

# Industry Research Report on Inorganic Chemicals Industry

19<sup>th</sup> September 2025

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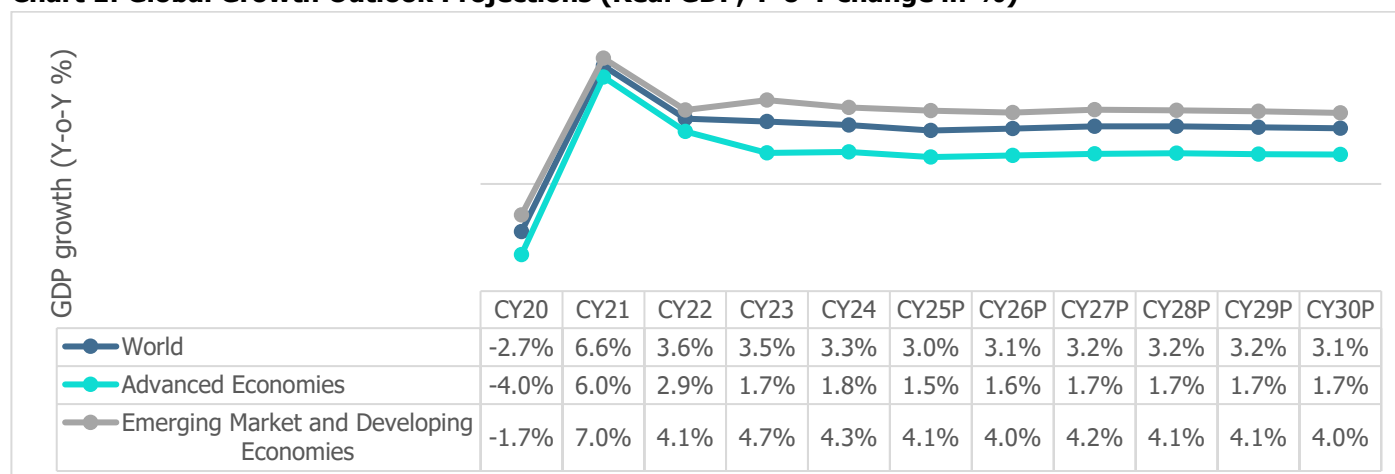
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## 1. Economic Outlook

### 1.1 Global Economy

Global growth, which reached 3.5% in CY23, stabilized at 3.3% for CY24 and projected to decrease at 3.0% for CY25. Global trade is expected to be disrupted by new US tariffs and countermeasures from trading partners, leading to historically high tariff rates and negatively impacting economic growth projections. The global landscape is expected to change as countries rethink their priorities and policies in response to these new developments. Central banks priority will be to adjust policies, while smart fiscal planning and reforms are key to handling debt and reducing global inequalities.

**Chart 1: Global Growth Outlook Projections (Real GDP, Y-o-Y change in %)**



Source: IMF – World Economic Outlook, July 2025; Notes: P-Projection

**Table 1: GDP growth trend comparison - India v/s Other Economies (Real GDP, Y-o-Y change in %)**

|               | Real GDP (Y-o-Y change in %) |      |      |      |      |       |       |       |       |       |       |
|---------------|------------------------------|------|------|------|------|-------|-------|-------|-------|-------|-------|
|               | CY20                         | CY21 | CY22 | CY23 | CY24 | CY25P | CY26P | CY27P | CY28P | CY29P | CY30P |
| India         | -5.8                         | 9.7  | 7.6  | 9.2  | 6.5  | 6.4   | 6.4   | 6.5   | 6.5   | 6.5   | 6.5   |
| China         | 2.3                          | 8.6  | 3.1  | 5.4  | 5.0  | 4.8   | 4.2   | 4.2   | 4.1   | 3.7   | 3.4   |
| Indonesia     | -2.1                         | 3.7  | 5.3  | 5.0  | 5.0  | 4.8   | 4.8   | 4.9   | 5.0   | 5.1   | 5.1   |
| Saudi Arabia  | -3.6                         | 5.1  | 7.5  | -0.8 | 1.3  | 3.6   | 3.9   | 3.6   | 3.2   | 3.2   | 3.3   |
| Brazil        | -3.3                         | 4.8  | 3.0  | 3.2  | 3.4  | 2.3   | 2.1   | 2.2   | 2.3   | 2.4   | 2.5   |
| Euro Area     | -6.0                         | 6.3  | 3.5  | 0.4  | 0.9  | 1.0   | 1.2   | 1.3   | 1.3   | 1.2   | 1.1   |
| United States | -2.2                         | 6.1  | 2.5  | 2.9  | 2.8  | 1.9   | 2.0   | 2.0   | 2.1   | 2.1   | 2.1   |
| Middle East   | -2.2                         | 4.4  | 5.5  | 2.2  | 2.4  | 3.4   | 3.5   | 4.0   | 3.7   | 3.7   | 3.7   |
| Latin America | -6.9                         | 7.4  | 4.2  | 2.4  | 2.4  | 2.2   | 2.4   | 2.7   | 2.7   | 2.7   | 2.6   |

Source: IMF- World Economic Outlook Database (July 2025)

Note: P- Projections E-Estimated; India's fiscal year (FY) aligns with the IMF's calendar year (CY). For instance, FY24 corresponds to CY23.

## 1.2 Indian Economic Outlook

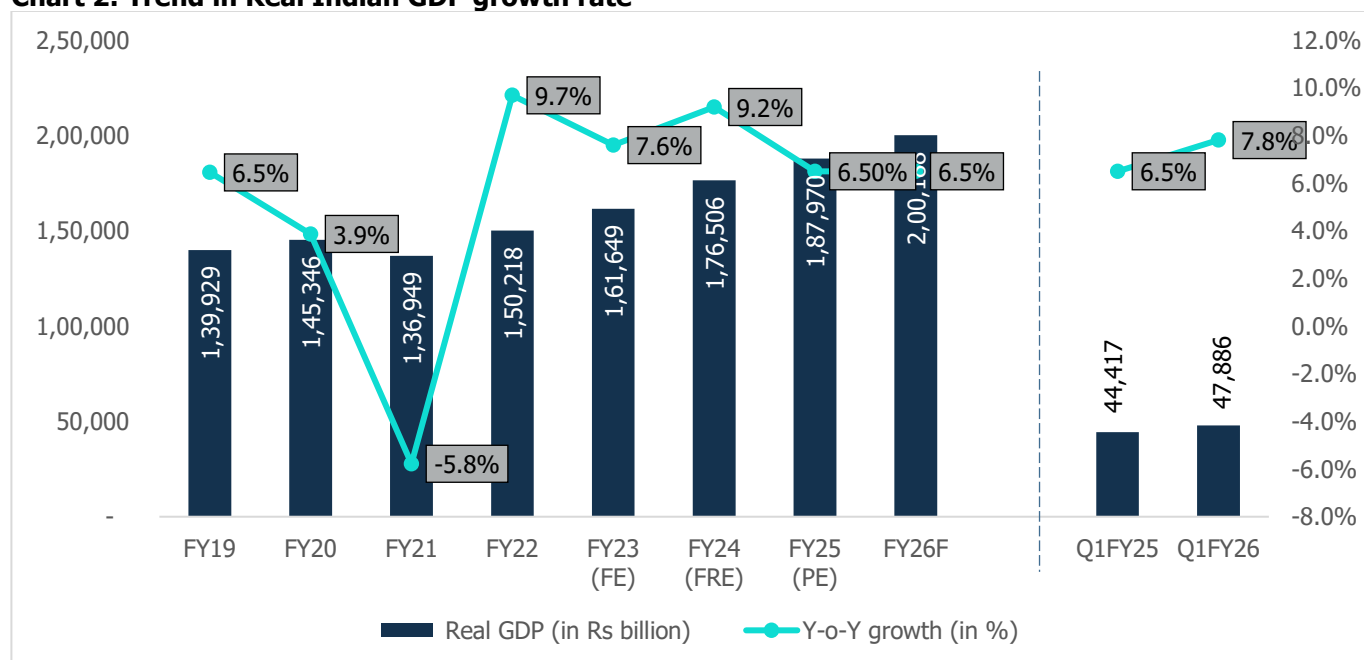
### 1.2.1 GDP Growth and Outlook

#### Resilience to External Shocks remains Critical for Near-Term Outlook

India's real GDP grew by 9.2% in FY24 (Rs. 176,506 billion) which is the highest in the previous 12 years (excluding FY22, on account of end of pandemic) and as per provisional estimates, it grew at 6.5% in FY25 (Rs. 187,970 billion), driven by double digit growth particularly in the Manufacturing sector, Construction sector and Financial, Real Estate & Professional Services. This growth is also led by private consumption increasing by 7.6% and government spending increasing by 3.8% Y-o-Y.

In Q1FY26, real GDP grew by 7.8% y-o-y as compared to 6.5% y-o-y in the previous year's quarter. Real GDP growth is projected at 6.5% in FY26 as well, driven by strong rural demand, improving employment, and robust business activity.

**Chart 2: Trend in Real Indian GDP growth rate**



Source: MOSPI, Reserve Bank of India.

Note: FE – Final Estimates, FRE- First Revised Estimates, PE – Provisional Estimates, F - Forecasted

#### GDP Growth Outlook (August 2025)

**FY26 GDP Outlook:** The RBI projects real GDP growth at 6.5% for 2025–26, driven by strong private consumption, steady investment, and resilient rural and urban demand. A favourable monsoon, robust services sector, and improving corporate balance sheets support this outlook.

However, risks from prolonged geopolitical tensions, global trade disruptions, and weather-related uncertainties remain. Taking these into account, the RBI has reaffirmed its growth projections.

**Table 2: RBI's GDP Growth Outlook (Y-o-Y %)**

| FY26P (complete year) | Q1FY26P | Q2FY26P | Q3FY26P | Q4FY26P | Q1FY27P |
|-----------------------|---------|---------|---------|---------|---------|
| 6.5%                  | 6.5%    | 6.7%    | 6.6%    | 6.3%    | 6.6%    |

Source: Reserve Bank of India; Note: P-Projected

### 1.2.2 Gross Value Added (GVA)

Gross Value Added (GVA) is the measure of the value of goods and services produced in an economy. GVA gives a picture of the supply side whereas GDP represents consumption. India's recovery in FY25 was powered by a broad-based rebound across sectors.

The agriculture and allied sector grew by 4.6% in FY25 (up from 2.7% in FY24), contributing 14.4% to real GVA, supported by a good monsoon, better crop output, and strong allied activities. The industrial sector grew by 5.9% in FY25, down from 9.5% in FY24 due to weaker manufacturing, with FY24 growth driven by strong manufacturing sales, construction (9.4%), utilities, and supportive policies. The services sector grew by 6.4% in FY25, down from 8.6% in FY24, supported by public administration (8.9%), financial services (7.2%), and trade and transport (5.8%), contributing Rs 94.4 trillion to the economy.

From Q1FY25 to Q1FY26, the overall GVA at basic price grew from 6.5% to 7.6%, indicating a stronger economic performance. Most sectors showed growth, with Services sector growing significantly from 6.8% to 9.3%, and Agriculture, Forestry & Fishing rebounding from 1.5% to 3.7%. However, Mining & Quarrying declined sharply from 6.6% to -3.1%, and Electricity, Gas & Water supply slowed considerably from 10.2% to 0.5%.

**Table 3: Sectoral Growth (Y-o-Y % Growth) – at Constant Prices**

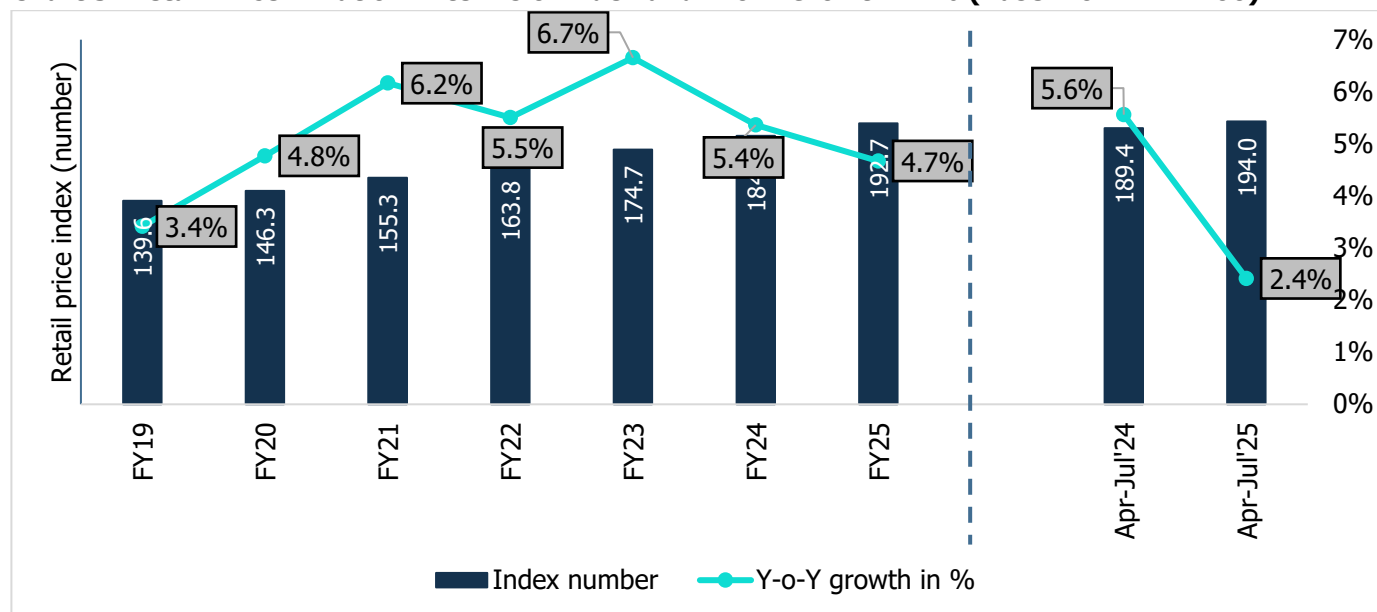
| At constant Prices                                      | FY19       | FY20        | FY21        | FY22        | FY23 (FE)   | FY24 (FRE)  | FY25 (PE)  | Q1FY25     | Q1FY26     |
|---------------------------------------------------------|------------|-------------|-------------|-------------|-------------|-------------|------------|------------|------------|
| <b>Agriculture, Forestry &amp; Fishing</b>              | <b>2.1</b> | <b>6.2</b>  | <b>4.1</b>  | <b>3.5</b>  | <b>5.1</b>  | <b>2.7</b>  | <b>4.6</b> | <b>1.5</b> | <b>3.7</b> |
| <b>Industry</b>                                         | <b>5.3</b> | <b>-1.4</b> | <b>-0.9</b> | <b>11.6</b> | <b>2.0</b>  | <b>10.8</b> | <b>5.9</b> | <b>8.5</b> | <b>6.3</b> |
| Mining & Quarrying                                      | -0.9       | -3.0        | -8.6        | 7.1         | 2.8         | 3.2         | 2.7        | 6.6        | -3.1       |
| Manufacturing                                           | 5.4        | -3.0        | 2.9         | 11.1        | -3.0        | 12.3        | 4.5        | 7.6        | 7.7        |
| Electricity, Gas, Water Supply & Other Utility Services | 7.9        | 2.3         | -4.3        | 9.9         | 11.5        | 8.6         | 5.9        | 10.2       | 0.5        |
| Construction                                            | 6.5        | 1.6         | -5.7        | 14.8        | 10.0        | 10.4        | 9.4        | 10.1       | 7.6        |
| <b>Services</b>                                         | <b>7.2</b> | <b>6.4</b>  | <b>-8.2</b> | <b>8.8</b>  | <b>11.3</b> | <b>9.0</b>  | <b>7.2</b> | <b>6.8</b> | <b>9.3</b> |
| Trade, Hotels, Transport, Communication & Broadcasting  | 7.2        | 6.0         | -19.7       | 13.8        | 14.4        | 7.5         | 6.1        | 5.4        | 8.6        |
| Financial, Real Estate & Professional Services          | 7.0        | 6.8         | 2.1         | 4.7         | 10.7        | 10.3        | 7.2        | 6.6        | 9.5        |
| Public Administration, Defence and Other Services       | 7.5        | 6.6         | -7.6        | 9.7         | 8.2         | 8.8         | 8.9        | 9.0        | 9.8        |
| <b>GVA at Basic Price</b>                               | <b>5.8</b> | <b>3.9</b>  | <b>-4.2</b> | <b>8.8</b>  | <b>7.4</b>  | <b>8.6</b>  | <b>6.4</b> | <b>6.5</b> | <b>7.6</b> |

Source: MOSPI; Note: SAE – Second Advance Estimates, FE – Final Estimates, PE- Provisional Estimates

### 1.2.3 Consumer Price Index

The Consumer Price Index (CPI) for the April–July 2025 recorded a combined inflation rate of 2.4%, marking the lowest quarterly retail inflation in six years. The moderation was driven by continued declines in Pulses, Transport and communication, Vegetables, Cereal, Education, Egg and Sugar and confectionery.

**Chart 3: Retail Price Inflation in terms of index and Y-o-Y Growth in % (Base: 2011-12=100)**



Source: MOSPI

The CPI is primarily factored in by RBI while preparing their bi-monthly monetary policy. At the bi-monthly meeting held in August 2025, RBI projected inflation at 3.1% for FY26 with inflation during Q2FY26 at 2.1% and Q3FY26 at 3.1%, Q4FY26 at 4.4% and Q1FY26 at 4.9%.

Considering the current inflation situation, RBI has maintained the repo rate to 5.5% in the August 2025 meeting of the Monetary Policy Committee.

### 1.2.4 Trends in Per Capita State Domestic Product (SDP)

State Domestic Product is the total value of goods and services produced, during any financial year, within the geographical boundaries of a state. The top 10 best performing states on per capita SDP include Delhi, Gujarat, Karnataka, and Tamil Nadu.

