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The Indian chemical industry: Unleashing the next wave of growth

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Chemicals Practice

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Executive summary

India's chemicals story is one of outperformance and promise. A consistent value creator, the chemical industry remains an attractive hub of opportunities even in an environment of global uncertainties. Worldwide trends affecting the global chemical industry could lead to near-term opportunities for chemical companies in India. How chemical players prioritize and tap this value-creating potential could shape the future of the industry in India as well as the country's trade performance.

India's chemical industry: A consistent value creator with a positive outlook

India's chemical industry is a global outperformer in returns to shareholders and remains an attractive hub for chemical companies. This outperformance has resulted in high expectations for sustained, continual growth of the industry's top line and bottom line.

The macro perspective on India indicates that while the short-term outlook is challenging, the country's long-term growth story remains positive.

The outperformer

Indian chemical companies have delivered robust and consistent total returns to shareholders (TRS) – higher than the global chemical industry, the global and Indian equity markets, and related upstream and downstream segments in India.¹ Until 2014, TRS growth was primarily underpinned by an increase in top line. Over the last five years, the triple effect of margin expansion, an increase in multiples and continued revenue growth has raised TRS.

Between 2006 and 2019, the compound annual growth rate (CAGR) in TRS for Indian chemical companies was 15 percent – a figure much higher than global chemical industry returns (CAGR of 8 percent) and the overall global equity market (CAGR of 6 percent). Even between 2016 and 2019, when the Indian economy faced headwinds, the chemical industry maintained a returns CAGR of 17 percent.

The growth is likely to continue

Despite economic challenges that caused India's GDP growth rate to drop to 4.5 percent in the third quarter of 2019,² a long-term perspective indicates that India has averaged an annual GDP growth of 7 percent for the last 30 years.³ The country is also working on becoming a USD 5 trillion dollar economy.⁴ This long-term optimistic scenario bodes well for chemical companies, especially in light of a long investment cycle. Chemical companies can also benefit from rising domestic demand in chemical end-use sectors,⁵ India's attractiveness as a manufacturing destination,⁶ and its improved ease of doing business.⁷

¹ Global return figures in this section are sourced from Datastream; the India analysis has been calculated based on this data

² GDP figure for July–September 2019, <https://economictimes.indiatimes.com/news/economy/indicators/severe-slowdown-when-will-the-indian-economy-recover-and-how/articleshow/72310684.cms>

³ National Accounts and Statistics, <http://mospi.nic.in/publication/national-accounts-statistics-2019>

⁴ <https://www.indiatoday.in/business/budget-2020/story/economic-survey-outlines-strategy-to-achieve-5-trillioneconomy-says-pm-modi-1642016-2020-01-31>

⁵ Ministry of Statistics and Programme Implementation

⁶ Economist Intelligence Unit

⁷ <https://www.doingbusiness.org/content/dam/doingBusiness/country/i/india/IND.pdf>

Global trends: Uncertainty for the world, possibilities for India

Six trends are shaping the global chemical industry. While they spell uncertainty in the global context, they could open up some near-term opportunities for the Indian chemical industry.⁸

- Several global oil and gas majors are turning their sights on downstream chemical opportunities. This may increase the focus on petrochemicals in India, and higher investment in the sector could ease feedstock challenges and boost self-sufficiency.
- The structure of China's chemical industry is changing due to stricter environment norms, tighter financing and consolidation. While these shifts may benefit select large players in the long run, they could cause uncertainty for international players that source chemicals from China. That could create opportunities for Indian chemical companies in certain value chains and segments, especially in the short term.⁹
- Trade conflicts have erupted around the world, especially among China, the United States and Western Europe. These have led to shifts in global supply chains, affecting bilateral trade between China and the United States,¹⁰ with possible repercussions for other economies. Large chemical markets that remain accessible in this scenario could present opportunities for Indian chemical companies.
- Industrywide, there seems to be a move toward prioritization of core businesses and consolidation for greater scale, often through big-ticket mergers and acquisitions. For Indian players, scale will matter even more, as it could help to fortify their competitive advantage.
- Digital technology has established itself as a lever to enhance efficiency and productivity. Many companies worldwide are embracing digital's potential; Indian companies could also tap into this opportunity to expand their profit margins.
- Sustainability is becoming an imperative, not a buzzword, with various stakeholders placing a premium on it. Chemical companies could prioritize environmental sustainability to protect long-term shareholder value, while continuing to comply with local regulations.

Investible opportunities in India

We analyzed India's trade flow in the chemical sector to identify and better understand investible themes in the domestic industry. Chemicals are a significant part of India's overall trade flow, consistently ranking third in imports and fourth in exports for the past five years.¹¹

Today, India has a chemical trade deficit of USD 15 bn. Analysis of India's chemical exports and imports, coupled with a review of opportunities emerging from global trends, suggests two investible themes:

- Building self-sufficiency in petrochemicals to plug the domestic supply shortfall of 52 percent (by volume) in petrochemical intermediates: Six value chains make up around 77 percent of this shortfall, creating an opportunity worth about USD 11 bn.
- Ramping up exports in select areas, such as specialty chemicals, to obtain a larger share of global value.¹²

The chemical industry already contributes significantly to India's trade volume. Capturing emerging opportunities in the near term could make a positive difference to Indian chemical companies and to the industry overall.

⁸ Based on various examples, these trends are described in detail in the chapter titled "Global trends"

⁹ Perspectives based on <https://www.mckinsey.com/industries/chemicals/our-insights/chinas-chemical-industry-new-strategies-for-a-new-era>

¹⁰ <https://www.washingtonpost.com/politics/2020/01/21/us-china-finally-signed-trade-agreement-who-won/>

¹¹ Unless indicated otherwise, all information in this section is an analysis of data sourced from the UN Comtrade database, <https://comtrade.un.org/>

¹² Analysis of data sourced from IHS Chemicals and UN Comtrade database, <https://comtrade.un.org/>

A charter for industry players

As India's chemical companies seek to capture the above opportunities, keep up their above-average TRS and buoy investor sentiment, they could focus on three priorities:

- Accelerate to build an at-scale business and take advantage of economies of scale. This could benefit Indian companies through a broadened footprint of geographies and customer segments, exposure to cutting-edge technological capabilities, economies of scale in capital expenditures and fixed costs and access to alternative and cheaper feedstock.
- Use digital and analytics (DnA) to improve margins. Chemical companies could see 3 to 5 percentage points of EBITDA impact from Industry 4.0 technologies.¹³
- Protect value in the long term through a pursuit of sustainability beyond compliance requirements. Companies could seek out more effective approaches to engage with regulatory bodies, focus on decarbonization and embed sustainability across their organizations – from governance models and corporate culture to capital allocation, feedstock and products.

In addition, industry players and associations could actively work with the government to address sector-level challenges. Supportive government measures could include an integrated petrochemical and specialty chemicals masterplan and fast-tracking the implementation of Petroleum, Chemical and Petrochemical Investment Regions (PCPIRs). The government could continue to work towards ease of doing business in India by streamlining regulations and processes and issuing clear directives on the future regulatory regime. Finally, introducing sector-specific skill-development programs and even a technology upgradation fund could boost skill levels and innovation across the industry.

The Indian chemical industry is positioned to capitalize on the near-term opportunities created by global uncertainties. How private players and the industry map their priorities and action plan could shape the future of India's chemical industry and contribute to the country's trade performance.

¹³ McKinsey Global Energy and Materials Practice



1. India's chemical industry: A consistent value creator

The chemical industry in India is a global outperformer in returns to shareholders and remains an attractive hub for chemical companies. A macro perspective on India suggests that while the short-term scenario is challenging, the country's long-term growth story remains positive.

The outperformer

The Indian chemical industry has reliably and steadily been creating value – more so than the global chemical industry – on the back of revenue and margin growth and multiples expansion. It has outperformed even in challenging economic times. This has, however, raised expectations for sustained, continual growth of the Indian chemical industry's top and bottom lines.

