The per capita consumption of various chemical products and segments is significantly lower compared to developed economies and this gap offers substantial space for demand growth and investment opportunities. Demographic dividends, low per capita consumption, increasing export demand and enabling Government initiatives are the key growth drivers for the industry. Indian CPC firms are also adopting the evolving trends in decarbonisation, sustainability and digitalisation, and these are expected to bring further investment opportunities and create value.

Petrochemical projects worth approximately USD 16 billion are under implementation and projects worth around USD 100 billion have been announced so far. The Department of Chemicals and Petrochemicals (DCPC), Ministry of Chemicals and Fertilisers, GoI, aims to transform India into a CPC manufacturing hub with a more business-friendly environment for domestic and international investors. The DCPC is proactively addressing the present challenges and implementing several flagship initiatives to improve the overall competitiveness, quality and output of the chemical industry.





Table of contents

1. India's economic scenario	10
2. Evolution of the Indian CPC industry	12
2.1 Key milestones	12
2.2 Planning and policy measures – Five-Year Plans	14
3. Market overview	18
3.1 Growth drivers	18
3.2 Industry size	19
4. Emerging trends and opportunities	22
4.1 Evolving developments	22
4.2 Industry opportunities	23
5. Key Government initiatives	28
5.1 Developments in the PCPIR policy	28
5.2 Recent initiatives and policies	29
6. Insights from industry leaders	32





01

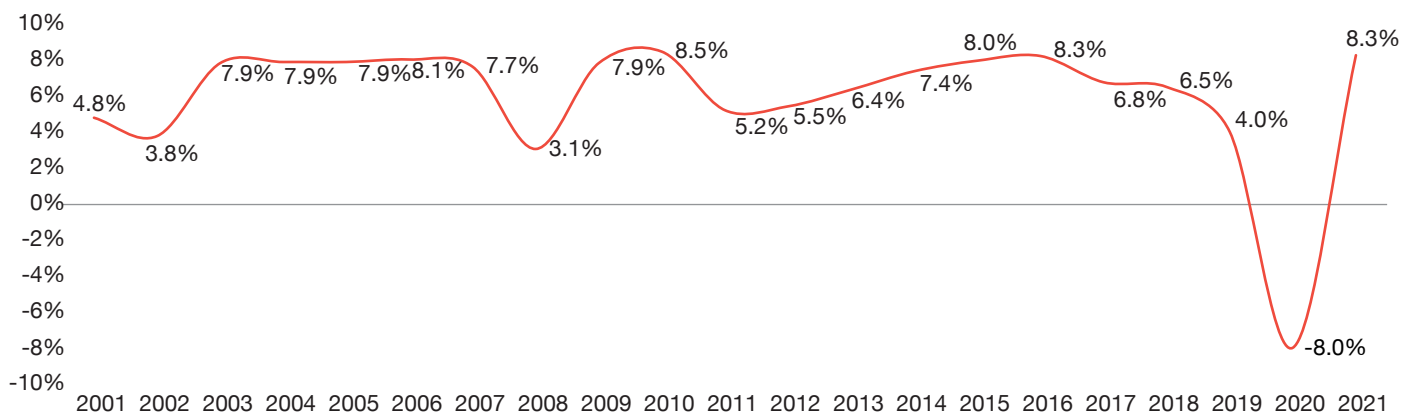
India's economic scenario

GDP growth

India's gross domestic product (GDP) grew at an average rate of 7% per annum in the last 20 years despite some major events like the global economic crises of 2007–09, dot-com crash of 2001–03, oil price crash of 2014 and various political and geographical setbacks.¹ The country's GDP contracted by 7.9% in FY21 due to the impact of the COVID-19 pandemic. In order to revive the economy, the Government of India (GoI) rolled out multiple stimulus packages, followed by the world's largest vaccination campaign. The proactive vaccination campaign along with Government support has resulted in a V-shaped recovery for the Indian economy. India's GDP in Q1 FY 2021–22 is estimated to increase by approximately 31% compared to the contraction of 22.3% in Q1 FY 2020–21.² India is expected to follow a robust growth trajectory with an estimated GDP growth of 8.3% for FY 2021–22, surpassing the major economies in the world.



Year-on-year (YoY) GDP growth rate of India (2001–21E)



Source: World Bank

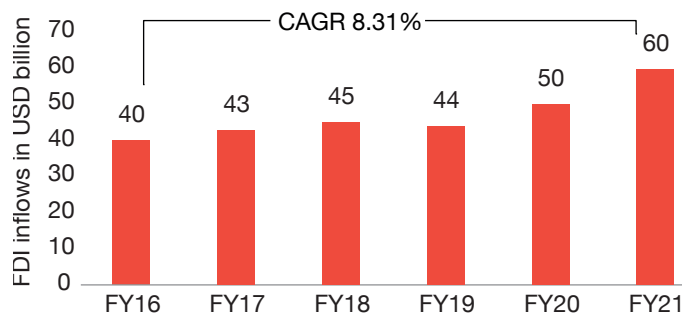
¹ <https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=IN>

² Reserve Bank of India

FDI inflows

In FY21, India's foreign direct investment (FDI) inflow stood at USD 60 billion, growing at a compound annual growth rate (CAGR) of 8.3% since FY16. Cumulative FDI inflows since FY 2000 amount to approximately USD 530 billion, about 55% of which have been realised in the past five years. Radical reforms such as Make in India, approval of 100% FDI through the automatic route and industrial delicensing have propelled the growth of FDI inflows, which recorded an increase of over 19.3% in FY21 over FY20. India attracted an FDI equity inflow of USD 17.5 billion during Q1 FY22, advancing by over 168% compared to FY21³. As per the UNCTAD (2020) report, India is amongst the top 10 FDI destinations.

FDI equity inflows between FY16–21 (in USD billion)



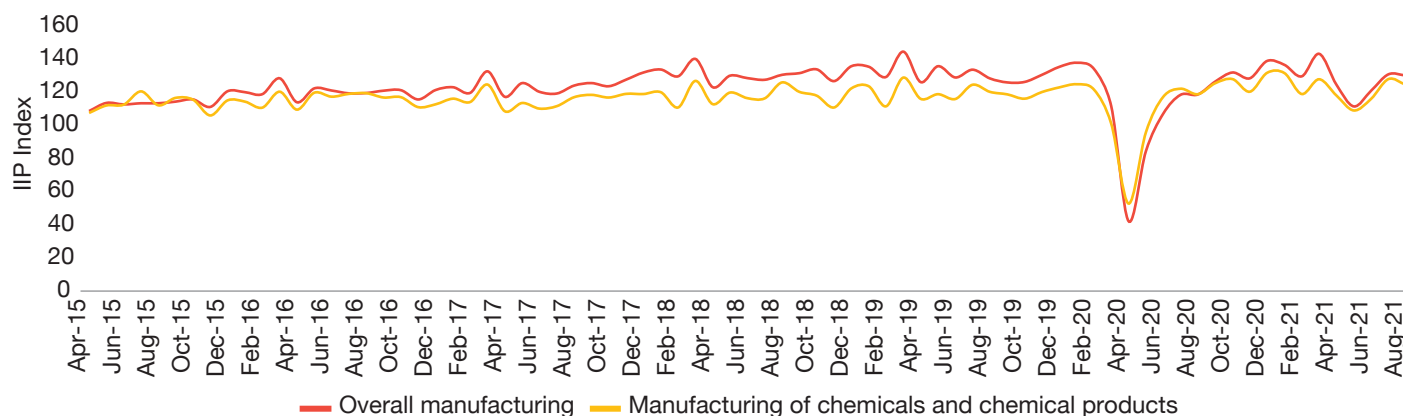
Source: Department for Promotion of Industry and Internal Trade

IIP trends

The index of industrial production (IIP) of the overall manufacturing and chemicals manufacturing segment has increased continuously in the last five years. However, the pandemic resulted in a steep decrease in value in April 2020 due to the nationwide lockdown, which led to manufacturing companies shutting down or not functioning at their full capacity. The IIP trends post August 2021 have started recovering and reaching pre-COVID levels, signifying the return of industrial activities.

India is perceived as a competitive and high-quality manufacturing country in the international market. India ranked sixth among the manufacturing countries⁴ and amongst the most competitive economies in South Asia.⁵

IIP trends in the manufacturing sector for chemicals and chemical products (FY16–21)



Source: Ministry of Statistics and Programme Implementation

³ <https://dpiit.gov.in/publications/fdi-statistics>

⁴ <https://www.unido.org/annualreport2019>

⁵ <https://www.weforum.org/reports/the-global-competitiveness-report-2020>

02

Evolution of the Indian CPC industry

2.1 Key milestones

The chemical and petrochemical (CPC) industry in India has a long and interesting history. The first effort to manufacture chemicals indigenously in India was undertaken by Acharya Prafulla Chandra Ray in 1901, with the establishment of Bengal Chemicals and Pharmaceuticals Works Ltd (now Bengal Chemicals and Pharmaceuticals Ltd [BCPL]) in Kolkata.⁶ It was the first company to manufacture quality chemicals, drugs, pharmaceuticals and home products in India. Subsequently, Shalimar Paint Color & Varnish Company (now Shalimar Paints) was established in 1902 and was the first company to start large-scale paint manufacturing in Howrah, West Bengal.⁷ Alembic Chemical Works, Vadodara, was founded in 1907 and engaged in distillation and utilisation of spirit in the manufacturing of pharmaceutical products.⁸ Multiple private companies emerged between 1919–1939, producing basic chemicals such as sulphuric acid, soda ash, caustic soda, chlorine and phosphate fertilisers. India's monopoly in the global cotton market had inherently led to the use of natural colorants since decades, which changed with the domestic production of synthetic dye for the first time in 1940 by Associated Research Laboratory (Arlabs Ltd). The industry further developed with the setting up of private pharmaceutical units on account of the decreased supply of drugs during the Second World War. By the time India became independent in 1947, a sizeable number of industrial units were already established, producing basic chemicals, dye stuff, explosives, fertilisers, etc.



6 <https://pharmaceuticals.gov.in/bengal-chemicals-pharmaceuticals-limited>

7 <https://www.shalimarpaints.com/>

8 <https://alembicpharmaceuticals.com/history/>



2.2 Planning and policy measures – Five-Year plans

The figure below details the evolution of the Indian CPC industry from 1900–2020.