As of FY24, major states having a per capita SDP below national average include Andhra Pradesh, Rajasthan, Madhya Pradesh, and Uttar Pradesh growing y-o-y by 7.20%, 6.94%, 4.83%, and 6.42% respectively. Bihar is the poorest performing state with a per capita SDP of Rs. 32,174. It has consistently been performing the poorest since FY18, growing merely at a CAGR of 3.14% from FY18 to FY24.

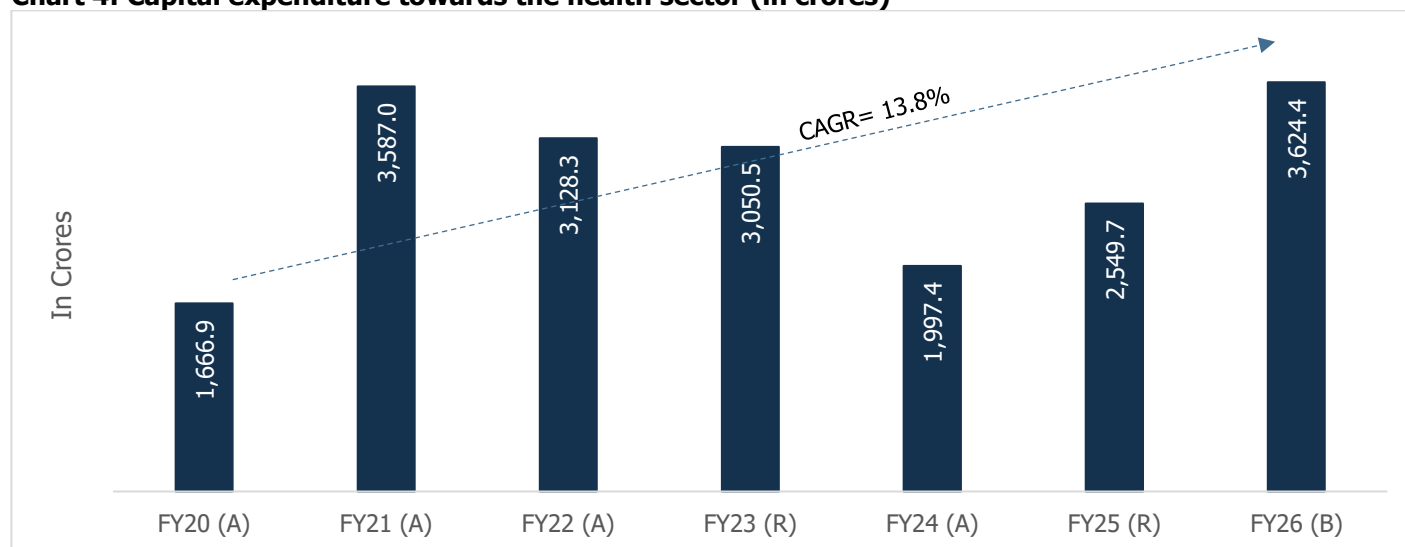
**Table 4: Per Capita SDP for Key States (at constant prices, in Rs.)**

| State\UT       | FY18     | FY19     | FY20     | FY21     | FY22     | FY23     | FY24     |
|----------------|----------|----------|----------|----------|----------|----------|----------|
| Andhra Pradesh | 1,03,177 | 1,08,853 | 1,10,587 | 1,10,971 | 1,21,762 | 1,26,690 | 1,35,806 |
| Bihar          | 26,719   | 29,092   | 29,798   | 26,839   | 27,674   | 29,909   | 32,174   |
| Gujarat        | 1,43,604 | 1,54,887 | 1,64,060 | 1,56,285 | 1,70,519 | 1,81,963 | 1,81,963 |
| Karnataka      | 1,40,747 | 1,49,024 | 1,56,478 | 1,49,673 | 1,63,732 | 1,75,895 | 1,86,038 |
| Madhya Pradesh | 54,824   | 59,005   | 60,452   | 56,086   | 60,166   | 63,379   | 6,6441   |
| Maharashtra    | 1,37,808 | 1,40,782 | 1,45,626 | 1,27,550 | 1,40,718 | 1,53,664 | 163,820  |
| Rajasthan      | 73,529   | 73,975   | 76,840   | 73,447   | 79,507   | 84,935   | 90,831   |
| Tamil Nadu     | 1,33,029 | 1,41,844 | 1,44,845 | 1,43,482 | 1,54,269 | 1,66,590 | 1,79,732 |
| Uttar Pradesh  | 41,771   | 42,333   | 43,061   | 39,866   | 44,178   | 47,808   | 50,875   |
| Delhi          | 2,52,960 | 2,57,597 | 2,60,559 | 2,28,162 | 2,44,024 | 2,58,941 | 2,73,687 |

Source: MOSPI

### 1.2.5 Budget capital expenditure towards the health sector

The trend in health capital expenditure (Capex) in India demonstrates a substantial increase from FY20 to FY21, followed by a decline in FY22 and FY23, with a projected rise in FY25. The significant increase in FY21 can be attributed to the government's heightened focus on strengthening healthcare infrastructure in response to the COVID-19 pandemic, which necessitated large-scale investments in medical facilities, equipment, and pandemic-related initiatives. The decrease in FY22 and FY23 likely reflects a phase of stabilization post-pandemic, with reduced emergency spending. However, the anticipated increase in FY25 indicates a renewed emphasis on healthcare sector development, driven by rising healthcare demands and ongoing government efforts toward long-term healthcare reforms.

**Chart 4: Capital expenditure towards the health sector (in crores)**


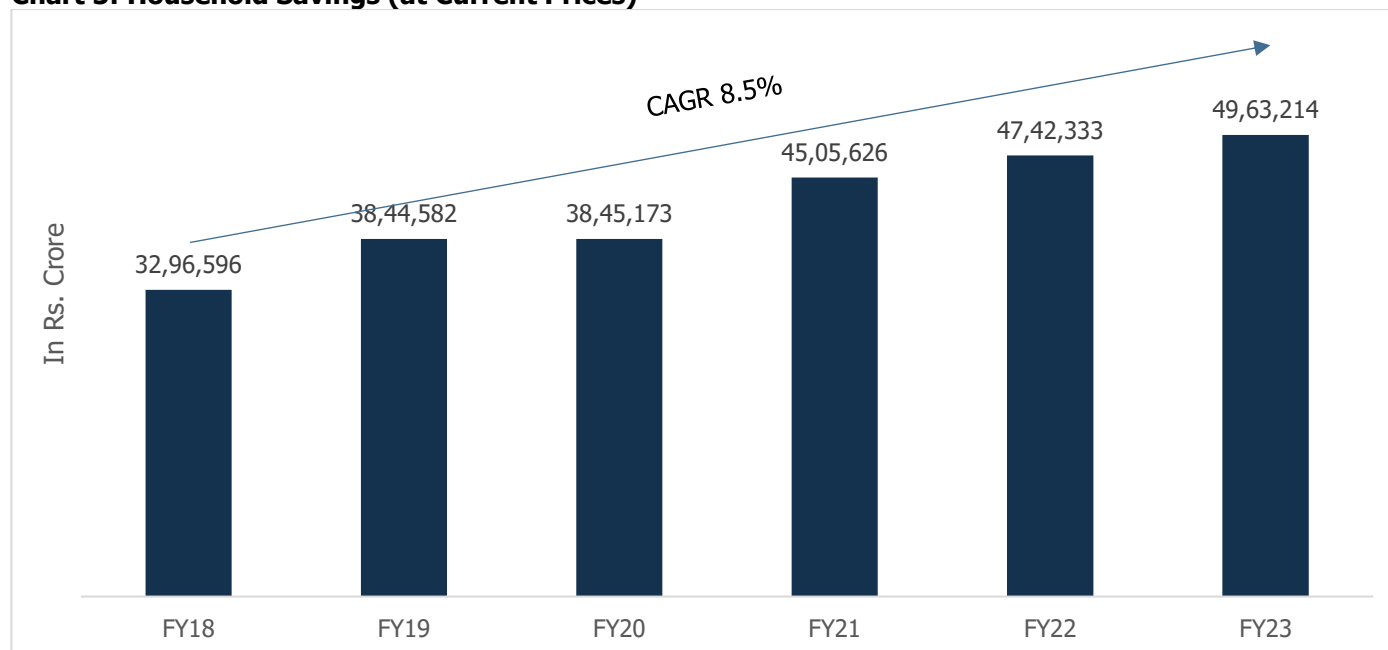
Source: Union Budget; Note: A- Actual, R- Revised, B- Budgeted

### 1.2.6 Trend in Household Savings

Household savings in India have grown at an 8.8% CAGR since FY18, reaching Rs. 54.61 billion in FY24, a 9% y-o-y increase. A shift toward physical assets, particularly housing and gold/silver ornaments, reflects a preference for tangible investments amid high inflation and slow growth in monetary assets.

This trend is driven by heavy borrowing, especially in housing, auto, and personal loans, leading to a six-year high in household financial liabilities. Savings in mutual funds and life insurance also grew, with an 11.5% and 13.6% y-o-y increase, respectively, while investment in equities and capital market instruments rose as they offer higher returns than bank deposits.

**Chart 5: Household Savings (at Current Prices)**



Source: MOSPI

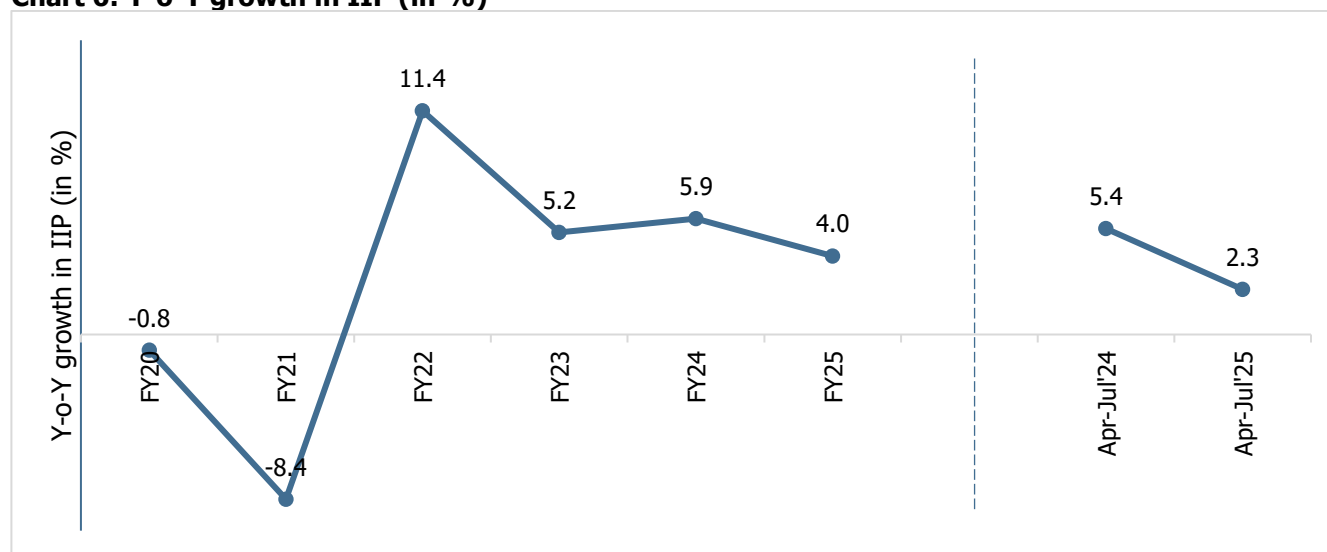
### 1.2.7 Industrial Growth

The Quick Estimates of the Index of Industrial Production (IIP) for July 2025 show a growth of 3.5%, compared to 4.9% in June 2025. The year-on-year moderation reflects weakness across major segments, primarily due to contractions in electricity, mining, and consumer non-durables.

In July 2025, industrial growth was supported by Manufacturing (5.4%), while Electricity declined by 1.2% and Mining contracted to -7.2%. Within manufacturing, notable growth was recorded in basic metals, machinery and equipment, and non-metallic mineral products. Specifically, these segments helped offset broader weakness.

Use-based indices reflected mixed trends, with strong growth in Infrastructure Goods (11.9%), but declines in Consumer Durables and Non-Durables indicating subdued consumption and Capital goods.

Manufacturing output grew by 5.4%, contributing significantly to overall industrial growth. This was primarily driven by strong performance in segments such as pharmaceuticals, motor vehicles, beverages, and electrical equipment.

**Chart 6: Y-o-Y growth in IIP (in %)**

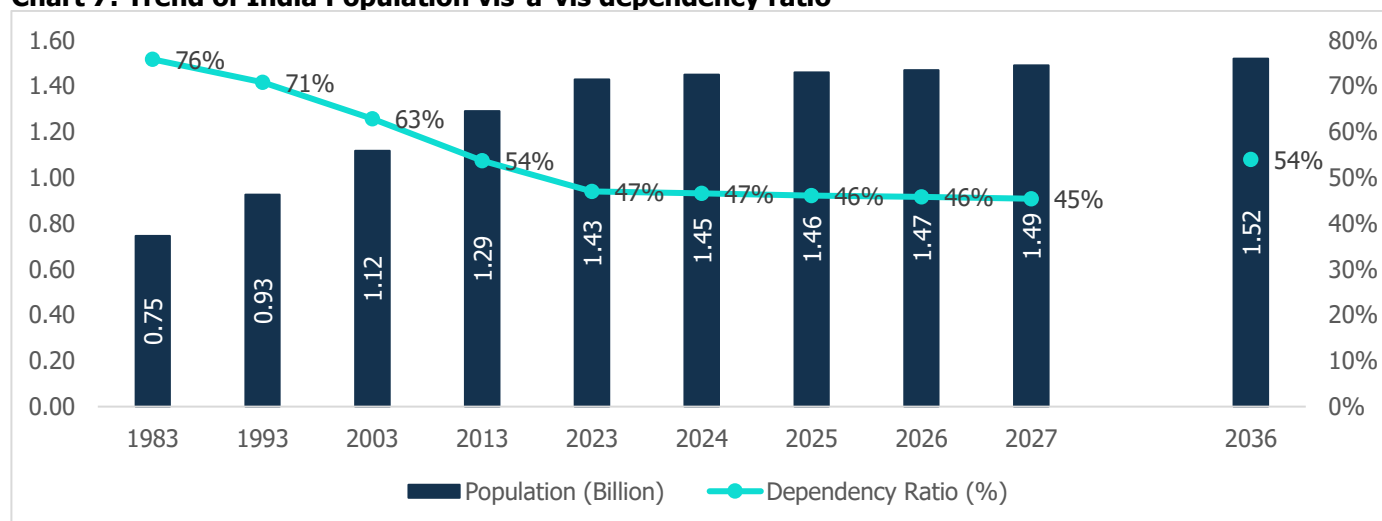
Source: MOSPI

### 1.2.8 Overview of Key Demographic Parameters

- Population growth and Urbanization**

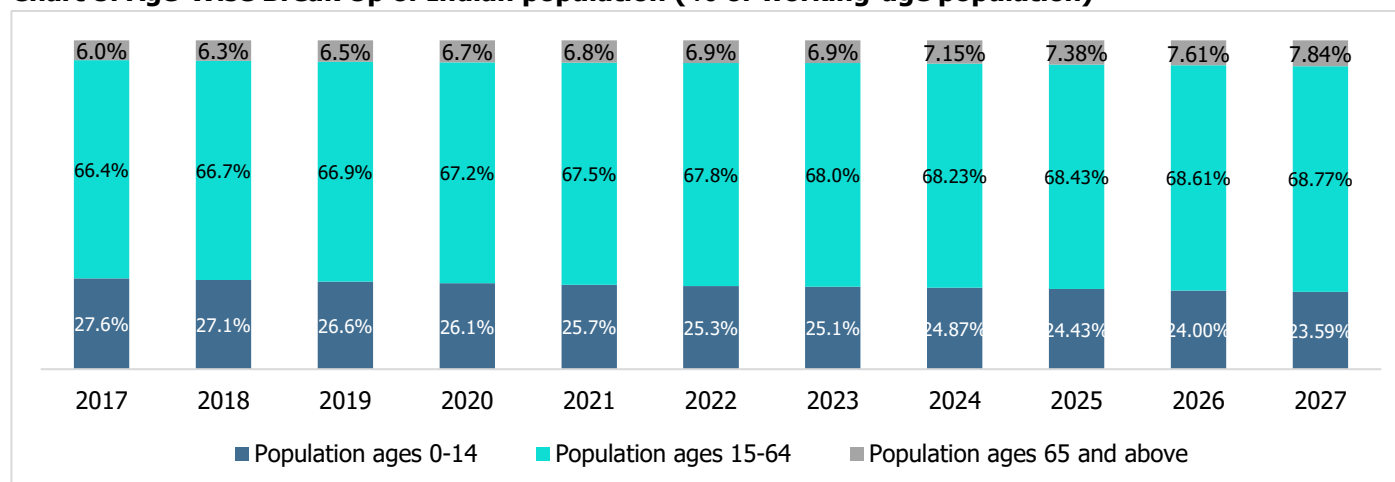
The trajectory of economic growth of India and private consumption is driven by socio-economic factors such as demographics and urbanization. According to the world bank, India's population in 2022 surpassed 1.42 billion, slightly higher than China's population (1.41 billion) and became the most populous country in the world.

Age Dependency Ratio is the ratio of dependents to the working age population, i.e., 15 to 64 years, wherein dependents are population younger than 15 and older than 64. This ratio has been on a declining trend. Declining dependency means the country has an improving share of working-age population generating income, which is a good sign for the economy. It was as high as 76% in 1983, which has reduced to 47% in 2023. However, this ratio is expected to rise again to 54% by 2036, driven by an increase in the elderly population as life expectancy improves.

