Market Intelligence
& Analytics

CRISIL
An S&P Global Company

# Assessment of pharmaceutical API and speciality chemicals Industry in India

May 2023

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# 1 Macroeconomic assessment

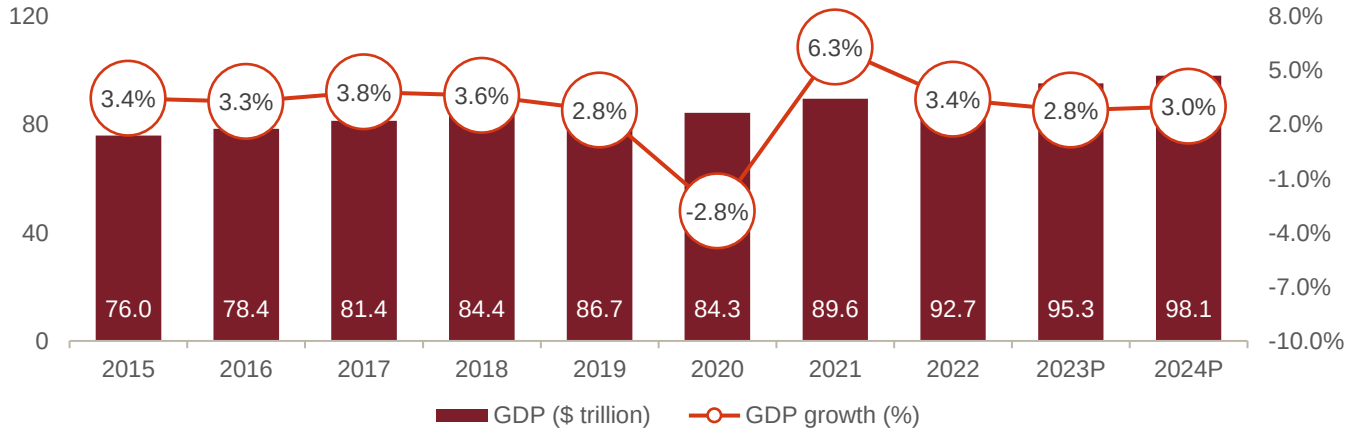
## 1.1 Global macroeconomic assessment

**Global gross domestic product (GDP) growth estimated at 2.9% in 2023 and 3.0% in 2024 amid the Russia-Ukraine conflict, elevated inflation and financial sector distress**

As per the International Monetary Fund's (IMF) April 2023 update, global growth is expected to moderate from 3.4% in 2022 and 2.8% in 2023 before settling at 3.0% in 2024. This is 0.1 percentage points lower for 2023 than projected in January 2023, the downward revision is mainly due to financial sector distress in major economies like US and Euro area. Economic slowdown is expected mainly due to financial systems instability, broadening inflation pressures, the Russia-Ukraine conflict and the slowdown in China. According to the IMF, The forecast of low growth in 2023 reflects the rise in central bank rates to fight inflation especially in advanced economies as well as the war in Ukraine. The decline in growth in 2023 from 2022 is driven by advanced economies; in emerging market and developing economies, growth is estimated to have bottomed out in 2022. Growth is expected to pick up in China with the full reopening in 2023. The expected pickup in 2024 in both groups of economies reflects gradual recovery from the effects of the war in Ukraine and subsiding inflation.

As per the IMF update, In most economies, amid the cost-of-living crisis, the priority has been on achieving sustained disinflation. With tighter monetary conditions and lower growth potentially affecting financial and debt stability. Accelerating COVID-19 vaccinations in China would safeguard the recovery and ease the bottlenecks created in the supply chains,

**Trend and outlook for global GDP (2015-2023P, $ trillion)**

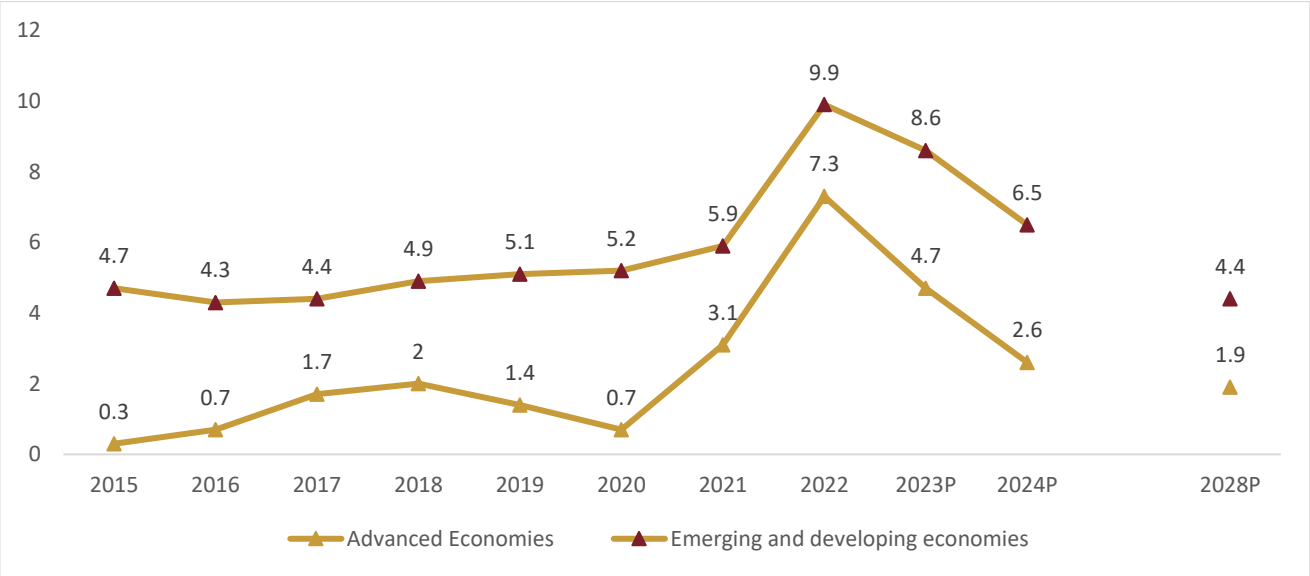



*Note: P: Projection*
*Source: IMF economic database, World Bank national accounts data, OECD national accounts data, CRISIL MI&A*

## Global inflation declining but remain elevated amid financial sector distress

As per the IMF, inflation have shown declining trend from mid-2022 although it still remain elevated and the monetary policy stance by the central bank is expected to remain restrictive for longer in the medium term to tackle sticky inflation. For 2023, inflation is estimated at 4.7% in advanced economies and 8.6% in emerging market and developing economies. This is 0.1 and 0.5 percentage points higher than projected in IMF's January 2023 forecast for advanced economies and emerging economies respectively. Although a gradual resolution of supply-demand imbalances and a modest pickup in labour supply are expected in the baseline, easing price inflation eventually.

**Trend and outlook on consumer prices**




*Note: P: Projection*
*Source: IMF, CRISIL MI&A*

## Global per capita GDP

Global GDP per capita logged 3.7% CAGR between 2016 and 2022, as per IMF data. In the case of India, it was ~5.6% CAGR between 2016 and 2022. From 2022 to 2025, the IMF projects global per capita GDP to grow at ~4.2% CAGR. During the period, India's per capita GDP is expected to sustain a higher growth trajectory of ~8.2% CAGR. India's per capita GDP is expected to rise the fastest by 2025 among the key economies.

**Per capita GDP at current prices for key economies**

| Regions | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2025P | 2016 to 2022 |
|---|---|---|---|---|---|---|---|---|---|
| **US** | 57,840 | 59,879 | 62,788 | 65,077 | 63,577 | 70,160 | 76,348 | 84,601 | 4.7% |
| **Euro area** | 25,946 | 27,562 | 29,703 | 29,286 | 28,314 | 32,228 | 32,319 | 36,801 | 3.7% |
| **UK** | 41,276 | 40,667 | 43,378 | 42,797 | 40,347 | 46,422 | 45,295 | 52,001 | 1.6% |
| **China** | 8,063 | 8,760 | 9,849 | 10,170 | 10,525 | 12,572 | 12,814 | 15,901 | 8.0% |
| **Japan** | 39,411 | 38,903 | 39,850 | 40,548 | 40,118 | 39,883 | 33,822 | 38,333 | -2.5% |
| **India** | 1,714 | 1,958 | 1,974 | 2,050 | 1,913 | 2,234 | 2,379 | 3,012 | 5.6% |
| **World** | 10,361 | 10,886 | 11,421 | 11,472 | 11,048 | 12,479 | 12,875 | 14,549 | 3.7% |

*Source: IMF, CRISIL MI&A*

### India regained the top spot as the world's fastest growing economy in 2021 among key nations

India was one of the fastest-growing economies in 2018 and 2019. In 2020, all countries, including developed ones such as the US and the United Kingdom (UK), except China, saw their GDP contracting due to the pandemic impact. India's GDP shrank 5.8% in fiscal 2021 (financial year: April-March). In 2021, GDP growth of all major economies rebounded as economic activities resumed and also due to the low base of 2020. Among the major economies, India, with a growth rate of ~9.1%, was the fastest growing in 2021, followed by China with 8.4% in 2021. The country also overtook the UK as the fifth largest economy in the word in the April-June quarter of 2022 and register GDP growth of 6.8% in 2022.Going ahead, India is expected to grow faster than China in 2023 and 2024. The country also overtook the UK as the fifth largest economy in the word in the April-June quarter of 2022. India's GDP is expected to grow at 5.9% in 2023 and 6.3% in 2024 as per the IMF forecast.

**Real GDP growth by geographies**

| Regions | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023P | 2024P |
|---|---|---|---|---|---|---|---|---|
| **US** | 2.3 | 2.9 | 2.3 | -2.8 | 5.9 | 2.1 | 1.6 | 1.1 |
| **Euro area** | 2.6 | 1.8 | 1.6 | -6.1 | 5.4 | 3.5 | 0.8 | 1.4 |
| **UK** | 2.4 | 1.7 | 1.6 | -11.0 | 7.6 | 4.0 | -0.3 | 1.0 |
| **China** | 6.9 | 6.8 | 6.0 | 2.2 | 8.4 | 3.0 | 5.2 | 4.5 |
| **Japan** | 1.7 | 0.6 | -0.4 | -4.3 | 2.1 | 1.1 | 1.3 | 1.0 |
| **India*** | 6.8 | 6.5 | 3.9 | -5.8 | 9.1 | 6.8 | 5.9 | 6.3 |
| **World** | **3.8** | **3.6** | **2.8** | **-2.8** | **6.3** | **3.4** | **2.8** | **3.0** |

*Note: P: Projection as per IMF update*

**Numbers for India are for financial year (2020 is FY21 and so on) and as per IMF forecast. CRISIL GDP forecast for India: FY22: 8.7%, FY23: 7.0% and FY24: 6.0%*

***Source: IMF economic database, World Bank national accounts data, OECD national accounts data, CRISIL MI&A***

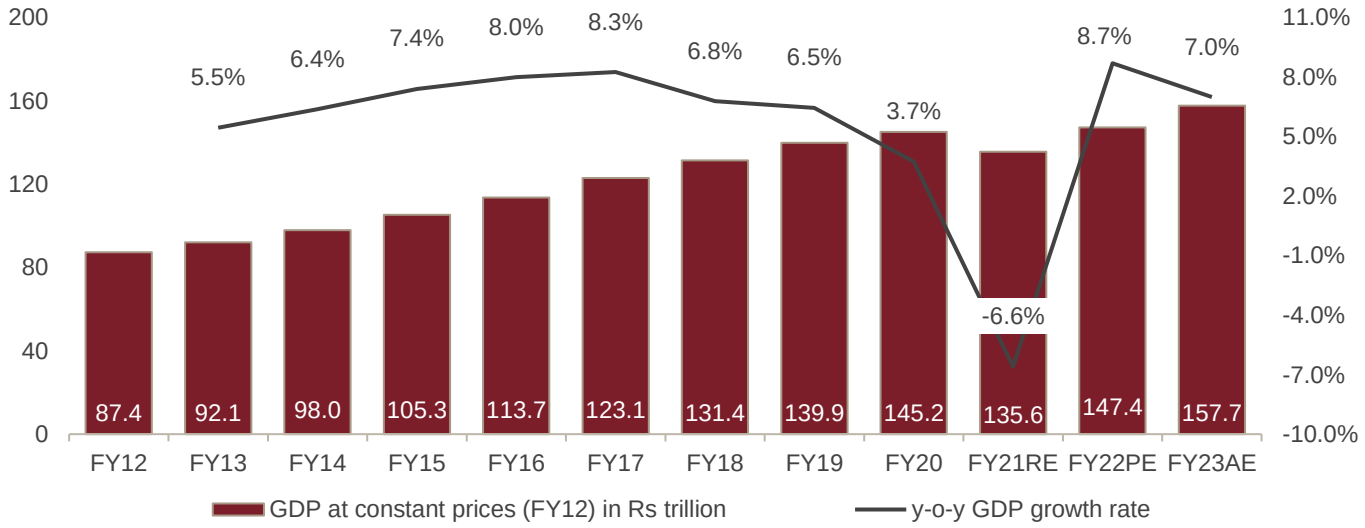
## 1.2 India's macroeconomic assessment

### India's GDP logged 5.4% CAGR over fiscals 2012-2022

In 2015, the Ministry of Statistics and Programme Implementation (MoSPI) changed the base year for calculating India's GDP from fiscal 2005 to fiscal 2012. Based on this, the country's GDP logged an 10-year CAGR of 5.4%, reaching Rs 147 trillion in fiscal 2022 from Rs 87 trillion in fiscal 2012.

In fiscal 2022, the economy recovered from the pandemic-related stress, aided by the resumption of economic activities and less stringent restrictions related to Covid-19. The economy faced challenges in the last quarter of fiscal 2022 owing to geopolitical pressures, resulting in higher inflation levels. With the resumption of economic activities and healthy trade flow, GDP growth was at a healthy 8.7%, albeit on a low base.

**Real GDP growth in India (new series)**




*Note: PE: Provisional estimates; RE: Revised estimates; AE: Advance estimates*
*Source: Provisional estimates of national income 2021-22, Central Statistics Office (CSO), MoSPI, CRISIL MI&A*

### India's GDP grew 8.7% on-year in fiscal 2022

As per the provisional estimates released by the National Statistical Office, India's real GDP grew 8.7% in fiscal 2022, lower than 8.9% it had estimated in February 2022. The growth is largely a reflection of a lower base (as the economy had shrunk 6.6% in fiscal 2021). It is noteworthy that given the large output loss in the past fiscal, GDP is 1.5% above the pre-pandemic (fiscal 2020) level. Over fiscals 2012-2022, GDP clocked 5.4% CAGR.