Evolution of the Indian CPC industry: Five-Year Plans and developments



Five-Year Plan of Planning Commission

Source: NITI Aayog and PwC analysis

2017–2020

Vision to transform India into a USD 5 trillion economy by 2025

- Attracted FDIs, petrochemical capacity additions, increased exports and improved EoDB rankings

2012–2017

Faster, sustainable and more inclusive growth

Target growth: **5.0%**

Actual growth: **6.0%**

- Established an integrated chemical management policy and regulatory regime
- Focused on the availability of feedstock, promoted green technologies and cluster-based infrastructure development

2007–2012

Aimed at faster and inclusive growth – focus on poverty, employment, essential services, environmental sustainability

Target growth: **9.0%**

Actual growth: **8.0%**

- Encouraged oil and gas exploration, energy efficiency and operational excellence
- Undertook R&D initiatives and investments in industrial infrastructure

2002–2007

To set monitorable growth targets and social development on state level

Target growth: **8.0%**

Actual growth: **7.6%**

- Created an industrial policy environment, privatised non-strategic public enterprises, improved legal and procedural processes, upgraded existing capital assets

1997–2002

Facilitate growth in social sector and infrastructure

Target growth: **6.5%**

Actual growth: **5.4%**

- Focused to build a strong science and technology base, strengthen technology transfer mechanisms, develop non-conventional energy sources
- Promoted bio-industrial development

1992–1997

Reduce debt burden, combat recession and control inflation

Target growth: **5.6%**

Actual growth: **6.8%**

- Introduced new reforms – industrial, fiscal, trade and foreign investment policies
- Delicensing and deregulation in petrochemical industry
- Focused on natural gas utilisation and LPG production

1985–1990

Accelerate production, productivity and employment opportunities

Target growth: **5.0%**

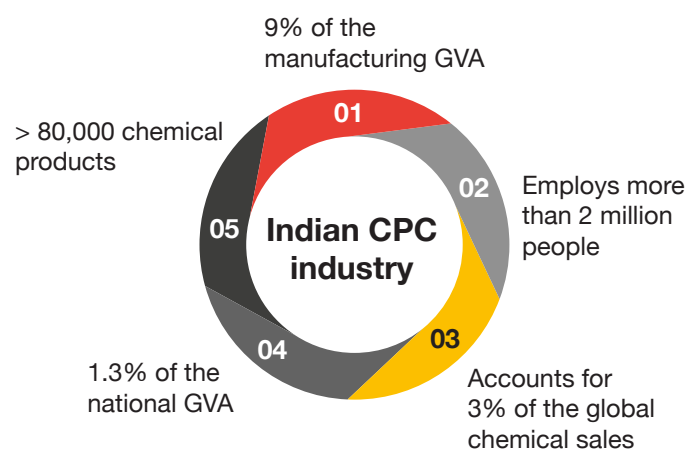
Actual growth: **6.0%**

- Facilitated adoption of engineering technologies, new scientific areas (process efficiencies, pollution control, energy efficiency), marketing networks for penetration of pesticide use

India entered the petrochemicals arena much later and primarily manufactured ethanol (produced from molasses) throughout the 1950s. Ethanol was used as the main feedstock for producing ethylene. Ethanol-based ethylene was produced by a number of companies, including Imperial Chemicals Industries (ICI) (now AkzoNobel) for manufacturing low-density polyethylene (LDPE) in Rishra, West Bengal, Synthetics and Chemicals Ltd for manufacturing styrene-butadiene (SBR) in Bareilly, Uttar Pradesh, and Chemicals and Plastics Ltd for manufacturing polyvinyl chloride (PVC) in Metturdam, Tamil Nadu. Some of the other industrial units located in the sugar-producing states used ethanol as feedstock for manufacturing mono ethylene glycol, acetic acid, ethyl acetate, acetone, butanol, etc. Production of ethylene from naphtha started in 1961 and was led by the establishment of the first ethylene cracker set-up by Union Carbide (now Eveready Industries India Limited) in Chembur, Mumbai. Naphtha was then sourced from ESSO Refinery (now HPCL) in the vicinity of the cracker. In 1963, ICI set up a manufacturing facility for polyester staple fibres in Mumbai. The petrochemical industry grew tremendously post 1970, driven by the strategic Five-Year plans led by expert committees. India's first fully integrated petrochemical complex with six downstream units was commissioned at Vadodara, Gujarat, by Indian Petrochemicals Corporation Ltd (IPCL) in 1979, providing an impetus to the rapid growth and development of downstream process industries.

Today, India ranks sixth globally and fourth in Asia in terms of global sale of chemicals.⁹ More than 80,000 varieties of chemicals and petrochemicals are manufactured in the country, and the industry employs over two million people. India is known for the export of specialty chemicals and specific agrochemicals, dyes and pigments. It is the fourth-largest producer of agrochemicals globally and exports about 50% of the production. India is also the second-largest manufacturer and exporter of dyes.¹⁰

The CPC industry accounted for around 9% of India's manufacturing gross value added (GVA) and 1.3% of its national GVA in FY20. Chemical manufacturing accounted for 1.4% of the total FDI equity inflows in FY21.¹¹



Source: MOSPI, DCPC and industry sources



⁹ <https://cefic.org/our-industry/a-pillar-of-the-european-economy/facts-and-figures-of-the-european-chemical-industry/> (excludes pharmaceuticals)

¹⁰ <https://ficci.in/spdocument/20065/new-report.pdf>

¹¹ <https://dpiit.gov.in/publications/fdi-statistics>



03

Market overview

The section below details some of the key growth drivers of the CPC industry.

3.1 Growth drivers



Increasing middle class and working population

By 2025, India's working population is expected to increase by 33% to reach 1.14 billion along with tripled income levels. The average median age of the country shall be 37.3 years by 2050.¹²



Increasing focus on R&D

Chemical companies are investing in R&D activities to develop their niche in the market. Moreover, they are also tying up to develop green products and chemistries (e.g. India Glycol Ltd have signed a joint venture (JV) agreement to develop renewable ethylene oxide).¹⁴



Headroom for per capita consumption

The per capita consumption of polymers and paints in India is about one-third and one-fourth of the global average. Whereas the per capita consumption of FMCG products and agrochemicals in China is almost four times compared to India. The overall per capita consumption of chemical products in India is one-fifth of the global average in terms of value, leaving a large headroom for improvement.¹³



Energy efficiency

The GoI is prioritising energy affordability and security measures as an integrated part of the country's economic development. Industrial sectors achieved an energy savings of 1.4 exajoule between 2014–2018, driven by the Perform, Achieve and Trade (PAT) scheme. The construction and transport sectors are also on the Government's priority list. Continued energy efficiency measures are leading to an increase in the demand for plastic insulations – polystyrene and polyurethanes, low thermal conductivity and light-weight polycarbonates, etc.



Increasing adoption of specialty products

Increasing awareness towards health and hygiene has resulted in the growing adoption of nutraceutical ingredients (increased demand for vitamins, amino acids, etc.) and personal and home care ingredients (increased demand for emollients, surfactants, active ingredients, etc.). The demand for engineering plastics and high-performance materials is increasing with rapid urbanisation and industrialisation led by the growth in automotive, electronics, consumer goods, construction and other sectors.

¹² <https://www.un.org/en/development/desa/population/publications/pdf/ageing/WorldPopulationAgeing2019-Highlights.pdf>

¹³ FICCI, Hindustan Uniliver Limited and IHS Markit

¹⁴ <https://www.clariant.com/>

3.2 Industry size

The CPC industry plays a crucial role in the development of a country's industrial and agricultural sectors. The Indian CPC industry has reached significant milestones in terms of capacity additions and value growth in the last 70 years. Basic heavy chemical production capacity stood at 223 kilo tonnes (KT) in FY1951¹⁵ compared to 10 million metric tonnes (MMT) and 1.5 MMT for alkali and inorganic chemicals respectively in FY20. Back then, increasing agricultural output was the primary reason why basic chemical manufacturing capacities were developed since India was primarily an agricultural economy. Today, such chemicals are used in a variety of end-use industries. Petrochemicals, especially polymers, have witnessed higher growth in the past owing to their light weight and chemical and mechanical properties, gradually replacing metals, wood and natural fibres. India's rate of petrochemical growth has always outpaced the global rate primarily due to the country's large population base. Moreover, India entered the petrochemical market nearly 20–25 years after petrochemicals were introduced globally, resulting in their increased domestic adoption.

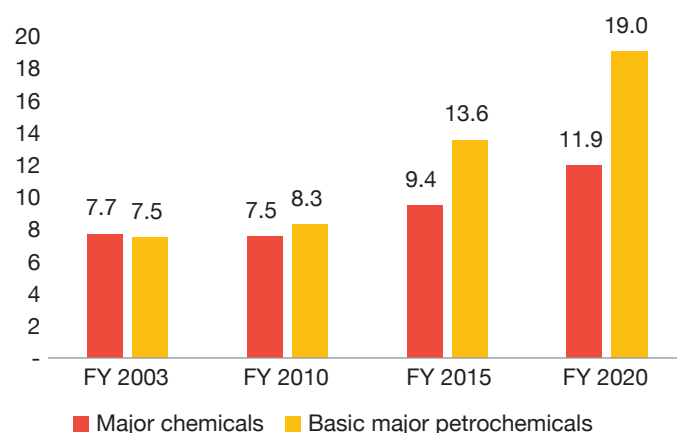
Between 1990–2001, India witnessed a four-time growth in the demand of linear low-density polyethylene (LLDPE) compared to the global industry, followed by three-time growth for high density polythene (HDPE) and PVC respectively.¹⁶

The production of chemicals (which includes alkali chemicals, inorganic chemicals, organic chemicals, pesticides and insecticides, dyes and dyestuff) has increased at a CAGR of approximately 3% between FY03 and FY20. The production of basic petrochemicals (synthetic fibre yarns, polymers, elastomers, synthetic detergents, and performance plastics) has increased at a higher CAGR of approximately 6% between FY03 and FY20.

In terms of value, the Indian chemical industry has grown significantly in the last ten years at a CAGR of approximately 7% and 5% between FY10–15 and FY15–20 respectively. It was estimated to be worth USD 187 billion in FY20, followed by a reduction in FY21 (estimated USD 177 billion) as a result of lower demand and supply-chain disruption due to the pandemic.¹⁷

Chemicals and chemical products are of significant importance in the overall manufacturing sector due to their direct and indirect applications in most industrial segments such as food and beverages, textiles, leather, metal extraction and processing, petroleum refining, pharmaceuticals and rubber. As a result, manufacturing of chemicals is closely related to the manufacturing sector's IIP. Manufacturing of chemicals and chemical products contributed to over 9% of the overall GVA of the manufacturing sector in FY20.