**Chart 7: Trend of India Population vis-à-vis dependency ratio**


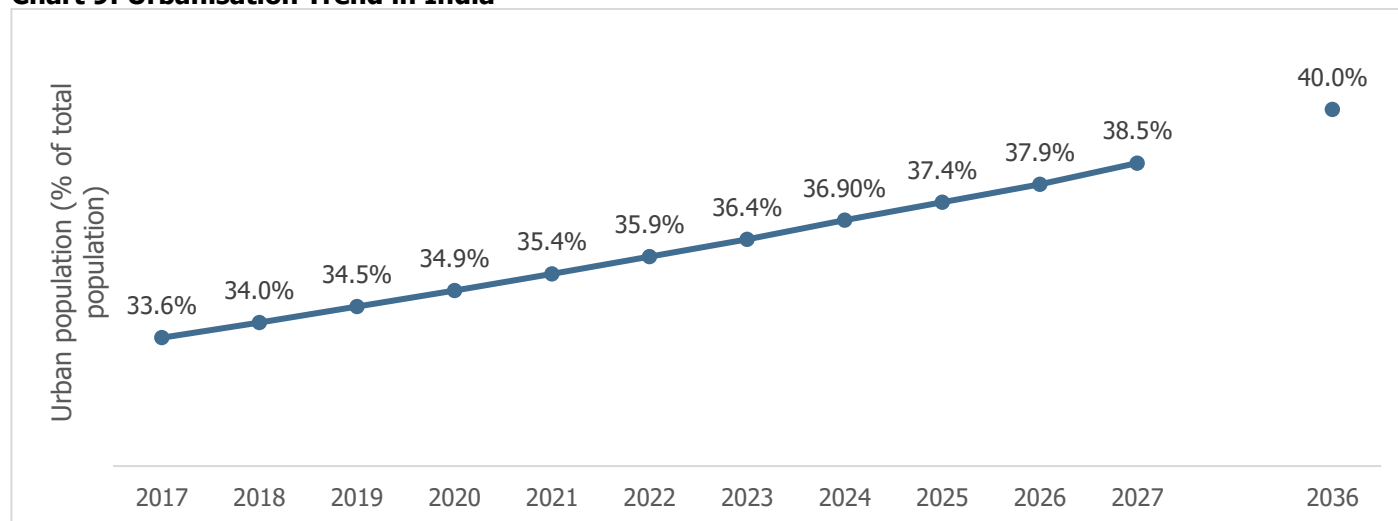
Source: World Bank Database

Despite a projected rise in the dependency ratio to 54% by 2036, India's young and growing workforce, especially in newly urbanised towns, will continue to drive income growth and consumer demand. This presents strong opportunities for sectors like consumer electronics, transportation, and railways. Rising employment, urbanisation, and government investment in rural development and digital infrastructure will further boost demand, while increased tech adoption supports long-term consumption growth across both urban and rural markets.

**Chart 8: Age-Wise Break Up of Indian population (% of working-age population)**


Source: World Bank Database

The urban population is significantly growing in India. The urban population in India is estimated to have increased from 413 million (32% of total population) in 2013 to 519.5 million (36.4% of total population) in the year 2023. India is undergoing a significant urban transformation, with the urban population projected to rise to 40% by 2036. This shift is driven by factors such as improved living standards, increased employment opportunities in urban areas, and government initiatives aimed at urban development. This rapid urbanisation might necessitate substantial investments in infrastructure, housing, and transportation.

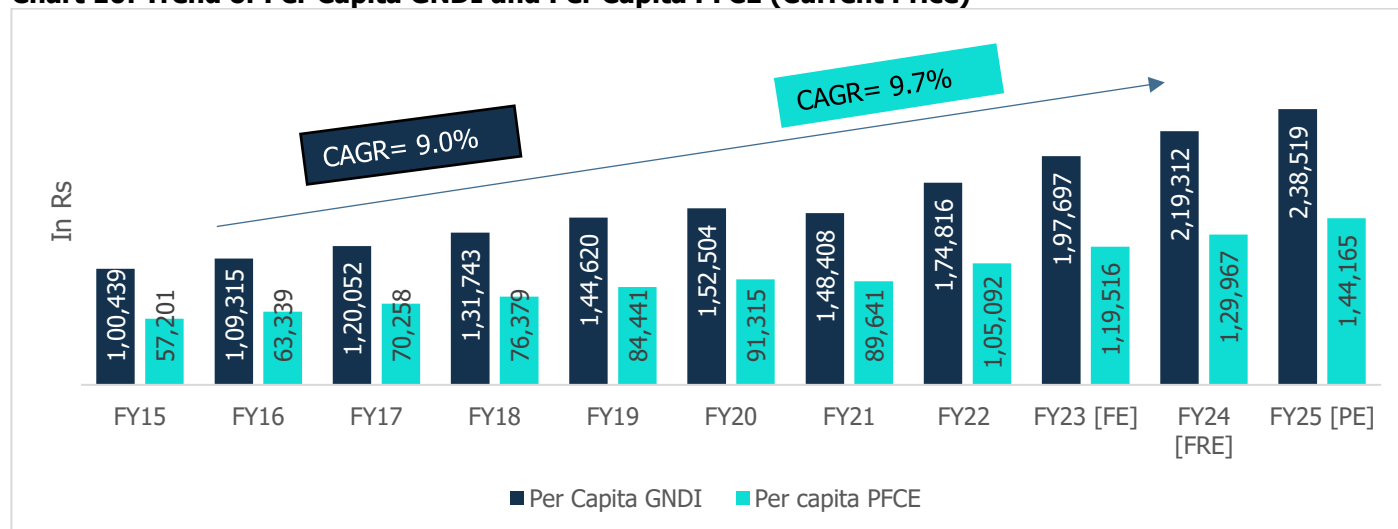
**Chart 9: Urbanisation Trend in India**


Source: World Bank Database

### • Increasing Disposable Income and Consumer Spending

Gross National Disposable Income (GNDI) is a measure of the income available to the nation for final consumption and gross savings. Between the period FY15 to FY25, per capita GNDI at current prices registered a CAGR of 9.0%. More disposable income drives more consumption, thereby driving economic growth.

With increase in disposable income, there has been a gradual change in consumer spending behaviour as well. Per capita Private Final Consumption Expenditure (PFCE) which is measure of consumer spending has also showcased significant growth from FY15 to FY25 at a CAGR of 9.7%.

**Chart 10: Trend of Per Capita GNDI and Per Capita PFCE (Current Price)**


Source: MOSPI; Note: FRE – First Revised Estimates, FE – Final Estimate, SAE-Second Advance Estimate

### 1.2.9 Concluding Remarks

Global economic growth faces headwinds from geopolitical tensions, volatile commodity prices, high interest rates, inflation, financial market volatility, climate change, and rising public debt. However, India's economy remains relatively strong, with an IMF forecast of 6.5% GDP growth in CY24 (FY25 according to the fiscal year), compared to the global projection of 3.3%. Key drivers include strong domestic demand, government capital expenditure and moderating inflation.

The health sector in India has witnessed significant investments in recent years, driven largely by the need to strengthen infrastructure in response to the COVID-19 pandemic. While expenditures saw a decline post-pandemic, the projected increase in future capital expenditures reflects a renewed focus on addressing growing healthcare demands and long-term reforms. Continued investment in healthcare infrastructure will be crucial for ensuring equitable access to quality healthcare and sustaining overall economic growth.

India's position as a manufacturing hub is being reinforced through a combination of government-led initiatives, a skilled labor force, and a vibrant startup ecosystem. Continued economic reforms and technology adoption are improving operational efficiencies and strengthening India's global manufacturing relevance.

Key macro indicators such as the Purchasing Managers' Index (PMI), E-way bills, bank credit, toll collections, and GST collections all showed improvement in FY24, signaling robust economic activity. The growth outlook for FY25–26 remains strong, backed by momentum in agriculture, industrial expansion, and rising services exports. Government investments in infrastructure highlighted by a capital outlay of ₹11.21 lakh crore in FY26 along with improving private capex, rising capital goods imports, and new project announcements are set to further boost economic activity. Additionally, government-driven logistical reforms such as the Gati Shakti National Master Plan and multimodal infrastructure initiatives are helping reduce turnaround times and logistics costs, thereby enhancing manufacturing productivity. Normalizing employment trends, improved rural demand, and supportive monsoon conditions are further expected to sustain private consumption and bolster the ongoing investment cycle.

The impact of recent U.S. tariffs on India's export trade is expected to be limited at an aggregate level; however, the chemicals sector, excluding pharmaceuticals, faces moderate exposure. While pharmaceuticals remain largely unaffected, the chemicals sector will need to reorient towards value-added chemistries and non-U.S. markets to mitigate the risks of tariff-led disruptions. India's relatively moderate tariff structure enhances its attractiveness as a global trade partner, and ongoing trade negotiations with the U.S., along with efforts to diversify export markets including those in the EU and ASEAN are expected to mitigate potential adverse impacts from global headwinds. As India strengthens its manufacturing base across sectors such as textiles, pharmaceuticals, electronics, and auto components, it continues to emerge as a more competitive option compared to peers like China, Taiwan, Bangladesh, and Vietnam. This positions India as a credible alternative in global supply chains, particularly in sectors where it holds a cost or skill-based advantage.

Recent Free Trade Agreements (FTAs), such as those signed with the UAE and Australia, are already benefitting textile and chemical manufacturers by improving market access and reducing input costs. India's expanding production capacity, underpinned by a skilled workforce and targeted policy support, further strengthens its appeal as a long-term investment destination for global companies.

On February 13, 2025, Prime Minister Narendra Modi and President Donald Trump discussed enhancing the U.S.-India trade relationship, with a target to increase bilateral trade from USD 200 billion to USD 500 billion by 2030. Negotiations for a multi-sector bilateral trade agreement (BTA) are expected to commence later this year, focusing on trade fairness, national security, and job creation.

Thus, while U.S. tariffs may have a limited impact on India's exports, ongoing trade negotiations and India's competitive manufacturing advantage position it well for continued growth in global trade.

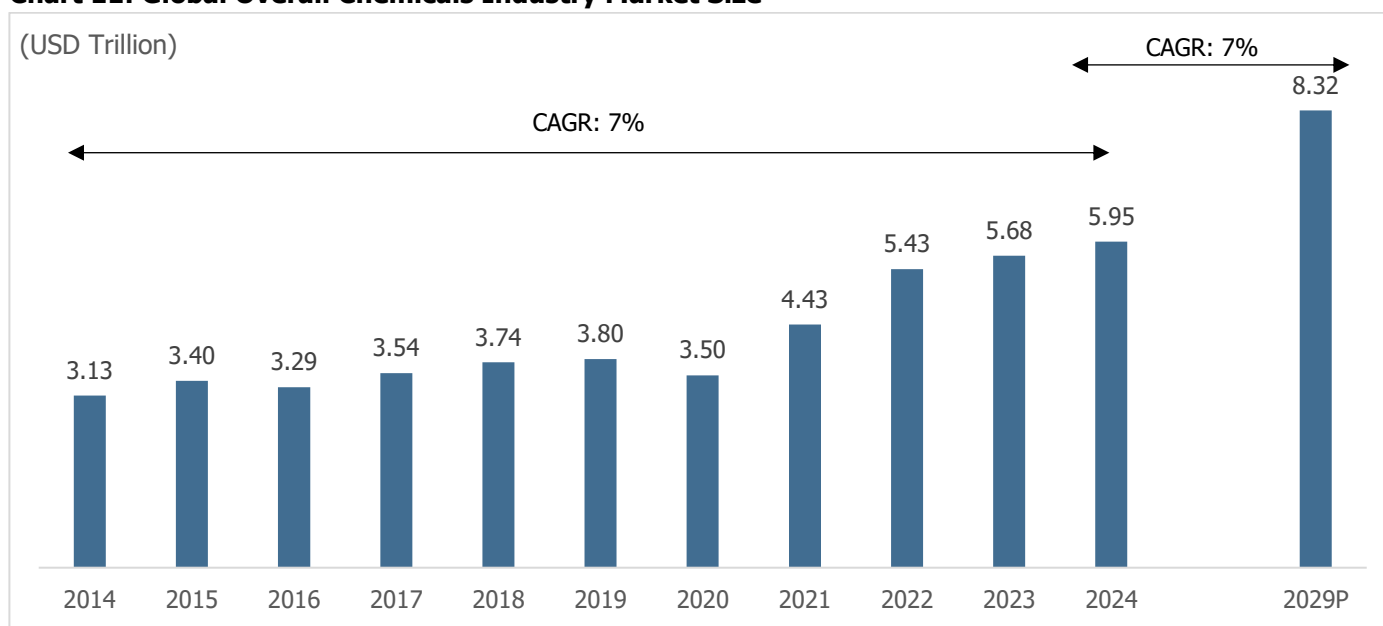
## 2. Global Chemical Industry

### 2.1 Industry Overview

#### Overview and market size

The global chemicals industry was valued at approximately \$5.7 trillion in 2023, contributing around 7% to global GDP. The industry is estimated to have been valued at \$5.9 trillion in 2024. It includes a wide range of products such as basic chemicals, specialty chemicals, and agrochemicals, supporting sectors like manufacturing, agriculture, pharmaceuticals, and consumer goods. The industry has grown at a CAGR of 7% from 2014 to 2024 and is projected to grow at 7%, reaching nearly \$8.3 trillion by 2029. Asia-Pacific accounts for over 45% of global production, with China being the largest producer and consumer. Other key countries in the chemical sector include the United States, Germany, Japan, South Korea, and India, which play significant roles in innovation, production, and consumption within the global market.

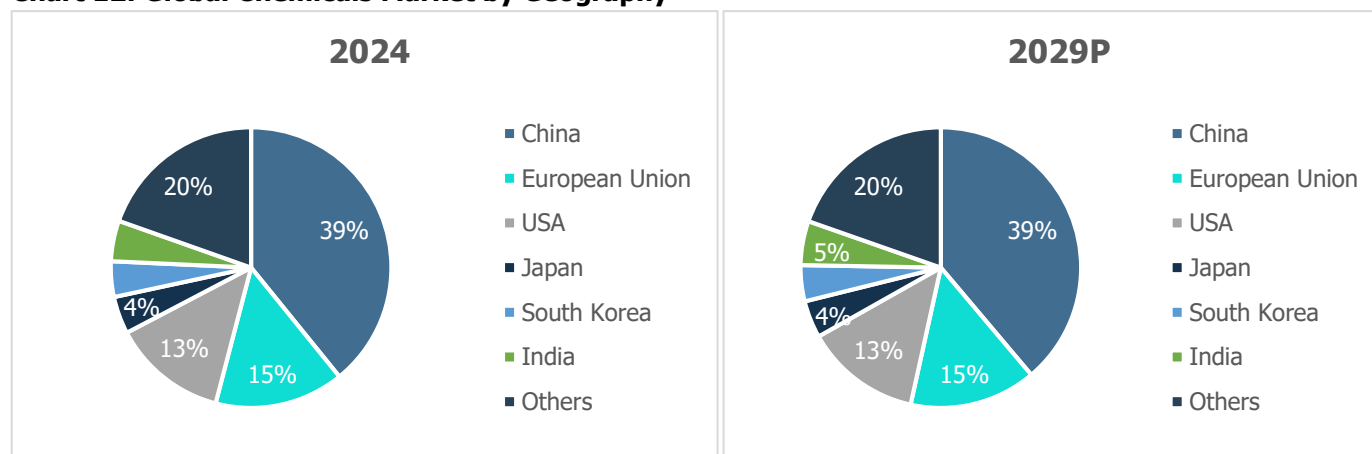
**Chart 11: Global Overall Chemicals Industry Market Size**



Source: CEFIC, CareEdge Research & Analysis; P: Projected

### 2.2 Global Chemicals Market by Geography

China is expected to maintain its dominant position in the global chemicals industry through 2029, though with a marginal dip from 39.2% to 38.8%, indicating gradual diversification in global sourcing. The European Union and the U.S. show relative stability, but with limited growth, suggesting mature markets with slower expansion rates. In contrast, India's share is projected to rise from 4.7% to 5.1%, signalling its growing competitiveness and capacity buildup, possibly driven by policy support and a shift in global supply chains. South Korea also shows slight improvement, reinforcing its position in high-value specialty chemicals.