While provisional estimates show a mild reduction in the overall size of GDP for fiscal 2021, estimates for private final consumption expenditure (PFCE) and gross fixed capital formation (GFCF) – the two major demand drivers – were marginally notched up. The latter suggests the government's continued focus on capital expenditure (capex). PFCE is still just 1.4% above the fiscal 2020 level and was the slowest to recover. Moreover, it faces strong headwinds from rising inflation.

## CRISIL estimates India's GDP to grow 7.0% in fiscal 2023

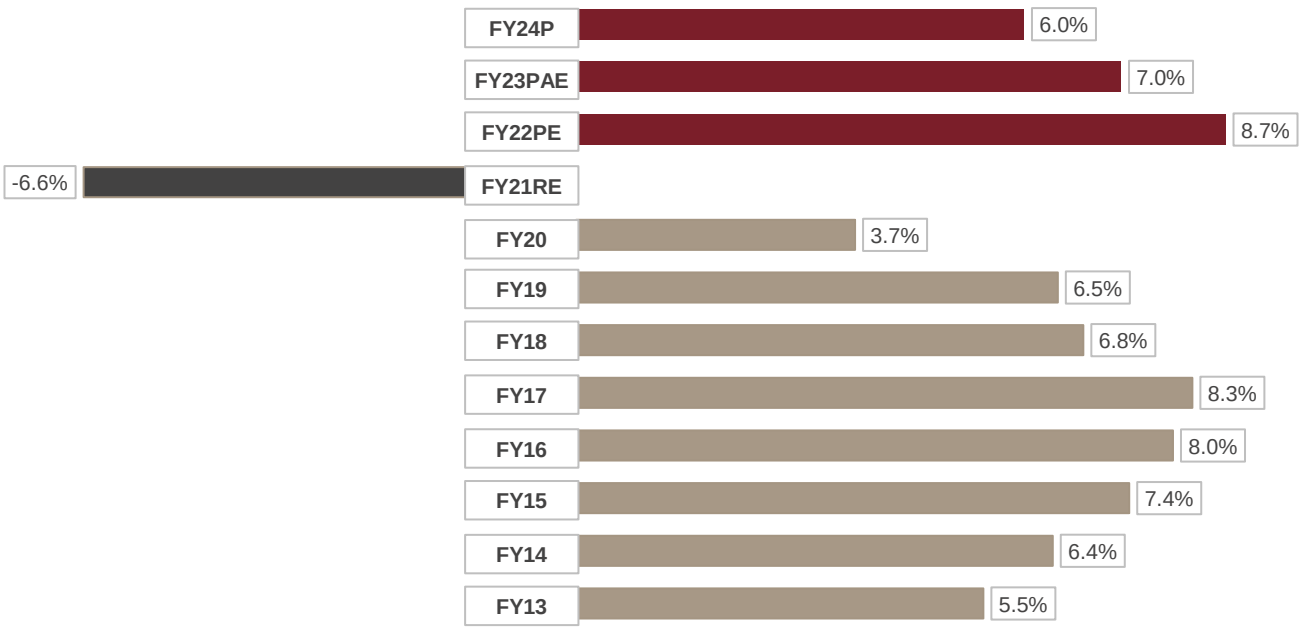
While recovery continues to gather pace, the economy is facing multiple risks. Global growth is projected to slow as central banks in major economies withdraw easy monetary policies to tackle high inflation. This would imply lower demand for our exports. Together with high commodity prices, especially oil, this may deal a trade shock for the country. High commodity prices, along with depreciating rupee, indicate higher imported inflation.

The second quarter fiscal 2023 data reflected how global slowdown had begun to spill over to the Indian economy. Long-term growth movements suggest that despite diverging now, India's growth cycles have been remarkably synchronised with that of advanced economies since the 2000s. Major developed economies are expected to fall into a shallow recession by next year. S&P Global expects the US GDP to swerve from a growth of 1.8% in 2022 to negative 0.1% in 2023, and the European Union from 3.3% to 0% driven by tight financial conditions induced by rate hikes of US Federal Reserve, and the European energy crisis. This will weaken the export prospects for India, thereby weighing on domestic industrial activity.

## GDP forecasted to grow 6.0% in fiscal 2024

Domestic demand has stayed relatively resilient so far, it would be tested next year by weakening industrial activity. It will feel the pressure from increasing transmission of interest rate hikes to consumers as well, and as the catch-up in contact-based services fades. Also, rural income prospects remain dependent on the vagaries of the weather. Therefore, increasing frequency of extreme weather events remains a key monitorable. While lowering demand for Mahatma Gandhi National Rural Employment Guarantee Act jobs is an encouraging sign for the rural economy from a job perspective, depressed wages are a matter of concern for rural demand. Because of these factors, CRISIL projects GDP growth to slow to 6% in fiscal 2024 from 7% in fiscal 2023, with risks to the downside.

**Real GDP growth (% on-year)**

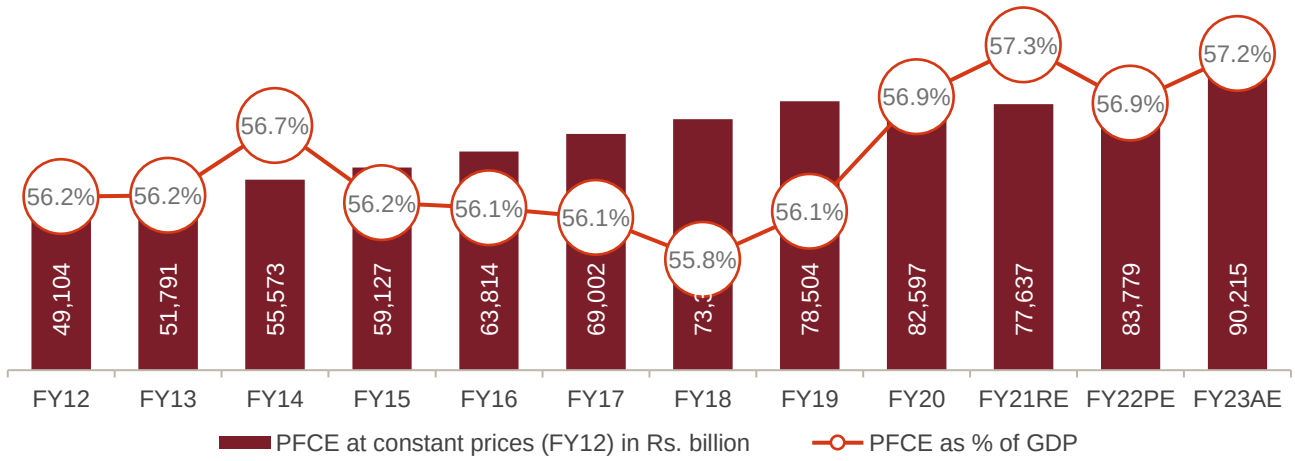



*Note: PE: Provisional estimates; RE: Revised estimates; AE: Advance estimates , P: Projected*
*Source: Advance Estimates of National Income, 2020-21, CSO, MoSPI, CRISIL MI&A*

## PFCE to maintain dominant share in India's GDP

PFCE at constant prices clocked 5.5% CAGR between fiscals 2012 and 2022, maintaining its dominant share in the GDP pie at ~57% or Rs 83,779 billion. Factors contributing to growth included good monsoons, wage revisions due to the implementation of the Pay Commission's recommendations, benign interest rates and low inflation. However, it declined in fiscal 2021 to Rs 77,637 billion on account of the pandemic, when consumption demand was impacted on account of strict lockdowns, employment loss, limited discretionary spending and disruption in demand-supply dynamics. In fiscal 2022, it increased 7.9% to Rs 83,779 billion, forming 56.9% of GDP as some of the restrictions were eased and economic activities resumed.

**PFCE (at constant prices)**




*Note: PE: Provisional estimates; RE: Revised estimates; AE: Advance estimates*
*Source: MoSPI, CRISIL MI&A*

## India saw robust growth in per capita income over fiscals 2012-2020

India's per capita income, a broad indicator of living standards, rose from Rs 63,462 in fiscal 2012 to Rs 96,522 in fiscal 2022, logging 5.2% CAGR. Growth was led by better job opportunities, propped up by overall GDP growth. Moreover, population growth remained stable at ~1% CAGR. However, in fiscal 2021, the indicator declined 9.7% on-year owing to the impact of Covid-19. Despite a 7.5% on-year growth seen in fiscal 2022, in absolute terms, it is yet to recover to pre-pandemic levels.

**Per capita net national income at constant prices**

| | FY12 | FY13 | FY14 | FY15 | FY16 | FY17 | FY18 | FY19 | FY20 | FY21RE | FY22PE | FY23AE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Per-capita net national income (Rs)** | 63,462 | 65,538 | 68,572 | 72,805 | 77,659 | 83,003 | 87,586 | 92,133 | 94,270 | 85,110 | 91,481 | 96,522 |
| **On-year growth (%)** | | 3.3 | 4.6 | 6.2 | 6.7 | 6.9 | 5.5 | 5.2 | 2.3 | -9.7 | 7.5 | 5.5 |

*Note: PE: Provisional estimates; RE: Revised estimates; AE: Advance estimates*
*Source: Second Advance Estimates of Annual National Income, 2020-21, CSO, MoSPI, CRISIL MI&A*

## India's per capita GDP grows faster than global average

Global GDP per capita clocked a CAGR of 2.2% between 2012 and 2021, as per the IMF data. Meanwhile, India's corresponding figure registered a CAGR of 5.5%.

**Per capita GDP at current prices**

| | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | CAGR 2012-2022 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **India per-capita GDP at current prices ($)** | 1,444 | 1,450 | 1,574 | 1,606 | 1,733 | 1,981 | 1,998 | 2,072 | 1,933 | 2,280 | 2,466 | 5.5% |
| **World per-capita GDP at current prices ($)** | 10,738 | 10,918 | 11,077 | 10,333 | 10,386 | 10,917 | 11,489 | 11,559 | 11,156 | 12,616 | 13,396 | 2.2% |

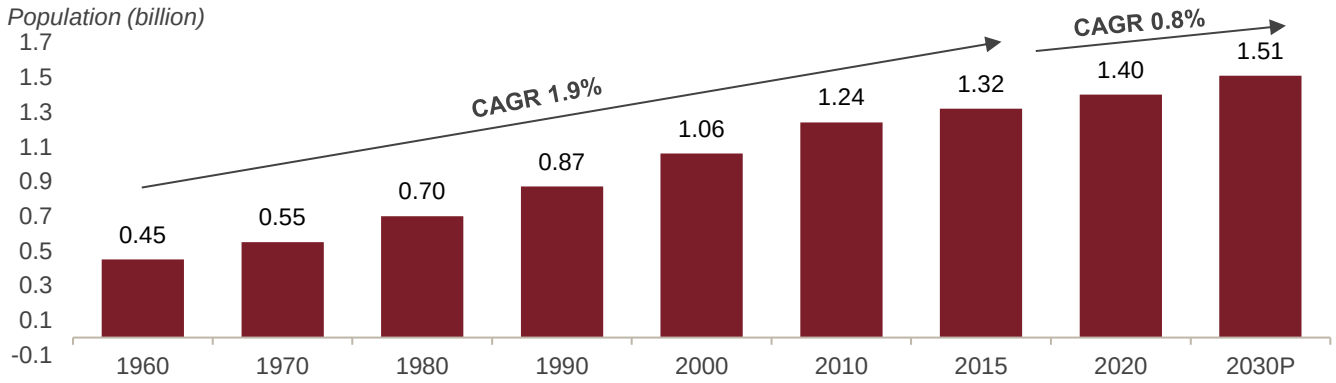
*Source: IMF, CRISIL MI&A*

## India's population is projected to log 0.8% CAGR between 2020 and 2030

India's population grew to ~1.2 billion according to Census 2011, at a CAGR of 1.9% during 2001-2011. As of 2010 census, the country had about 246 million households.

According to the United Nation's (UN) World Urbanization Prospects, 2022 revision, India and China, two of the most populous countries, accounted for nearly 36% of the world's population in 2021. The report projects India's population to increase at a CAGR of 0.8% from 2020 to 2030 to reach 1.5 billion by 2030. According to UN reports India is expected to surpass China to become most populous country in April 2023. In April 2023, India's population is expected to reach 1.425 billion people, matching and then surpassing the population of mainland China.

**India's population growth**




*Note: P: Projected*

*Source: UN Department of Economic and Social Affairs, World Population Prospects 2022, CRISIL MI&A*

## Global population to log 0.7% CAGR between 2020 and 2050

According to the latest UN population estimates, world population grew 1.1% on-year in 2020, or by 82 million

people, to reach a global total of 7.8 billion. In the coming decades, slowdown in population growth is projected to continue. The population is expected to grow 0.7% between 2020 and 2050.

**Global population growth rate**

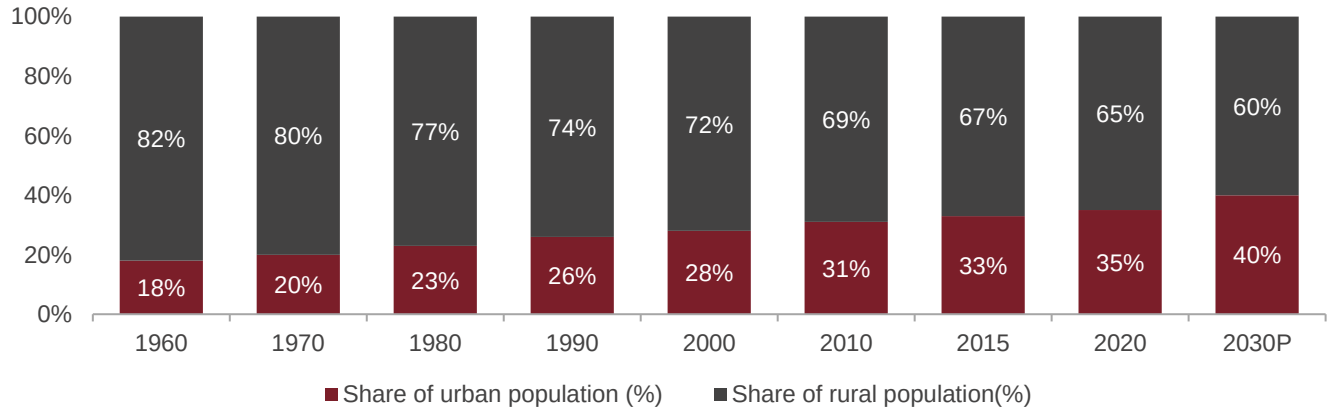
| Group of economies | Population (Million) | | | Annual growth rate (%) | | |
|---|---|---|---|---|---|---|
| | 2015 | 2020 | 2050 | 2015–2020 | 2020 | 2020–2050 |
| World | 7427 | 7841 | 9709 | 1.1% | 1.0% | 0.7% |
| High income countries | 1216 | 1244 | 1282 | 0.5% | 0.3% | 0.1% |
| Middle income countries | 5570 | 5869 | 7024 | 1.1% | 0.9% | 0.6% |
| Low Income countries | 610 | 699 | 1367 | 2.8% | 2.8% | 2.3% |

*Source: World Population Prospects 2022, CRISIL MI&A*

## Urbanisation in India likely to reach 40% by 2030

India's urban population has been rising over the years and is expected to continue with rise in economic growth. From ~31% of the total population in 2010, it is projected to rise to nearly 40% by 2030, according to a UN report on urbanisation.