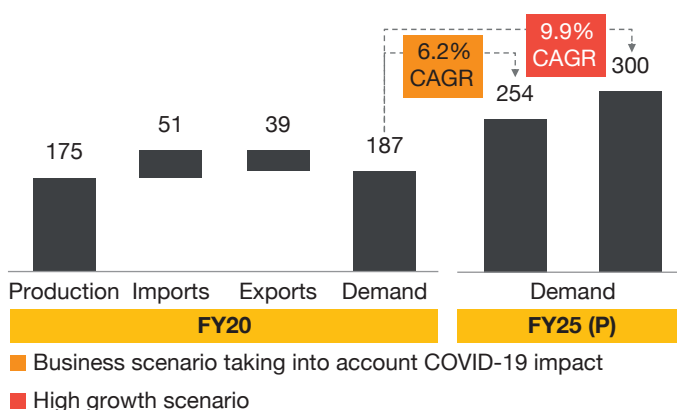
Production of chemicals and basic petrochemicals from FY03–20 (in million tonnes)



Source: DCPC

With the IIP of chemical and chemical products manufacturing recovering to pre-COVID levels, the chemical industry is expected to witness a V-shaped recovery by FY22, similar to India's GDP recovery trend. The industry is expected to grow at a CAGR of 6.4% by FY25 to reach USD 254 billion. In order to reach USD 300 billion by FY25, the chemical industry needs to grow at a CAGR of 9.9% in the next five years, which seems achievable considering Government initiatives and the growth in the consumer base, changes in lifestyle, increase in disposable incomes and focus on healthcare and hygiene.

Size of the Indian chemical industry (FY20–25)



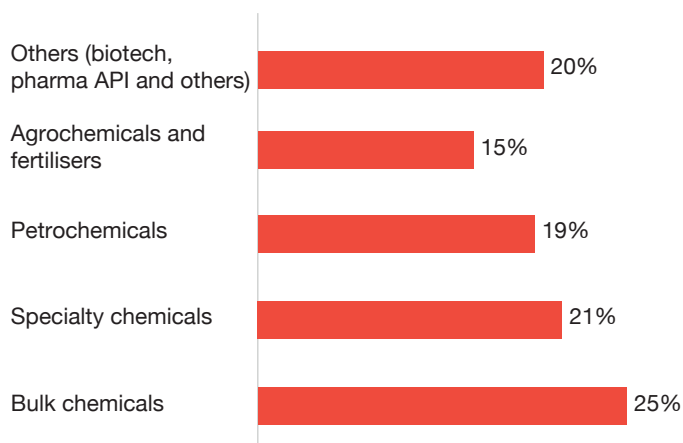
Source: DCPC, FICCI and PwC analysis

¹⁵ Capacities based on sulphuric acid, caustic soda and soda ash (First Five-Year Plan)

¹⁶ https://papers.ssrn.com/sol3/papers.cfm?abstract_id=954912

¹⁷ <http://mospi.nic.in/>

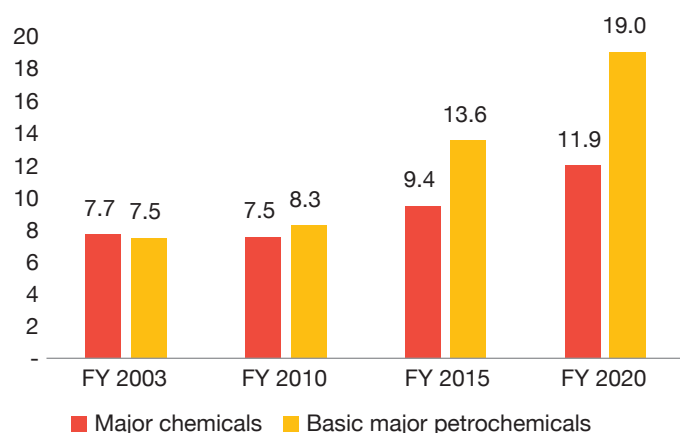
Chemical industry market by sub segments in FY20 (in USD billion)



Source: DCPC, FICCI and PwC analysis

Globally, India ranks sixth in the import and ninth in the export of chemicals and chemical products (excluding pharmaceutical products) respectively. Chemical products contributed 12.9% to India's total exports and 12.8% to India's total imports in FY21.¹⁸ Its import rate increased at a CAGR of 5.4% between FY16 and FY20 with petrochemical intermediates accounting for a major share of over 30% of the total. On the other hand, export of chemicals and chemical products grew at a CAGR of 7.2% between FY16 and FY20. Specialty chemicals account for over 50% of chemical exports, dominated by agrochemicals, dyes and pigments, etc. Export of inorganic chemicals, staple fibres, filaments and tanning chemicals was slightly impacted due to the pandemic in FY21 which resulted in lower exports compared to FY20.¹⁹

Import and export of chemicals and petrochemicals from FY16–21 (in USD billion)



Source: DCPC



¹⁸ <https://commerce.gov.in/>

¹⁹ <https://chemicals.nic.in/>



04

Emerging trends and opportunities

4.1. Emerging trends

Several global megatrends are impacting the Indian economy and subsequently, the Indian CPC industry. Some of the key trends that are emerging and shaping the country's CPC industry are discussed below.

01 Shift in customer preferences

Consumers are increasingly demanding innovative and personalised goods and services. They have become more conscious about the products that they use and their impact on health and the environment, resulting in shifting preferences towards milder and safer products with pure ingredients. At the same time, consumers are also willing to pay a premium price for such eco-friendly products. For example, the increasing demand for sustainable food packaging and naturally oriented home and personal products shows how consumer preferences have changed.

02 Increasing per capita consumption

The per capita consumption of polyethylene and polypropylene together has increased from approximately 6.5 kg in 2015 to 8.2 kg in 2020.²⁰ The present per capita consumption of chemical products in India is about one-tenth of the global average and is expected to double by 2025.²¹

03 Digitalisation and Industry 4.0

Digitalisation and Industry 4.0 offer a competitive advantage through improved horizontal and vertical integration, operations management, innovation and new digital business models. Chemical companies today are implementing digitalisation initiatives and tools in their supply chains, demand planning and pricing strategies. For example, organisations are using data-based operating models and implementing sensors in production sites to generate real-time data on a plant's operational status. Such data can be used as a starting point for algorithms that forecast machine breakdowns and their causes. Production losses can be prevented by such predictive maintenance methods, resulting in significant cost and time savings.

04 Innovation and sustainability

Sustainability and circular economy principles enable value addition from balancing economic, social and environmental impact, opportunities for innovation and new chemistries. The four factors that are accelerating the chemical industry's transition to sustainability and circular economy are increasing consumer demand for environment-friendly products, voluntary commitment of brand owners to sustainability targets, shift towards responsible investing as a new standard and reduction in greenhouse gas emission to slow down global warming.

The chemical industry has been at the forefront of adopting stricter environmental regulations owing to its nature of handling diverse and complex chemical groups. Organisations are undertaking proactive efforts to develop sustainable and innovative products, and implement new technologies that enable circularity.

05 Increasing M&A activities

Optimising footprint to cater to geographically shifting demand and forward integration into petrochemicals and chemicals has been the most prevalent trend in the petrochemical industry. Whereas, divestment of the non-core elements, portfolio broadening and building comprehensive product offering have been the mergers and acquisitions (M&A) trends for the specialty chemicals and agrochemicals industry. The Indian specialty chemicals industry has witnessed M&A on account of portfolio expansion, process improvement, technology absorption, new market entry and scale-up. Acquisitions in the agrochemicals and specialty chemicals have been prominent in the past and is gaining further traction based on recent announcements.

Going forward, companies are planning to invest in green R&D portfolio and technologies, develop a digitally enabled ecosystem to scale innovation, upgrade critical infrastructure and capitalise on new opportunities to buy low.

²⁰ DCPC and PwC analysis

²¹ <https://chemicals.nic.in/chemical>

4.2. Industry opportunities

Huge investment opportunities across all CPC segments are present in India. Demographic dividends, low per capita consumption, increasing export demand and rising income levels are driving the demands for chemicals. Some of the important opportunities and challenges in the CPC segments are discussed below.

4.2.1 Petrochemicals

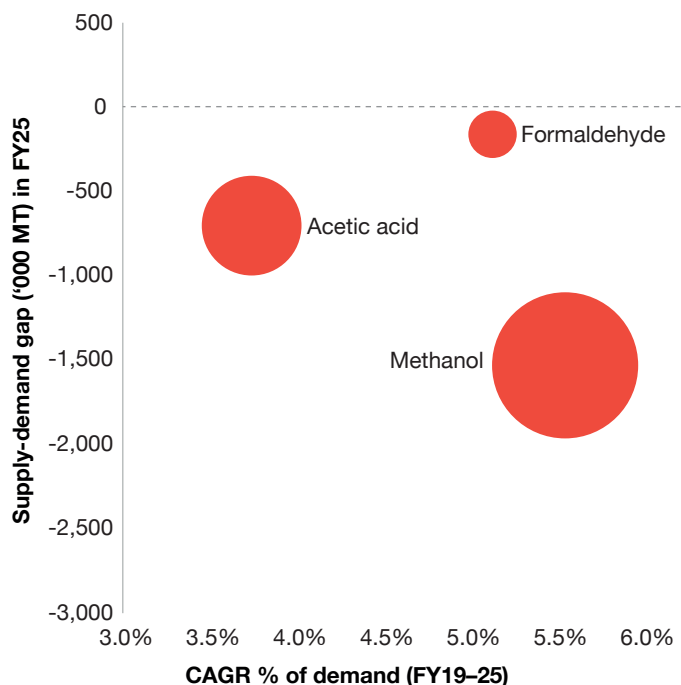
C1 derivatives: The application of methanol has transitioned from a chemical intermediate to a fuel carrier and later as an intermediate for olefins – ethylene and propylene. In India, methanol is primarily used as a chemical intermediate and is the single-largest organic chemical imported. Access to a huge amount of low-cost raw material – that is, natural gas and low-ash coal – is a must to support the multimillion demand for methanol. As India lacks the availability of cheap natural gas, abundant availability of coal seems to be a favourable option but requires the development of technology to monetise high-ash content coal. In the past, imported technologies have proven to be expensive, with stiff competition from China and Middle Eastern countries that have access to cheap natural gas.