From 2006 to 2019, the global chemical industry outperformed the world equity market on total returns to shareholders (Exhibit 1).¹⁴ Global chemical industry returns grew at a robust compound annual growth rate (CAGR) of around 8 percent during this period. In contrast, equity market returns hovered at a CAGR of 6 percent.

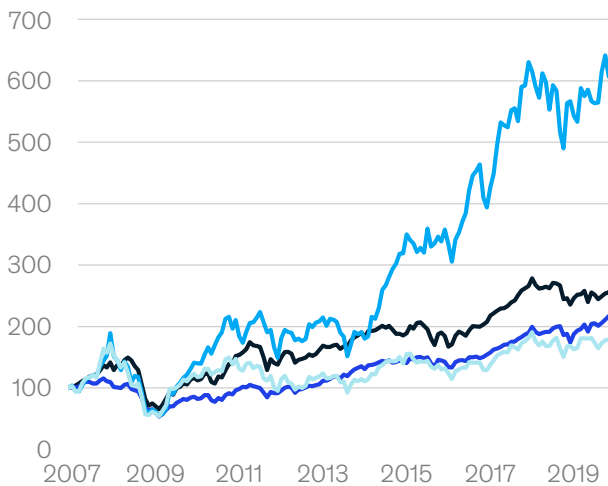
Exhibit 1

Globally and in India, the chemical industry TRS has grown robustly over the long term

The Indian chemical industry has consistently outperformed the global chemical industry

Total returns to shareholders (TRS)

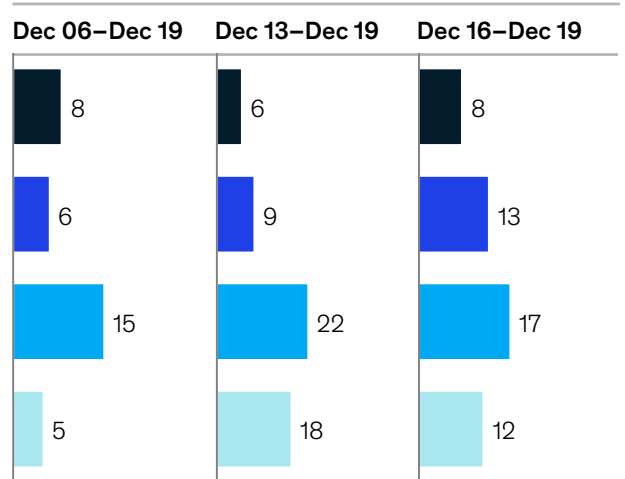
USD, indexed, 100 = 31 Dec 2006



— World chemicals — World market — India chemicals — India Market

TRS CAGR

Percentage (based on TRS in USD)



Source: Datastream; Corporate Performance Analytics by McKinsey

¹⁴ Unless indicated otherwise, all data in this section is sourced from Datastream; the India analysis has been calculated based on this data

The secret behind this growth lay in attractive industry consolidation at sub-segment levels, China's accelerated economic growth prompting strong chemicals demand and significant productivity gains through functional excellence, from which the industry continues to benefit.¹⁵ In the last three years, this value creation trend flattened as entrants arrived from emerging markets and China's growth tapered.¹⁶

If the global chemical industry has been doing well, India's has been faring even better – yielding high total returns to shareholders (TRS) despite recent headwinds. Between 2006 and 2019, the CAGR of India's chemical industry TRS was 15 percent; between 2013 and 2019, it was even higher, 22 percent.

Between 2013 and 2019, the Indian chemical industry also outdid related segments upstream and downstream (Exhibit 2).¹⁷ Even when India's economic momentum slowed between December 2016 and 2019, the chemical industry's returns CAGR remained at around 17 percent.¹⁸

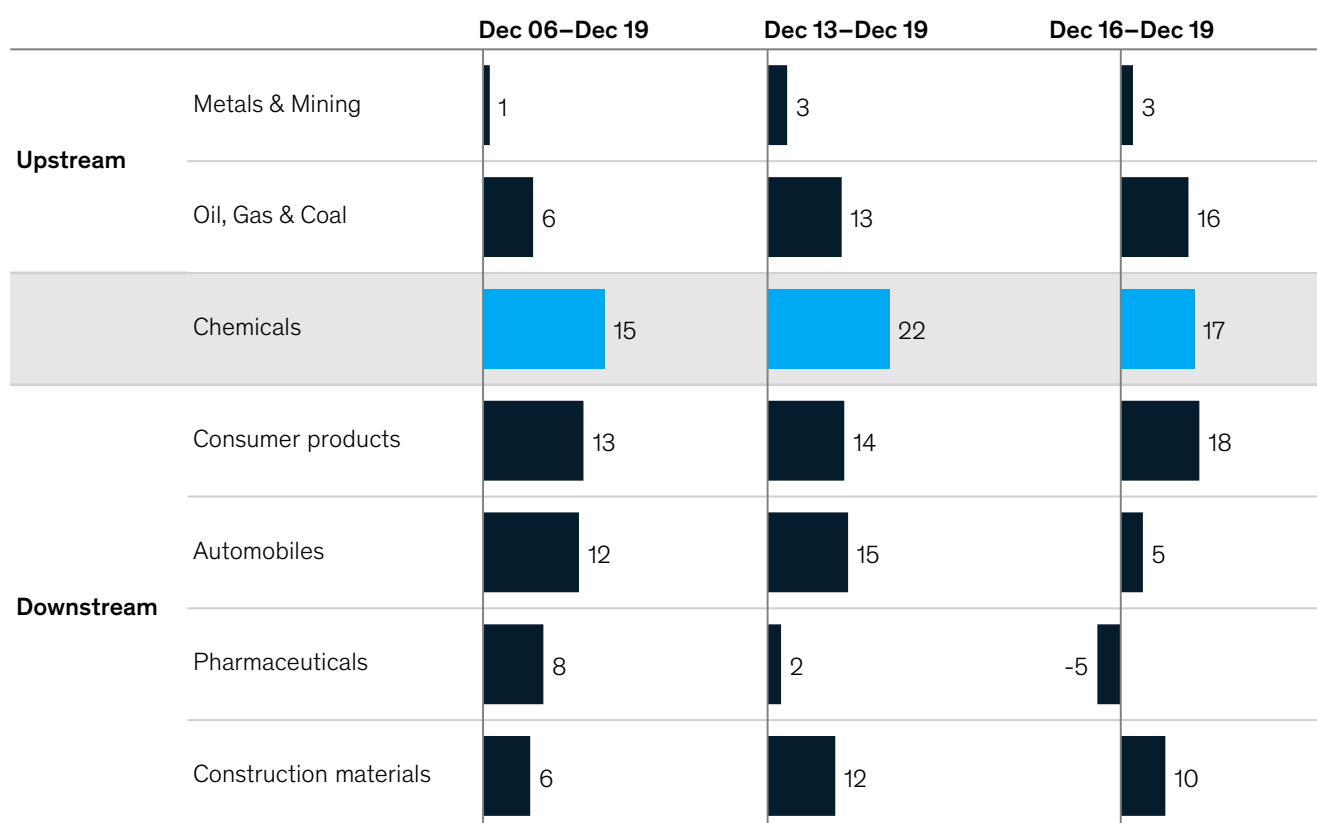
Exhibit 2

The Indian chemical industry has been outperforming related upstream/downstream sectors in India

The extent of outperformance has decreased over the past 3 years

TRS CAGR

Percentage (based on TRS in USD)



SOURCE: Datastream; Corporate Performance Analytics by McKinsey; Capital IQ

¹⁵ <https://www.mckinsey.com/industries/chemicals/our-insights/chemicals-and-capital-markets-back-at-the-top>

¹⁶ <https://www.mckinsey.com/industries/chemicals/our-insights/chemicals-2025-will-the-industry-be-dancing-to-a-very-different-tune>

¹⁷ Datastream and Capital IQ

¹⁸ India calculations based on figures sourced from Datastream and Capital IQ

Until 2014, TRS growth was primarily driven by an increase in top line. Over the last five years, the triple effect of margin expansion, an increase in multiples and continued revenue growth has enhanced TRS (Exhibit 3).