**India's urban vs rural population**




*P: projected*

*Source: World Urbanization Prospects: The 2018 Revision, UN, CRISIL MI&A*

People from rural areas move to cities for better job opportunities, education, and quality of life. The entire family or only a few individuals (generally an earning member or students) may migrate, while the other members continue to live in their rural home.

## India's youth to account for ~39% of its population by 2030

As per the UN's 2022 Revision of World Population Prospects, India's youth (0-24 years) accounted for nearly half its population in 2010, significantly higher than that for some of its peers (Brazil at 42.5%, China at 35.1% and the Russian Federation at 29.7%). The fact that ~31% of the population is aged below 15 indicates that a high proportion of the country's young population is expected to remain so in the coming years.

This share is, in fact, expected to reach ~39% by 2030, and remain significantly higher than that of its peers (Brazil at 31.5%, China at 25.4% and the Russian Federation at 27.7%). This also indicates higher proportion of population entering the workforce.

**Age-wise population break-up for key countries**

| Country | 0-14 years | 15-24 years | 25-49 years | 50-69 years | 70+ | Total |
|---|---|---|---|---|---|---|
| **Brazil** | | | | | | |
| 2010 | 24.8% | 17.7% | 37.6% | 15.6% | 4.4% | 100% |
| 2020 | 20.8% | 15.6% | 38.3% | 19.5% | 5.8% | 100% |
| 2030P | 18.2% | 13.3% | 37.4% | 22.6% | 8.4% | 100% |
| **China** | | | | | | |
| 2010 | 18.5% | 16.6% | 40.3% | 19.0% | 5.7% | 100% |
| 2020 | 18.0% | 11.4% | 37.6% | 25.5% | 7.5% | 100% |
| 2030P | 13.1% | 12.3% | 34.0% | 28.6% | 12.0% | 100% |
| **India** | | | | | | |
| 2010 | 31.0% | 19.1% | 33.9% | 12.9% | 3.1% | 100% |
| 2020 | 26.1% | 18.2% | 36.2% | 15.5% | 3.9% | 100% |
| 2030P | 22.3% | 16.2% | 38.0% | 17.9% | 5.5% | 100% |
| **Russian Federation** | | | | | | |
| 2010 | 15.2% | 14.6% | 37.2% | 23.2% | 9.8% | 100% |
| 2020 | 17.7% | 9.8% | 37.4% | 25.5% | 9.7% | 100% |
| 2030P | 15.4% | 12.4% | 33.8% | 25.2% | 13.3% | 100% |
| **UK** | | | | | | |
| 2010 | 17.6% | 13.1% | 34.8% | 22.9% | 11.6% | 100% |
| 2020 | 17.8% | 11.6% | 32.5% | 24.4% | 13.7% | 100% |
| 2030P | 15.4% | 12.2% | 31.9% | 24.5% | 15.9% | 100% |
| **US** | | | | | | |
| 2010 | 19.9% | 14.1% | 34.1% | 22.8% | 9.1% | 100% |
| 2020 | 18.5% | 13.1% | 33.0% | 24.7% | 10.7% | 100% |
| 2030P | 16.4% | 12.5% | 33.2% | 23.0% | 14.8% | 100% |

*P: projected*

*Source: United Nations, Department of Economic and Social Affairs, Population Division (2022); World Population Prospects 2022, CRISIL MI&A*

### Indian population's median age to be 30.9 years by 2030

According to the UN, the global median age rose to ~30 years in 2020 from ~20 years in 1970. This is lower than the median age in developed countries such as the US (37.5 years) and the UK (39.5 years). Interestingly, India's median age is 27.3 years, indicating a favourable demographic dividend. Furthermore, it is the lowest among its BRIC peers: Brazil (32.4 years), Russia (37.4 years), and China 38.6 years.

This trend is expected to continue up to 2030, implying strong potential for an increase in income, and basic and healthcare spending, with a large proportion of the population being employed.

**Median age trend across key countries**

| Country | 1970 | 1990 | 2010 | 2015 | 2020 | 2030P |
|---|---|---|---|---|---|---|
| Brazil | 17.3 | 21.5 | 28.2 | 30.3 | 32.4 | 36.5 |
| China | 18.0 | 23.7 | 34.1 | 35.6 | 37.4 | 42.7 |
| India | 18.3 | 20.0 | 24.0 | 25.5 | 27.3 | 30.9 |
| Russian Federation | 29.7 | 32.2 | 36.9 | 37.6 | 38.6 | 42.1 |
| UK | 33.2 | 34.8 | 38.5 | 39.0 | 39.5 | 41.6 |
| US | 27.2 | 31.8 | 36.1 | 36.6 | 37.5 | 39.7 |
| World | 20.3 | 23.0 | 27.3 | 28.5 | 29.7 | 32.1 |

*Source: United Nations, Department of Economic and Social Affairs, Population Division (2022); World Population Prospects 2022, CRISIL MI&A*

## India's GVA continues to record healthy growth

On the supply side, gross value added (GVA), a much better measure of the economic performance, grew 8.1% (compared with 4.8% de-growth in fiscal 2021). In absolute terms, real GVA was Rs 136 trillion in fiscal 2022, up from Rs 125.9 trillion in fiscal 2021, and is expected to reach Rs 145.1 trillion in fiscal 2023, as per the advance estimates.

**GVA at constant fiscal 2012 prices)**

| Rs trillion | FY21RE | FY22PE | FY23AE | Share in GVA FY23 | Annual growth in FY23 |
|---|---|---|---|---|---|
| Agriculture, forestry and fishing | 20.5 | 21.1 | 21.8 | 15% | 3.5% |
| Mining and quarrying | 2.9 | 3.3 | 3.3 | 2% | 2.4% |
| Manufacturing | 22.5 | 24.7 | 25.0 | 17% | 1.6% |
| Utility services | 2.9 | 3.1 | 3.3 | 2% | 9.0% |
| Construction | 9.6 | 10.7 | 11.7 | 8% | 9.1% |
| Trade, hotels, transport, communication and services related to broadcasting | 21.5 | 23.9 | 27.1 | 19% | 13.7% |
| Financial, real estate and professional services | 29.6 | 30.9 | 32.8 | 23% | 6.4% |
| Public administration, defence and other services | 16.3 | 18.4 | 19.8 | 14% | 7.9% |
| GVA at basic prices | 125.9 | 136.1 | 145.1 | | 6.7% |

*RE: revised estimate, AE: advanced estimate*
*Source: CRISIL MI&A*

GVA for chemicals and chemical related products including pharmaceuticals have seen healthy growth over the last few years owing to higher manufacturing output achieved by the country. The GVA for chemicals and chemical related products including pharmaceuticals have registered growth of ~7.1% CAGR from fiscal 2015 to fiscal 2020. At the same time the share of this segment in manufacturing and overall economic GVA have also seen increasing

trend.

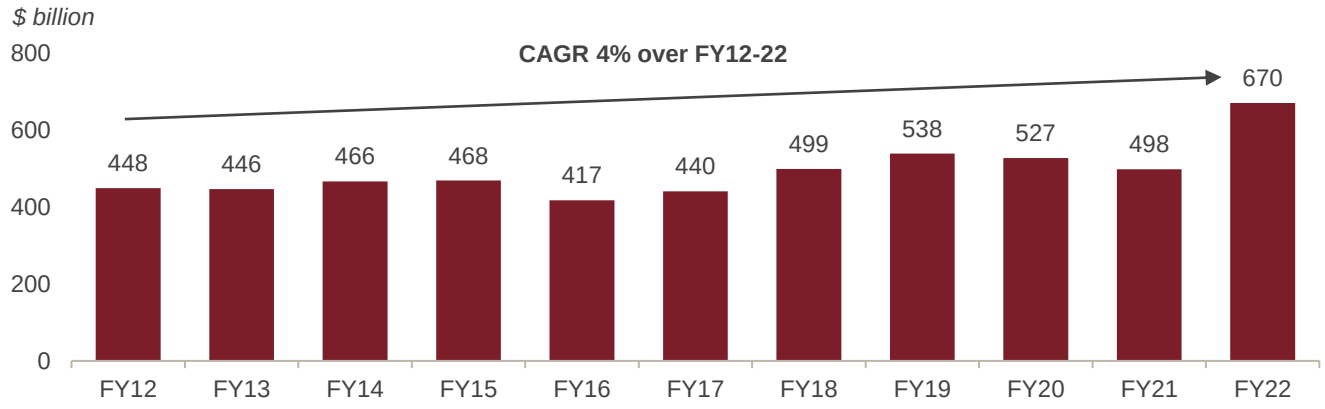
**GVA for chemicals and chemical related products at constant fiscal 2012 prices)**

| Rs trillion | FY15 | FY16 | FY17 | FY18 | FY19 | FY20 | FY15-FY20 CAGR |
|---|---|---|---|---|---|---|---|
| GVA for chemicals and chemical products including pharmaceuticals | 2,148.8 | 2,310.1 | 2,558.1 | 2,640.0 | 2,939.0 | 3,022.3 | 7.1% |
| Y-o-Y growth | - | 7.5% | 10.7% | 3.2% | 11.3% | 2.8% | - |
| Share in manufacturing GVA | 12.8% | 12.1% | 12.5% | 12.0% | 12.6% | 13.3% | - |
| Share in total GVA | 2.2% | 2.2% | 2.3% | 2.2% | 2.3% | 2.3% | - |

## India's exports increased at 4% CAGR between fiscals 2012 and 2022

India achieved an all-time high annual exports of USD 679 billion in fiscal 2022, up 35% from USD 498 billion in fiscal 2021. Merchandise and services exports clocked a steady 4% CAGR during the mentioned period. The steady rise in exports can be attributed to India becoming a major manufacturing hub for key products as well as the central government's push for local manufacturing of key goods.

**Trend in India's exports (merchandise + services)**

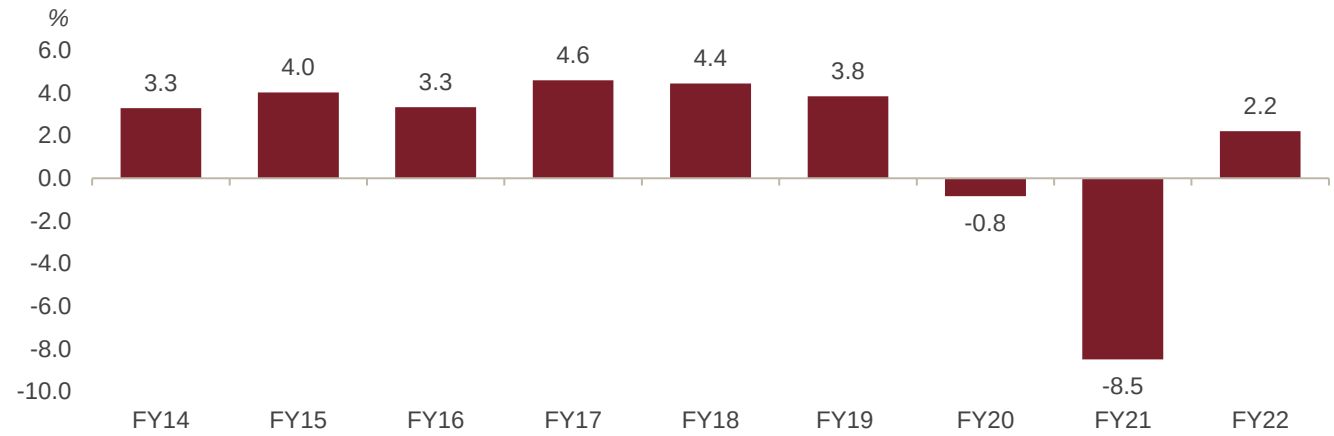



*Source: Ministry of Commerce, CRISIL MI&A Research*

## India's Industrial Index of Production grew steadily before the pandemic

India's industrial production increased steadily from a base of fiscal 2012, as a result of higher traction in economic activities, particularly in the manufacturing segment. IIP fell in fiscals 2020 and 2021 owing to the pandemic-related stress, but recovered in fiscal 2022 with resumption economic activities. It is expected to hold ground this fiscal amid global economic challenges.

**Trend in IIP (base FY12)**




*Source: Ministry of Commerce, CRISIL MI&A Research*

# 2 Assessment of pharmaceutical API industry in India

Bulk drugs/Active Pharmaceutical Ingredients (API) serve as raw materials for manufacturing finished dosage forms or formulations. US Food & Drug Administration defines a bulk drug as any substance which is an active ingredient in a finished dosage. However, the term does not include intermediates used in the synthesis of the bulk drug itself.


## 2.1 Overview of global pharmaceutical API industry

The global API market is connected through supply chains across the different parts of the world. The supply chains for API are constantly evolving according to demand-supply trend in the industry. Price and regulatory compliances are also one of the key elements that affects the global API market. The global API market consists of regional hubs in which manufacturers specialize in producing different types of ingredients for different sections of the global pharma market. In Asia particularly in China, the API industry is known for low-cost, high-volume API manufacturing and it is one of the key global source for the global pharmaceutical industry. However with covid-19 related disruptions pharmaceutical players are looking for alternate sourcing destinations like India which has skilled workforce and low cost manufacturing capabilities. European API Manufacturing players on the other hand are specialized in production of specialized, highly potent, APIs for the global market.

As the pharmaceutical industry is evolving, various countries and regulators have implemented stringent regulations on developing high quality APIs, thus enhancing the potential clinical effectiveness of the final product and at the same time maintain the environmental safety standards. As a result, many companies are outsourcing API manufacturing and Asia-pacific region has witnessed strong growth in API manufacturing due to its cost-effectiveness. Large number of manufacturers have their bases located in China and India which is propelling many global pharmaceutical industries to seek partnerships with manufactures in these countries. The advantage of technical know-how and capabilities for largescale manufacturing, is expected to drive the growth in the Asia-pacific markets like India and China.