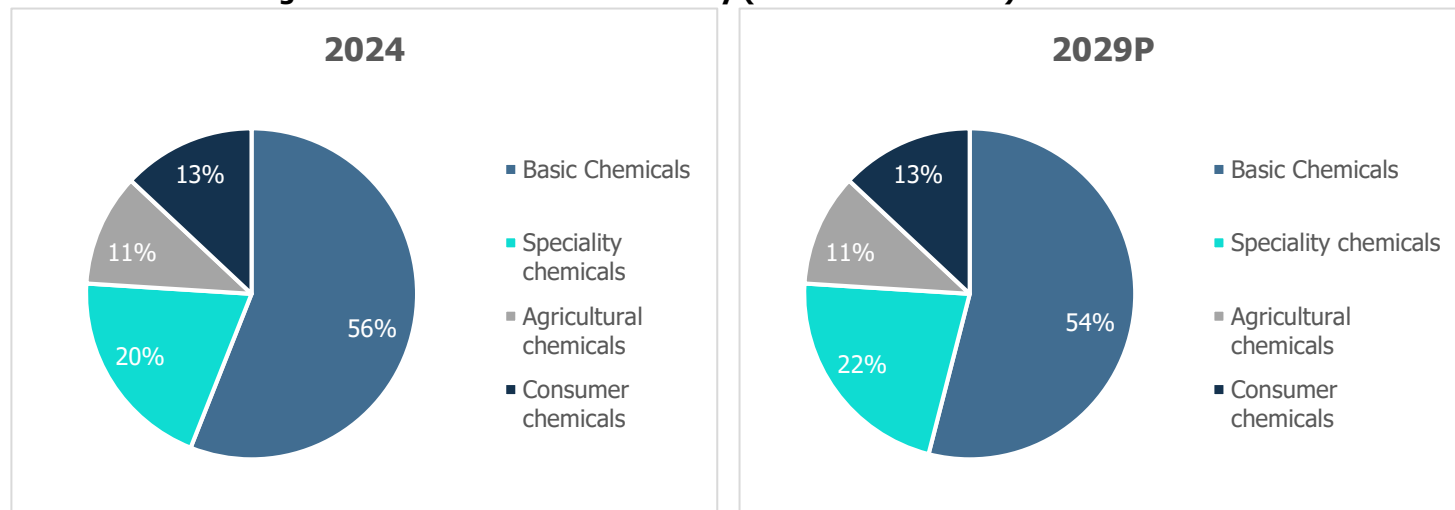
**Chart 12: Global Chemicals Market by Geography**


Source: CareEdge Research

## 2.3 Market Segmentation of the Chemicals Industry

The chemical industry is broadly segmented into the following key categories:

| Basic Chemicals                                                                                                        | Specialty Chemicals                                                                                                                                                                                                          | Agriculture Chemicals                                                                                                    | Consumer Chemicals                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>Petrochemicals</li> <li><b>Inorganic Chemicals</b></li> <li>Polymers</li> </ul> | <ul style="list-style-type: none"> <li>Coatings &amp; Paints</li> <li>Adhesives &amp; Sealants</li> <li>Catalyst</li> <li>Electronic Chemicals</li> <li>Water Treatment Chemicals</li> <li>Construction Chemicals</li> </ul> | <ul style="list-style-type: none"> <li>Fertilizers</li> <li>Crop Protection</li> <li>Bio-based Agri Solutions</li> </ul> | <ul style="list-style-type: none"> <li>Soap &amp; Detergents</li> <li>Home and Personal Care</li> <li>Food Additives &amp; Flavours</li> </ul> |

**Chart 13: Market Segmentation of Chemicals Industry (Market share in %)**

Source: CareEdge Research &amp; Analysis

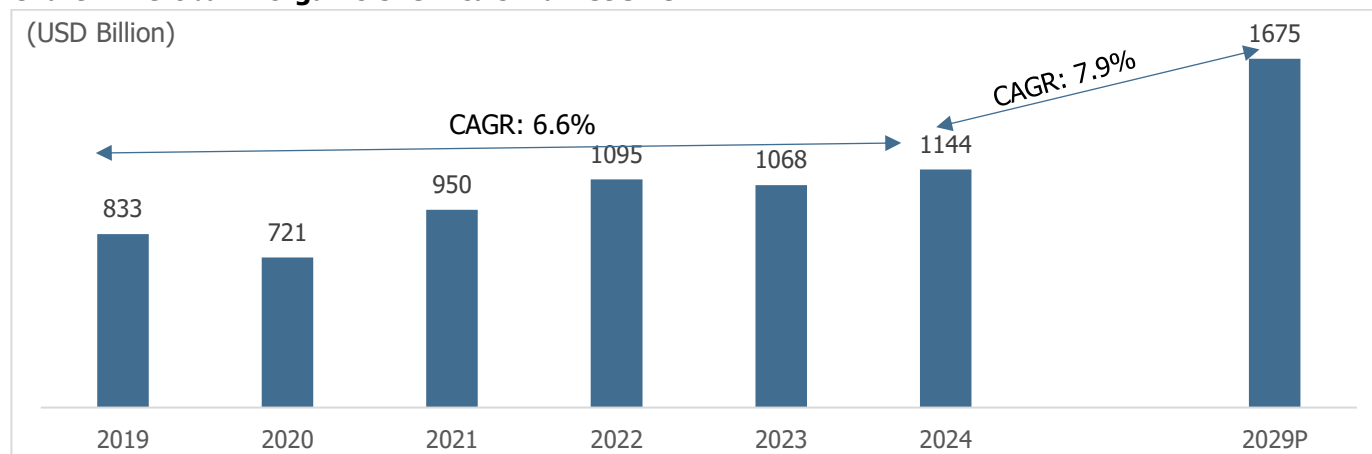
- 1. Basic Chemicals:** Basic chemicals form the foundation of the global chemical industry, representing the largest market share. In 2024, they are estimated to account for around 56% of the market, with a projected moderation to 53–55% by 2029 as higher-value segments expand at a faster pace. This category covers bulk petrochemicals (such as ethylene and propylene), intermediates, and a broad range of inorganic chemicals including sulphuric acid, soda ash, caustic soda, chlorine, and other sulphur-based compounds. These serve as critical feedstocks for downstream applications across fertilizers, water treatment, pulp & paper, textiles, and metallurgy. While basic chemicals are volume-driven and cyclical in nature, the inorganic segment remains particularly vital given its extensive use in industrial processes. Furthermore, energy transition policies and the expansion of cost-competitive capacities continue to reinforce the role of basic chemicals in the industrial ecosystem.
- 2. Specialty Chemicals:** Known for their tailored and application-specific functionalities, specialty chemicals are estimated to represent 20% of the market in 2024, with growth expected to reach 21–23% by 2029. These chemicals include categories such as coatings, adhesives, construction chemicals, surfactants, textile auxiliaries, and active ingredients. The segment is witnessing rising demand due to the shift toward higher performance, environmentally compliant, and customized solutions, particularly from end-user industries like pharma, personal care, automotive, and electronics. Innovation, IP-driven formulations, and customer stickiness make this the most profitable and fastest-growing segment in India's chemical industry.
- 3. Agricultural Chemicals:** This segment includes fertilizers, crop protection chemicals (insecticides, herbicides, fungicides), micronutrients, and plant growth regulators, and is estimated at 11% of the market in 2024, with a projected range of 10–12% by 2029. The minor decline in share reflects a gradual pivot toward integrated pest management, organic farming, and sustainable agriculture. Nevertheless, India remains a net exporter of agrochemicals, and domestic demand is underpinned by increasing cropping intensity, rising foodgrain demand, and policy support. Some sulphur-based compounds—like elemental sulphur, sulphur dust, and sulphur micronutrients—are key inputs in fungicides and soil enrichment formulations, especially for oilseeds and pulses.
- 4. Consumer Chemicals:** These include products such as detergents, cosmetics, personal hygiene products, oral care items, and household cleaning agents, contributing an estimated 13% of the market in 2024, expected to grow modestly to 12–14% by 2029. Growth is driven by urbanization, rising disposable incomes, changing consumption

patterns, and increasing awareness around hygiene and personal care. This segment is evolving with the emergence of natural, bio-based, and dermatologically safe ingredients, pushing chemical manufacturers to develop mild surfactants, fragrance compounds, and specialty preservatives tailored for health-conscious consumers.

## 2.4 Global Inorganic Chemicals Market Size

The global inorganic chemicals market has witnessed moderate growth, growing from USD 833 billion in 2019 to an estimated USD 1,144 billion in 2024, with a CAGR of 6.6%. Going forward, the market is expected to grow at an accelerated CAGR of 7.9% to reach USD 1,675 billion by 2029. This growth is likely to be supported by sustained demand momentum across diverse end-use sectors such as construction, water treatment, agriculture, and energy. Furthermore, increasing industrial output in emerging markets, along with growing applications in electronics and green technologies, is expected to drive market expansion.

**Chart 14: Global Inorganic Chemicals Market Size**



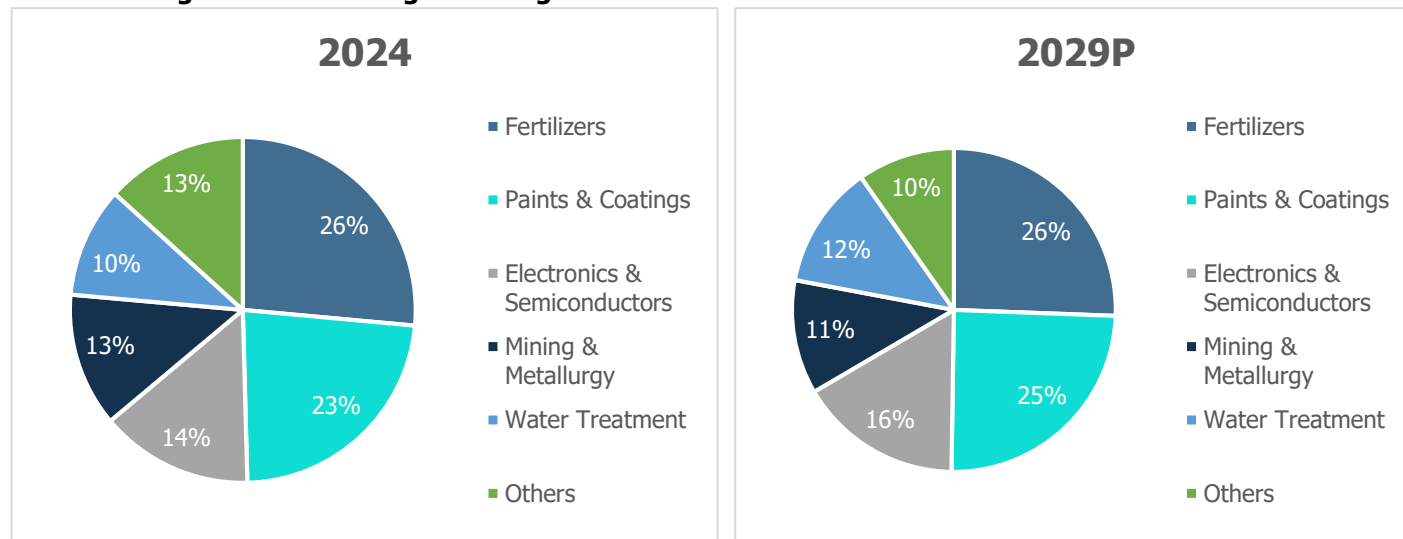
Source: Custom Market Insights (CMI), CareEdge Research & Analysis; P: Projected

## 2.5 Global Segmental End-use of Inorganic Chemicals

The global end-use distribution of inorganic chemicals is expected to remain relatively stable between 2024 and 2029, with subtle shifts across key industrial segments. Fertilizers continue to dominate demand, maintaining a consistent 26% share until 2029. This underscores the sustained reliance on inorganic compounds such as nitrogen-based salts and phosphates in global agricultural practices, especially across developing economies.

The paints and coatings segment are expected to see a modest rise in share from 23% in 2024 to 25% by 2029 driven by ongoing expansion in infrastructure, automotive manufacturing, and protective coatings. Meanwhile, electronics and semiconductors are also poised for growth, with their share increasing from 14% to 16%, supported by rising semiconductor fabrication and investments in clean energy technologies that require specialty inorganic materials.

In contrast, mining and metallurgy and others show a slight decline in share, reflecting slower relative growth in traditional heavy industries. Water treatment, however, is expected to grow modestly, increasing its share from 10% to 12%, as global focus intensifies on sustainability and industrial water reuse.

**Chart 15: Segmental end-usage of Inorganic Chemicals**


Source: Custom Market Insights (CMI), CareEdge Research & Analysis; P: Projected

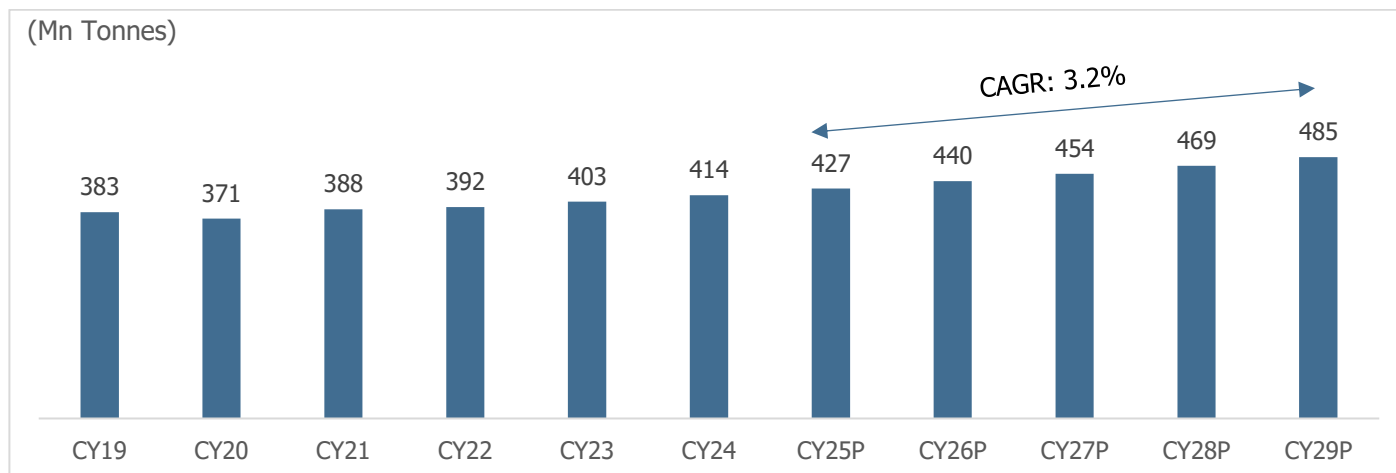
## 2.6 Global Inorganic Chemicals Consumption Trend

Global consumption of inorganic chemicals is expected to grow at a CAGR of 3.2% from 427 million tonnes in CY25 to 485 million tonnes in CY29, reflecting steady industrial demand across key end-use sectors. After a marginal dip in CY20 due to COVID-19-induced disruptions, the segment rebounded in CY21 and has since exhibited a consistent upward trajectory.

This growth is primarily underpinned by expanding demand in fertilizers, water treatment, construction, textiles, and mining, where sulphuric acid, chlorine, soda ash, and other inorganic compounds serve as critical inputs. The forecasted acceleration beyond CY24 suggests rising investments in infrastructure, clean energy transitions (e.g., solar PV glass and batteries), and stricter environmental regulations, which in turn boost usage of treatment chemicals and advanced inorganics.

Moreover, growth in emerging economies—especially across Asia-Pacific—is expected to drive incremental consumption, supported by strong manufacturing and industrial output. Despite being a mature segment, inorganic chemicals continue to play an indispensable role in global industrial value chains, ensuring long-term volume stability.

**Chart 16: Global Inorganic Chemicals Consumption Trend**



Source: Custom Market Insights (CMI), CareEdge Research & Analysis; P: Projected

## 2.7 Country-wise growth of Inorganic Chemicals

The global inorganic chemicals industry is witnessing a shift in growth patterns, with emerging economies increasingly driving demand and capacity expansion.

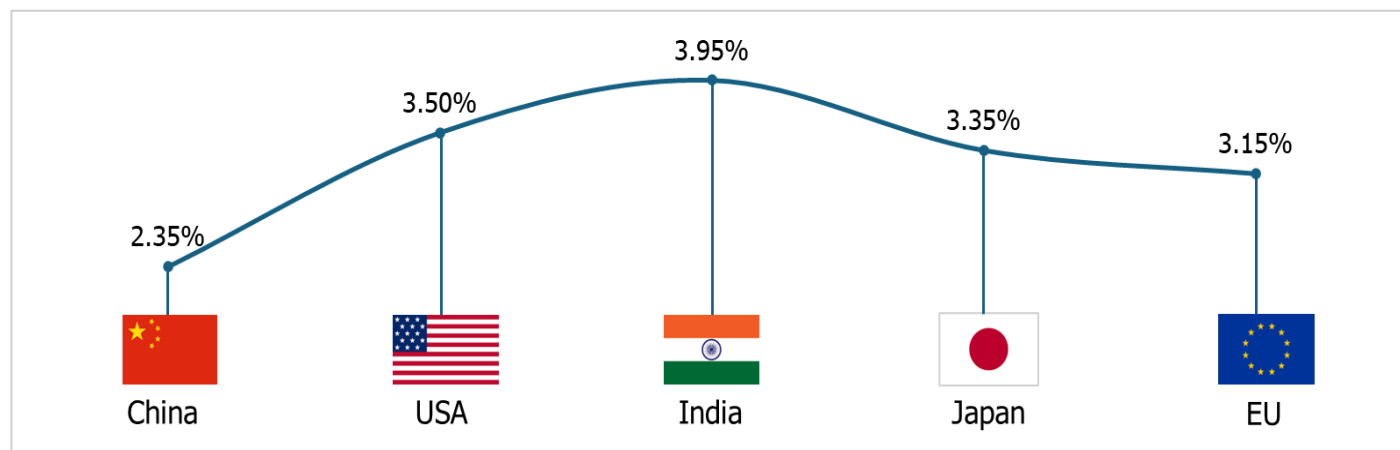
India is projected to record the highest growth rate globally at a CAGR of 3.95% in the inorganic chemicals space. This robust momentum is driven by broad-based end-use expansion across fertilizers, construction materials, textiles, water treatment, and food-grade preservatives. A notable support also comes from the increased domestic production of sulphur-based chemicals, such as sulphuric acid, sodium bisulphite, and sulphites, which are integral to India's fertilizer and agrochemical manufacturing. Government-backed initiatives like PLI schemes and import substitution mandates are catalysing backward integration and scaling of capacities, positioning India as a rising hub in the global inorganic value chain.

The United States, growing at 3.50% CAGR, maintains a steady trajectory, supported by sustained demand from industrial segments like pulp & paper, automotive components, and environmental treatment. Investment in modernizing infrastructure—particularly wastewater treatment and green building has created stable demand for chemicals like chlorine, alum, and caustic soda. Additionally, reshoring trends in chemical production post-pandemic are reinforcing domestic manufacturing resilience.

Japan (3.35% CAGR) and the European Union (3.15% CAGR) exhibit moderate but high-quality growth, underpinned by stringent environmental compliance and a shift toward sustainable and high-purity inorganic compounds. Growth is tied to sectors like electronics, specialty glass, and clean energy, where performance-grade chemicals such as ultra-pure sulphuric acid and high-purity hydrogen peroxide are critical. Both regions are investing in circular economy initiatives and carbon-neutral manufacturing, influencing product and process innovation.

In contrast, China, while retaining its position as the largest global producer, is expected to grow at a slower pace of 2.35% CAGR. The country is undergoing structural realignment, with a strategic pivot from bulk commodity chemicals toward value-added and specialty inorganic variants. Stringent environmental regulations and plant rationalization efforts have subdued volume expansion. Sulphur-based chemicals, once a high-volume export stream, are now increasingly targeted for domestic value addition in electronics, semiconductors, and lithium-ion batteries.

### Chart 17: Country-wise growth of Inorganic Chemicals Industry



Source: Custom Market Insights (CMI), CareEdge Research & Analysis

These trends indicate a gradual rebalancing of global growth in the inorganic chemicals space, with countries like India emerging as new centres of production and consumption, reflecting broader changes in industrial priorities and regional competitiveness.