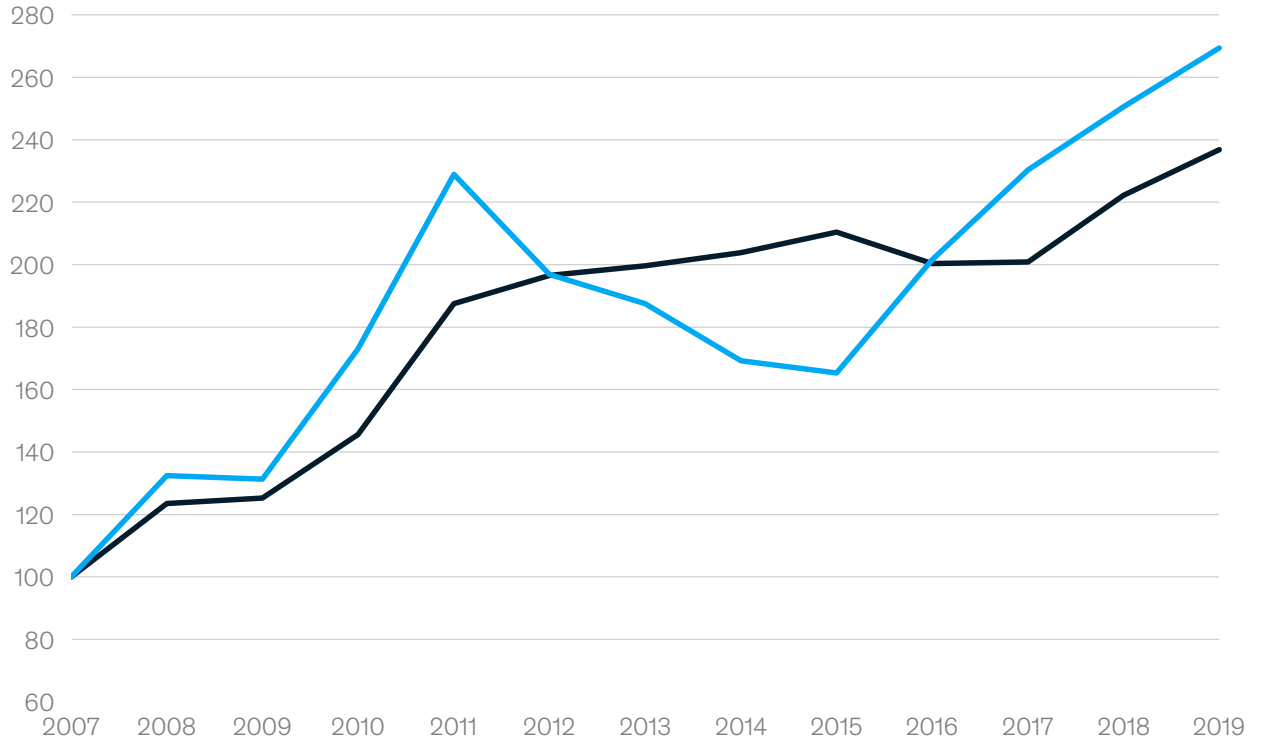
Exhibit 3

TRS has been driven by the triple effect of revenue growth, margin expansion and a growing multiple

Increase in percentage points

USD, indexed, 100 = 2007

— Revenue growth — EBITA growth



Multiple (EV/EBITA)

12	13	6	10	10	10	13	14	20	16	19	20	19
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SOURCE: Capital IQ, Corporate Performance Analytics by McKinsey

The growth is likely to continue

India's macro outlook is a story of long-term optimism. This bodes well for chemical companies, especially when viewed in the context of long investment cycles.

The country's economy has faced headwinds in recent times, with GDP growth dropping to 4.5 percent in the July to September quarter of 2019¹⁹ – it has only ever sunk this low during the Asian, dot-com and recent global financial crises.

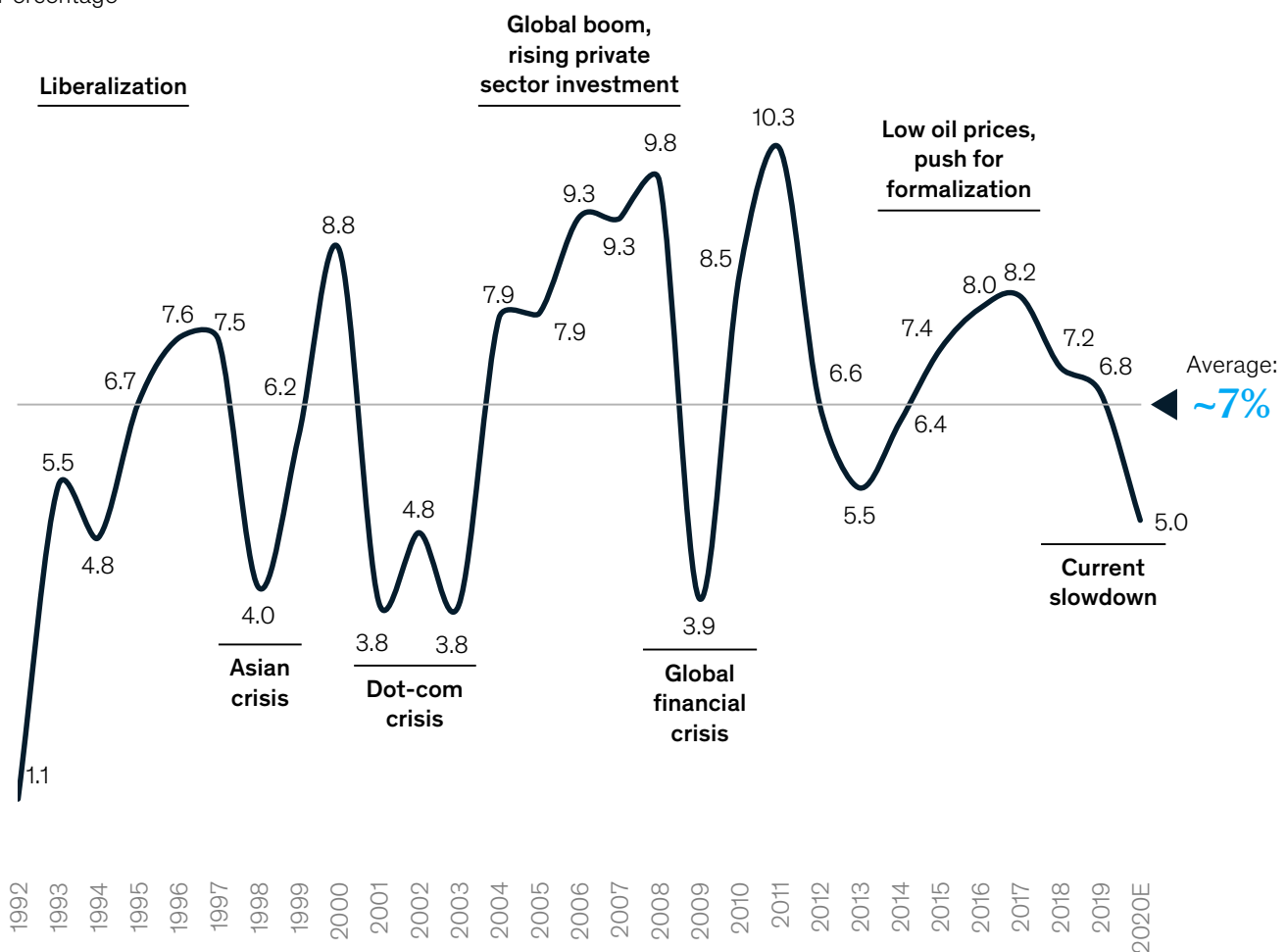
While this could be challenging in the short term, a longer-term view of India shows that its GDP has grown at around 7 percent annually over the last 30 years (Exhibit 4).²⁰ India is working towards becoming a USD 5 trillion economy over the next decade.²¹