Carbonylation of methanol is the most widely followed route for acetic acid production and the technology is guarded with four–five licensors reluctant to provide licences outside the existing JVs. India's methanol production challenges further add up to the unfavourable economics of acetic acid plants. Though the manufacturing of acetic acid seems to be a lucrative business, import dependency, technology availability and economics of production are the severe challenges which are expected to last longer. Forward integration of acetic acid into vinyl acetate has remained a non-functional route given the associated challenges.

C2 derivatives: India is amongst the largest importers of mono-ethylene glycol (MEG), importing an average of approximately 800 KT annually. The requirement is driven by the large demand for polyesters. The shortfall in the supply of MEG is expected to be substantial in 2025. Newly incepted petrochemical expansion projects have considered MEG in their product slates, which will reflect in supplies in the mid to long term. Polyesters are expected to face competition from nylon with reduced custom duties announced on caprolactam and nylon.

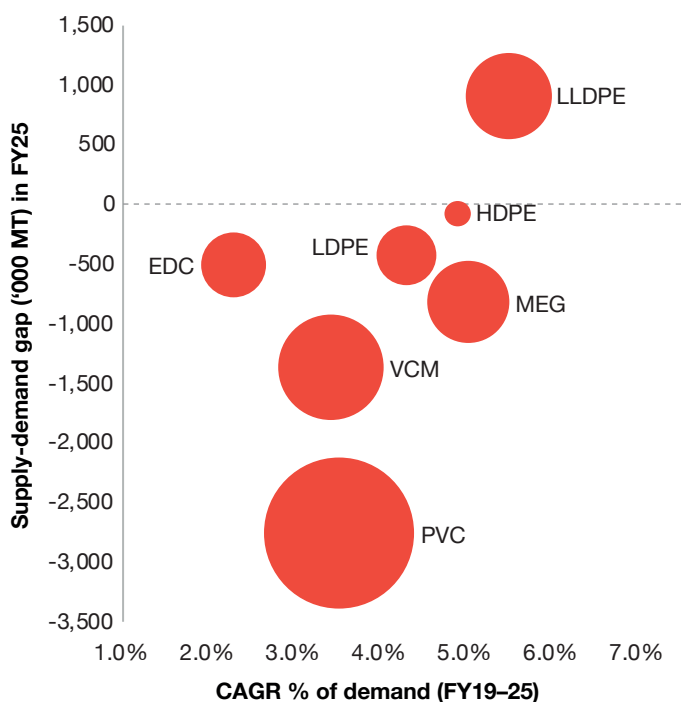
India has been the largest importer of PVC in the past and the same trend is expected to continue in the mid-to-long term. The primary reason for the demand is the lack of availability of ethylene and complexity in handling and storage of chlorine. Thus, the demand for chlorine in the form of EDC or VCM is met through imports. However, the most competitive producers are the ones with full integration with ethylene and chlorine. PVC production based on ethylene dichloride (EDC) imports can also be evaluated for investments.

Opportunities in the C1 value chain



Source: PwC analysis

Opportunities in the C2 value chain



Source: PwC analysis



PVC production in China is majorly based on the carbide route (starting with limestone and coal) which consumes high amount of energy. The energy-led curtailments in China and polluting carbide route have resulted in closure of PVC plants in the country. India can take advantage of the situation to increase PVC production. The recent announcement of a two million tonne coal-to-PVC project echoes the China strategy and could be a game changer for India's import-dependent PVC market.

The mighty HDPE and LLDPE grades of polyethylene are expected to be produced in sufficient volumes to cater to the domestic demand up to 2025. However, the long-term outlook for LLDPE is likely to be contained due to its major application in plastic films, the usage of which is increasingly being regulated due to waste-management initiatives. As manufacturers migrate towards high-thickness films, investors should be selective about technologies that are capable of manufacturing metallocene-grade LLDPE along with other grades.

Low-density polyethylene (LDPE) is also expected to face a shortage in supply as the demand for the product is increasing and there is no announcement on new capacity additions in near future.

C3 derivatives: Polypropylene (PP) is a versatile polymer that has replaced multiple applications of its peers owing to its excellent strength and durability. India will have excess propylene and is expected to become a net exporter of PP by 2025. Private as well as public sector undertakings are already in the process of implementing their PP projects.

Availability of propylene has been a challenge for the merchant market in the past, and this has restricted the development of high-value derivatives in the C3 value chain. On-purpose production of propylene via propane dehydrogenation (PDH) is a talking point these days. PDH technology is quite mature and prominent in China. Investors are looking to explore opportunities in trading propane/LPG and evaluating PDH projects.

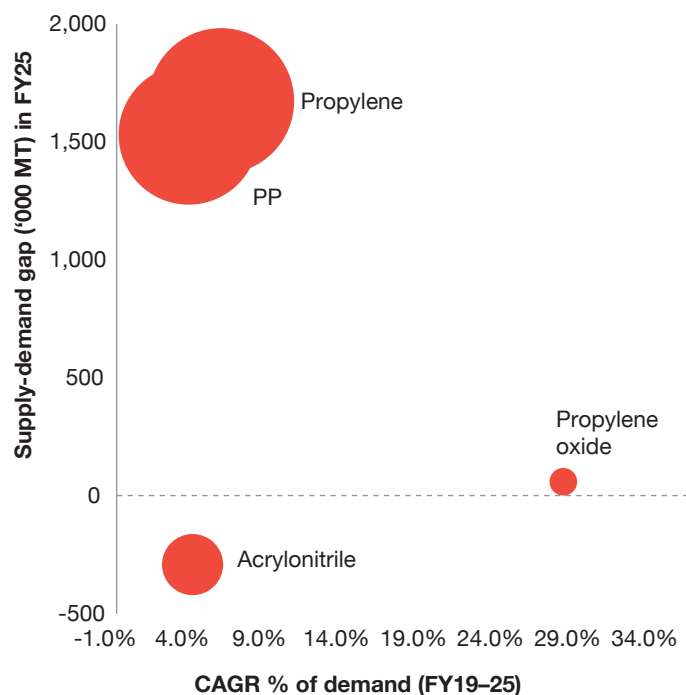
Acrylonitrile is an important derivative of propylene which is most widely manufactured through the ammoxidation of propylene using ammonia and air. Access to propylene, handling of the process that involves formation of hydrogen cyanide as of by-product and disposal of the effluent are the key challenges limiting the development of acrylonitrile projects. With no local manufacturer, significant investment opportunities are restricted to experienced manufacturers of acrylonitrile.

Oxo alcohols are another group of chemicals derived from propylene and have profound investment opportunities in India. n-butanol (NBA), isobutanol (IBA) and 2-ethylhexanol (2-EHA) are the major oxo alcohols which are primarily used in the production of phthalate-based PVC plasticisers. At present, Andhra Petrochemicals Limited is the only manufacturer of oxo alcohols in India. With BPCL's commissioning of its propylene derivatives project (Acrylic acid-47 KT, Butyl acrylate-180 KT, 2-Ethyl Hexyl Acrylate-10

KT, butanol-45 KT and 2EHA-47 KT), the stunted supply has begun to recover. While IOCL Dumad (Acrylic acid-90 KT, Butyl acrylate-153 KT and butanol-100 KT) is in the process of implementing another project, other refiners are also eyeing opportunities in the value chain. Despite one project being operational and the other in the implementation stage, India's demand for oxo alcohols outstrips the domestic supply.

The availability of propylene may trigger new capacities in the C3 value chains. Integrated projects in propylene oxide, propylene glycol, polyols, acrylic acid, oxo alcohols, cumene, bisphenol, etc., can be further explored.

Opportunities in the C3 value chain

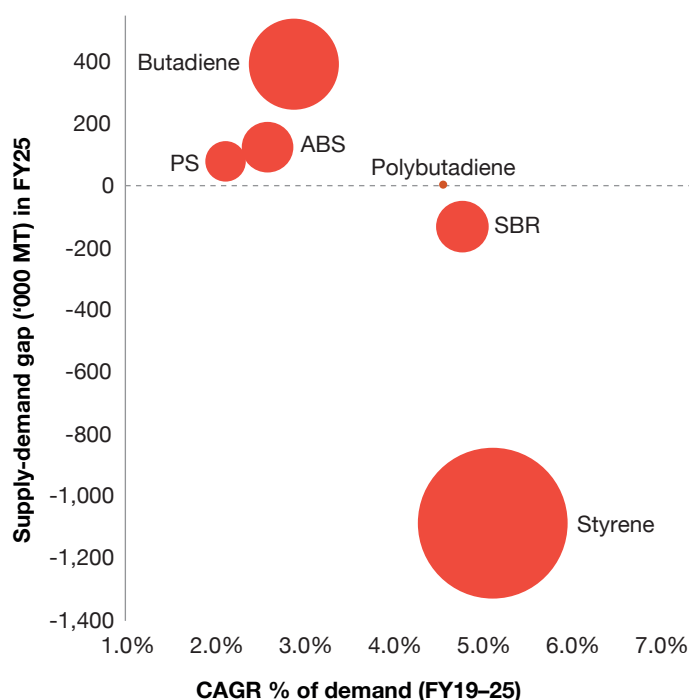


Source: PwC analysis

C4 derivatives: India has surplus butadiene capacity. The availability of styrene and acrylonitrile is a challenge for C4 derivatives. Integrated acrylonitrile-butadiene-styrene co polymer (ABS), styrene butadiene rubber (SBR) and butadiene derivative projects may be evaluated for investments.

C2/C6 derivatives: The GoI has recently announced a ban on the usage of single-use plastic. The ban will come into effect from July 2022 for most single-use plastic varieties. General-purpose polystyrene grade, a derivative of styrene, is the major grade of polystyrene consumed in the production of single-use disposable products and its demand will be significantly impacted. Other grades of polystyrene – high-impact polystyrene and expanded polystyrene – allow attractive investment opportunities despite their relatively less demand. Styrene projects in India have primarily failed owing to the stiff competition from large and integrated styrene projects in the Middle East. Integrated benzene projects can still be explored, considering optimised techno-economics.