## 2.2 Overview of Indian pharmaceutical API industry

The pharmaceutical API industry in India is ranked third-largest globally in terms of volume, behind China and Italy – About 35 per cent of API and intermediaries produced in India are exported and the remaining API and intermediaries are sold in the domestic market, including captive consumption by several large formulation players. India is the largest provider of generics drugs globally contributing to ~20% in global supply by volume of generics drugs.

In the Indian pharmaceutical API industry, players adopt different business models to cater to the demand in the domestic as well as export markets. Bulk drugs are exported either under a contract manufacturing service between Indian manufacturers and global innovator companies or are merely supplied on a trading basis. The latter method is generally followed when exporting to semi-regulated markets or while supplying bulk drugs for manufacture of off-patent drugs in regulated markets. Typically, regulated markets offer higher profits than semi-regulated markets.

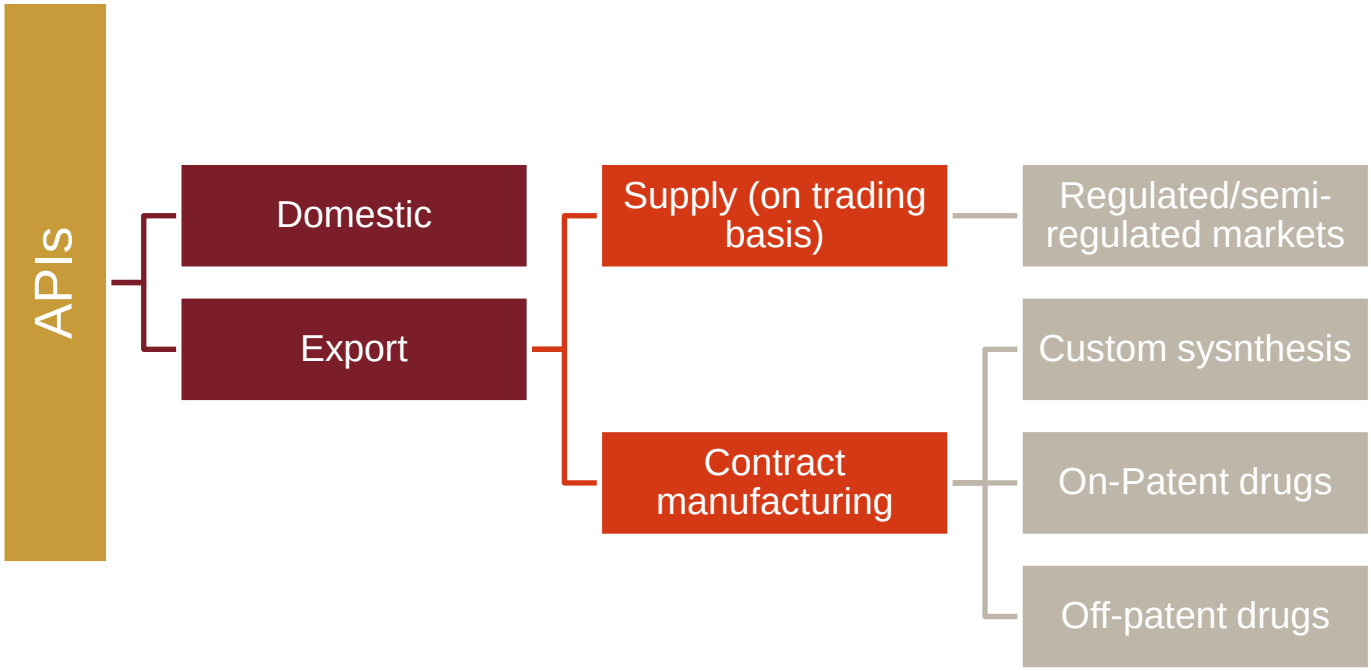
Exports to regulated markets also occur in the nature of contract manufacturing for on-patent and off-patent drugs. Besides, bulk drugs are also supplied (in smaller quantities) during drug development to innovator companies. Players operating in this segment earn higher margins as compared to other exporters. The margins vary according to the player's area of expertise; for example, custom synthesis carries very high margins compared to supply for manufacture of off-patent drugs.

The nature of Indian bulk drug exports to regulated markets has also changed over a period of time. Initially, exports were routed through merchants. Increasingly, most medium and large-sized exporters are directly exporting to generic or innovator companies in regulated markets. Further, profitability is higher for players who supply bulk drugs for manufacturing on-patent drugs in regulated markets as compared to players who supply bulk drugs for generics' manufacture.

In terms of imports, Indian API industry still relies on imports for specific products. High dependence on Chinese imports is a concern for the domestic pharmaceuticals industry. The covid outbreak has been detrimental in revealing the consequences of a supply disruption from China and its potential impact.

Therefore, the central government has earmarked ~Rs 100 billion for the bulk drug industry, including Rs 30 billion for promotion of bulk drug parks (for next five years) and Rs 69.4 billion towards production-linked incentive scheme for promotion of domestic manufacturing of critical KSMs/Drug Intermediates and APIs in the country (for next eight years).

**Revenue model adopted by bulk drug players**



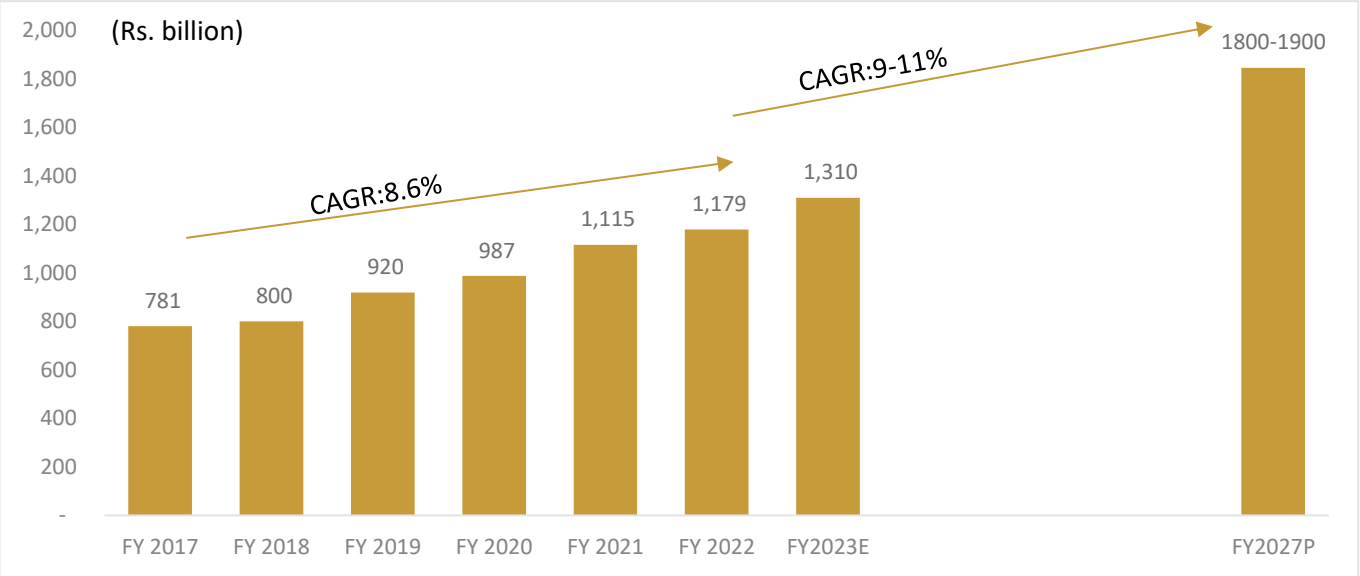

*Source: CRISIL Research*

### API industry in India to grow at 9-11% CAGR between fiscal 2022 and 2027

The overall API industry in India grew from Rs. 781 billion in fiscal 2017 to Rs. 1179 billion in fiscal 2022 registering a CAGR of 8.5% in rupee terms. Growth in the industry was supported by growth in formulation manufacturing in India. The formulation industry also grew at healthy pace during the same period and API imports grew at a tepid pace during the period under consideration. Thus the domestic API and intermediaries industry was supported by demand in formulation, manufacturing by local players and backward integration by large formulation players.

Going forward the API industry is expected to clock a CAGR of 9-11 % between fiscal 2022 and fiscal 2027, largely driven by growth in API  exports, which is expected to deliver a healthy growth during the period under consideration.

**Overview of API industry in India (incl. exports)**




*Note: E-Estimated, P: Projected*
*Source: DGCIS, CRISIL Research*

### 2.2.1 Overview of paracetamol API industry in India

Paracetamol (Acetaminophen-$C_8H_9NO_2$), is the most commonly taken analgesic worldwide and is recommended as first-line therapy in pain conditions by the World Health Organization (WHO).It is also used for its antipyretic effects, helping to reduce fever. This drug was initially approved by the U.S. FDA in 1951 and is available in a variety of forms including syrup form, regular tablets, effervescent tablets, injection, suppository, and other forms. Paracetamol is often found combined with other drugs in many over the counter (OTC) allergy medications, cold medications, sleep medications, pain relievers, and other products.

#### Paracetamol API industry in India to grow at 5-7% CAGR between fiscal 2023 and 2027

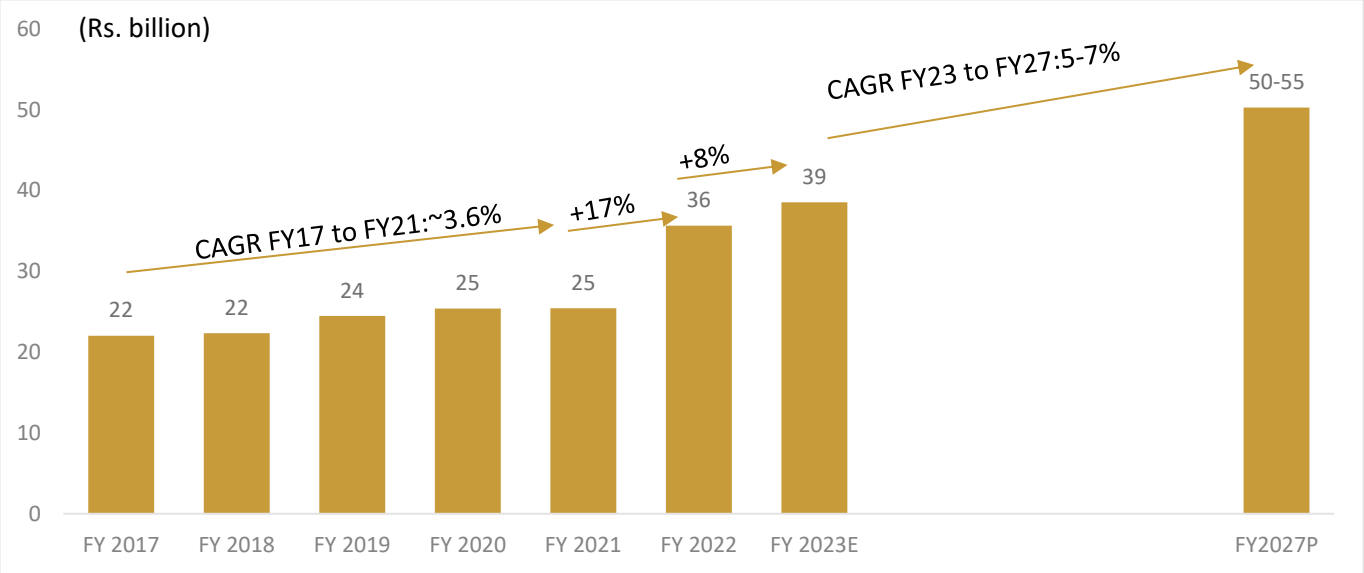
The paracetamol API industry (Domestic consumption+ exports) grew from Rs. 22 billion in fiscal 2017 to Rs.39 billion in fiscal 2023.The paracetamol API market growth was mainly supported by growth in pain and analgesics therapy area which focuses on treatment of common fever, cough and cold as well as volume rise coupled with strong realization levels for players. The paracetamol API demand saw uptick in fiscal 2022 owing to pent up demand due to covid-19 and extensive usage of common cold and fever drugs during the second wave of covid-19. Also, the boost in export demand due to supply restrictions in China gave opportunities for Indian manufacturers to tap the potential export market.

Some of the paracetamol API based products like Dolo and Crocin saw huge demand during the pandemic giving rise to the strong demand in the domestic market. Increased sales of these fever medicines saw demand for domestically manufactured APIs in fiscal 2021 and fiscal 2022.The past growth in the paracetamol API has been supported by moderate increase in the volume consumption coupled with the price rise.

Going forward the paracetamol API industry is expected to clock a CAGR of 5-7% between fiscal 2023 and fiscal 2027, largely driven by the demand from domestic formulation manufacturers as well as export markets. The demand in the domestic market can be attributed to rise of OTC segment and self-care for some of the common

ailments like fever and cold which are key application areas for paracetamol API as well as price rise caused by the rising raw material costs for manufacturing paracetamol API. The price rise in the paracetamol API space is often reflected in the formulation price rise of formulations which is often revised to the tune of wholesale price index for the year 2022 the WPI was ~10% and hence going forward price rise is expected in paracetamol formulations market which will also see similar price rise trend in the paracetamol API market.

**Overview of paracetamol API industry (incl. Exports)**




*Note: E-Estimated, P: Projected*
*Source: DGCIS, CRISIL Research*

In coming years India is expected to see traction of manufacturing capacities for some of the key APIs majorly owing to the PLI scheme introduced by the government to reduce the import dependency from China. In the paracetamol API space as well, which is one of the key APIs for manufacturing finished dosage formulations there has been capacity addition by players to cater to the domestic as well as export demand. Players are augmenting their capacities for paracetamol API mainly to cater to the export demand from some of the regulated markets like USA and Europe .Formulation players in these regulated markets opting for China plus one strategy to diversify their supply chains and India being one of the key destinations for pharmaceutical manufacturing, there has been thrust in domestic API manufacturing to cater to this demand.

### 2.2.2 Overview of Pain and analgesics therapy are in Indian domestic formulation industry

Analgesics are medications used in the management and treatment of pain. They include several classes of medications (acetaminophen, nonsteroidal anti-inflammatory drugs, antidepressants, antiepileptics, local anaesthetics, and opioids). Some of the key molecules in pain and analgesics therapy area in Indian domestic formulation market includes Paracetamol, Aceclofenac + Paracetamol + Serratiopeptidase and Ibuprofen + Paracetamol, Paracetamol + Tramadol, Diclofenac + Paracetamol.