## 2.8 Key Sulphur-based Chemicals in the Inorganic Chemicals Industry

### 2.8.1 Sodium Bisulphite ( $\text{NaHSO}_3$ )

#### Product Overview

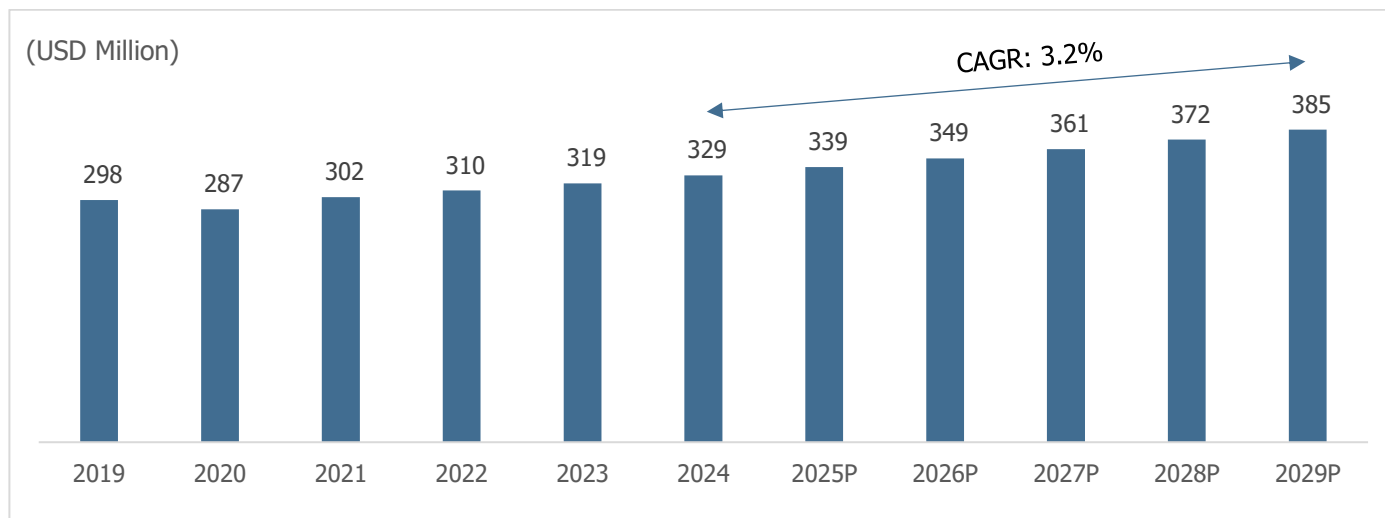
Sodium bisulphite is an inorganic salt commonly used as a reducing agent and preservative in various industrial and food applications. It is typically manufactured by bubbling sulphur dioxide ( $\text{SO}_2$ ) through a sodium carbonate or sodium hydroxide solution.

Globally, the product finds significant demand in water treatment, textile processing, and paper & pulp industries, driven by its effectiveness in oxygen scavenging and bleaching. Its use in food preservation and pharmaceuticals is more prominent in regions with advanced regulatory compliance systems, such as North America and Europe.

#### Global Market Size

The global market for Sodium Bisulphite has grown due to increasing demand for effective water treatment chemicals and its use as a preservative in food processing from USD 298 million in 2019 to USD ~329 million in 2024. Going further, the market is expected to grow at a CAGR of 3.2% to reach USD 385 million by 2029 backed by growing industrial wastewater treatment facilities and stricter environmental discharge norms globally.

#### Chart 18: Global Market Size of Sodium Bisulphite

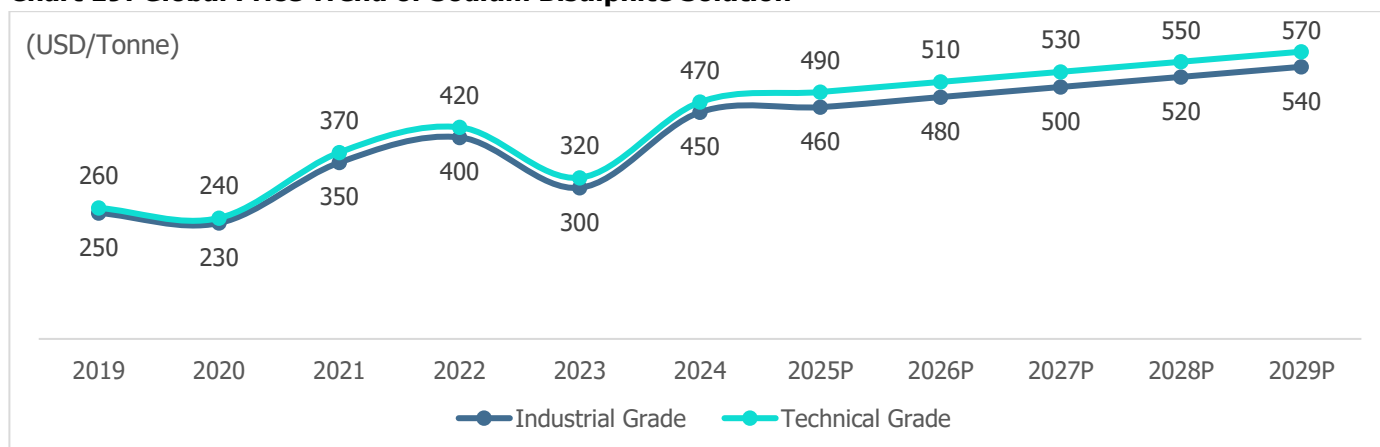


Source: Custom Market Insights (CMI), CareEdge Research & Analysis; P: Projected

### Global Price Assessment

Globally, sodium bisulphite prices have shown a steady upward trend, supported by consistent demand across water treatment, pulp & paper, and textile industries. Minimal volatility in sulphur-based raw materials has helped maintain this gradual price growth.

**Chart 19: Global Price Trend of Sodium Bisulphite Solution**



Source: Custom Market Insights (CMI), CareEdge Research & Analysis; P: Projected

## 2.8.2 Sodium Metabisulphite ( $\text{Na}_2\text{S}_2\text{O}_5$ )

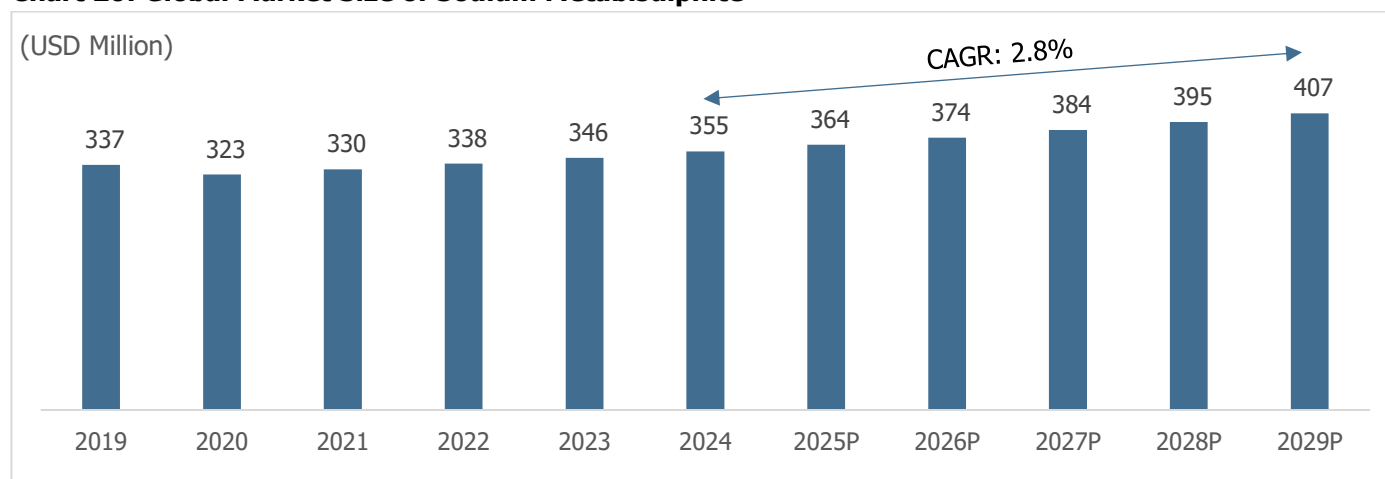
### Product Overview

Sodium metabisulphite is a widely used sulphite salt with strong antioxidant, disinfectant, and bleaching properties. It is produced through the reaction of sulfur dioxide with sodium carbonate or sodium hydroxide. Globally, it is extensively used in food processing (as a preservative), photography, textile bleaching, mining (as a flotation agent), and water treatment. Growth in packaged foods, water recycling technologies, and chemical processing especially in emerging economies is fuelling its global demand.

## Global Market Size

The global growth for Sodium Metabisulphite has been driven by its wide application in food preservation, water purification, and mining processes to reach USD 355 million in 2024. Continued expansion in packaged food consumption, along with growth in gold and mineral processing is expected to drive further demand to grow at a CAGR of 2.8% to reach USD 407 million by 2029.

**Chart 20: Global Market Size of Sodium Metabisulphite**

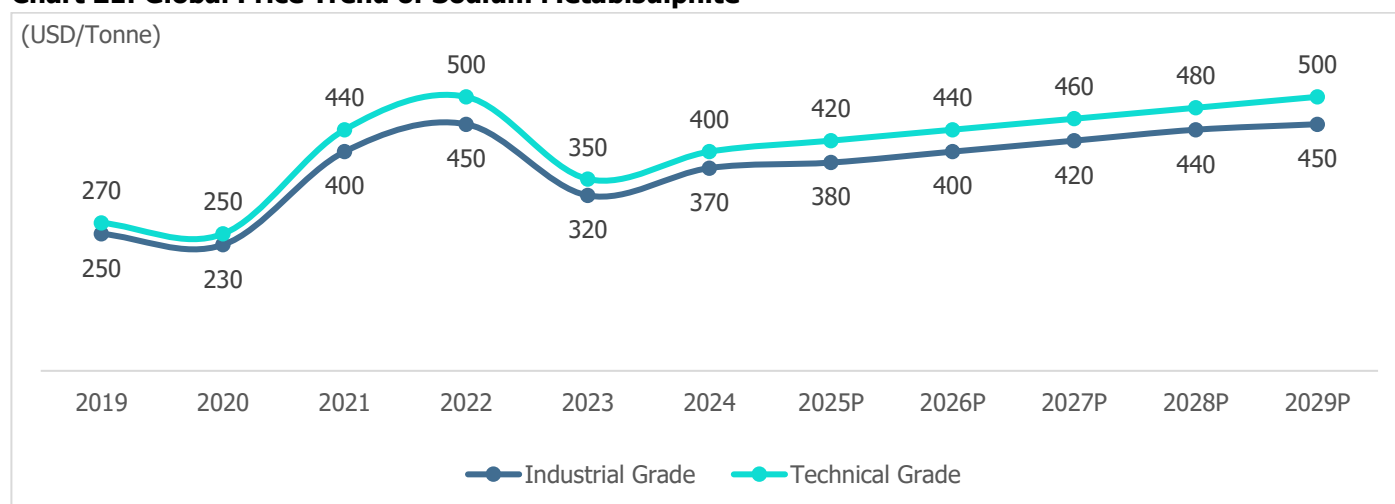


Source: Custom Market Insights (CMI), CareEdge Research & Analysis; P: Projected

## Global Price Assessment

On a global scale, sodium metabisulphite prices have increased marginally over time, driven by stable consumption in food preservation, pharmaceuticals, and industrial applications. Supply chain normalization post-COVID has also contributed to steady price growth.

**Chart 21: Global Price Trend of Sodium Metabisulphite**



Source: Custom Market Insights (CMI), CareEdge Research & Analysis; P: Projected

### 2.8.3 Sodium Sulphite ( $\text{Na}_2\text{SO}_3$ )

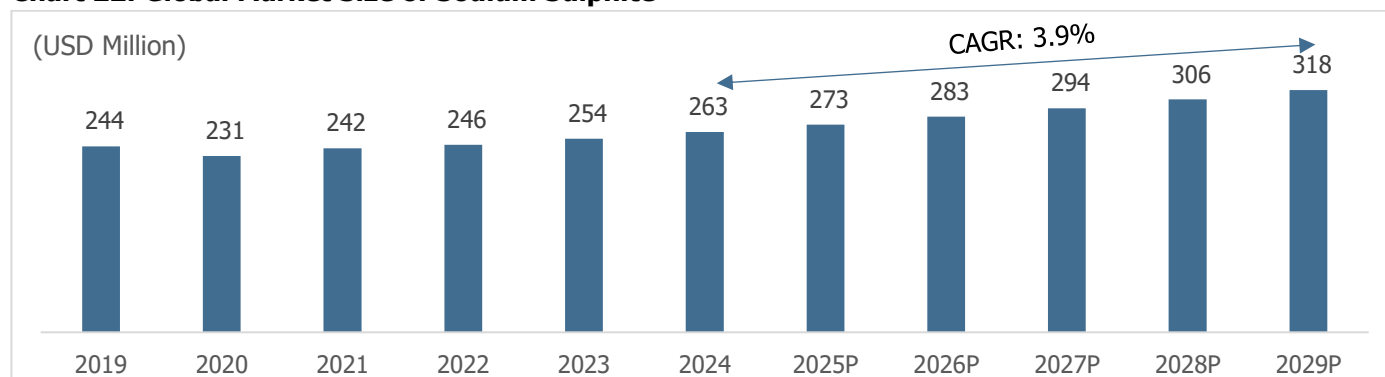
#### Product Overview

Sodium sulphite is a white, water-soluble solid that functions primarily as a preservative, antioxidant, and bleaching agent. Produced industrially by reacting sodium hydroxide with sulfur dioxide, it plays a vital role in pulp and paper manufacturing, photography, chemical synthesis, and textile processing. Global demand for sodium sulphite is closely tied to environmental and industrial water treatment needs, particularly in Asia-Pacific, where infrastructure development and regulatory frameworks are evolving rapidly.

#### Global Market Size

The global demand has grown owing to usage in pulp & paper, textile, and photographic industries, particularly in developing economies to reach at USD 263 million in 2024. Going further, the market expansion is expected to grow at a CAGR of 3.9% to reach USD 318 million by 2029 backed by the growth in the packaging and paperboard sectors along with eco-friendly bleaching solutions likely to gain traction.

**Chart 22: Global Market Size of Sodium Sulphite**



Source: Custom Market Insights (CMI), CareEdge Research & Analysis; P: Projected

#### Global Price Assessment

Global sodium sulphite prices continue to rise slowly due to sustained demand from the paper, water treatment, and photographic sectors. Balanced supply-demand conditions and moderate energy costs are keeping the upward momentum intact.

**Chart 23: Global Price Trend of Sodium Sulphite**



Source: Custom Market Insights (CMI), CareEdge Research & Analysis; P: Projected

## 2.8.4 Ammonium Bisulphite ( $\text{NH}_4\text{HSO}_3$ )

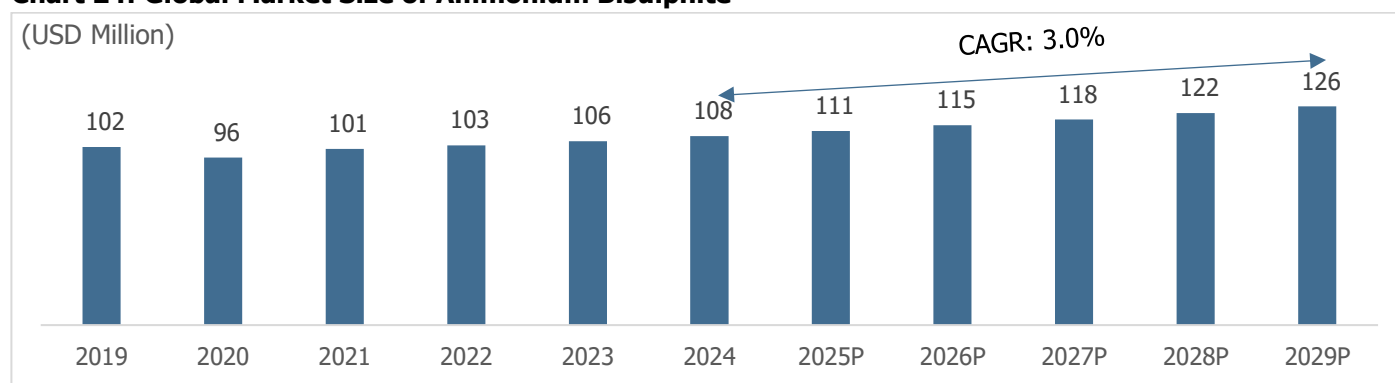
### Product Overview

Ammonium bisulphite is a clear, yellowish liquid used primarily as an oxygen scavenger and reducing agent in industrial processes. It is formed by absorbing sulfur dioxide into an aqueous solution of ammonia. The product is critical in oilfield applications (especially in drilling fluids), boiler water treatment, and the photographic and pulp & paper industries. Its global demand is strongly linked to the upstream oil & gas industry, particularly in regions with enhanced oil recovery and offshore drilling operations like North America and the Middle East.

### Global Market Size

The market has expanded owing to increased usage in oil & gas fields for oxygen scavenging and corrosion control to reach USD 108 million in 2024. With rising upstream oil exploration and the need for efficient boiler water treatment, demand is likely to grow further at a CAGR of 3.0% to reach USD 126 million by 2029.