Opportunities in the C4 and C2/C6 value chains



Source: PwC analysis

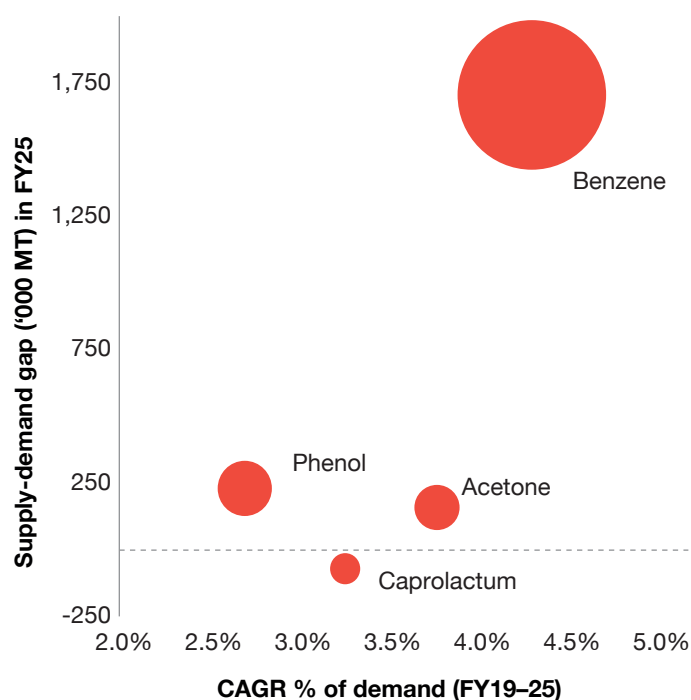
C3/C6 derivatives: India is a net exporter of benzene and the availability of excess benzene opens up multiple attractive opportunities in the benzene value chain. The production of styrene from ethyl benzene and further conversion into ABS and SBR is another attractive value chain. Styrene derivative plants are being planned at Panipat and Haldia.

Integrated phenol projects can be explored given the increasing demand for phenol resins and the presence of limited players in the phenol value chain. The demand for its by-product acetone can be balanced via forward integration into iso propyl alcohol (IPA), although access to propylene poses a challenge to the manufacturing of phenol.

Bisphenol A is another derivative of benzene and a critical raw material for manufacturing epoxy resins. With a limited domestic capacity and supply demand gap of approximately 60 KT, bisphenol A qualifies for an attractive investment opportunity. The recent imposition of customs duty on bisphenol A further holds a positive outlook for forward integration.

Aniline is another chemical derived from benzene via nitrobenzene that can be used as an intermediate for dyes, rubber chemicals, etc. The demand for aniline in India is about 125 KT, which at present faces a supply-demand gap of approximately 72 KT. Technologies to manufacture nitrobenzene and aniline are available and new aniline projects can be explored given the increasing demand in end-use industries.

Opportunities in the C3/C6 value chain



Source: PwC analysis

C8 derivatives: PTA is majorly used as a raw material in the manufacturing of polyesters and their demand is increasing at an annual growth rate of over 8–9%, majorly driven by polyester yarn and PET bottles. Limited availability of domestic PTA and the promising demand for polyesters make PTA a lucrative investment opportunity. Planning of PTA projects requires acetic acid, which needs to be imported.

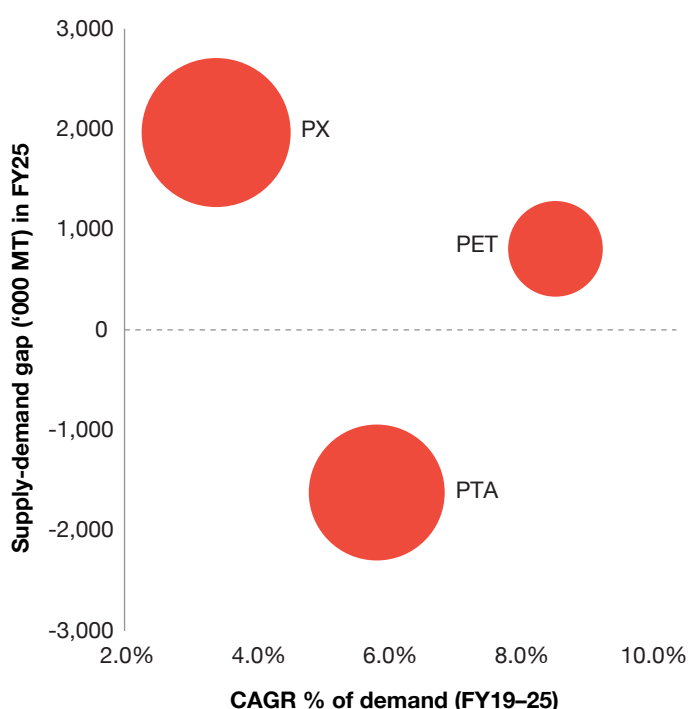
Purified isophthalic acid (PIA) is a comonomer used along with PTA in the manufacturing of bottle-grade PET resin. PIA reduces the crystallinity and imparts clarity in the resin. At present, PIA is entirely imported in India from Northeast Asia. PIA offers attractive investment opportunities as the demand for PET increases.

The ever-rising domestic demand for PET bottles bring in tremendous opportunities for recycling and business model innovation.

4.2.2 Chemicals

The specialty chemicals segment has grown at an impressive rate of approximately 11.7% (in terms of value) in the last five years. The COVID-19 pandemic had a positive impact on the demand for flavours and fragrances, personal care chemicals, nutraceutical ingredients and surfactants as a result of increased consumption of hygiene products, packaged foods, energy drinks and nutraceuticals. The pandemic had a neutral or negative impact on the demand for other products such as polymer additives, paints and coatings, dyes and pigments, water treatment chemicals, and textile and construction chemicals due to the lockdown. The segment has immense

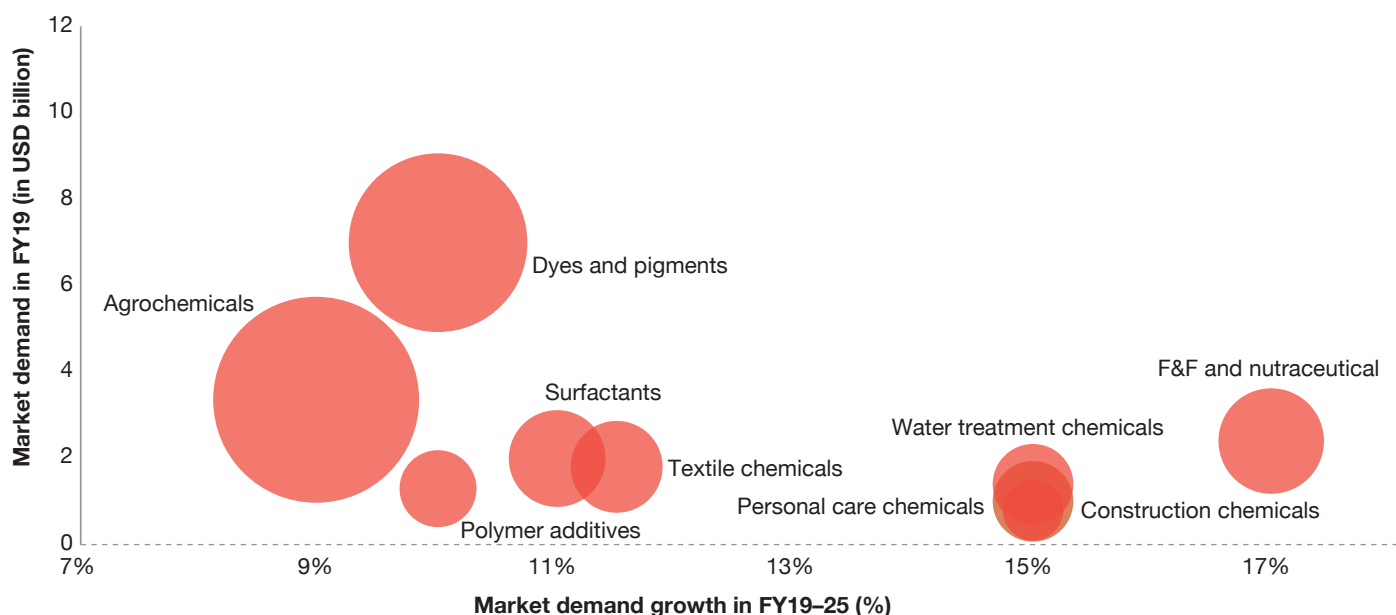
Opportunities in the C8 value chain



Source: FICCI

growth potential due to the increasing demand from construction, automotive, packaging, water treatment, home and personal care, food processing, nutraceuticals and other demand-driven sectors.

Growth in the specialty chemicals segment



Source: FICCI

India has faced significant challenges in developing local production capacities due to competition from foreign manufacturers, lack of access to technologies, raw material shortages, etc. Acrylic acid, methyl methacrylate and poly methyl methacrylate together account for over a supply-demand gap of approximately 145 KT. The linear alkyl benzene market is experiencing a supply-demand deficit due to the increasing demand of home care and industrial cleaning chemicals, and reluctance of manufacturers to invest in high capex technologies. The aniline market has a