Exhibit 4

India has grown rapidly, at an average of around 7% over the last 30 years, through shocks and cycles

Annual GDP growth

Percentage



Source: National Accounts and Statistics, <http://mospi.nic.in/publication/national-accounts-statistics-2019>

¹⁹ GDP figure for July–September 2019, <https://economictimes.indiatimes.com/news/economy/indicators/severe-slowdown-when-will-the-indian-economy-recover-and-how/articleshow/72310684.cms>

²⁰ National Accounts and Statistics, <http://mospi.nic.in/publication/national-accounts-statistics-2019>

²¹ <https://www.indiatoday.in/business/budget-2020/story/economic-survey-outlines-strategy-to-achieve-5-trillion-economy-says-pm-modi-1642016-2020-01-31>

Despite industry-specific challenges in infrastructure, feedstock access, energy costs and constraints in the availability of skilled talent, chemical companies in India could benefit in the long term from three factors:

- Rising domestic demand in chemical end-use sectors such as agriculture, consumer and retail, infrastructure, auto and electronics, and healthcare could spur around 50 percent of incremental growth in chemicals as the economy grows. Each of these is expected to drive chemical demand, creating lucrative value pools across most chemical sub-segments.²²
- India's attractiveness as a manufacturing destination has been rising because of competitive labour costs,²³ its ability to build a plant at less cost than in the developed world,²⁴ and recent changes to corporate tax rates that have shaped a more supportive ecosystem.²⁵ Many Indian specialty chemical players have developed distinctive capabilities and established supply relationships with global networks.
- India's Ease of Doing Business ranking has been steadily improving. India ranked 63rd in 2019, up 14 places from its 2018 spot.²⁶

A global outperformer, India remains one of the most attractive hubs for chemical companies. India's overall macro trajectory, combined with the expected growth in demand and local manufacturing advantages, make a promising combination for the future.

²² IHS Markit

²³ Economist Intelligence Unit

²⁴ <https://compassinternational.net/>

²⁵ <https://www.moneycontrol.com/news/business/india-jumps-to-63rd-position-in-world-banks-ease-of-doing-business-rankings-4569251.html>

²⁶ <https://www.doingbusiness.org/content/dam/doingBusiness/country/i/india/IND.pdf>



2. Global trends: Uncertainty for the world, possibilities for India

Six trends are shaping the global chemical industry. While they spell uncertainty in the global context, they could open up some near-term opportunities for the Indian chemical industry.

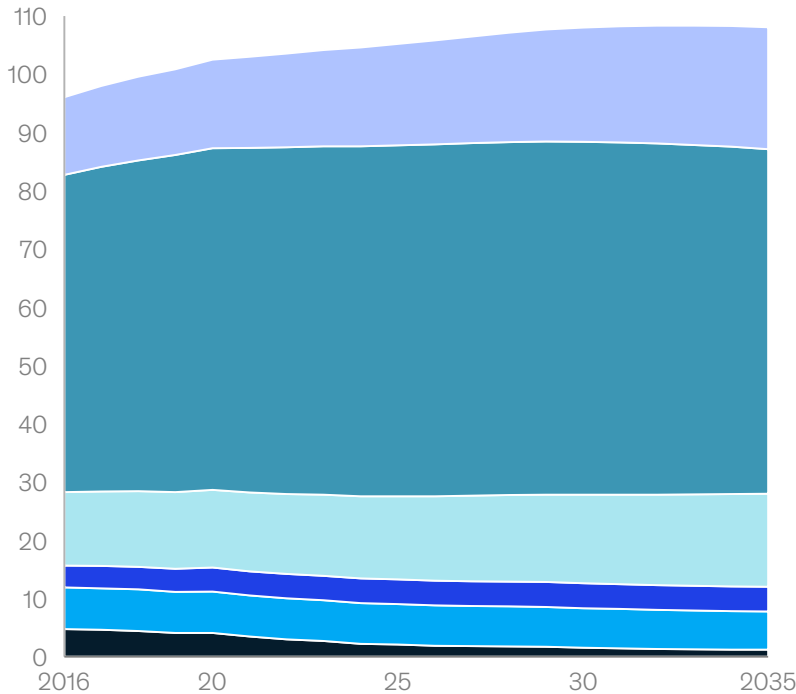
Oil and gas majors are venturing downstream into petrochemicals

Over the next 15 years, petrochemicals are expected to contribute to 63 percent of total liquid demand growth (Exhibit 5).²⁷ Several global oil and gas majors are turning to downstream opportunities in petrochemicals. For example, Shell has announced that it will invest USD 3 bn to 4 bn each year in its chemicals business through the next decade.²⁸

Exhibit 5

Petrochemicals are expected to contribute to ~63% of liquid demand growth over the next 15 years

Global liquids demand
Million metric barrels/day



	CAGR 2020-35	Contribution to growth
Liquids overall	0.40%	100%
Chemicals	2.20%	63%
Transport	0.10%	39%
Other industries ¹	1.50%	28%
Other Energy sectors	0.20%	4%
Buildings	-0.50%	-5%
Power	-7%	-29%

¹Including iron and steel

Source: McKinsey Energy Insights Global Energy Perspective 2019

²⁷ McKinsey Energy Insights Global Energy Perspective 2019

²⁸ <https://www.chemanager-online.com/en/news-opinions/headlines/shell-pledges-4-bn-annual-spend-chemicals>

Similarly, many oil and gas majors have begun to explore downstream investments in India. Saudi Aramco signed a framework agreement with the Abu Dhabi National Oil Company (ADNOC) and India's Ratnagiri Refinery and Petrochemicals Limited (RRPCL) in 2018 to build a mega refinery and petrochemicals complex on India's west coast.²⁹ In late 2019, the Adani Group announced a partnership with BASF, ADNOC and Borealis to study the feasibility of building a chemical plant in India.³⁰ Investment of this kind in petrochemicals could ease current feedstock challenges, and in turn provide support for downstream intermediates and specialty chemicals.

The structure of China's chemical industry is changing³¹

The shape of China's chemical industry is changing in the face of stricter environmental norms, tighter financing and consolidation.

In the past, the rapidly growing industry put growth ahead of environmental concerns. Things started changing after 2016, with China's 13th Five Year Plan seeking to arrest and reverse environmental degradation. Steadily shepherding the industry toward higher environmental standards, China's stricter norms are disrupting some parts of the chemical value chain. The government has set clear provincial targets and is shutting down non-compliant companies. Between 2017 and 2018 alone, nearly 40 percent of all Chinese production capacity for monosodium glutamate and certain dyestuffs and pesticides was shut down, prompting 50 percent higher global prices.

The capital-intensive industry has also been hit by considerably tighter financing availability. Bank loans have grown elusive and expensive – not only are eligibility criteria stricter, chemical companies are also charged higher-than-average interest rates. Greater monitoring and regulation of corporate bonds and private lending further limit access to capital. This pressure on finance has led the industry to shy away from capital expenditure, pushing down annual spending from around RMB 1.61 trillion in 2015 to RMB 1.5 trillion in 2017.

There is a discernible shift from overcapacity to consolidation in the industry structure. Already, companies are strategically consolidating major sectors of the chemical industry, such as dyestuffs and polyester fibre.

While these changes may benefit select large players in the long run, they could also understandably cause uncertainties for international players that source chemicals from China. This might open up some opportunities for Indian chemical companies in certain value chains and segments, especially in the short term.

Protectionism and trade conflicts are on the rise

Trade conflicts have erupted around the world, especially among China, the United States and Western Europe. These have led to shifts in global supply chains, affecting bilateral trade between China and the United States,³² with possible repercussions for other economies. Such discontinuities could make long-term capital decisions more difficult, requiring a more comprehensive scenario analysis for stakeholders.