**Chart 24: Global Market Size of Ammonium Bisulphite**

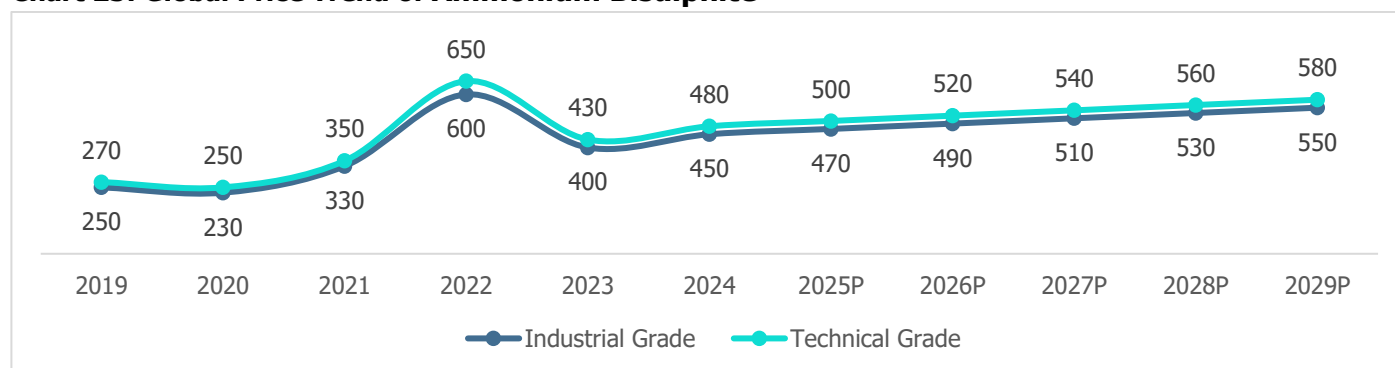


Source: Custom Market Insights (CMI), CareEdge Research & Analysis; P: Projected

### Global Price Assessment

Globally, ammonium bisulphite prices are on a gradual upward trajectory, with steady demand from oil & gas drilling, gas treatment, and wastewater management. Limited production capacity in key regions and specialized end-use reliance is contributing to firming price levels.

**Chart 25: Global Price Trend of Ammonium Bisulphite**



Source: Custom Market Insights (CMI), CareEdge Research & Analysis; P: Projected

## 2.9 Key growth drivers for the Chemical Industry

The growth drivers for the Chemical Industry are as follows:

### Rising Demand from End-Use Industries

- As per the International Council of Chemical Associations (ICCA), the global chemical industry enables 95% of all manufactured goods, reflecting its widespread application across end-use sectors such as agriculture, pharmaceuticals, construction, and automotive.
- Government initiatives like India's National Policy on Electronics and Production Linked Incentive (PLI) scheme have spurred the growth of electronic manufacturing, thereby increasing demand for semiconductors and chemicals used in PCB fabrication and chipmaking.
- The Ministry of Agriculture & Farmers Welfare continues to support fertiliser production through subsidies, contributing to steady demand for agrochemicals.

### Shift of Global Supply Chains Away from China (China+1 Strategy)

- Global players are actively diversifying sourcing and manufacturing away from China, driven by supply chain disruptions, geopolitics, and ESG scrutiny.
- India has emerged as a preferred alternative, particularly in pharmaceutical intermediates, agrochemical actives (AIs), and specialty chemicals, evidenced by increasing contract manufacturing deals (CDMO/CRAMS).
- Between FY21 and FY24, FDI inflow into India's chemicals sector rose by ~25%, reflecting this strategic shift.

### Technological Advancements

- According to the European Chemical Industry Council (CEFIC), digitalisation and Industry 4.0 tools, such as advanced analytics, process automation, and predictive maintenance, are being increasingly adopted to optimise production and reduce unplanned downtime.
- The Indian government, through the Department of Chemicals and Petrochemicals (DCPC), has supported innovation in bio-based and green chemical processes to encourage cleaner production pathways.
- Biotechnological methods such as enzyme catalysis are being promoted globally for their lower environmental impact and process efficiency, as noted by industry bodies like the ICCA.

### Sustainability and Green Chemistry

- Growing emphasis on circular economy practices is leading chemical manufacturers to invest in waste minimisation, recycling, and the use of renewable feedstocks. This aligns with India's National Chemical Policy draft that encourages sustainable manufacturing.
- The European Green Deal and initiatives by organisations like Responsible Care promote green chemistry principles, pushing producers toward safer, environmentally friendly alternatives.
- Programs such as the Bureau of Energy Efficiency's (BEE) PAT Scheme incentivise energy efficiency in the chemical sector.

### Industrialisation in Emerging Economies

- According to CEFIC, Asia remains the largest chemical-producing region, accounting for approximately 60% of global chemical sales.

- The Government of India's "Make in India" initiative and 100% FDI allowance in the chemical sector have boosted investments and capacity expansions across industrial zones.
- Development of Petroleum, Chemicals and Petrochemicals Investment Regions (PCPIRs) is creating hubs for integrated chemical manufacturing and infrastructure development.

### **Innovation in Speciality Chemicals**

- ICCA highlights that speciality chemicals continue to see strong growth due to their tailored applications in personal care, electronics, and healthcare sectors.
- Increased R&D activity supported by public-private partnerships and government incentives is facilitating the development of performance chemicals and value-added formulations.
- The DCPC under the Ministry of Chemicals & Fertilisers has recognised the specialty chemical segment as a focus area under its industrial development plans

### **Rising Demand for Environmentally Compliant Chemicals**

- Regulatory tightening (e.g., EU REACH, India's BIS standards, and bans on specific APIs and agrochemicals in China) is driving demand for low-toxicity, biodegradable, and high-purity chemical substitutes.
- This has led to a surge in R&D-driven specialty segments like bio-based surfactants, green solvents, and water-soluble polymers.
- Indian companies with strong process engineering are gaining market share in exporting these compliant chemistries.

## **3. Domestic Chemicals Industry**

### **3.1 Industry Overview**

The chemical industry is one of the most pervasive sectors in manufacturing, owing to its critical role in enabling a wide array of end-use applications. The Indian chemicals industry is highly diversified, encompassing over 80,000 commercial products, including basic chemicals, petrochemicals, agrochemicals, paints, gases, personal care chemicals, and pharmaceuticals. It is a key enabler of India's industrial and agricultural development and acts as a fundamental building block for several downstream industries such as textiles, paper, packaging, paints and coatings, soaps and detergents, and healthcare.

Within this broader ecosystem, the sulphur-based chemicals segment holds particular importance due to its wide industrial usage and essentiality in strategic sectors. Sulphur and its derivatives such as sulphuric acid, sulphur dioxide, and sulphur hexafluoride are critical inputs in fertilisers, dyes, detergents, pharmaceuticals, petroleum refining, water treatment, and metal processing. Sulphuric acid, in particular, is one of the most produced and consumed industrial chemicals globally and serves as a key indicator of a country's industrial development.

India is one of the largest consumers of sulphur-based chemicals in Asia, driven by growing fertiliser production (especially phosphatic fertilisers), increasing demand from the petroleum refining industry, and expansion of the chemical intermediate sector. Moreover, with limited domestic availability of elemental sulphur, India relies heavily on imports, primarily from the Middle East and the CIS region, making supply-chain stability a critical concern.

The strategic role of sulphur-based chemicals in supporting food security (via fertilisers), clean energy (via refining and batteries), and industrial manufacturing positions this segment as an essential contributor to India's economic and industrial growth. Ongoing investments in downstream chemical manufacturing, coupled with increasing environmental regulations, are expected to shape the demand-supply dynamics of sulphur-based products in the near to medium term..

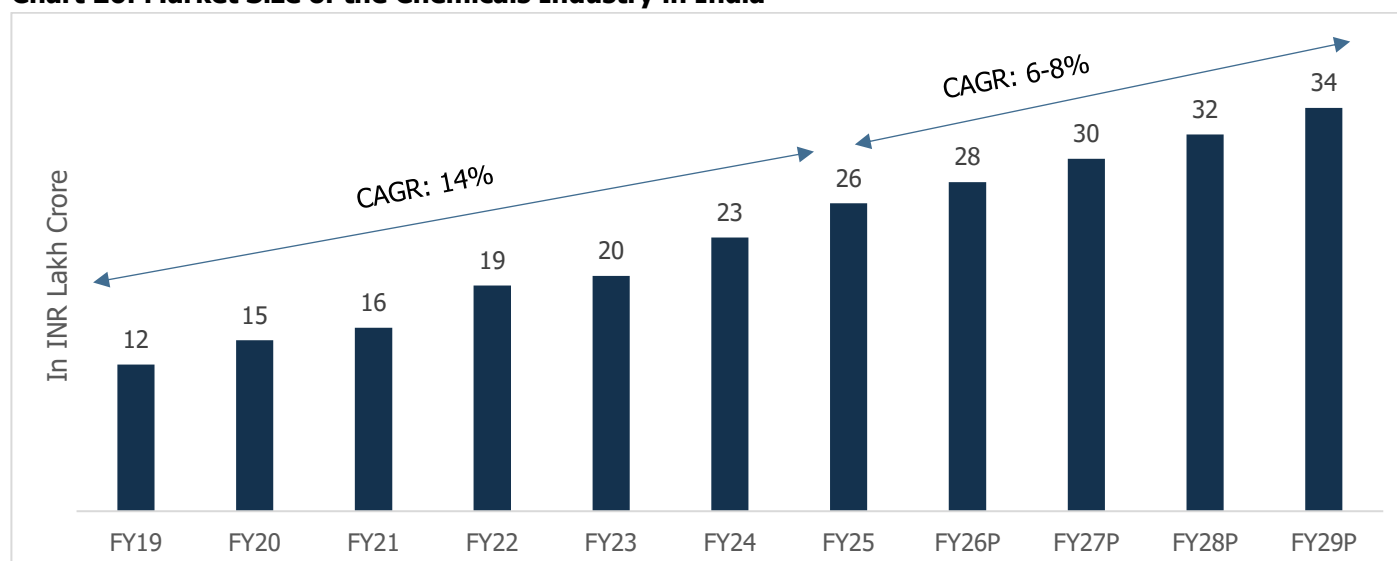
### 3.2 Industry Market Size and Segmentation

India's chemical industry has showcased robust growth over the years, evolving into a key pillar of the country's manufacturing landscape. The industry stood at Rs. 12 lakh crores in FY19 and expanded at a healthy CAGR of 14% to reach Rs. 26 lakh crores by FY25.

Looking ahead, the sector is projected to continue its growth trajectory, albeit at a slightly moderate pace. From FY24 to FY29, the market is expected to grow at a CAGR of 6-8%, reaching approximately Rs. 34 lakh crores by FY29. This moderation is likely reflective of global economic headwinds, commodity price volatility, and evolving regulatory frameworks, though the long-term fundamentals remain strong.

The expansion is being driven by rising domestic consumption, increasing exports, diversification of manufacturing bases, and growing demand from end-user industries such as pharmaceuticals, textiles, agrochemicals, and automotive. India's growing positioning as a preferred alternative to China in the global chemicals supply chain is further bolstering investment inflows and capacity expansion across multiple sub-segments.

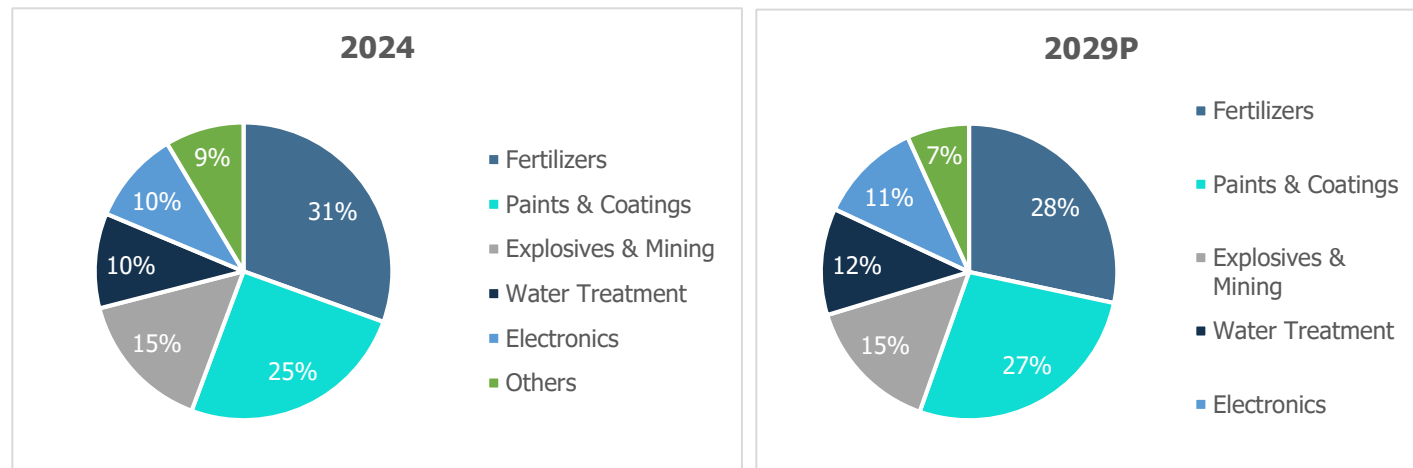
**Chart 26: Market Size of the Chemicals Industry in India**



Source: CareEdge Research & Analysis; P: Projected

### 3.3 Domestic Segmental end-usage of Inorganic Chemicals

India's domestic inorganic chemicals market remains anchored by the fertilizer sector, though its share is expected to decline from 31% in 2024 to 28% by 2029, reflecting a shift toward industrial applications. Paints & coatings are set to grow from 25% to 27%, driven by infrastructure and manufacturing demand. Electronics and water treatment are also gaining share, supported by policy push and sustainability focus. While explosives & mining remain steady at 15%, the others category is expected to decline. Overall, the market is gradually transitioning toward higher-value and tech-driven end uses.

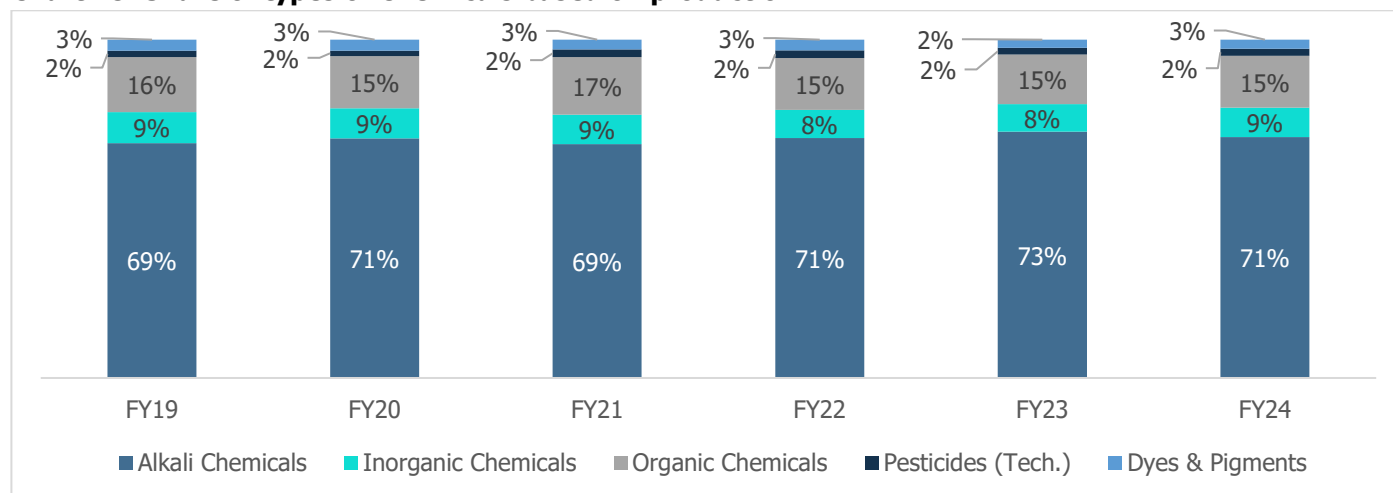
**Chart 27: Segmental end-usage of Inorganic Chemicals**


Source: Custom Market Insights (CMI), CareEdge Research & Analysis; P: Projected

### 3.4 Share of Different Types of Chemicals Based on Production

The share of chemicals is consistently dominated by alkali chemicals, relatively remained stable at 69-71%, with a slight uptick to 73% in FY23, reflecting their critical role in India's chemical manufacturing ecosystem, particularly in sectors like textiles, paper, and detergents.

Inorganic chemicals, though significantly smaller in share, maintained a steady presence around 8-9%, showing their sustained relevance in industrial applications. Organic chemicals, the second-largest category after alkalis, showed minor fluctuations between 15-17%, indicating stable demand across pharmaceuticals and agrochemicals. Steady demand from end-use sectors has supported consistent production levels in the chemicals industry, which have remained largely stable over the past five years.

**Chart 28: Share of types of Chemicals based on production**


Source: Statistics at a Glance 2024, Department of Chemicals and Petrochemicals, CareEdge Research

### 3.5 Overview and Domestic Market Size of the Inorganic Chemicals Industry

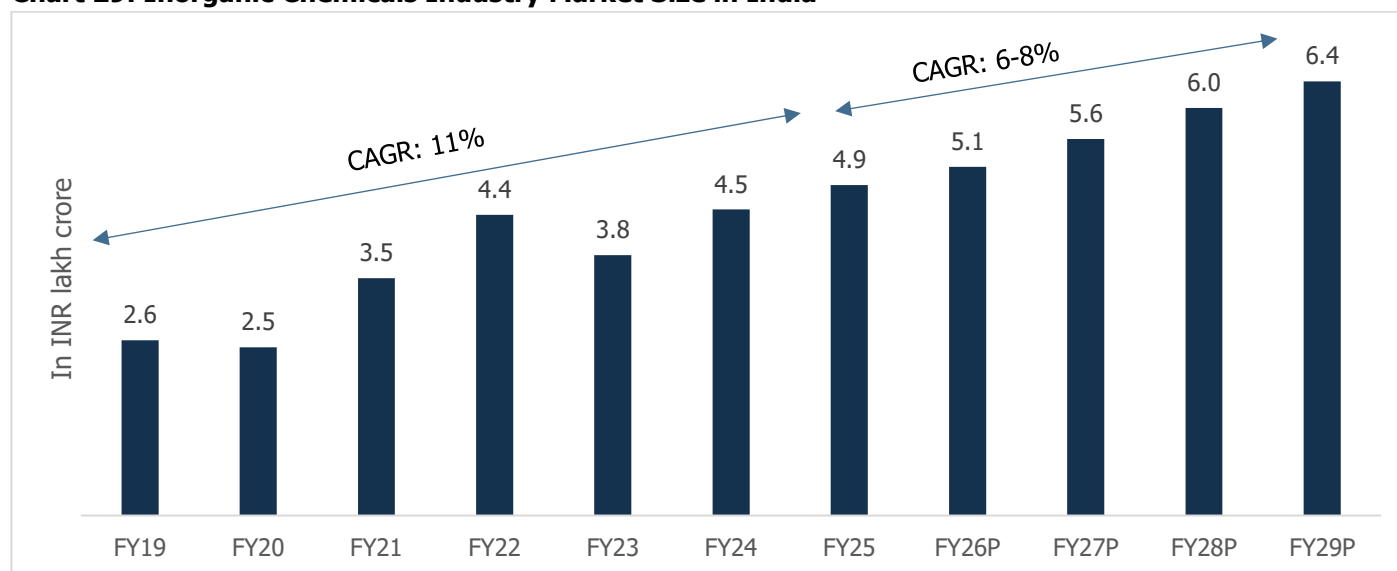
Inorganic chemicals form a crucial segment of India's chemical industry, catering to diverse sectors such as fertilizers, textiles, water treatment, and construction. Common products include acids, alkalis, salts, and gases like chlorine and hydrogen. India has a strong base in the production of inorganic chemicals, particularly due to the availability of key raw materials and robust domestic demand.