Pain and analgesics therapy area have seen traction in recent years owing to covid-19 related demand with common fever medications generating healthy demand in the Indian domestic market. .Some of the key brands in pain and analgesics therapy area includes Volini, Dolo, Zerodol and Combiflam. The pain and analgesics therapy area have grown at 4.1% CAGR from fiscal 2017 to fiscal 2022.

**Formulations sales in Indian domestic formulation industry (Rs. billion)**

| Therapy Name | FY17 | FY18 | FY19 | FY20 | FY21 | FY22 | CAGR FY17-FY22 |
|---|---|---|---|---|---|---|---|
| **Pain and Analgesics** | 80.4 | 83.1 | 89.9 | 98.2 | 95.5 | 98.5 | 4.1% |

*Source: AIOCD AWACS, CRISIL Research*

## Growth drivers and recent trends for Indian bulk drugs industry

### India enjoys cost advantage over regulated markets

API and intermediaries manufacturing costs are significantly lower in India than in the regulated markets of the United States (US) and Europe, as illustrated in the chart below. China is a major exporter of API and intermediaries intermediates globally as it enjoys competitive advantage due to government support, coupled with low power and labour costs. On the other hand, India is a preferred destination for the procurement of active pharmaceutical ingredients (APIs), especially in regulated markets, compared with China. This is on account of its advanced process chemistry skills, which aid the manufacture of API and intermediaries and complex intermediaries.

Cost of manufacturing drugs in India, China, Europe and US

| Country/Region | Costs in units |
|---|---|
| **USA** | 100 |
| **Europe** | 85-90 |
| **India** | |
| **-US FDA approved plants** | 45-50 |
| **-Others** | 35-40 |
| **China** | 35-40 |

*Note: Costs indexed to US*
*Source: CRISIL Research*

### Highest number of US FDA-approved facilities outside the US, leads US DMF submissions

India has the highest number of US Food and Drug Administration (FDA) approved facilities outside the US. The country also has skilled manpower and advanced process chemistry skills. Some API and intermediaries manufacturers have forward-integrated into pre-formulations (pelletisation / granularisation of API and intermediaries before they are converted into finished dosages) as well.

Though China is a major destination for API and intermediaries manufacturing, it has a major share primarily in the manufacturing of API and intermediaries intermediates. India has consistently maintained its leadership in drug master file (DMF) submissions. India had approximately 40% share in the DMFs filed in the year 2020 which proves the capability of Indian players to meet required export quality standards for regulated markets. A DMF is an indicator of the API and intermediaries manufacturing capabilities of players (in terms of quality standards maintained at their facilities for processing, packaging, storage of drugs, etc.), which is used by global pharmaceutical companies that are outsourcing production activities (innovators).

### products to aid growth

A focus on speciality products and niche molecules would aid the growth of API and intermediaries players. Players have a healthy pipeline of complex generics and limited competition products, which are difficult to manufacture but command a higher premium. The pricing pressure is also expected to normalise in regulated markets in the coming years.

Further, the supply disruption from China is expected to aid business opportunities for API and intermediaries players in the global market. Also, recent quality issues related to Chinese APIs have slightly dented the country's image globally, which would in turn boost business for India, the next largest and cost-effective API supplier after China. Some multinational corporations (MNCs) are looking at alternative sources for API and intermediaries procurement following Chinese issues.

### New technology adoption a key monitorable in the Indian pharmaceutical industry

Indian pharmaceutical industry still adopting when it comes to employing newer technologies in the research and manufacturing processes. Automation and artificial intelligence are some of the key technological trends in the industry. World health organization also recommends application of automated systems right from documentation to the manufacturing of formulations. Moreover, pharmaceutical companies place a premium on working with API manufacturers that can ensure a high degree of regulatory compliance, which decreases execution risk. Newer technology helps in process efficiencies which can aid Indian API players but implementing those changes will be a key monitorable for Indian API industry.

### Outsourcing of API and intermediaries from MNCs to continue

In view of high operating expenses, CRISIL Research believes MNCs will look at API and intermediaries outsourcing to control cost and improve profitability. Margins of global innovator players dipped substantially from 2015 to 2018. Going ahead as well, MNCs are likely to continue outsourcing API and intermediaries manufacturing to India as India is one of the key destination for low cost pharmaceutical manufacturing and also has substantial manufacturing capabilities in the pharmaceutical manufacturing space.

### Regulatory boost for domestic industry

The Union Cabinet, on March 21, 2020, approved the below schemes for the development of the Indian API and intermediaries sector. These schemes are aimed at providing regulatory boost to the sector by reducing manufacturing cost of API and intermediaries. One of the major factors for China’s dominance in API and intermediaries is the regulatory support it gets from its government, with common facilities across plants and various subsidies being provided, which helps them bring down the cost considerably. With the newly announced schemes, the Indian government is also looking at creating common infrastructure facilities and reduce dependence on some critical drugs.

| Name of the scheme | Details |
|---|---|

| Name of the scheme | Details |
|---|---|
| Production-Linked Incentive | • Tenure: FY21 to FY30<br>• Financial outlay: Rs. 69.4 billion<br>• Scheme applicable for greenfield projects<br>• Financial incentive to be provided for 41 identified key products which cover all 53 identified API's<br>• The net worth of applicant (including that of group companies) as on date of application >=30% of total proposed investment<br>• Maximum number of selected applicants: 136<br>• The incentive under scheme shall be applicable only on sales of eligible product to domestic manufacturers |
| Creation of API and intermediaries parks | • Tenure: FY21 to FY25<br>• Financial outlay: Rs. 30 billion<br>• Three API and intermediaries parks will be supported under the scheme<br>• Maximum grand-in-aid for one API and intermediaries park will be limited to Rs. 10 billion<br>• Minimum 50% of land area for API and intermediaries manufacturing units<br>• 3 states to be selected through challenge method |

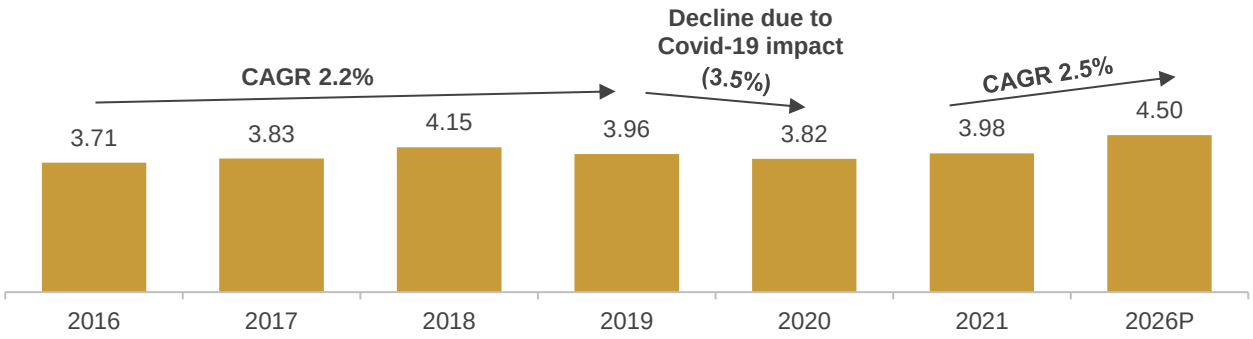
*Source: PIB, CRISIL Research*

The above mentioned schemes are aimed at providing regulatory boost to the sector by reducing manufacturing cost of API and intermediaries. One of the major factors for China's dominance in API and intermediaries is the regulatory support it gets from its government, with common facilities across plants and various subsidies being provided, which helps them bring down the cost considerably. With the newly announced schemes, the Indian government is also looking at creating common infrastructure facilities and reduce dependence on some critical drugs.

In addition, the 'China plus one' strategy, resulting in a number of multinationals undertaking proactive steps to reduce dependence on China for their manufacturing operations and looking at India as an alternative options, provides the opportunity for manufacturers in India, including domestic formulations focused CDMOs, to capture a larger market share. Accordingly, the Government of India has approved the Production Linked Incentive scheme for pharmaceuticals for fiscal 2021 to fiscal 2029, which is expected to promote innovation for development of complex and high-tech products, including products of emerging therapies as well as improve accessibility and affordability of medical products. The PLI scheme's objective is to enhance India's manufacturing capabilities by increasing investment and production and contributing to product diversification to high value goods in the pharmaceutical sector.The PLI scheme also specifically covers complex generic drugs and patented drugs or drugs nearing patent expiry.

# 3 Global chemical and speciality chemical industries

**Global chemical industry size ($ trillion)**

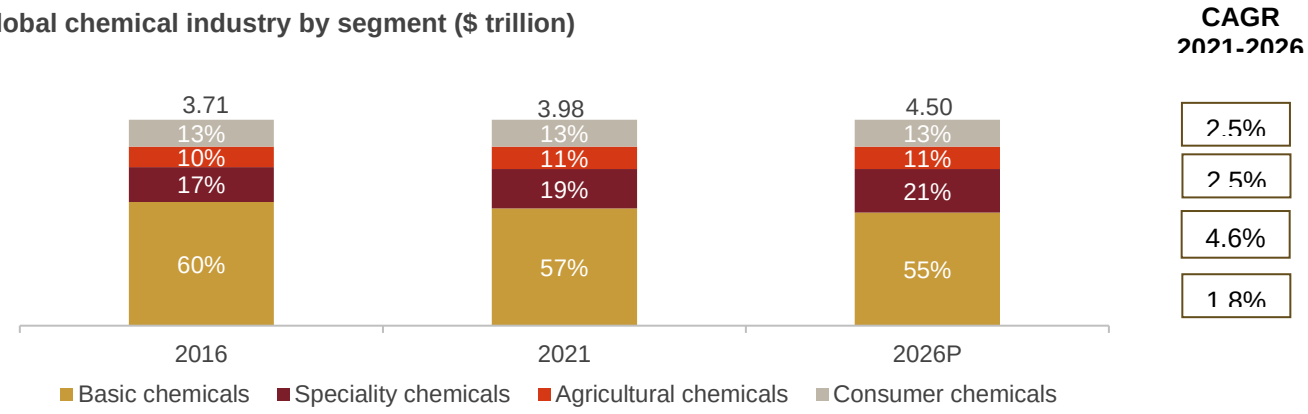



*P: projected , Data for each calendar year*

*Note: Industry size excluding pharmaceuticals*

*Source: CRISIL MI&A Consulting*

**Global chemical industry by segment ($ trillion)**




*P: projected , Data for each calendar year*

*Source: CRISIL MI&A Consulting*

## India's positioning in the global chemical industry

As of 2020, the Indian chemical industry had a share of ~3% in the global chemical industry. It is ranked sixth at the global level and fourth in Asia. The country ranks eighth in global export of chemicals (excluding pharmaceutical products) and seventh in global import of chemicals (excluding pharmaceutical products).

**Chemical exports**

| Exporters | Exports ($ bn) | Share in world exports (%) | | |
|---|---|---|---|---|
| Regions/ countries | 2021 | 2005 | 2010 | 2021 |
| EU | 1,263 | 50.0% | 46.0% | 45.6% |
| US | 270 | 10.9% | 11.2% | 9.7% |
| China | 260 | 3.2% | 5.2% | 9.4% |

| Exporters | Exports ($ bn) | Share in world exports (%) | | |
|---|---|---|---|---|
| Regions/ countries | 2021 | 2005 | 2010 | 2021 |
| Switzerland | 144 | 4.0% | 4.3% | 5.2% |
| South Korea | 101 | 2.5% | 2.9% | 3.6% |
| Japan | 95 | 4.8% | 4.6% | 3.4% |
| UK | 70 | 5.2% | 4.3% | 2.5% |
| **India** | **62** | **1.0%** | **1.4%** | **2.2%** |
| Singapore | 60 | 2.4% | 2.3% | 2.3% |
| Saudi Arabia | 46 | 1.0% | 1.3% | 1.6% |
| **Above 10** | **2,371** | **85.0%** | **83.4%** | **85.6%** |

*Source: World Trade Organization (WTO Statistical Review, 2022)*

### Chemical imports

| Exporters | Imports ($ bn) | Share in world imports (%) | | |
|---|---|---|---|---|
| Regions/ countries | 2021 | 2005 | 2010 | 2021 |
| EU | 1,038 | 41.4% | 37.9% | 36.2% |
| US | 329 | 11.4% | 10.1% | 11.5% |
| China | 262 | 6.7% | 8.5% | 9.2% |
| Japan | 88 | 3.3% | 3.5% | 3.1% |
| UK | 81 | 4.7% | 4.0% | 2.8% |
| **India** | **78** | **1.2%** | **2.0%** | **2.7%** |
| South Korea | 65 | 2.1% | 2.3% | 2.3% |
| Brazil | 64 | 1.3% | 1.8% | 2.2% |
| Switzerland | 62 | 2.3% | 2.1% | 2.2% |
| Canada | 62 | 2.8% | 2.4% | 2.2% |
| **Above 10** | 2,130 | **77.1%** | **74.6%** | **74.4%** |

*Source: World Trade Organization (WTO Statistical Review, 2022)*

The size of the Indian chemical industry, excluding fertilisers and pharmaceuticals, was $115-120 billion in fiscal 2021. Including fertilisers and pharmaceuticals, it was $160-180 billion.

## Global speciality chemical market to log 4-5% CAGR by 2026

Speciality chemicals are low-volume, high-value chemicals with specific applications classified based on end-user industries. They can be single-chemical formulations or entities whose composition affects how the end-product performs and is processed. The major distinction between speciality chemicals and commodity chemicals is that speciality chemicals are produced through extensive R&D and typically are synthesized using multiple step reactions as compared to one or two steps in the case of commodity chemicals. A speciality chemical has only one or two primary applications, whereas a commodity chemical may have hundreds of varied applications. These high-value compounds are created via speciality chemistry and are employed in a variety of essential goods for consumers and business, including medications, agricultural chemicals, and performance chemicals. In the speciality chemical industry, custom synthesis is a common service provided to customers.

**Comparison between commodity and speciality chemicals**

| Parameters | Commodity chemicals | Speciality chemicals |
|---|---|---|
| Type | Single basic chemicals; starting materials for the chemical industry, standardized product | Formulations of chemicals containing one or more fine chemicals as active ingredients |
| Sub-categories | Petrochemicals, basic chemicals, heavy organic and inorganic chemicals (ammonia, chlorine, sulphuric acid, also includes lead-based products – lead stabilizers), large volume monomers, commodity fibres, and plastics | Adhesives, agrochemicals, biocides, catalysts, dyestuffs and pigments, enzymes, electronic chemicals, flavours and fragrances, food, and feed additives, speciality additives (includes calcium zinc, other mixed metal PVC stabilizers) |
| Pricing indications | Rs 30-150/kg | Rs 200-800/kg for usual speciality chemicals, with potential for significantly higher per kg pricing for niche products |
| Production | High volume production (in thousand ton/ year); mass produced in continuous-process plants, using standardised reactions | Produced in limited quantities (10-500 ton/ year); blended in customised batches |
| Manufacturing steps | Limited steps (1 or 2) | Multiple steps (2 or more); for synthesis of intermediates and APIs, steps can range between 5 and 20 |
| Usage | Based on their versatility as raw materials | Based on specific functionality |

*Source: CRISIL MI&A Consulting*

Barriers to entry in the speciality chemical industry are typically high. The specialised nature of products leads to significant differentiation. Substantial R&D requirements, technical know-how, capital intensity service capabilities, customer relationships, and engineered or regulated specifications also create important barriers to entry. Although these barriers are not homogeneous across the industry, most speciality chemical companies enjoy the benefits of one or more of them.