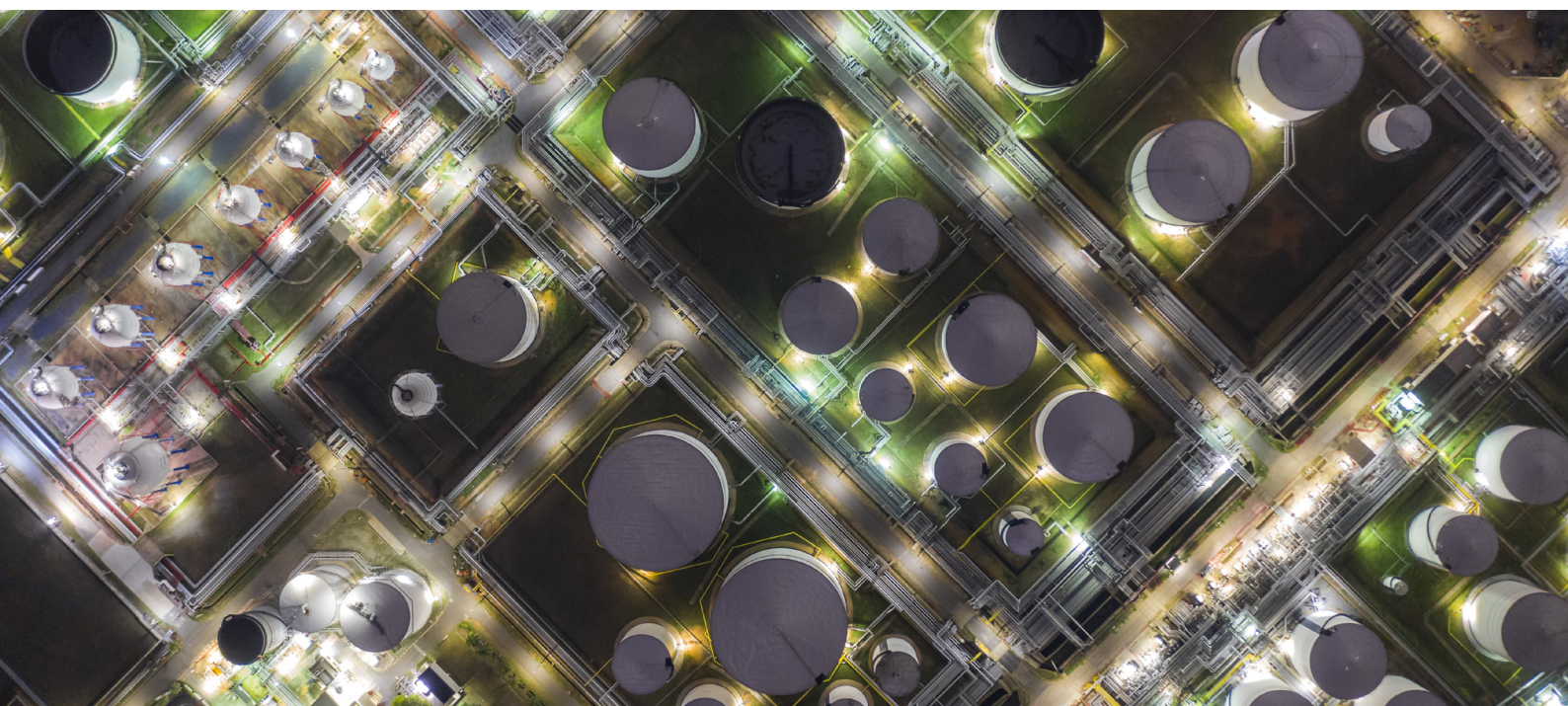
limited number of players and the present demand outstrips supply with over 70 KT of the product being imported to India. Calcium nitrate finds applications in fertiliser production, wastewater treatment, concrete admixtures setting, etc. At present, calcium nitrate is mostly imported.

The figure below lists some of the important chemicals which provide investment opportunities for domestic and international companies.

Key chemicals with supply-demand deficit

225 KT Polyamides	150 KT Isopropyl alcohol	260 KT Linear alkyl benzene	25 KT Amino phenol	60 KT Bisphenol A
70 KT Methyl amines	180 KT Maleic anhydride and phthalic anhydride	70 KT Aniline	140 KT Mono ammonium phosphate	120 KT Calcium nitrate
40 KT Melamine	50 KT Acrylic acid	42 KT Adipic acid	90 KT Methyl methacrylate and its polymer	45 KT MEK

Source: PwC analysis



Key Government initiatives

5.1 Development of PCPIRs

The GoI had launched the Petroleum, Chemicals and Petrochemicals Investment Region (PCPIR) policy in April 2007 to promote investment in the CPC sector and make India a manufacturing hub for both domestic and international markets. At present, PCPIRs are being developed in the states of Andhra Pradesh (Vishakhapatnam), Gujarat (Dahej) and Odisha (Paradeep). A new petrochemical cluster is being developed in Barmer district of Rajasthan, namely Hindustan Petroleum Corporation Limited (HPCL) Rajasthan Refinery Limited.²²

The Government is taking active steps in amending the previous PCPIR policy. Completion of all the existing projects and streamlining the processes to smoothen the roadblocks are being taken up on priority. The Central Government has decided to take over and lead the development of PCPIRs. The proposed new PCPIR policy will be implemented between 2020–35 and is expected to attract a combined investment of over USD 420 billion. As per the draft policy, the size requirement of a PCPIR is being reduced from 250 sq. km to 50 sq. km, with specific cluster-integration strategy. Provisions for viability gap funding of 20% are being planned for both infrastructure projects and smart utilities. Additional funding for project design and management consultancy is also being provisioned. The PCPIRs will be equipped with smart utilities such as common effluent treatment plants, integrated solid waste management projects and environmental monitoring systems.



The objectives of the PCPIR policy are:

Attracting FDI and domestic investments in the CPC sector through a transparent and investment friendly policy and facility regime

Providing state-of-the-art common infrastructure and support services to enable benefits of co-siting, networking and improved efficiency

Ensuring the availability of petrochemical feedstock, improving regulatory policies, facilitating exports and enabling infrastructure, logistics and skill development

Changing the image of the CPC industry within India and making Indian CPC products/services more popular internationally

Prioritising resource allocation through a defined policy framework and ensuring safe and sustainable operations

Promoting green chemistry and focusing on specialty chemicals

²² <https://hrrl.in/>

5.2 Recent initiatives and policies

The GoI aims to transform India into a CPC manufacturing hub with initiatives and policy reforms to create a more business-friendly environment for domestic and international investors. India's Ease of Doing Business (EoDB) ranking has improved from 142 in 2014 to 63 in 2019.²³ The Government is also taking bold steps with initiatives such as the Chemical (Management and Safety) Rules (CMSR), Extended Producer Responsibility (EPR) rules and rationalising the basic customs duties on raw material used by the domestic manufacturers. The focus of the Government is to continue removing anomalies and challenges in the indirect tax regime – especially the inverted duty structure – which impedes the Make in India policy.

The GoI is taking progressive steps to transform the domestic manufacturing sector and aims to transform India into a global CPC manufacturing hub. Recently, the GoI announced multiple economic stimulus packages to kick-start the COVID-affected economy, launched the

Production Linked Incentive (PLI) Scheme for over 13 sectors, implemented tax and labour reforms, set up the National Infrastructure Pipeline (NIP), developed various chemical industry specific policies and schemes, including public procurement policy. The Government has also set mandatory Bureau of Indian Standards (BIS) regulations, launched skill development programmes and renewed the PCPIR policy to support the development of the CPC sector.

The PLI Scheme has now been extended for a total of 13 sectors with an outlay of USD 28 billion. With this, the minimum production in the country as an outcome of the PLI Scheme stands to be around USD 500 billion in the next five years.²⁴ The scheme also provides cashback and incentives between 2–20% of the incremental sales revenue (over the base year) and incremental exports revenue, depending on the sector.

Revised custom duties on petrochemical intermediates, chemicals, and specialty chemicals

Raw material/product	Key immediate applications	Rate of basic custom duty	
		From	To
Caprolactam, nylon chips, nylon fibre and yarn	Textiles and technical textiles	7.5%	5%
Carbon black	Tyre, plastic processing, paints and inks	5%	7.5%
Bisphenol A	Epoxy resins and polycarbonates	Nil	7.5%
Epichlorohydrin	Epoxy resins and synthetic glycerine	2.5%	7.5%
Builder's ware of plastics	Building and construction	10%	15%
Polycarbonates	Automotive, building and construction, and appliances	5%	7.5%
Methylene diphenyl diisocyanate (MDI)	Spandex yarn and polyurethanes	Nil	7.5%

Source: Union Budget FY21–22

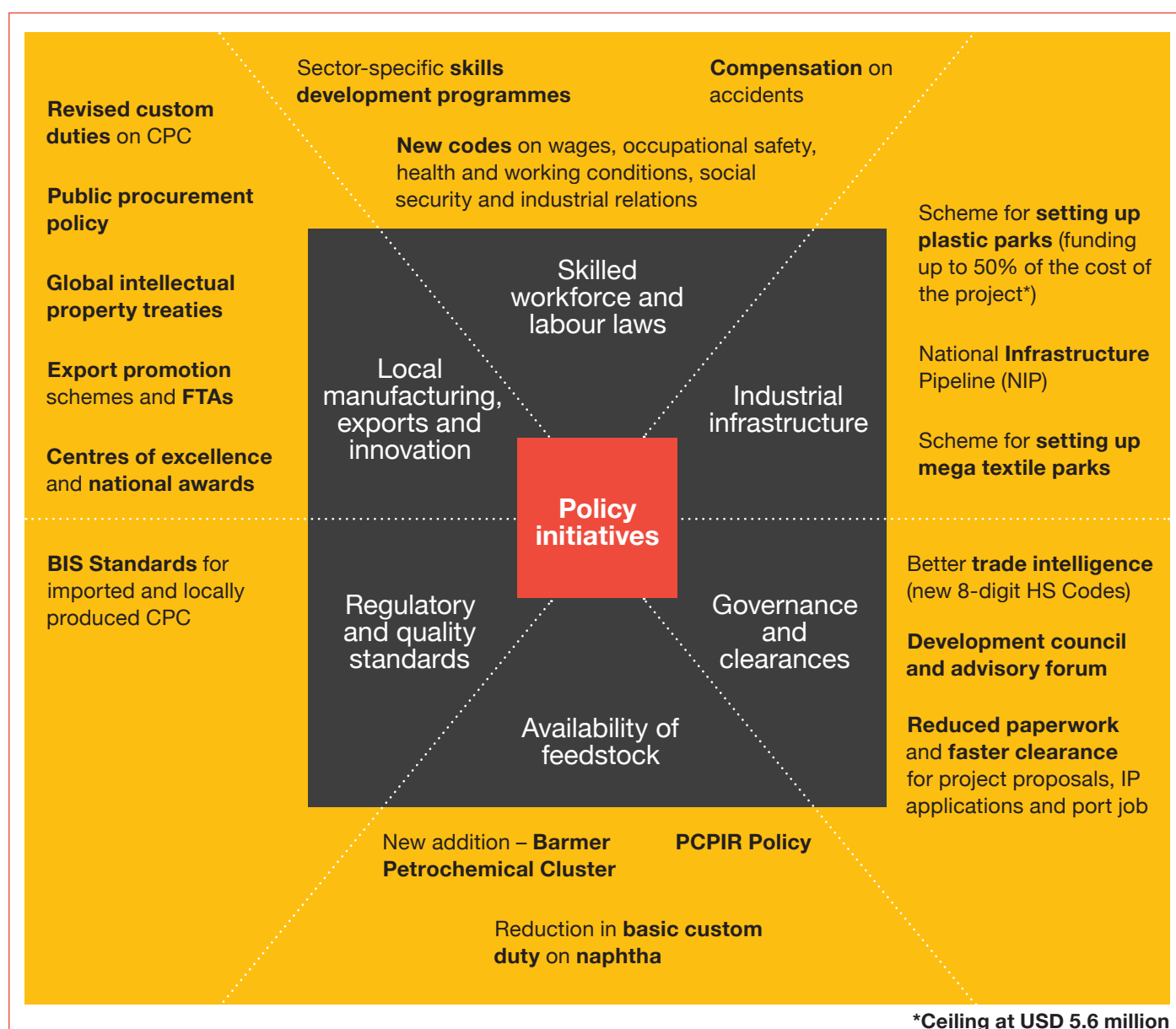
²³ <https://www.doingbusiness.org/en/rankings>

²⁴ <https://www.pib.gov.in/PressReleasePage.aspx?PRID=1710134>

India has come a long way in the last 75 years with the CPC industry becoming the backbone of the country's agricultural and industrial development. The country's real GDP growth trajectory has been promising with an impressive YoY growth of over 7% in the last 20 years. The country is expected to remain amongst the fastest-growing economies in the world. The latest GDP growth numbers published by the International Monetary Fund (IMF) anticipates India to grow at 6.2%, more than both China (5.1%) and the global average of (3.3%). Significant efforts are further required from both the industry and the

Government to build a USD 300 billion market by 2025. Recent policy interventions and economic measures have strengthened the positive outlook towards the Indian economy. Enhancing upstream cracker capacities, customising tariff policies, speeding up routine clearance processes, standardising chemicals logistics policies across the supply chain and aggressively adopting digitisation to increase manufacturing competitiveness are some of the initiatives that can transform India into a leading global CPC player.