The segment is also supported by established players and government initiatives encouraging industrial growth. Despite being a smaller contributor in volume compared to alkali or organic chemicals, inorganic chemicals remain indispensable for several core industrial processes.

India's domestic inorganic chemicals market has demonstrated a resilient recovery post-pandemic, growing from Rs. 2.6 lakh crore in FY19 to Rs. 4.9 lakh crore in FY25. This rebound has been backed by revived demand in core sectors like fertilisers, infrastructure, and water treatment, alongside policy-driven industrial momentum.

Going forward, the market is projected to reach Rs. 6.4 lakh crore by FY29, supported by expansion in electronics manufacturing, environmental compliance, and downstream capacity additions. The growth trajectory signals a structural shift from cyclical recovery to sustained industrial demand and strategic import substitution.

**Chart 29: Inorganic Chemicals Industry Market Size in India**



Source: Custom Market Insights (CMI), CareEdge Research & Analysis; P: Projected

### 3.6 Overview of Sulphur-Based Inorganic Chemicals

India is one of the leading consumers and producers of sulphur-based inorganic chemicals, driven primarily by its large agricultural base, expanding industrial activity, and growing demand from sectors such as fertilizers, water treatment, chemicals, pulp & paper, and textiles.

The Indian sulphur-based chemical industry includes products such as sulphuric acid, sodium bisulphite, sodium metabisulphite, sodium sulphite, and ammonium bisulphite, with sulphuric acid being the most consumed and produced.

### 3.7 Key Sulphur-based Chemicals in the Inorganic Chemicals Industry

#### 3.7.1 Sodium Bisulphite ( $\text{NaHSO}_3$ )

##### Product Overview

In India, sodium bisulphite is primarily produced for use as a reducing agent and oxygen scavenger in water treatment, effluent treatment plants (ETPs), and the pulp & paper industry. It is also used in the leather and textile industries as a bleaching and dechlorinating agent.

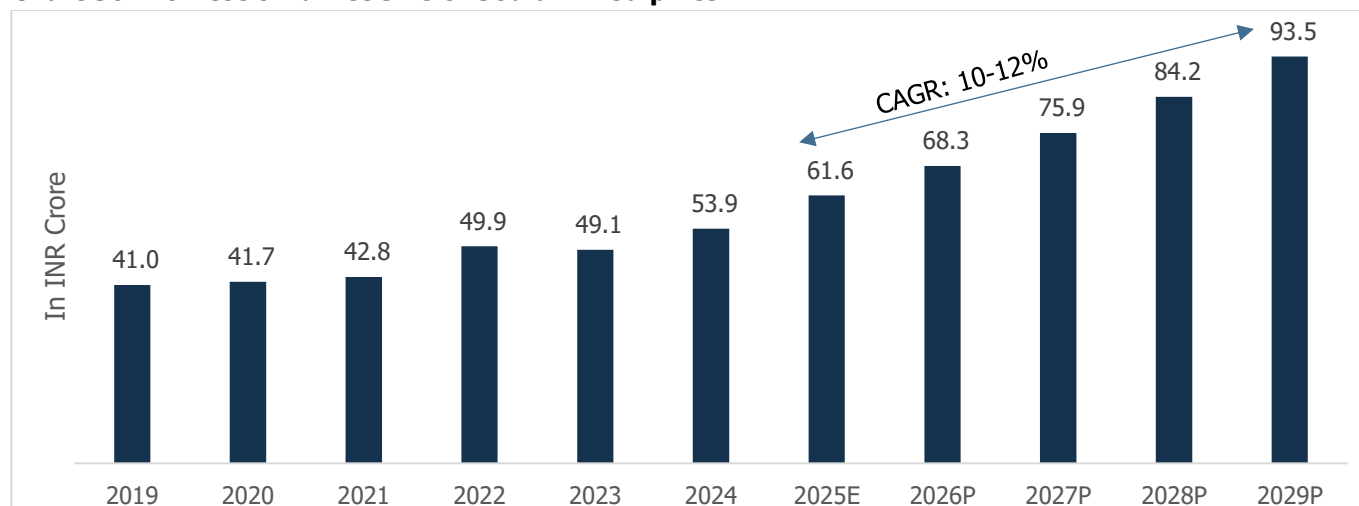
India's industrial demand for sodium bisulphite has been rising in line with environmental compliance norms, especially across states with high industrial output like Gujarat, Maharashtra, and Tamil Nadu. It is typically produced by reacting sulphur dioxide with sodium carbonate or sodium hydroxide.

##### Domestic Market Size

The demand for sodium bisulphite in India has grown due to stricter industrial effluent treatment norms and expanding capacity in the paper, textile, and leather industries to reach Rs. 53.9 crores in 2024. The growth of urban water treatment infrastructure and industrial clusters has created steady domestic demand.

Going forward, increasing investments in clean water and wastewater treatment under government initiatives like the Jal Jeevan Mission are expected to further support consumption with market growing at a CAGR of 10-12% to reach Rs. 93.5 crores by 2029.

**Chart 30: Domestic Market Size of Sodium Bisulphite**

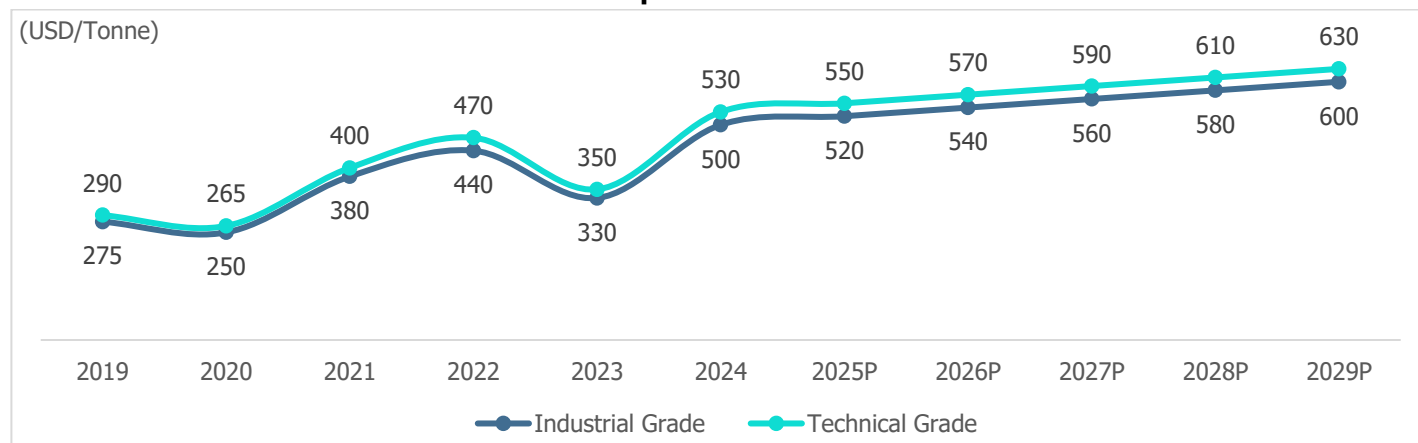


Source: Custom Market Insights (CMI), CareEdge Research & Analysis; P: Projected

### Domestic Price Assessment

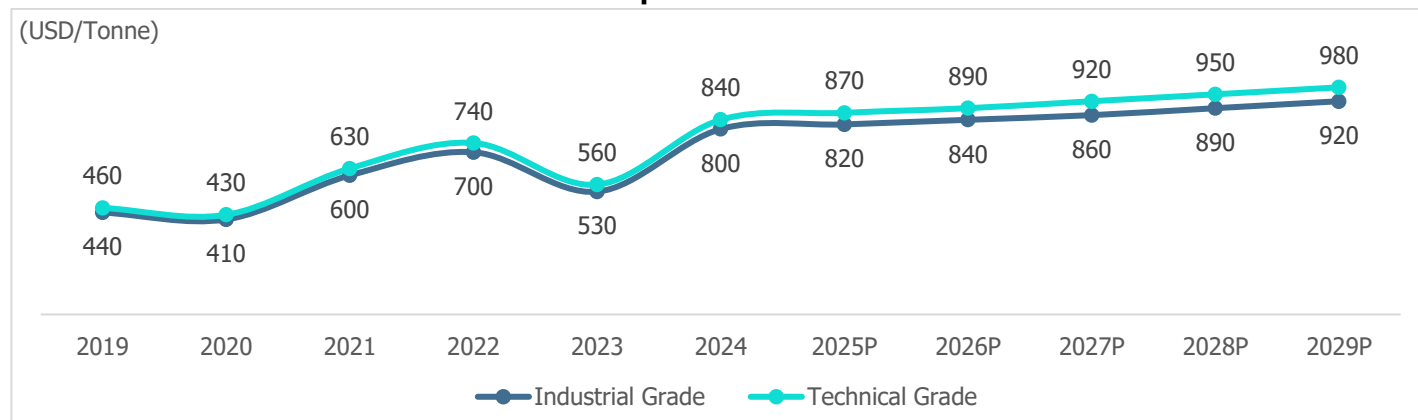
Prices of sodium bisulphite solution and solid both have witnessed rising trend post covid. However, global uncertainties led to certain decline in prices. Going forwards prices are likely to witness a steady upward trend, largely driven by consistent demand from water treatment and textile sectors. Limited fluctuations in raw material costs are expected to support this minimal yet sustained growth.

**Chart 31: Domestic Price trend of Sodium Bisulphite Solution**



Source: Custom Market Insights (CMI), CareEdge Research & Analysis; P: Projected

**Chart 32: Domestic Price trend of Sodium Bisulphite Solid**



Source: Custom Market Insights (CMI), CareEdge Research & Analysis; P: Projected

### 3.7.2 Sodium Metabisulphite ( $\text{Na}_2\text{S}_2\text{O}_5$ )

#### Product Overview

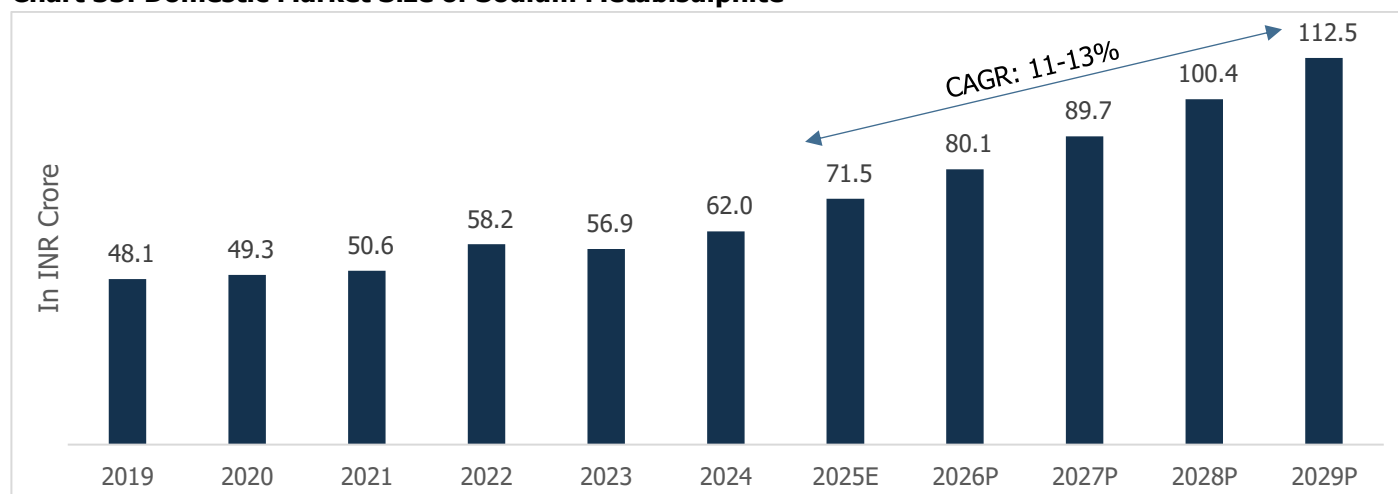
Sodium metabisulphite in India has applications across food processing, mining, photography, and chemical industries. It is widely used as a preservative and antioxidant in food and beverages, particularly in packaged foods, pickles, and fruit juices. Industrially, it is used in the textile sector for dyeing and as a bleaching agent.

India exports significant volumes of sodium metabisulphite to markets like the U.S., UAE, and Europe, which has driven investments in capacity expansion by domestic chemical manufacturers. Gujarat and Andhra Pradesh are major production hubs.

### Domestic Market Size

India has seen a rise in food preservation needs due to growth in packaged and processed foods, especially in urban centers. Additionally, the use of Sodium metabisulphite in mining and textile dyeing processes has contributed to industrial demand to reach Rs. 62 crores in 2024. Going forward, growth will likely be driven by increasing exports, expansion of food-grade production capacity, and growing demand from the pharmaceutical and chemical formulation sectors to reach Rs. 112.5 crores by 2029 at a CAGR of 11-13%.

**Chart 33: Domestic Market Size of Sodium Metabisulphite**

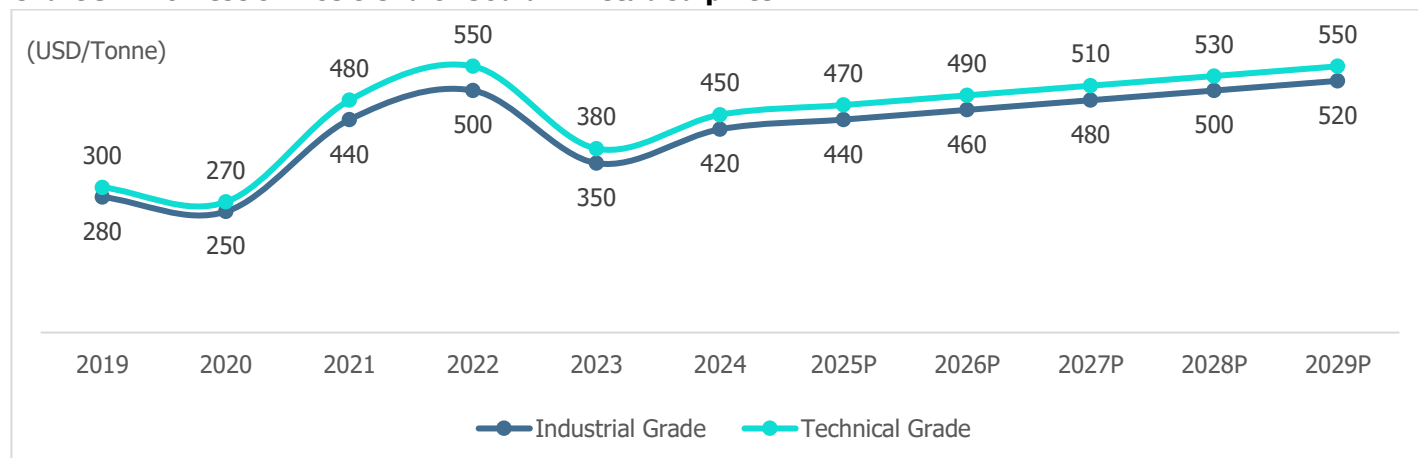


Source: Custom Market Insights (CMI), CareEdge Research & Analysis; P: Projected

### Domestic Price Assessment

The price of sodium metabisulphite has seen marginal increases over time, backed by stable demand from food preservation and chemical processing industries. Supply-side stability has contributed to this gradual rise. The prices are expected to rise on a constant trend supported by rising demand.