The speciality chemicals industry was valued at $750-770 billion at the global level in 2021. The segment clocked 3-4% Compound annual growth rate (CAGR) over 2016-21. Agrochemicals and performance chemicals contribute the highest to the global speciality chemical revenue pie, accounting for 8-10% share each in 2021. The use of agrochemicals is rising because of increasing demand for agro products, led by population growth and improving propensity to buy owing to rapid industrialisation globally.

**Global speciality chemical industry classification (2021)**

| Speciality chemical classification | (% share in global market) |
|---|---|
| Agrochemicals | 8-10% |
| Performance chemicals (includes multiple sub-segments) | 8-10% |
| Construction chemicals | 7-8% |
| Home and personal care chemicals | 6-7% |
| Electronic chemicals | 6-7% |
| Dyes and pigments | 6-7% |
| Flavours and fragrances | 5-6% |
| Polymer and plastic additives | 4-5% |
| Food additives | 4-5% |

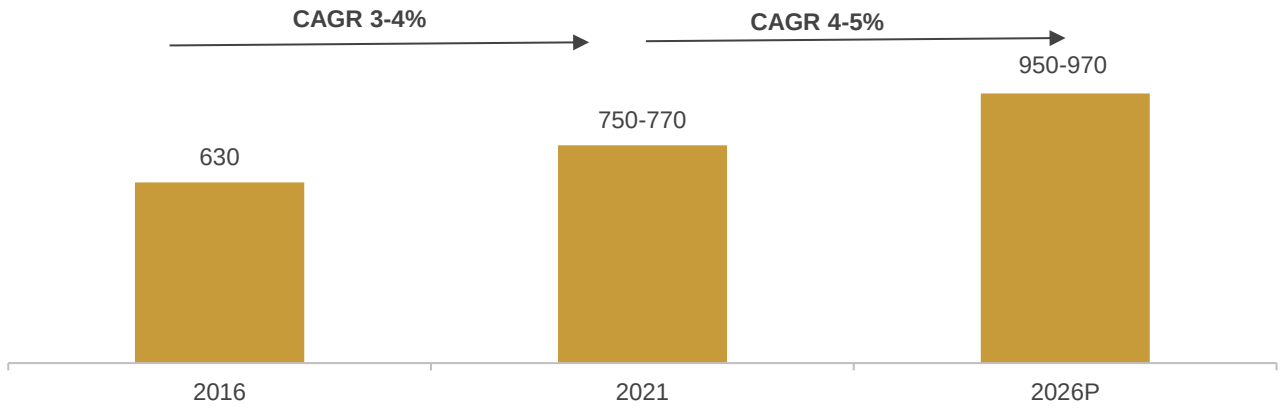
| | |
|---|---|
| Pharma intermediates | 4-5% |
| Textile chemicals | 3-4% |
| Speciality coatings | 3-4% |
| Oilfield chemicals | 3-4% |
| Others | 18-33% |

*Note: The performance chemical segment includes various sub-segments, such as antioxidants, anti-wear additives, flotation agents, solvents, surfactants, emulsifier, solvents, and chemical intermediates*

*Source: CRISIL MI&A Consulting*

In 2020, the global speciality chemicals space declined 3-4% on-year because of the outbreak of Covid-19. However, the segment is estimated to have recovered in 2021. Between 2021 and 2026, the market is expected to grow at 4-5% CAGR to $950-970 billion.

**Global speciality chemical market size ($ billion)**



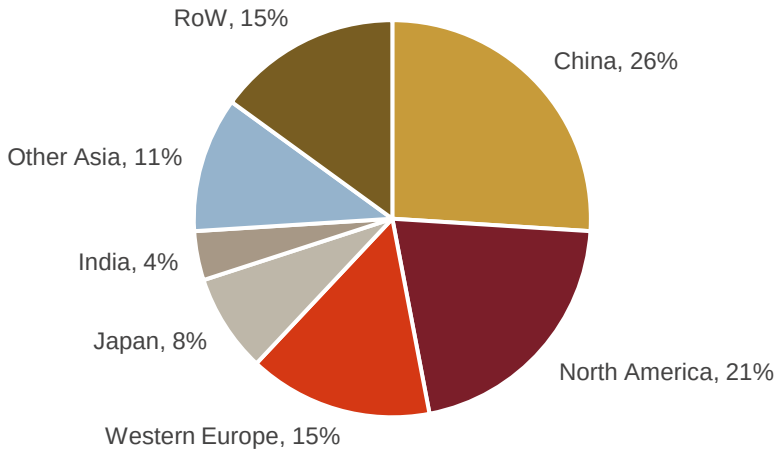

*P: projected | Data for each calendar year*

*Source: CRISIL MI&A Consulting*

## APAC – key contributor to global speciality chemical market in 2021

Developed countries (particularly the US) and emerging countries in Asia-Pacific (APAC) have seen a significant shift in the speciality chemical industry in the past two decades. This has mainly been due to stricter environmental norms in western countries, coupled with cost advantages enjoyed by companies in emerging markets in terms of logistics and labour. The shift is also because companies are relocating closer to demand centres and optimising their supply chains. In 2021, APAC accounted for majority of the global speciality chemical market, with a share of 48-50%, followed by North America and Western Europe.

**Market share of key countries in speciality chemicals in 2021**

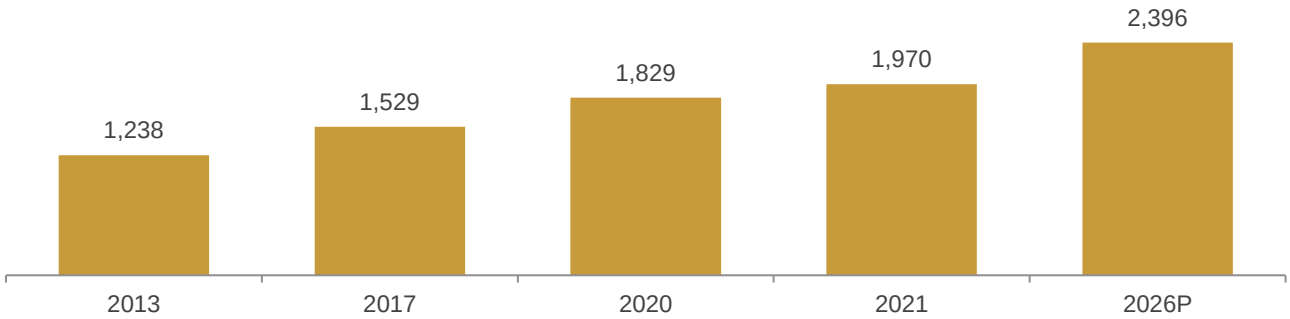



*Source: CRISIL MI&A Consulting*

## China's chemical industry performance

### Growth of China's chemical industry ($ billion)

CAGR: 2013-2021: 6.0%
CAGR: 2021-2026P: 4.0%




*P: projected | Data for each calendar year*

*Source: CRISIL MI&A Consulting, Cefic (European Chemical Industry Council)*

The Chinese chemical industry logged 6% CAGR over 2013-21. The industry is expected to clock a relatively slower CAGR of ~4% over 2021-26. Chemical demand growth is expected to taper in the consumer goods and electronics industries. Meanwhile, the automotive sector is expected to drive demand.

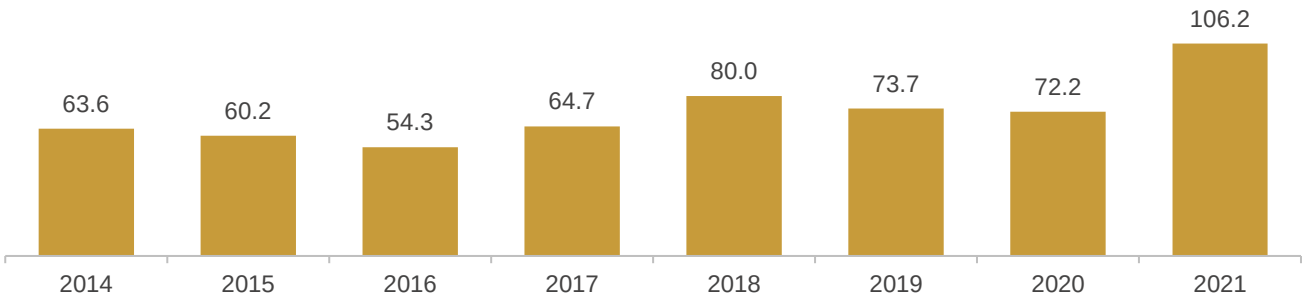
## China's speciality chemical market is eroding

China's speciality chemical market has been on a downtrend in recent years, primarily because of environmental norms introduced by the government which led to the closure of several chemical plants as well as recent global geo-political tensions with the US and most corporates either planning or in the process of implementing supply chain diversification strategies.

The Chinese government started implementing stricter environmental protection norms from January 2015 to control pollution and has imposed strict penalties on polluting industries, including chemicals. As a result, capital and operating expenditures of chemical companies are rising, making the output less competitive in the export

market. China's chemical exports have been on a downtrend since 2015. In 2017, ~40% of the chemical manufacturing capacity in China was temporarily shut down for safety inspections, with over 80,000 manufacturing units charged and fined for breaching emission limits. While exports rose in 2017 and 2018, as most plants restarted production, the trend has again turned south over the past two years. Domestic demand is also declining because of slowing economic growth. China's economy is expected to grow at a relatively slow pace in the coming years, resulting in reduced domestic demand.

**Trend in China's chemical exports ($ billion)**



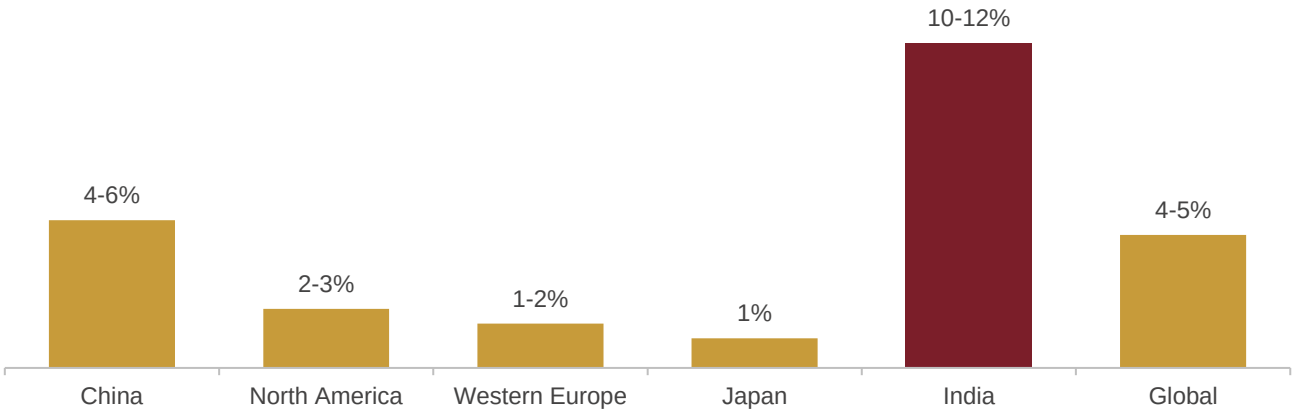

*Note: Data for each calendar year*

*Source: UN Comtrade. Export of goods under HS codes 28 and 29 considered*

## Indian market expected to grow sharply as compared to other regions

By region-wise demand, India's speciality chemical industry is expected to post 10-12% CAGR over 2021-26 owing to rising demand from end-user industries, along with tight global supply on account of stringent environmental norms in China. In contrast, markets such as the North America, Europe and Japan are expected to clock less than 3% CAGR over the next five years because of industry saturation in these regions. China's speciality chemical industry saw historic growth rates of ~20% and above until 2013, driven by a low-base effect. It exhibited a moderate CAGR of 9-10% over 2013-21 and is expected to witness a relatively slow CAGR of 4-6% over 2021-26.

**Region-wise growth in speciality chemicals (2021-26, CAGR)**

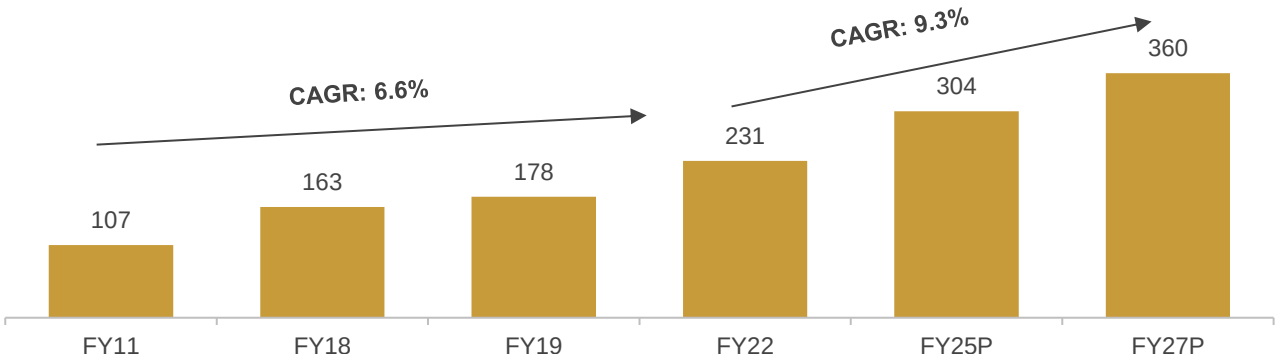



*Source: CRISIL MI&A Consulting*

# 4 Indian chemical and speciality chemical industries

## 4.1 Indian chemical industry

**Indian chemical industry development ($ billion)**



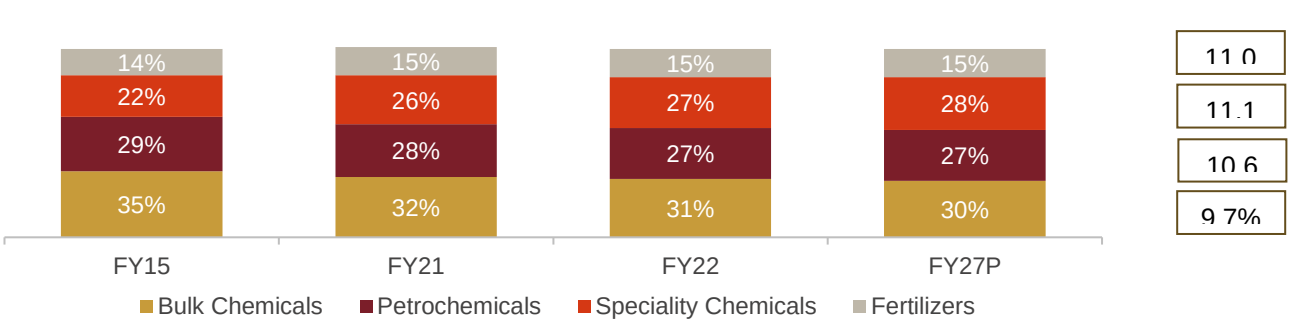

*Note: Market size including (Biotech, Pharmaceuticals), Market size is based on consumption*

*P: Projected*

*Source: Department of chemicals and petrochemicals*

The Indian chemical industry is a key constituent of the country's economy, accounting for 2.28% of the GVA (including pharmaceuticals) for all economic activities in fiscal 2020 compared with 2.23% in fiscal 2015. In 2020, it ranked sixth in the world in terms of revenue (excluding pharmaceuticals) and accounted for 2.7% of the global chemical industry compared with 2.5% in fiscal 2010. The Indian chemical industry is expected to double at 9.3% CAGR over fiscals 2019-25.