Recent Government initiatives



Source: DCPC



Insights from industry leaders



Prabh Das

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

The CPC industry plays a key role in powering the modern lifestyle. It acts as an enabler for several downstream sectors and is a key contributor to the Indian economy. The country's GDP is expected to register a growth of 8.3% in FY22, recovering from the contraction last year. High-frequency economic indicators such as electricity consumption, fuel consumption, e-way bills, UPI transactions and GST collection as well as sentiment indicators such as the Purchasing Managers' Index (PMI) are showing encouraging signs of gradually improving economic conditions. All these factors are expected to contribute to the demand for chemicals and petrochemicals.

The CPC industry is anticipated to grow at a CAGR of 7.5–9.5% in the next five years. Despite challenges such as volatility in the prices of feedstock in the international market, the global container crisis and adapting to hybrid working, the industry has done reasonably well. The growth of India's CPC sector has been supported by the favourable impact of the policies formulated by the GoI through initiatives such as the PLI scheme, easing of environmental clearance, simplification of labour laws and flagship programmes such as Make in India. The growth will be driven by burgeoning domestic demand and strong regional demand. Continued policy support from the Government can help India become a global manufacturing hub for petrochemicals and serve the international market through exports.

I believe that there are three themes that will be pertinent in the days to come. These are accelerated action on sustainability, innovations to decarbonise the economy and growth of newer end-user segments. The Indian CPC industry can play an important role in facilitating the transition to a circular economy and explore the opportunities of green chemicals. There

will be greater focus on investments in R&D to facilitate the decarbonisation of the industry. The growth of ESG investments globally and in India is expected to provide impetus to this journey.

At HMEL, we are committed to India's growth story. We have made domestic investments in setting up refining capacities of 11.3 Million MT per annum and 467 KT per annum in building blocks of polypropylene. We are bullish on the opportunities for the petrochemical industry and have recently invested to the tune of USD 3 billion by building a 1.2 million MT per annum cracker complex in Punjab with an additional capacity of manufacturing 1,200 KT per annum of polyethylene and 500 KT per annum of polypropylene.

I am glad that FICCI and the Department of Chemicals and Petrochemicals, Government of India, are jointly organising a summit on Global Chemicals and Petrochemicals Manufacturing Hubs in India. I hope that the summit attendees will find the insights shared in this knowledge paper helpful and explore the potential that India offers.

I wish everyone all the very best for the event.



Deepak C Mehta

Chairman, FICCI National Chemical Committee, and
Chairman and Managing Director, Deepak Nitrite Ltd

The past few months have taught us the importance of being resilient. Communities, governments and institutions worldwide have displayed a commendable spirit of resilience in tackling the COVID-19 pandemic and in saving lives. Along with exposing our vulnerabilities, the pandemic has had unintended consequences for businesses globally.

Drastic measures such as lockdowns have disrupted global supply chains. As governments roll out massive vaccination programmes for their respective citizens, we are witnessing a sharper rebound in consumption. These knee-jerk reactions have caused chaotic demand-supply dynamics, destabilising the just-in-time (JIT) logistics model that has been so pivotal for global trade and commerce.²⁶

Inflationary pressures are leading to higher input costs for businesses.²⁷ These, in turn, may be passed on to customers, thereby resulting in a severe inflation cycle.

It is imperative for the CPC sector globally, to seek stability and predictability amid such uncertainty. At a time when geopolitics and geographically motivated challenges are increasingly impacting businesses, India stands out as an exception. A high degree of political stability, a large captive market with aspirations and a robust economy offer unparalleled advantages for businesses, domestic and global alike.

CPC companies operating across the value chain can benefit immensely by investing in India as the return on investment (RoI) has the potential to far outweigh those of other markets. The sector, which is currently worth USD 178 billion is estimated to grow up to USD 300 billion by 2025.²⁸

The Government's clarion call to attain economic self-sufficiency through the Aatmanirbhar Bharat initiative will only invigorate 'Make in India'. This is an unprecedented opportunity for companies to manufacture in India for the world, as well as cater to the large domestic market.

As India progresses towards becoming a USD 5 trillion economy, the share of the CPC sector shall become even more prominent, considering that it is the backbone of agriculture, infrastructure, manufacturing, and services.

Despite the odds, the Indian economy is poised for a robust growth rate of 8–10% in FY22. As per data from the UN Comtrade, chemical exports account for a significant percentage of India's foreign trade volume.²⁹ However, utilising latent and emerging opportunities in areas such as specialty chemicals and downstream end-user product segments should enable India to obtain a greater share of global trade.

Considering the times that we live in, India's geographical location is of strategic importance. As a peninsula with well-developed logistics and advanced digital infrastructure, India is well-connected to major global markets. With a slew of reforms announced by the Government over the past few years, India is at the cusp of a growth journey and the country's EoDB rankings have been steadily improving as well. China Plus One is a nascent strategy and the best is yet to come.

If early indications are to be believed, India's CPC sector is about to enter a golden period of growth. The signs are clear – be it the impressive RoI in financial markets, India's demographics, rising affluence or its stature in global affairs. There are tremendous opportunities for CPC companies to serve the captive domestic market. This would lead to import substitution as well as save valuable foreign exchange for the exchequer.

A strategic direction towards building an ecosystem for the sector would be the creation of more PCPIRs. These, and other such chemical clusters, would have the benefit of plug-and-play infrastructure, easy availability of resources across the production value chain, lower cost of logistics, among many others.

Similarly, the Government's PLI scheme will only encourage more domestic participation and that would bode well for the industry. However, there are a few challenges that should be noted. For example, the sector will be required to navigate issues related to ample feedstock supply, industrial commitment towards environmental, societal and governance (ESG) standards and geopolitical risks. I am confident that these headwinds can be addressed proactively, especially considering the favourable position India is in.

26 <https://sloanreview.mit.edu/article/what-everyone-gets-wrong-about-the-never-ending-covid-19-supplychain-crisis/>

27 <https://www.bloomberg.com/news/articles/2021-09-21/global-inflation-spike-seen-posing-near-term-risk-to-economy>

28 <https://www.investindia.gov.in/sector/chemicals>

29 The UN Comtrade database, <https://comtrade.un.org/>



Rajendra Gogri

Co-Chairman, FICCI National Chemicals Committee, and
Chairman and Managing Director, Aarti Industries Limited

The global specialty chemical market declined by 4–6% in 2020 owing to the pandemic and the subsequent prolonged lockdowns across major economies. The agrochemical and pharmaceutical intermediates segment was the least impacted since the finished products cater to essential supplies. Other segments within the global specialty chemical market are expected to recover in the next 6–12 months based on the assumption of timely vaccination and reduced resurgence of the virus's strains and variants.

It is expected that the global specialty chemicals market will grow at a CAGR of 4–6% during the next four–five years. The growth is expected to be led by sustainable demand in end-user industries. During the last two decades, a significant shift has been observed in the global specialty chemicals industry, with emerging markets, particularly Asia, gaining production supremacy over developed countries. The key facilitators for this shift include cost advantages in emerging markets with respect to equipment costs, logistics, labour and stricter environmental norms in western countries. Further, many global companies are looking to optimise their supply chain and explore opportunities to shift closer to the demand centres.

Within Asia, a significant business opportunity exists for Indian manufacturers as global corporations are striving to minimise the risk by reducing their dependency on China. Factors like competitive advantage due to the reduction in corporate taxes, PLI scheme for various downstream industries, 100% FDI in the chemical sector through automatic route, the PCPIR scheme, other schemes promoting Make in India and significant improvement in EoDB rankings indicate a bright future for the Indian chemical industry at least for the next decade.

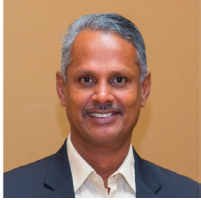
India accounts for 4% of the global share of manufacturing specialty chemicals and the per capita consumption level of specialty chemicals is far below the global average, which provides significant opportunities to the Indian chemical industry. Rapid urbanisation and a growing young population with disposable income will translate into rising

demand for end-user industries such as food processing, personal care and home care. This will add to the specialty chemicals sector's growth.

Export of CPC products grew at a CAGR of approximately 7% between 2018–20. Specialty chemicals account for a major share of more than 50% of chemical exports, dominated by agrochemicals, dyes, pigments, etc. Over the years, the chemical industry has improved its export competitiveness and established a strong presence in the global market driven by low-cost manufacturing, availability of skilled workforce, reputation for IP protection and strong process optimisation capabilities.

At present, approximately 30% of India's chemical requirements are met by imports. In FY20, the Indian CPC industry recorded imports worth USD 51 billion, of which organic chemicals alone accounted for USD 20 billion. This also indicates that there is ample opportunity for import substitution and the Government's push towards building an Aatmanirbhar Bharat (self-reliant India) is the need of the hour.

Triple growth drivers, viz. increasing domestic demand, room for import substitution and expanding export opportunities, are expected to aid the Indian specialty chemicals market to grow at a CAGR (2020–25) of 10–12% against the global estimated growth rate of 4–6%. I hope that with sustained investments in technology and R&D, the Indian chemical industry will be well equipped to meet the growing demand. My best wishes to the participants of the Global Chemicals and Petrochemicals Manufacturing Hubs in India summit as we progress towards making India a global manufacturing hub.