The United States imposed three rounds of tariffs on Chinese imports in 2018, including a 25 percent tariff on goods worth USD 250 bn. China responded with tariffs on USD 185 bn worth of US goods. The 25 percent tariff on Chinese exports to the United States remained in place for many chemicals even after the phase-one trade deal signed between the two countries in January 2020.³³ According to the American Chemistry Council, the old tariffs still apply to USD 20 bn in imports of chemicals and plastics from China and USD 11 bn in exports

²⁹ <https://www.livemint.com/industry/energy/oil-firms-prepare-for-potential-investments-from-aramco-adnoc-11580665312109.html>

³⁰ <https://economictimes.indiatimes.com/industry/energy/oil-gas/adani-partners-uaes-adnoc-germanys-basf-for-4-bn-chemical-venture/articleshow/71634144.cms?from=mdr>

³¹ This section is based on the perspectives shared in <https://www.mckinsey.com/industries/chemicals/our-insights/chinas-chemical-industry-new-strategies-for-a-new-era>

³² <https://www.washingtonpost.com/politics/2020/01/21/us-china-finally-signed-trade-agreement-who-won/>

³³ <https://www.washingtonpost.com/politics/2020/01/21/us-china-finally-signed-trade-agreement-who-won/>

of chemicals and plastics to China.³⁴ Most recently, China announced the decision to halve tariffs on over 1,500 goods it imports from the United States.³⁵

The repercussions of the trade situation could affect industry stakeholders beyond China and the United States. Many downstream multinational companies that imported the bulk of their chemical requirements from China may consider supplementing this supply from elsewhere. Large chemical markets that remain accessible in this scenario could present opportunities for Indian chemical companies.

Companies are moving towards increased focus and global scale

Industrywide, there seems to be a move toward prioritization of core businesses and consolidation for greater scale.

Many companies are streamlining their portfolios to strengthen and prioritize a core business, even if it means spinning off non-core businesses. For example, in 2018 Akzo Nobel sold its specialty chemicals business to the private equity companies Carlyle Group and GIC, which formed a new entity called Nouryon. This allowed Akzo Nobel to focus on its core paints and coatings business.³⁶ In 2019 DowDupont, one of the largest chemical companies in agriculture, material science and specialty products, split into three entities, each with a focused core. Dow is dedicated to commodity chemicals, Dupont to specialty chemicals and Corteva to agricultural chemicals.³⁷

Saudi Aramco acquired SABIC, a Saudi company focused on petrochemicals, chemicals and industrial polymers, to forward-integrate into the downstream chemicals value chain.³⁸

Industry consolidation demonstrates the increasing importance of scale, with deals occasionally reaching record-high values in recent years. The year 2019 saw 294 M&A transactions where chemicals was the target industry, with a sizeable aggregate deal value of USD 263 bn. The average deal value in 2019 was USD 895 mn, more than four times that of 2012 and 2013 figures.³⁹

Focused growth and global scale could be the key for Indian chemical companies striving to build and maintain their competitive advantage.

Digital technology has emerged as a critical lever for efficiency and productivity

In today's world, digital technology is the key to ramping up efficiency and productivity. Many companies are investing in digital and analytics (DnA) capabilities as they pursue flexibility, agility and productivity. In 2018, as part of a digital transformation, BASF launched a fleet of autonomous transport vehicles and tank containers which transport liquids and waste between 150 loading points at a company facility in Germany; Borealis uses data mining and modelling to make its plants more energy efficient; Bayer has introduced machine learning models for faster production.⁴⁰

Companies worldwide are turning to digital and analytics to enhance efficiency and productivity, and Indian companies could also explore and tap this potential.

³⁴ <https://thehill.com/policy/finance/478864-trump-trade-wins-seen-providing-few-economic-gains>

³⁵ <https://www.bbc.com/news/business-51353503>

³⁶ <https://www.akzonobel.com/en/for-media/media-releases-and-features/akzonobel-makes-progress-transformation-focused-paints-and>

³⁷ <https://www.barrons.com/articles/dowdupont-spinoff-dow-dupont-corteva-51556552428>

³⁸ <https://www.atlanticcouncil.org/in-depth-research-reports/issue-brief/the-saudi-aramco-sabic-merger-how-acquiring-sabic-fits-into-aramcos-long-term-diversification-strategy/>

³⁹ Dealogic

⁴⁰ <https://www.chemistryworld.com/news/industry-delves-into-the-digital-toolbox/3010971.article>

Sustainability is an imperative, not a buzzword

As the world's environmental conscience deepens, stakeholders (the public, policymakers, investors and brand owners) are increasingly placing a premium on sustainability.

A number of research initiatives and surveys indicate this shifting mindset. In a 2018 Nielsen report, 81 percent of global respondents strongly felt that companies should help improve the environment; Nielsen's 2015 survey had found 66 percent of consumers across 60 countries were willing to pay more for "sustainable" products, compared with only 50 percent in 2013.⁴¹ Asset managers are increasingly integrating environmental, social and governance (ESG) criteria into their investment considerations.⁴² Global socially responsible investments grew by 34 percent to USD 30.7 trillion between 2017 and 2019.⁴³ Regulators are growing stricter about pollutants, with stringent norms common across developed and emerging economies. A United Nations report in 2018 found that 127 of 192 countries have legislation of some kind to regulate the use of plastic bags.⁴⁴ India is contemplating a total ban on single-use plastics by 2022.⁴⁵

Chemical companies could prioritize sustainability to protect long-term shareholder value, while continuing to comply with local regulations.

Amid these global shifts and resulting uncertainties, India remains a hub of possibilities for the chemical industry. The trend of oil and gas majors investing in petrochemicals could increase the availability of feedstock for downstream petrochemical intermediates. Changes in global trade patterns and China's industry structure could form a launchpad for India to grow its share of global exports. Indian chemical company executives could reflect about ways to capitalize on the near-term opportunities emerging from these trends.

⁴¹ *The evolution of the sustainability mindset*, a Nielsen report, September 2018, <https://www.nielsen.com/us/en/insights/report/2018/the-education-of-the-sustainable-mindset/>; *The sustainability imperative: New insights on consumer expectations*, a Nielsen report, October 2015, <https://www.nielsen.com/wp-content/uploads/sites/3/2019/04/global-sustainability-report-oct-2015.pdf>

⁴² <https://www.forbes.com/sites/georgkell/2018/07/11/the-remarkable-rise-of-esg/#5b5117491695>

⁴³ 'Global sustainable investments rise 34 percent to \$30.7 trillion', Bloomberg, April 2019, <https://www.bloomberg.com/news/articles/2019-04-01/global-sustainable-investments-rise-34-percent-to-30-7-trillion>

⁴⁴ *Legal Limits on Single-Use Plastics and Microplastics: A Global Review of National Laws and Regulations*, United Nations Environment Programme, 2018, https://wedocs.unep.org/bitstream/handle/20.500.11822/25496/singleUsePlastic_sustainability.pdf

⁴⁵ <https://economictimes.indiatimes.com/news/politics-and-nation/government-may-list-8-single-use-plastic-items/articleshow/72324377.cms?from=mdr>



3. Investible opportunities in India

To identify and better understand investible themes for Indian chemical players, we analyzed the country's trade flows in this sector.⁴⁶