**Indian chemical industry by sub-segments**




*Note: Segments excluding Pharmaceuticals*

*P: Projected*

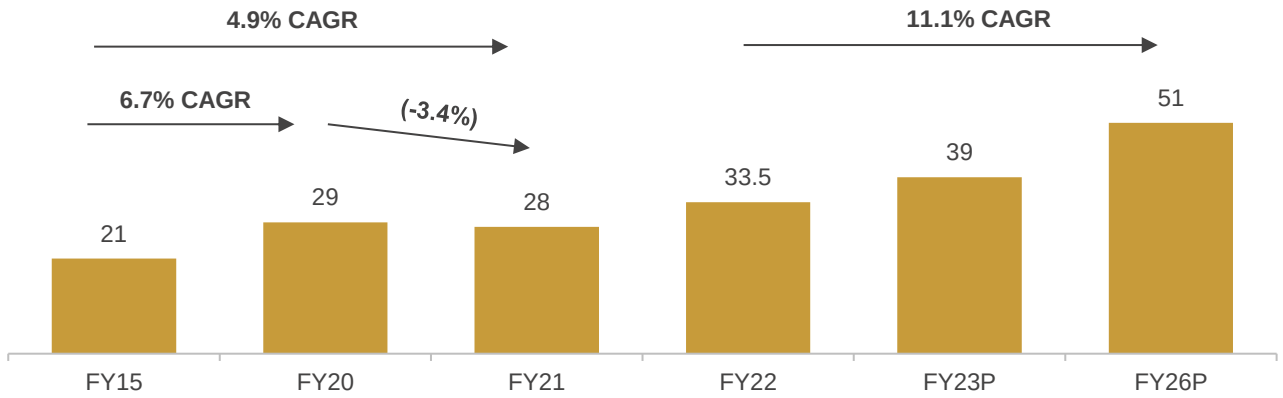
*Source: CRISIL MI&A Consulting*

## 4.2 Indian speciality chemical industry

The Indian speciality chemicals industry, accounting for ~26% of the overall chemicals industry (excluding pharmaceuticals), was worth $29 billion in fiscal 2020. The industry expanded at 6.7% CAGR over fiscals 2015-20,

driven by an increase in domestic offtake from various end-user industries and rising exports. However, in fiscal 2021, the industry declined 3.4% on-year because of a slowdown in economic activity and the consequent decline in demand from end-user industries. The industry exhibited recovery in fiscal 2022 with an estimated worth of $33.5 billion. The Indian speciality chemical industry is expected to reach $51 billion by fiscal 2026, growing at 11.1% CAGR over 2022-26.

**Indian speciality chemicals industry's trajectory ($ billion)**




*P: Projected*

*Note: Market size is based on consumption*

*Source: CRISIL MI&A Consulting*

**Major sub-segments within the speciality chemicals market (value terms) in fiscal 2022**

| Segments | Market value ($ billion) | Market share % |
|---|---|---|
| Dyes and pigments (colorants) | 5.36 | 16.0% |
| Paints and coatings | 4.52 | 13.5% |
| Agrochemicals | 4.86 | 14.5% |
| Speciality polymers | 2.85 | 8.5% |
| Plastic additives | 1.34 | 4.0% |
| Home care surfactants | 1.34 | 4.0% |
| Construction chemicals | 1.01 | 3.0% |
| Textile chemicals | 1.01 | 3.0% |
| Flavours and fragrance | 0.67 | 2.0% |
| Water chemicals | 0.67 | 2.0% |
| Cosmetic chemicals | 0.67 | 2.0% |
| Paper chemicals | 0.67 | 2.0% |
| Others | 8.38 | 25.0% |

*Source: CRISIL MI&A Consulting*

*Note: CRISIL MI&A Consulting considers personal care ingredients, polymer additives, water chemicals, textile chemicals, construction chemicals, surfactants, and flavours and fragrances as speciality chemical categories.*

The speciality chemicals industry presents significant entry barriers, including customer validation and approvals, expectation from customers for process innovation and cost reduction, high quality standards and stringent

specifications, as well as various client and regulatory approvals that are required to be obtained.

**Key speciality chemical segments and growth drivers**

| Segments | Segment overview and growth drivers |
|---|---|
| Agrochemicals  | The agrochemicals sector consists of key chemicals which find use in the agriculture sector, with almost 98% of the all the products classified under pesticides. Pesticides can be further classified, basis the specific target organisms, into insecticides, herbicides, fungicides, and others. Crisil MI&A consulting expects the overall growth in the agriculture sector to drive demand for agrochemicals in the medium-term. Additionally, strong export demand from international markets such as Brazil and the US are further expected to support demand growth. One of the key trends in the sector has been India's evolution as a key player in the global market. The overall diversification by the western consumers, especially the effort to move away from supply-chain dependencies on China, has boosted India's overall exports of agrochemicals, which is estimated to have grown at a CAGR of 12-13% over fiscal 2017-2022. Agrochemicals sector is expected to grow at 9-10% CAGR between fiscal 2022 and fiscal 2027. |
| Construction chemicals  | Construction chemicals include concrete admixtures, adhesives and sealants, waterproofing chemicals, flooring chemicals, chemicals for repair, rehabilitation, and others. Growth of construction chemicals is largely linked to overall spending in the construction industry. In India, share of construction chemicals in overall construction is ~1% compared with global average of 4-5%. Investments in key end user industries, such as infrastructure and real estate (residential, commercial, and retail, healthcare and education), supported 9-11% CAGR of construction chemicals between FY17-22. The construction chemicals industry is expected to grow 13-15% on year this fiscal (FY23) because of an increase in construction spending, led by infrastructure. |
| Colorants  | The colorants industry is expected to grow 9-11% in FY23, after posting healthy growth of 24-27% during last fiscal over a lower base. Demand from the domestic end user industries led by automobiles and construction will drive the colorants sector growth. The US, China, Bangladesh, and the EU to continue to remain key export destinations for India. However, slowdown in global economy to be a key monitorable |
| Surfactants  | The personal care segment, which primarily consists of soap and shower products, moisturizers etc. accounts for almost 15-18% of the overall surfactant segment. The home care segment accounts for almost 35-40% of the overall surfactants demand in India, consisting of products such as detergents. The industrial and the institutional cleaning segment accounts for almost 30-35% of the overall revenues for the surfactants segment. The surfactants demand has been growing at a strong pace over the last five years, although demand was impacted in the fiscal 2020 owing to the onset of the pandemic. However, demand rebounded in fiscal 2021 on the back of partial recovery of economic activities. Going forward, Crisil MI&A consulting expects the overall demand for surfactants to grow by 12-14% in fiscal 2023, driven by increasing penetration on the back of increasing hygiene awareness as well as improvement in disposable income of households. |
| Polymer additives  | Polymer additives are used to provide stabiliser antioxidant, flame retardant properties, amongst others. Growth in the polymer additives industry is driven by plastics and other end-user industries. Polymer additives comprise 1-5% by weight in plastics products. Increasing disposable income from urban dwelling and increasing per capita spend on key end use segments such as consumer durables, automobiles, and construction segment to drive growth going forward. |

*Source: CRISIL MI&A Consulting*

### Favourable global factors

China, a major player in commodity chemicals, has seen reduced focus on speciality chemicals. China's speciality chemicals market has seen a downturn in recent years due to various factors. Most prominent being the introduction of stringent environmental norms, which has led to the shutdown of several chemical plants. Also, the Chinese government has mandated the construction of compulsory effluent treatment plants and imposed green tax on the chemicals industry to combat pollution. This coupled with increasing wage costs are pushing the capex and opex costs upwards, making Chinese chemical companies less competitive in the export market. Going forward, these factors are expected to play out in favor of India's speciality chemicals industry, since exports will trend up over the next few years.

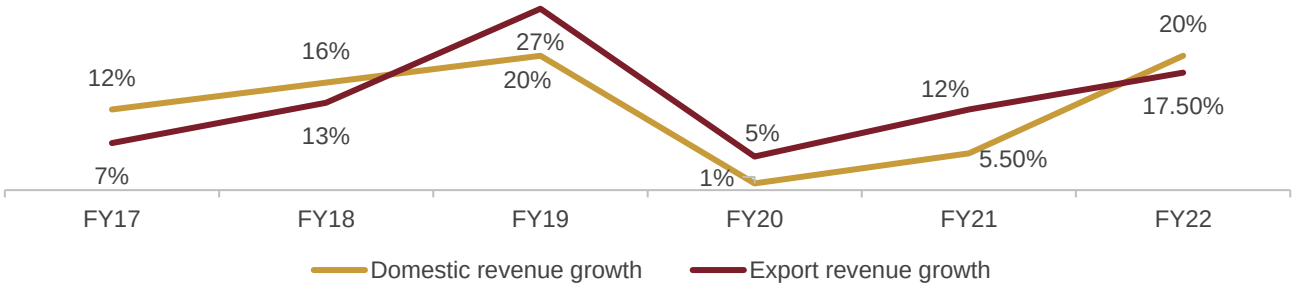
India is well-positioned to drive growth in the speciality chemicals industry, given its abundant supply of labour, land, feedstock, and established legal and regulatory framework. Indian companies with strong safety, health and environment measures, robust R&D and project management, and integration are well-poised to leverage opportunities in this space.

### Capex in speciality chemicals to increase 50% on-year in FY23

A revival in domestic demand and continuing robust exports will spur a 50% on-year increase in the capex of speciality chemicals manufacturers in FY23 to Rs 6,000-6,200 crore. That would also be well above the Rs 5,000 crore spent before the pandemic in fiscal 2020, a CRISIL Ratings study of 106 rated speciality chemicals manufacturers, which account for a fourth of the sector's annual revenue of ~Rs 3 lakh crore, shows.

Export growth is expected to accelerate to 17-18% from 12-13% in fiscal 2021, owing to the competitive positioning of players, recovery in global demand, and the China-plus-one strategy of customers. In addition, owing to the impact of the pandemic on the global supply chain and geopolitical tensions, suppliers are looking to diversify and expand sourcing of products from different manufacturers across economies, including India, to minimise disruption on their operations. Domestic growth is likely to surge to ~20%, riding on strong demand from agrochemicals, fast-moving consumer goods (FMCGs), pharmaceutical and textile sectors, as well as a rise in discretionary spend.

**Figure 1: Domestic and export revenue growth development of Indian speciality chemical companies**




*Notes: Based on 106 CRISIL-rated players (25% of sector's annual revenue)*

*Source: CRISIL MI&A Consulting*

### Key growth drivers for the Indian chemicals industry

- Per capita consumption of chemicals in India is lower compared with western countries. Hence, there is considerable scope for new investment
- A large population, huge dependence of the domestic market on agriculture, and strong export demand are the industry's key growth drivers

- The shift in the geopolitical landscape and global supply chain preference from China can provide India with a platform for converting challenges into opportunities
- The domestic market has significant growth potential with rising GDP and purchasing power
- World-class engineering and strong R&D capabilities

## 4.3 Competitive landscape for Indian speciality chemicals industry

Low in volume but high in value, speciality chemicals are a critical input for a range of industries. Apart from being utilised as raw material by textile companies and being added for formulations by pharmaceutical players, these are used in agriculture, plastics, construction, paints, and packaging, among others.

The speciality chemicals sector is an important part in the overall functioning of the Indian economy, producing various intermediaries that form raw material for numerous important end usage industries. From furniture used by the direct consumers to thermo-plastics used in automotive sectors, the speciality chemicals sector forms critical linkages for multiple key end-use sectors such as agriculture, textiles, plastics, construction, paints, packaging etc. The table below shows brief overview of some of the key listed players in the Indian speciality chemicals sector.

**Brief overview of speciality chemicals players in India**

| Company name | Key geographies catered | Manufacturing facilities | Products/business segments |
|---|---|---|---|
| Atul Ltd | USA, Europe, Middle East, Asia Pacific and South America | 6 | Aromatics, Bulk Chemicals and Intermediates, Colors, Crop Protection, Floras, Pharmaceuticals, Polymers |
| Alkyl Amines Chemicals Ltd (AACL) | North America, Europe, Middle East, Asia Pacific and South America | 3 | Aliphatic Amines, Amine Derivatives, other speciality chemicals |
| Navin Fluorine International Ltd. | North America, Europe, Middle East and Asia Pacific | 2 | Refrigerants, Inorganic and organic fluorides and CDMO services |
| Vinati Organics Ltd. | US, Europe and Asia | 2 | Speciality Aromatics, Speciality monomers, Butyl phenols, other polymers |
| Laxmi Organics Ltd | America, Europe, Africa, Asia Pacific, Middle East | 2 | Acetyl Intermediates, Speciality Intermediates, Emerging Chemistries |

*Note: The list above is an indicative list and not an exhaustive list*
*Source: Company reports, company websites, CRISIL MI&A*

# 5 Overview of ketene and diketene derivatives industry

## Introduction to ketene and diketene derivatives

Ketene (systematic name ethenone) is a colorless, toxic gas with a “penetrating” odor, according to the Merck Index. It is soluble in essentially all organic solvents, but it decomposes in water to form acetic acid. It is only reasonably stable at low temperatures (−80 °C). It must therefore always be prepared for each use and processed immediately, otherwise a dimerization to diketene occurs or it reacts to polymers that are difficult to handle. In industrial chemistry, ketene is produced by the dehydration reaction of acetic acid. Ketenes are used in the production of various chemical compounds such as acetic anhydride and diketene.