Janardhanan Ramanujalu

Co-Chairman, FICCI Petrochemicals Committee, and
Vice President, South Asia SABIC

The Indian chemical industry has always been an important enabler for growth of many industries – from pharma to automobiles, from appliances to consumer goods and agro-solutions to food industry to name a few. Over the last two years of pandemic and quick recovery, our industry, with great agility and ability, has once again proven its strengths to take on the challenges, apart from rapid response and support the pharma and healthcare sectors.

As India embarks on an aggressive export drive and coupled with Make in India, PLI and other initiatives, a liberal overall trade regime will facilitate this objective greatly. To this effect, multiple new trading agreements are being considered to open up markets for India's produce, while some ongoing agreements are under review.

India is very well placed and poised for multi-year growth over the next few years in the entire CPC value chain. These efforts will contribute to integrate an industry into the global value chains. A well-balanced trade position also greatly facilitates overall logistics competitiveness for both exports and imports. The GoI's various measures have reflected in the EoDB rankings. A special focus on manufacturing will surely help increase its share in our GDP.

The industry has significant responsibility in enabling nearly 10 out of 17 UN's Sustainable Development Goals 2030. Furthermore, the industry will also need to play a vital role in aiding the implementation of circular economy through effective designs, reuse and recycle of material as well as innovation and technology. This will require embracing Industry 4.0 to enhance our existing technological strengths while maintaining global safety standards.





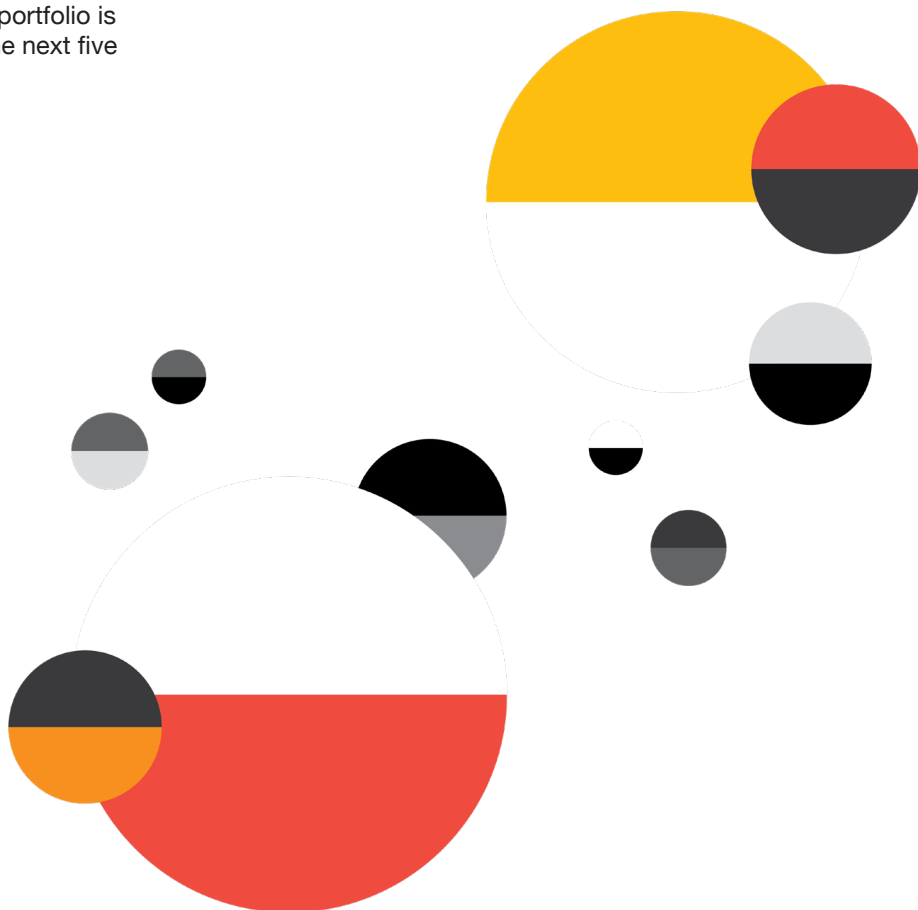
Jayant V Dhobley

Business Head and CEO, Global Chemicals, Fashion Yarn, and Insulators, Aditya Birla Group

The Indian chemical sector is poised to grow along with the country's expanding middle class population. There is a clear focus today on safety within manufacturing premises, sustainability and innovation along with large facilities, automation and diversified portfolios.

As more advanced products enter the life of the increasing and ever-evolving discerning Indian middle class population, the need for specialty chemicals is also expected to grow. Megatrends like renewables, light-weight materials, electronics, electric vehicles, food, health, and hygiene would drive the growth of specialty chemicals in India.

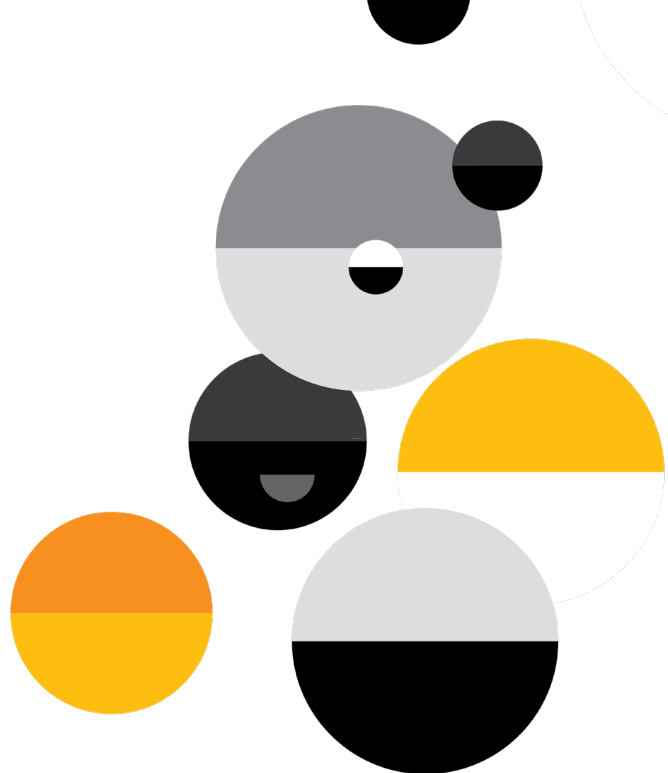
Aditya Birla Chemicals, a global billion-dollar mini conglomerate with a diversified portfolio, focuses on products that harness sustainable value chains and invest in R&D and global technical collaborations to be future ready. The organisation's specialty business portfolio is expected to grow by more than twice over the next five years.





Neelanjan Banerjee

Vice Chairman and Managing Director,
LANXESS India Private Limited



The Indian chemical industry is on the cusp of further growth. The recent geopolitical developments and ambitious climate-neutral goals are bringing in a significant shift in the supply chains of most downstream specialty chemicals.

The developments in China and the disruptions caused due to various reasons are presenting the Indian chemical industry with a never-before opportunity as the China Plus One strategy unfolds. Tremendous prospects exist at the horizon for the industry to capitalise on a host of end-application segments and chemistries.

The Indian chemical industry is expected to grow at an encouraging rate of over 9% from USD 165 billion in 2019–2020 to USD 300 billion by 2025. The growth is expected to be driven by a young demography, increase in per capita consumption with a burgeoning middle class, increasing export demand and favourable Government initiatives such as economic stimulus packages, the PLI scheme, tax reforms, various chemical industry specific policies and schemes like mandatory BIS standards and strengthening of the PCPIRs.

To further boost the industry, strategic global partnerships and the Government's collaborative programmes have a critical role to play. An increase in public-private partnerships supporting ports, roadways, reliable infrastructure and improvement of regulatory aspects to provide security to the industry would be key for attracting potential investors. Nevertheless, growth in India should be sustainable and it is important that the industry invests in safety and sustainability, as it does in innovation. Only then will the country be able to emerge as a real leader and accelerate growth for the industry, with Indian companies becoming suppliers of choice in global markets.

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 and engaging with policymakers 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, and 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, policymakers and the international business community.

Contact us



Samidha Hasija

Research Associate

Phone: +91-11-23487473

samidha.hasija@ficci.com



Rinky Sharma

Deputy Director

Phone: +91-11-23487473

rinky.sharma@ficci.com

About PwC

At PwC, our purpose is to build trust in society and solve important problems. We're a network of firms in 156 countries with over 295,000 people who are committed to delivering quality in assurance, advisory and tax services. Find out more and tell us what matters to you by visiting us at www.pwc.com.

PwC refers to the PwC network and/or one or more of its member firms, each of which is a separate legal entity. Please see www.pwc.com/structure for further details.

© 2021 PwC. All rights reserved.

Authors



Deepak Mahurkar
Partner and Leader, Oil and Gas
Industry Sector
PwC India
Mobile: +91 98186 70797
deepak.mahurkar@pwc.com



Gaurav Gupta
Associate Director, Chemicals practice
PwC India
Mobile: +91 98999 72220



Harit Kakkar
Manager, Chemicals practice
PwC India
Mobile: +91 99106 77891
harit.kakkar@pwc.com



Nikhil Kalane
Senior Consultant, Chemicals practice
PwC India
Mobile: +91 97668 46822
nikhil.kalane@pwc.com

Contact us

Deepak Mahurkar
Partner and Leader, Oil and Gas Industry Sector
PwC India
deepak.mahurkar@pwc.com

Harit Kakkar
Manager, Chemicals practice
PwC India
harit.kakkar@pwc.com



pwc.in

Data Classification: DC0 (Public)

In this document, PwC refers to PricewaterhouseCoopers Private Limited (a limited liability company in India having Corporate Identity Number or CIN : U74140WB1983PTC036093), which is a member firm of PricewaterhouseCoopers International Limited (PwCIL), each member firm of which is a separate legal entity.

This document does not constitute professional advice. The information in this document has been obtained or derived from sources believed by PricewaterhouseCoopers Private Limited (PwCPL) to be reliable but PwCPL does not represent that this information is accurate or complete. Any opinions or estimates contained in this document represent the judgment of PwCPL at this time and are subject to change without notice. Readers of this publication are advised to seek their own professional advice before taking any course of action or decision, for which they are entirely responsible, based on the contents of this publication. PwCPL neither accepts or assumes any responsibility or liability to any reader of this publication in respect of the information contained within it or for any decisions readers may take or decide not to or fail to take.

© 2021 PricewaterhouseCoopers Private Limited. All rights reserved.

KS/November 2021-M&C 15979