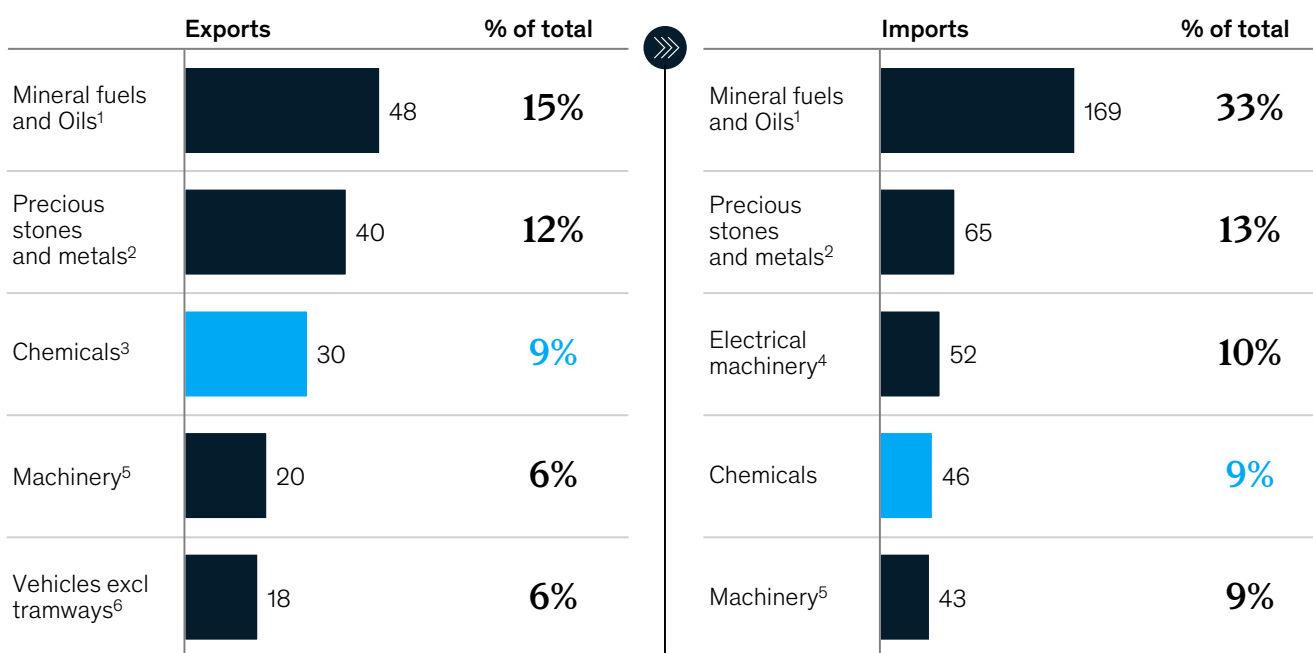
India's share in global chemicals trade by value is 3 percent. Chemicals form a significant part of the overall trade flow in India (Exhibit 6). The chemical industry's import–export rankings have been consistently high for the past five years. The industry ranks third in Indian exports, appearing after mineral fuels and oils, and precious stones and metals, with a 9 percent share. Chemicals ranks fourth in imports, after mineral fuels and oils, precious stones and metals, and electrical machinery, also with a 9 percent share.

Exhibit 6

Chemicals are a significant part of India's trade flow, ranking 3rd in exports and 4th in imports

India's trade flow breakdown in 2018

USD bn



¹(HS 27) Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral

²(HS 71) Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad

³Chemicals: HS chapters considered: 28,29, 32, 38, 39 (only polymers), 4002

⁴(HS 85) Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television

⁵(HS 84) Machinery, mechanical appliances, nuclear reactors, boilers; parts thereof

⁶(HS 87) Vehicles other than railway or tramway rolling stock, and parts and accessories thereof

NOTE: Agri products are scattered over 25 HS codes.

Approximate exports: Animal products/Live animals: USD 10 bn; Other agri/plant-based agri products: USD 24 bn

Source: UN Comtrade

⁴⁶ All data in the chapter has been sourced from the UN Comtrade database, <https://comtrade.un.org/>

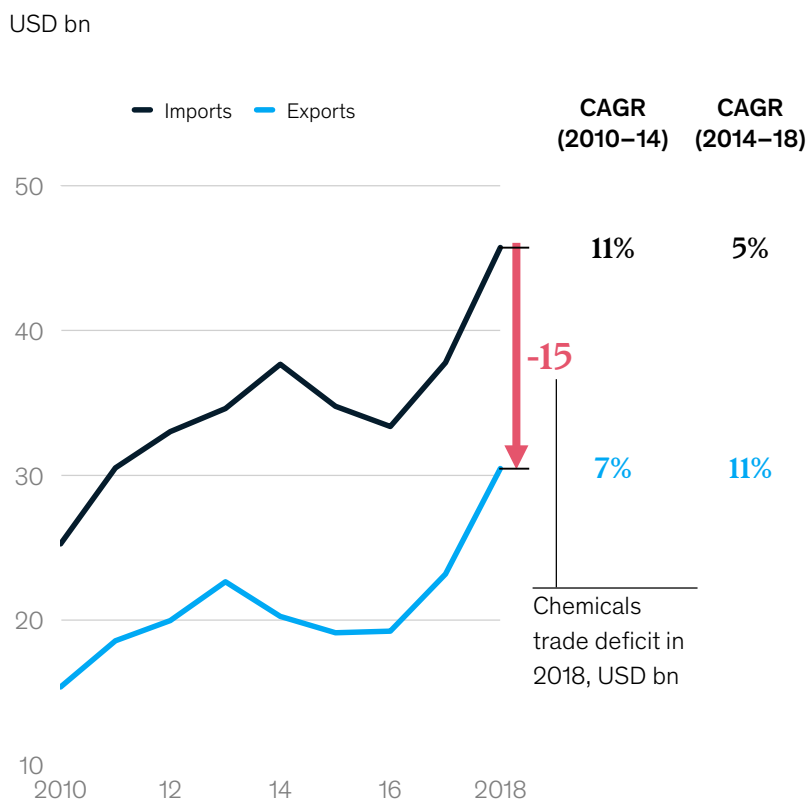
Chemical trade value has grown faster than India's average trade value. Chemical exports grew at 11 percent from 2014 to 2018 compared with India's average exports at just 0.4 percent, indicating immense opportunity in global markets. Chemical imports also grew in this period, at 5 percent. Despite the faster growth in exports than imports, India still imports more than it exports, resulting in a chemical trade deficit of USD 15 bn (Exhibit 7).

Exhibit 7

India faces a trade deficit of USD 15 bn in chemicals, pointing to 2 investible opportunities

Top export segment is specialty chemicals and top import segment is petrochemical intermediates

India chemicals¹ trade flow trend, 2014–18



India chemicals¹ by segment, 2018



¹Chemicals: HS chapters considered: 28,29, 32, 38, 39 (only polymers), 4002
Source: Analysis based on data sourced from UN Comtrade

This deficit opens the door to two opportunities. Reducing imports of petrochemical intermediates could make India more self-sufficient and improve inputs for downstream specialty chemicals. And ramping up specialty chemicals exports could bring India a larger share of global value.

Opportunity 1: Building self-sufficiency in petrochemicals and intermediates

Petrochemicals is the largest category (54 percent) of India's chemical imports by value. Intermediates (produced using petrochemical building blocks such as ethylene and propylene) constitute 60 percent of petrochemical imports. These are vital links in the Indian chemical industry – intermediates like ethylene oxide, propylene oxide, polyols, phenol, acrylic acid and styrene are the primary feedstock for specialty chemicals, which in turn are used to produce a vast majority of consumer and technology products.

India is largely self-sufficient in naphtha, the feedstock for petrochemical building blocks and bulk polymers. However, India has been facing significant domestic supply shortfall (52 percent by volume) in almost all petrochemical intermediates. This has led petrochemical intermediate imports to grow steadily at a CAGR of 5 percent between 2014 and 2018.

A breakdown of this import gap (of 52 percent) by volume shows that 77 percent (amounting to USD 11 bn) stems from six major value chains in petrochemical intermediates that feed into a wide range of end-use sectors, from agriculture, automotive, construction, and electricals and electronics, to paints, consumer care, and food and feed. For each value chain, addressing specific constraints can help boost self-sufficiency (Exhibit 8).