Diketene is a colorless liquid produced by dimerization of ketene. It is a highly reactive building block that can be combined with numerous other chemical compounds to make a wide range of products. Based on derivatives, the diketene market is segmented into various class of compounds such as arylamides, alkylamides, dihydroacetic acid (DHS) and salt and others. Diketene esters are expected to maintain their dominance because they are used extensively in both agrochemicals and pharmaceutical products, mainly as intermediaries.

## Ketene and diketene derivatives application

Diketene derivatives have a wide range of applications in high-growth sectors such as pharmaceuticals (including vitamins), agrochemicals, cosmetics, plasticizers, dyes, and pigments. The agrochemical and pharmaceutical industries collectively account for 70–75% of the diketene derivatives applications.

**Ketene and Diketene derivatives usage across applications**

| Application | Brief usage overview |
|---|---|
| **Pharmaceutical products** | Ketene and diketenes derivatives are used as intermediates in the synthesis of many drugs such as acetaminophen, paracetamol, ibuprofen, and naproxen and are also used in the manufacturing of a wide range of antimicrobial and chemotherapeutic products |
| **Agrochemicals** | In the agrichemical sector, ketene and diketene derivatives are widely used for soil fertilization, weed and pest control, and crop protection. Acetoacetanilides is a type of diketene derivative that has antibacterial, antifungal, and antiprotozoal properties. |
| **Dyes and Pigments (colorants)** | Preparation of azo dyes- arylide yellow and diarylide pigments, diketenes react with amines to form acetoacetanilides which are important precursors for mostly yellow, orange, red azo dyes, and azo pigments. |
| **Food and Feed** | Used in food preservatives, food (sweeteners) and feed additives (olaquindox) |
| **Polymer** | Used as co-promoters in the production and modification of polymers |
| **Cosmetics & beauty products** | Ketene and diketene derivatives are used as intermediates in the production of various skin care products, such as anti-aging creams, moisturizers, and lotions. Some ketene and diketene derivatives, such as 2,3-Butanedione, are used in the production of hair dyes. Diketene derivative, Dehydroacetic acid (DHS) is used as |

| | |
|---|---|
| | stabilizer for cosmetic products due to its fungicide and bactericide activity. |
| **Coatings and Adhesives** | Diketene derivatives are used as co-promoter used in the polymerization of unsaturated polyester resins for coatings and adhesive applications. |
| **PVC stabilizer** | Diketene derivative, dehydroacetic acid (DHS), is also used as an additive for PVC-stabilizers |

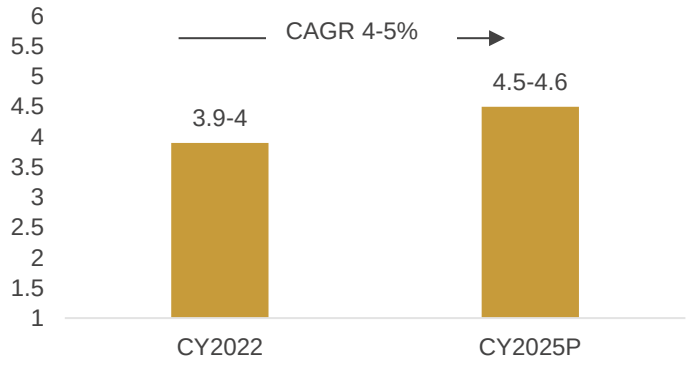
*Source: CRISIL MI&A Consulting*

## 5.1 Market size of ketene, diketene and derivatives industry

### Global ketene, diketene and derivatives market is between 3.9-4 billion USD in CY2022

Global market for ketene, diketene derivatives is 3.9 to 4.0 billion USD in CY2022 and is estimated to grow at 4-5% CAGR to reach 4.5 to 4.6 billion USD by CY2025. The global market for only diketene and derivatives is estimated between $1.3 to $1.4 billion in CY2022 and is anticipated to expand at a 4-5% CAGR to reach $1.5 to 1.6 billion by CY2025. Increasing adoption of agrochemicals in developing countries is fueling the growth of the diketene derivatives market across the globe. With rising population, demand across the industries including food and beverages, pharmaceuticals, aromatics, and agrochemicals have increased, which in turn has triggered the demand for diketene derivatives.

**Global ketene, diketene and derivatives market (USD billion)**




*P: Projected*

*Source: CRISIL MI&A Consulting*

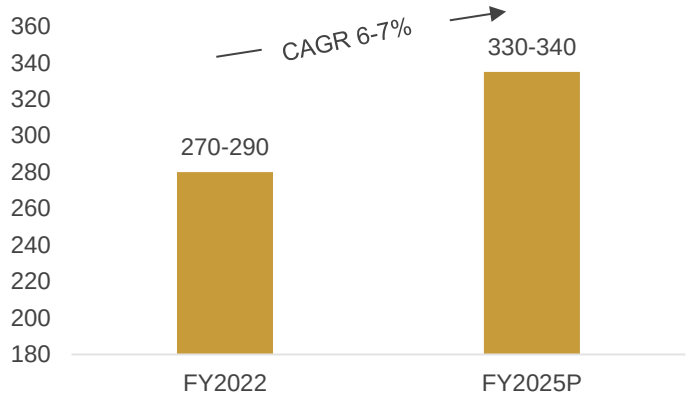
### Indian market for ketene, diketene and derivatives to reach 270-290 million USD by fiscal 2025

India market for ketene, diketene and derivatives is estimated at 270-290 million USD in fiscal 2022 which is projected to increase at 6-7% CAGR to reach 330-340 million USD by fiscal 2025. India market for only diketene and diketene derivatives is estimated at ~180 million USD in fiscal 2022. The market is projected to increase at 6-7% CAGR to reach 210-220 million USD by fiscal 2025. India consumes about ~28,000 TPA of diketene, out of which ~40% is imported. Imports are made from US, China, and Europe. Key companies which are exporting diketene derivatives to India include Lonza and Nantong Acetic Acid.

Growth of the pharmaceutical industry and the increasing number of API units in India, as well as demand from the agrochemical industry, are collectively expected to boost demand for diketene derivatives and, as such, drive their

market growth.

**India ketene, diketene and derivatives market (USD million)**




*P: Projected*

*Source: CRISIL MI&A Consulting*

## 5.2 Player landscape

### Global manufacturing landscape

Global ketene derivative market is highly fragmented due to the nature of the product. Some of the key manufacturers in the global diketene derivatives market include Lonza, Celanese, Eastman Chemicals, Daicel Corporation, Nantong Acetic Acid Chemical, Ningbo Wanglong Tech, Xinhua Pharmaceuticals, Anhui JinHe Industrial and Laxmi Organic Industries.

### India manufacturing landscape

In India, the domestic manufacturing landscape is characterised by the presence of two manufacturers. Laxmi Organic Industries is the leading manufacturer of ketene, diketene, and their derivatives, with a market share of 55% in the domestic market. The company has a portfolio of 34+ products in this segment, which includes diketene derivatives, including esters, acetic anhydride, amides, arylides, and others.

Jubilant Ingrevia, another marquee player in the speciality chemicals industry, has commissioned its Phase 1 facility, with a 7,000 TPA Diketene derivatives facility at its manufacturing site in Gajraula, in fiscal 2022 (Q4). The company achieved utilisation of 40–50% in Q2 of FY23 and plans to increase its utilisation by FY24. Presently, the company has launched two derivatives (esters and amides), which are building blocks for molecules that find applications in pharmaceuticals, agrochemicals, nutraceuticals, and dyes. The company plans to launch 15 more derivatives over the next three years.

# 6 Assessment of Competitive landscape

## 6.1 Competitive landscape for Indian pharmaceutical API industry

In this section, CRISIL has compared key competitors in the Indian pharmaceutical API Industry. CRISIL has considered some of the key players operating in Indian pharmaceutical API industry and who have comparatively similar product portfolio. Data in this section is obtained from publicly available sources, including annual reports and investor presentations of listed players, regulatory filings, rating rationales, and/or company websites. The financials used in the competitive section are re-classified by CRISIL based on the annual report and financial fillings by the players.

The manufacturing landscape for paracetamol API industry in India is concentrated with presence of few players. Sri Krishna Pharmaceuticals Ltd., Granules India Ltd., Farmson Pharmaceuticals Gujarat Pvt. Ltd., Meghmani LLP, Para Products Pvt. Ltd. and Valiant Labs Ltd. are some of the paracetamol API manufacturers in the Indian market. The overall capacity for paracetamol manufacturing in India is approximately 6,000 metric tonnes per month as per industry estimates.

| Company name | Date of incorporation | Registered office/ Headquarters |
|---|---|---|
| Farmson Pharmaceutical Gujarat Private Ltd. | 1974 | Gujarat, India |
| Granules India Ltd. | 1991 | Hyderabad, India |
| Meghmani LLP | 2010 | Gujarat, India |
| Para Products Private Ltd. | 1998 | Gaziabad, India |
| Sri Krishna Pharmaceuticals Ltd. | 1974 | Hyderabad, India |
| Valiant Laboratories Ltd.* | 1980 | Mumbai, India |

*Note: The list above is an indicative list and not an exhaustive list,*
**-Company converted from Bharat chemicals (Founded in 1980) to Valiant Laboratories Ltd in 2021*
*Source: CRISIL MI&A*

### 6.1.1 Operational overview

| Company name | Key geographies catered | Manufacturing facilities | Business Segments/ Services offered |
|---|---|---|---|
| Farmson Pharmaceutical Gujarat Private Ltd. | NA | 3 | Active pharmaceutical Ingredients (API) |
| Granules India Ltd. | India, Europe, Latin America, North America | 6 | Active pharmaceutical Ingredients (API), Formulations |
| Meghmani LLP | NA | 1 | Active pharmaceutical Ingredients (API), |
| Para Products Private Ltd. | NA | 1 | Active pharmaceutical Ingredients (API), Formulations |
| Sri Krishna Pharmaceuticals Ltd. | NA | 5 | Active pharmaceutical Ingredients (API) |
| Valiant Laboratories Ltd. | NA | 1 | Active pharmaceutical Ingredients (API) |

*Note: NA: Not available, The list above is an indicative list and not an exhaustive list*
*Source: Company reports, company websites, CRISIL MI&A*

- Valiant laboratories Ltd Operates in a business segment of manufacturing pharmaceutical APIs. The company manufactures paracetamol API which is used in preparation of various finished formulations like oral dosages, capsules, IVs etc.
- Valiant laboratories Ltd have 1 manufacturing facility in India for manufacturing paracetamol API/bulk drugs

### 6.1.2 Financial overview

**Financial snapshot key competitors considered (FY22)**

| Company name | Operating Income | | OPBDIT | | PAT | |
|---|---|---|---|---|---|---|
| | INR million | CAGR FY2020-FY2022 | INR million | CAGR FY2020-FY2022 | INR million | CAGR FY2020-FY2022 |
| Farmson Pharmaceutical Gujarat Private Ltd. | 20,103.4 | 67.0% | 7,055.5 | 113.1% | 4,934.7 | 112.8% |
| Granules India Ltd. | 32,384.4 | 18.4% | 6,488.2 | 13.1% | 3,865.1 | -6.7% |
| Para Products Private Ltd. | 1,765.1 | 60.8% | 106.9 | 61.4% | 36.2 | 92.1% |
| Sri Krishna Pharmaceuticals Ltd. | 8,757.3 | 40.0% | 703.4 | 29.9% | 352.2 | 46.5% |
| Valiant Laboratories Ltd. | 2,905.0 | 78.3% | 420.5 | 145.5% | 273.1 | 187.1% |

*Note: The list above is an indicative list and not an exhaustive list, The latest financials for Meghmani LLP is not available on MCA and hence it is not considered in the financial analysis.*
*Source: Company reports, company websites, CRISIL MI&A*

**Financial ratios of key competitors considered (FY22)**

| Company name | Operating profit margin (%) | Net profit margin (%) | ROCE (%) | Gearing (Times) | Interest coverage ratio (Times) | Current ratio |
|---|---|---|---|---|---|---|
| Farmson Pharmaceutical Gujarat Private Ltd. | 35.1 | 24.5 | 80.6 | 0.0 | 119.0 | 3.1 |
| Granules India Ltd. | 20.0 | 11.9 | 16.5 | 0.4 | 40.5 | 1.5 |
| Para Products Private Ltd | 6.1 | 2.0 | 39.2 | 0.5 | 1.9 | 1.3 |
| Sri Krishna Pharmaceuticals Ltd. | 8.0 | 4.0 | 12.5 | 0.7 | 11.7 | 1.6 |
| Valiant Laboratories Ltd. | 14.5 | 9.4 | 38.0 | 0.8 | 72.6 | 3.6 |

*Note: n.m.- Not meaningful, The list above is an indicative list and not an exhaustive list, The latest financials for Meghmani LLP is not available on MCA and hence it is not considered in the financial analysis.*
*Ratios calculated as per CRISIL MI&A standards are described below:*

*OPBDIT margin = OPBDIT / operating income*
*Net profit margin = Profit after tax / operating income*
*RoCE = Profit before interest and tax (PBIT) / [total debt + adjusted net worth (includes only goodwill as part of intangible net worth) + deferred tax liability]*
*Gearing ratio = Adjusted Debt / Adjusted Net worth*
*Interest coverage ratio = Profit before depreciation, interest and tax / (interest + finance charges)*
*Current ratio = Current assets / Current liabilities*

*Source: Company reports, company websites, CRISIL MI&A*

### 6.1.3 Key observations

- During fiscal 2022, Valiant laboratories Ltd has recorded an operating income of INR 2,905.0 million and a net profit of INR 273.1 million
- Valiant laboratories Ltd has recorded a OPBDIT of INR 420.5 million in fiscal 2022
- Over the period, from fiscal 2020 to 2022, operating income for Valiant laboratories Ltd has grown at a CAGR of 78.3%.
- In terms of profitability, for fiscal 2022, Valiant laboratories Ltd recorded operating profit margin of 14.5% and net profit margin of 9.4%.
- In terms of return ratio's, Valiant laboratories Ltd has the ROCE of 38.0% in fiscal 2022.
- Valiant laboratories Ltd has a gearing and interest coverage ratio of 0.8 times and 72.6 times respectively for fiscal 2022.

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