Exhibit 8

Solving for the import gap of six major value chains could boost petrochemicals self-sufficiency in India

		India imports, 2018		Key enablers
		KT	USD mn	
C1	Methanol – Formic/Acetic Acid - Acetate esters - VAM - EVA-PVA	~3,300	~2,100	
C2	EDC - VCM - PVC	~3,000	~2,400	Access to feedstock <ul style="list-style-type: none"> Form strategic partnerships with local refineries/gas majors to secure feedstock Invest in basic building blocks in feedstock-advantaged regions and build downstream value chain in India
C6/C4	Styrene - PS - ABS - SAN - SBR	~1,700	~2,500	
C3/C6	Phenol - Acetone - Bisphenol A - PC - MMA/PMMA	~1,000	~1,700	Access to feedstock <ul style="list-style-type: none"> Set up on-purpose Propane DeHydrogenation (PDH) unit Partner with refinery majors implementing PRU units Access to technology <ul style="list-style-type: none"> Partner with major chemical MNCs or independent technology licensors Capability to offer application-specific product and solutions <ul style="list-style-type: none"> Partner with MNCs to develop end-market solutions, e.g., polymer compounding Make targeted acquisitions to build capabilities, e.g., independent PU system house
C3	Acrylic acid - Oxo alcohol - Acrylates - SAP	~900	~1,300	
C3	PO-PG/Polyol - MDI/TDI - PU systems	~500	~1,000	
Total		~USD 11 bn		

Note: VAM: Vinyl acetate monomer; EVA: Ethylene vinyl acetate; PVA: Poly vinyl acetate; EDC: Ethylene dichloride; VCM: Vinyl chloride monomer; PVC: Poly vinyl chloride; PS: Polystyrene; ABS: Acrylonitrile butadiene styrene; SAN: Styrene Acrylonitrile; SBR: Styrene butadiene rubber; PC: Polycarbonate; (P)MMA: (Poly) methyl methacrylate; SAP: Superabsorbent polymer; PO: Propylene oxide; PG: Propylene Glycol; MDI: Methylene phenyl diisocyanate; TDI: Toulene diisocyanate; PU: Polyurethane

Source: Analysis of data sourced from UN Comtrade and Cybex; Expert Interviews

The domestic supply shortfall of 52 percent by volume in petrochemical intermediates creates an attractive opportunity, sufficiently large to merit multiple world-scale plants. Individual players could evaluate what part of the product value chain and what capacity can best be located in India based on tactical considerations of the global demand–supply scenario and competitive economics.

Opportunity 2: Growing exports of specialty chemicals

Specialty chemicals are the leading Indian chemical export segment, making up more than half (55 percent) of total chemical export value in 2018. Yet they are just 3 percent of the total export value of specialty chemicals worldwide, compared with 13 percent for China, 11 percent for Germany and 5 percent for Japan. Clearly, there is room for growth.

The export of specialty chemicals offers a compelling value proposition. Indian companies earning a significant proportion (greater than 40 percent) of revenue from specialty chemicals exports have seen disproportionate growth in TRS. Examples include Aarti Industries, Vinati Organics, SRF, Atul Ltd, and Navin Fluorine, all of which have had a TRS CAGR of more than 25 percent over the last three years.⁴⁷

An analysis of trade in specialty chemicals identifies the top nine segments in specialty chemicals exports globally (Exhibit 9). China, one of the world's largest exporters, stands tall in all these areas, while India's presence is significantly lower. India could take a greater share of the pie, both by penetrating deeper in already-served segments and by serving new segments.

India already has a strong base in the top three export segments in specialty chemicals – agrochemicals, dyes and pigments, and intermediates for active pharmaceutical ingredients (APIs). These constitute 27 percent, 19 percent and 18 percent respectively of total Indian specialty chemicals exports, and yet, China's total value of exports across these three subsegments is 2.7 times higher. India could further penetrate the market and obtain a greater share by leveraging its current base.

A scan of the remaining segments in the top nine indicates that India can build its exports presence in six areas (Exhibit 9). India has an export value of USD 1.3 bn for these six segments compared with China's USD 15 bn export value. Indian chemical companies could also explore specific opportunities in other specialty chemical segments (for example, specialty polymers, cosmetic chemicals, and coatings and adhesives).

Chemical companies seeking to explore the export opportunity could evaluate the availability of feedstock, the synergies and fit of these potential new products with their current portfolio, and their competitive advantage in these segments compared with current exporters. They could also evaluate domestic market demand for these products, which would be an additional incentive to ramp up.

⁴⁷ Company annual reports, Capital IQ and Datastream

China has a much greater presence than India in top specialty chemicals segments traded globally

■ Segments where India can penetrate deeper ■ Potential whitespace opportunities for India

Top segments in specialty chemicals exports	Global Market CAGR 2018–23, Percentage	Global specialty chem exports USD bn	China Global specialty chem exports, Percentage	India Global specialty chem exports, Percentage	Key insights
Intermediates for APIs	6-7% ¹	77	11%	4%	China's export value in top 3 segments is 2.7x that of India's • India can aim for deeper market penetration in these segments
Agrochemicals	2-3%	72	17%	6%	
Dyes and Pigments	2-3%	66	12%	5%	
Plastic additives	3-4%	15	8%	1%	China's export value in the next 6 segments is 12x that of India's • These segments provide new opportunities for India to explore
Electronic chemicals	4-5%	15	22%	0.02%	
Food/Feed additives	2-3%	12	19%	2%	
Nutraceuticals	4-5%	10	46%	2%	
Rubber chemicals	2-3%	5	27%	2%	
Flavours and Fragrances	3-4%	5	46%	12%	

¹Value based CAGR for Manufacture of Basic Pharmaceutical Products and Pharmaceutical Preparations
Source: IHS Chemicals, IHS Global Insights, UN Comtrade

The chemical industry already contributes significantly to India's trade volume. Capturing the opportunities in petrochemicals and specialty chemicals could make a positive difference to Indian chemical companies. To this end, Indian chemical companies could determine their priorities and develop a roadmap for success.



4. A charter for industry players to surge ahead

As India's chemical companies seek to keep up their above-average TRS and buoy investor sentiment, they could focus on three priorities to remain competitive and create value. Besides these steps by private players, Indian companies could also partner with the government to address sector-level challenges in the pursuit of growth.

Focus areas for industry players

Indian chemical companies could focus on attaining scale, building DnA capabilities for margin expansion and enhancing environmental sustainability.

Accelerate growth to build an at-scale business

Evolving into an at-scale business is a critical step to acquiring muscle in the chemical industry. It promotes economies of scale, critical in a capital-intensive industry such as chemicals which continually squeezes margins for smaller players. Enhanced scale could have the following benefits for Indian companies:

- **Broadened footprint of geographies and customer segments:** This can lead to sustainable growth and meaningful market share. Changing end-use demand indicates that companies cannot restrict themselves to one market alone. Specialty chemicals players, in particular, could tap the global market, where they get maximum revenue but are still small players. Aarti Industries earns more than 40 percent of its revenue from global markets.⁴⁸ UPL has expanded to multiple markets and over 30 percent of its revenue comes from Latin American markets (and under 20 percent from India).⁴⁹ SH Kelkar is an example of a niche Indian company that has made multiple strategic acquisitions, including stakes in China-based Anhui Ruibang Aroma and Italy's Creative Flavours and Fragrances. These have helped to expand its current portfolio of products, strengthen its technological platform and created access to new market segments.⁵⁰
- **Exposure to cutting-edge technological capabilities through a global network:** This could be a differentiator in today's dynamic industry environment, imparting a critical competitive advantage. Atul Chemicals, for example, partnered with Akzo Nobel to access state-of-the-art eco-friendly hydrogenation technology for monochloroacetic acid (MCA) production in India. Established as a partnership, this plant will produce enough MCA, a vital ingredient in agrochemicals, adhesives and pharmaceuticals, to supply the expanding Indian market.⁵¹
- **Access to alternative and cheaper feedstock:** This remains a challenge for Indian players,⁵² and at-scale companies could form partnerships with entities outside India to ease this pressure. For example, in late 2019, Reliance and ADNOC announced that they had signed an agreement to explore development of an ethylene dichloride (EDC) plant in Abu Dhabi. For Reliance, this move would provide access to low-cost ethylene feedstock to produce EDC – an input to produce polyvinyl chloride (PVC), which has growing demand and a widening domestic supply gap.⁵³

⁴⁸ Company annual report, https://www.aarti-industries.com/media/investors/annual/1566544942_Annual_Report_2018-2019.pdf

⁴⁹ Company annual report, https://www.upl-ltd.com/financiai_pdfs/6vohVH3pKznTjdhdAuC2phXr0iGfHp1OLsau2p3/UPL-Annual-Report-2018-19.pdf

⁵⁰ https://www.business-standard.com/article/news-cm/s-h-kelkar-company-enters-into-agreement-to-acquire-creative-flavours-and-fragrances-s-p-a-118011601055_1.html; <https://www.keva.co.in/our-group>;

⁵¹ <https://www.akzonobel.com/en/for-media/media-releases-and-features/akzonobel-closes-sale-specialty-chemicals-carlyle-group-and>

⁵² <https://www.smeventure.com/chemical-manufacturing-industry-india-challenges-opportunities/>

⁵³ <https://economictimes.indiatimes.com/industry/energy/oil-gas/reliance-signs-pact-with-adnoc-for-development-of-chemical-facility/articleshow/72461057.cms?from=mdr>

- **Value-chain integration:** This is another opportunity for players to structurally improve their cost positions to compete globally at scale. Many Indian players have started exploring this as a core source of long-term competitiveness. Camlin Life Sciences (CFS) acquired Borregaard Italia Spa⁵⁴ (a raw-material catechol manufacturing player) and Ningbo Wanglong (an end-product vanillin flavour manufacturing player). This vertical integration allowed CFS to become the third-largest vanillin producer worldwide.⁵⁵

Build DnA as a core capability to improve margins

In the absence of a feedstock advantage for India, achieving best-in-class functional efficiency is a crucial input to competitiveness.

The power of digital and analytics (DnA) in this context is compelling. According to the World Economic Forum Global Lighthouse Network, companies applying Industry 4.0 DnA technologies are getting a head start in creating value through increased functional efficiency across their organizations, beyond just the factories. “Lighthouses” are facilities generating outsized improvement in productivity, sustainability, operating cost and speed to market through cutting-edge digital technologies.⁵⁶

Can India's chemical companies also aspire to develop “lighthouses”? Already, chemical companies globally are seeing DnA applications yield an EBITDA impact of 3 to 5 percentage points (Exhibit 10) across the value chain. A focused approach to DnA could spur higher levels of productivity and margin growth.

What sets apart winning organizations in the pursuit of functional excellence is the leadership's desire to improve business performance and realize gains. Adapting to and using digital technology as a means for this calls for mindset shifts across all levels of the organization.⁵⁷

- From getting lost in a maze of multiple technologies and activities to realizing business opportunities and focusing on value
- From pilot purgatory (or pilots that never roll out to the wider organization) to programmatic implementation
- From waiting to get all the requisite data together to targeting business improvement with existing data (typically there is more than enough data)
- From focusing on a lack of capability and exploring outsourcing to building in-house capability



⁵⁴ <https://www.borregaard.no/Nyheter/Borregaard-sells-plant-in-Ravenna-Italy>
















⁵⁵ <https://www.foodbusinessnews.net/articles/9614-camlin-to-acquire-majority-stake-in-vanillin-manufacturer>

⁵⁶ The Global Lighthouse Network is an ongoing research project by the World Economic Forum in collaboration with McKinsey. Read more at https://www.weforum.org/projects/global_lighthouse_network

⁵⁷ <https://www.livemint.com/opinion/online-views/industry-4-0-is-a-buzzword-that-need-not-mystify-us-11578412883695.html>

Globally, digital is becoming established as a lever for functional excellence, improving margins by 3–5 percentage points

 % of total potential  Applicable

		Typical improvement (Percentage points)	Percentage of total potential	Dominant digital theme				
				Advanced analytics	Internet Of Things (IoT)	Robotics & automation	Process digitization	
A	Procurement	Procurement spend ¹ reduction	2–3	15–20%				
B	Manufacturing	1 Yield energy throughput & quality improvement	5–7	30–35%				
		2 Predictive maintenance to reduce cost and improve throughput	2–5	10–15%				
		3 Labour productivity improvement	8–10	10–15%				
C	Supply chain	Supply chain optimization	4–7	10–15%				
D	G&A	General & admin cost reduction	2–5	3–5%				
E	Sales & Marketing	Price improvement	5–7	10–15%				
Total			3–5	100%	50-60%		20–30%	20–30%

¹Includes raw material, stores & spares, excludes VIU potential
Source: McKinsey Global Energy and Materials Practice

Protect value in the long term through a push on environmental sustainability

The global push for sustainability is most strongly seen in the form of stricter environmental regulations, rising sustainability requirements among investors and shifting customer expectations. This effort is particularly significant in the case of the chemical industry, which is energy intensive and emits a high volume of greenhouse gases (GHG).⁵⁸

Chemical industry leaders have typically worried about energy, water and waste management in the context of sustainability.⁵⁹ It is now important that they target sustainability as a business necessity, shifting from mere compliance with norms to an imperative to protect long-term value. In this context, executives could consider the following:

- Reinforcing industry associations for stakeholder interactions: Given the quickening pace of regulatory change, industry associations could work closely with the government and regulatory authorities to shape policies.
- Following a three-step process toward decarbonization: The first step is to optimize processes and energy, which is already a theme for most companies. Second, companies could strongly focus on using renewable energy. Third, they could ramp up research and development efforts to reduce GHG emissions, such as through bio-based chemicals and plastics recycling.⁶⁰
- Creating strategies that weave sustainability into the business fabric: Instead of pursuing sustainability through a siloed approach, it could be embedded across the organization as a theme for governance models, corporate culture, capital allocation, feedstock and products.

Partnering with the government to address sector-level challenges

In addition to re-thinking internal priorities, industry players and associations could actively work with the government to address sector-level challenges. Strategic interventions and creation of an enabling environment could play a definitive role in the continuing success of the chemical industry.

- Feedstock availability: An integrated petrochemical and specialty chemicals masterplan could facilitate feedstock availability, limiting Indian companies' reliance on imports.
- Infrastructure: Fast-tracking the implementation of Petroleum, Chemical and Petrochemical Investment Regions (PCPIRs), perhaps through a steering committee that works with multiple stakeholders, could facilitate access to specialized common infrastructure and utilities.
- Skill development and innovation: The industry struggles with limited local capability to develop new products and technologies. It could be helpful to introduce sector-specific skill-development programs (for example, training in process engineering) and even a technology upgradation fund to encourage innovation.
- Incentives and duty structures: The government could consider supporting the import of plant and machinery for PCPIR units or providing capital expenditure incentives for facilities developed for environment protection. A duty structure review could also be important in light of changes in global supply chains and India's current trade deficit in chemicals.
- Environmental concerns: Expediting clearance processes for companies with registrations including GRI, CDP, ISO and SA 8000 and product-agnostic manufacturing approvals for near-term opportunities could be considered.⁶¹

⁵⁸ How to build a more climate-friendly chemical industry, a World Economic Forum report, January 2020

⁵⁹ McKinsey Global Sustainability Survey

⁶⁰ Drawn from the BASF article that was part of the World Economic Forum Annual Meeting in 2020, <https://www.weforum.org/agenda/2020/01/how-to-build-a-more-climate-friendly-chemical-industry/>

⁶¹ GRI: Global Reporting Initiative; CDP: Carbon Disclosure Project; ISO: International Standards Organization; SA: Social Accountability

- Regulations and ease of doing business: India's Ease of Doing Business ranking has already improved as a result of government efforts. The government could further enhance ease of business through streamlined regulations and processes for fast-track approvals and clear directives on the future regulatory regime, especially for environmental and health safety norms, hazardous waste rules, and amalgamation of environmental acts for water and air.

All these could be invaluable sources of support for chemical companies as they set their sights on the future.

In a world of uncertainties shaped by global trends, the Indian chemical industry could capture and capitalize on opportunities. How private players and the industry overall map their priorities and action plan could shape the future of the sector in India and contribute to the country's trade performance. Private players and the government could collaborate to strengthen India's chemical industry, making it a force to reckon with on the global stage.

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