**Chart 34: Domestic Price trend of Sodium Metabisulphite**



Source: Custom Market Insights (CMI), CareEdge Research & Analysis; P: Projected

### 3.7.3 Sodium Sulphite ( $\text{Na}_2\text{SO}_3$ )

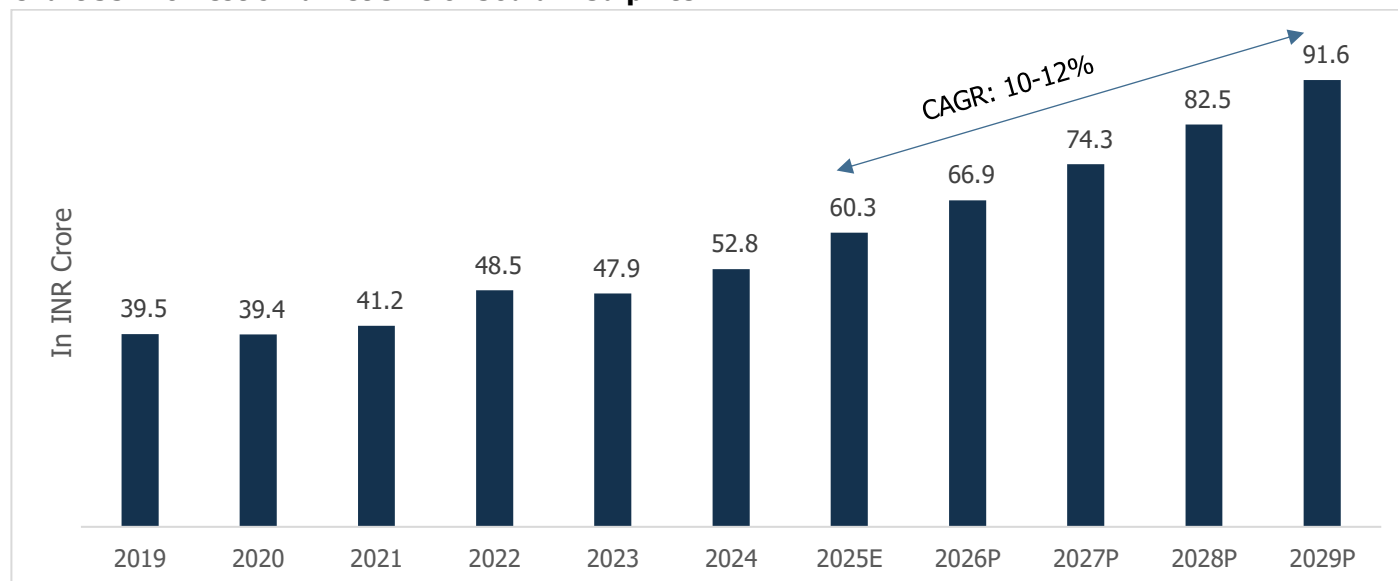
#### Product Overview

Sodium sulphite is used in India mainly for pulp & paper processing, photographic development, chemical synthesis, and as an oxygen scavenger in boilers. Its role in helping reduce dissolved oxygen in feedwater makes it critical in the power and industrial steam generation sectors. While sodium sulphite demand remains stable, the chemical is considered moderately hazardous, and Indian regulations mandate strict handling and transport standards. Local production is largely centered around western India, where bulk chemical industries operate.

#### Domestic Market Size

The growth in sodium sulphite consumption has been aligned with the expansion of India's pulp and paper industry and power generation sector, where it serves as an oxygen scavenger. This has led to consistent growth in demand reaching Rs. 52.8 crores in 2024. Going further, demand is expected to be driven by India's industrial infrastructure expansion, particularly in packaging, printing, and utility sectors to reach Rs. 91.6 crores by 2029 at a CAGR of 10-12%.

**Chart 35: Domestic Market Size of Sodium Sulphite**

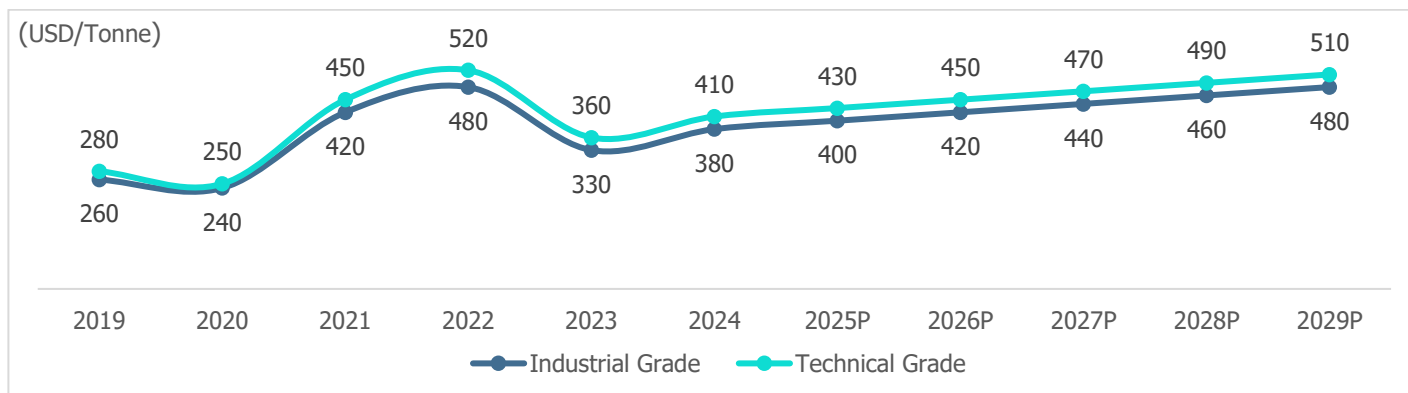


Source: Custom Market Insights (CMI), CareEdge Research & Analysis; P: Projected

#### Domestic Price Assessment

Sodium sulphite prices continue to edge upward, supported by its sustained use in pulp & paper and photographic industries. Modest input cost inflation and steady demand have led to incremental growth in pricing.

**Chart 36: Domestic Price trend of Sodium Sulphite**



Source: Custom Market Insights (CMI), CareEdge Research & Analysis; P: Projected

### 3.7.4 Ammonium Bisulphite ( $\text{NH}_4\text{HSO}_3$ )

#### Product Overview

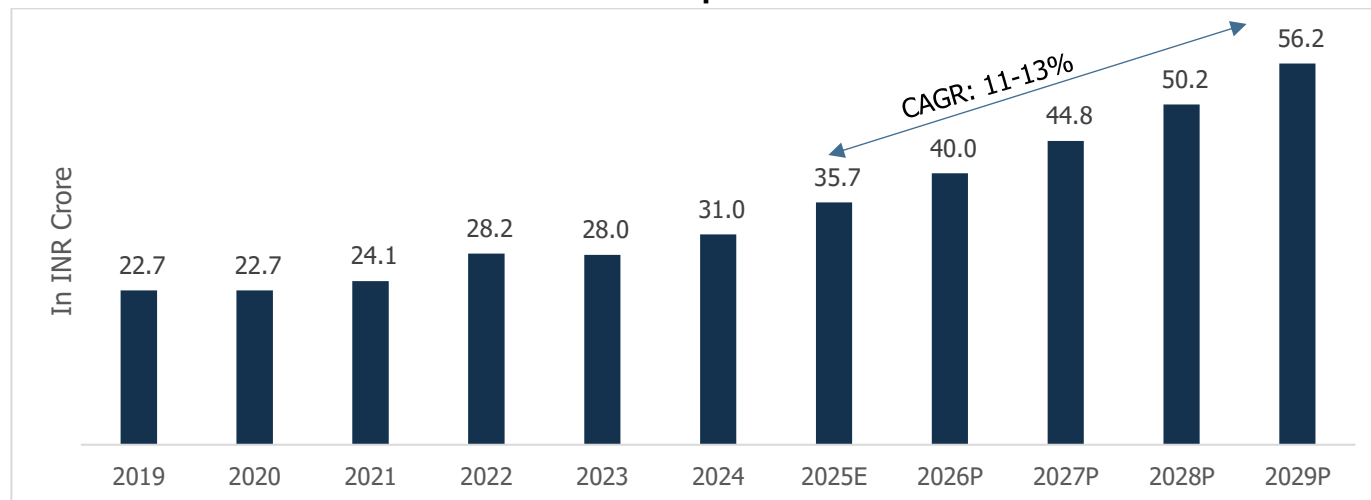
Ammonium bisulphite is used extensively in India's oil & gas, power generation, and water treatment sectors. Its principal use is as an oxygen scavenger to prevent corrosion in pipelines, boilers, and refineries.

With India pushing domestic oil & gas production and expanding thermal power generation capacity, demand for ammonium bisulphite has grown steadily. Indian manufacturers also supply the product for export markets in the Middle East and Southeast Asia.

#### Domestic Market Size

Ammonium bisulphite has gained traction in oil and gas production and refinery operations, where it is used as a corrosion inhibitor and oxygen scavenger. Increased domestic E&P activity and investments in power plants and industrial boilers have supported growth to reach Rs. 31 crores by 2024. With India's continued push for energy self-reliance and rising focus on maintenance of legacy thermal assets, demand is expected to remain robust and is expected to reach Rs. 56.2 crores by 2029 at a CAGR of 11-13%.

**Chart 37: Domestic Market Size of Ammonium Bisulphite**

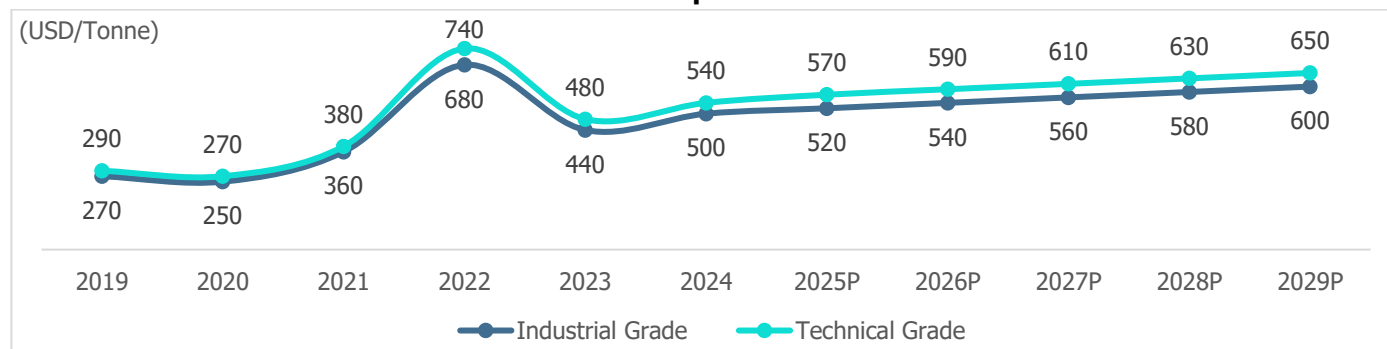


Source: Custom Market Insights (CMI), CareEdge Research & Analysis; P: Projected

### Domestic Price Assessment

Prices of ammonium bisulphite have been rising gradually, supported by stable demand from oilfield services and wastewater treatment applications. Limited supplier base and specialized end uses continue to exert mild upward pressure on prices.

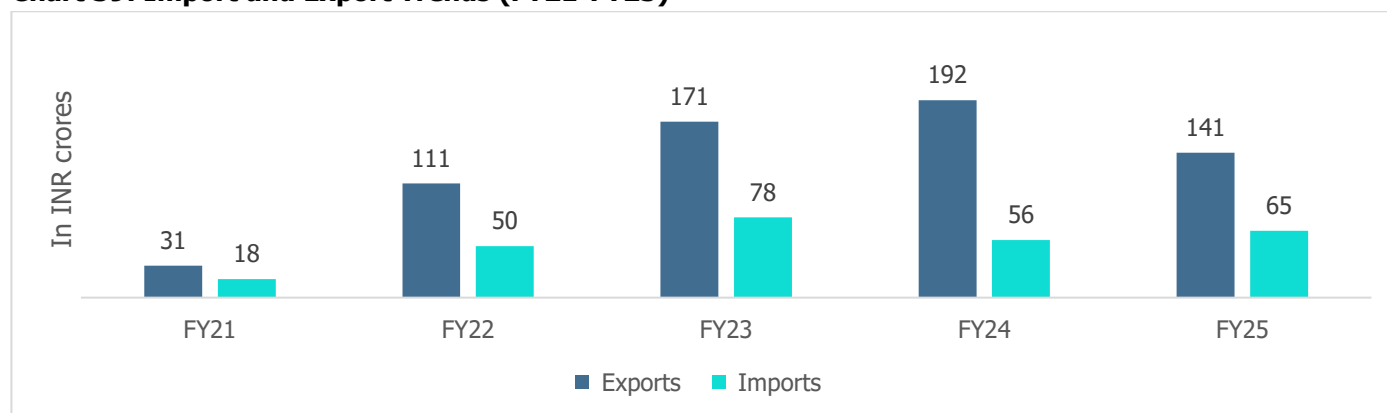
**Chart 38: Domestic Price trend of Ammonium Bisulphite**



Source: Custom Market Insights (CMI), CareEdge Research & Analysis; P: Projected

### 3.8 Import and Export Trend by Products

**Chart 39: Import and Export Trends (FY21-FY25)**



Source: Ministry of Commerce and Industry, CareEdge Research; Note: FY25 (April-Jan); The import and export trends are based on combined data for HS Codes 28321010, 28321090, and 28322090.

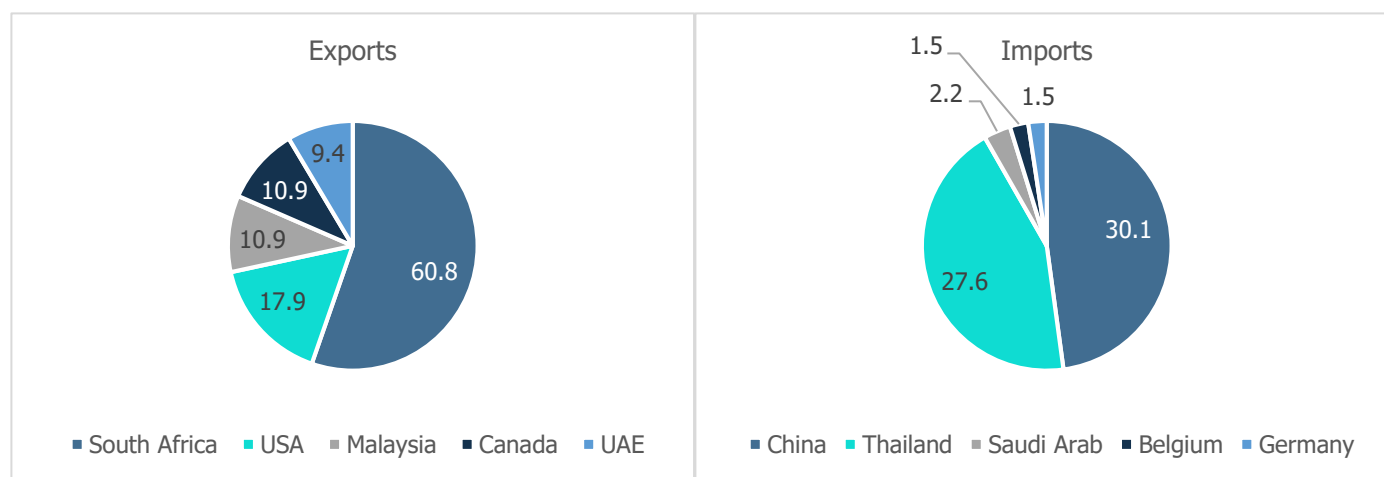
Between FY21 and FY24, exports in this chemical segment witnessed robust growth, rising from Rs 31 crores in FY21 to Rs 192 crores in FY24. This surge can be attributed to increased international demand from end-use industries such as water treatment, pulp & paper, textiles, and food processing, along with improved domestic manufacturing capabilities and cost competitiveness. Exporters may also have benefited from favourable trade agreements and a shift in sourcing preferences away from traditional suppliers in certain global markets.

However, exports declined to Rs 1,410 million in FY25 a drop of nearly 27% over the previous year. This contraction could reflect weakening global industrial activity, inventory adjustments by overseas buyers, or the impact of more competitive pricing from alternate supplier countries. Additionally, logistical challenges, regulatory barriers, or changes in environmental compliance norms in key export destinations may have contributed to the downturn.

On the import front, values grew steadily from Rs 18 crore in FY21 to Rs 78 crore in FY23, likely driven by domestic demand for higher-grade variants or specific formulations not sufficiently available in the local market. The decline to Rs 56 crore in FY24 and the subsequent recovery to Rs 65 crore in FY25 suggest fluctuations in local production capacity, price movements in global markets, or shifts in buyer preferences between domestic and imported sources.

Overall, while exports reflect India's strong global presence in this segment, the recent dip calls for renewed focus on competitiveness and market diversification. The import trends point to a gradually stabilising domestic supply chain amid evolving demand conditions.

**Chart 40: Top Importers and Exporters for sulphur-based chemicals (Rs Crore)**

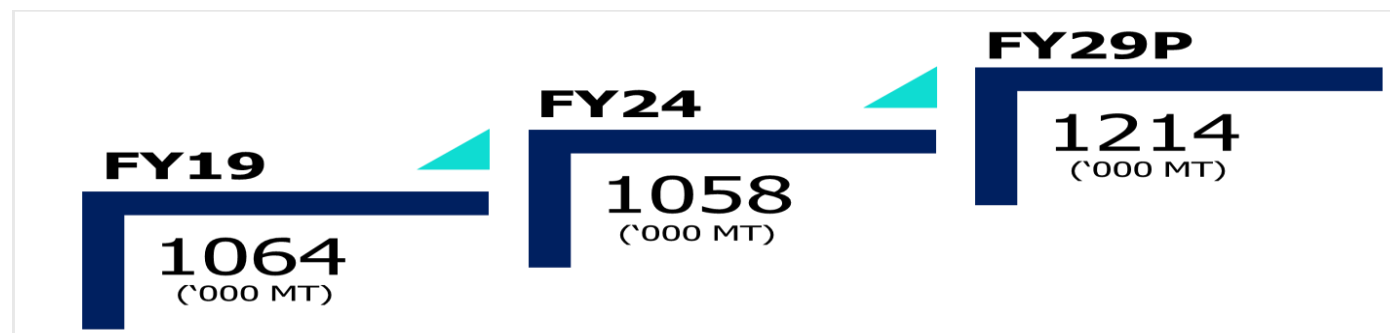


Source: Ministry of Commerce and Industry, CareEdge Research; Data as of FY25 (April-Jan) The import and export trends are based on combined data for HS Codes 28321010, 28321090, and 28322090

### 3.9 Forecast of Production of Inorganic Chemicals in India

India's inorganic chemical production witnessed a marginal decline from FY19 to FY24, largely due to demand normalisation, capacity rationalisation, and tighter environmental regulations. However, the going forward the production is expected to grow mainly driven by demand recovery across water treatment, fertilizers, and industrial manufacturing. The recovery is also supported by infrastructure expansion and policy-led import substitution, prompting higher capacity utilisation.

**Chart 41: Production of Inorganic Chemicals in India**



Source: Statistics at a Glance 2024, Department of Chemicals and Petrochemicals, CareEdge Research; P: Projected

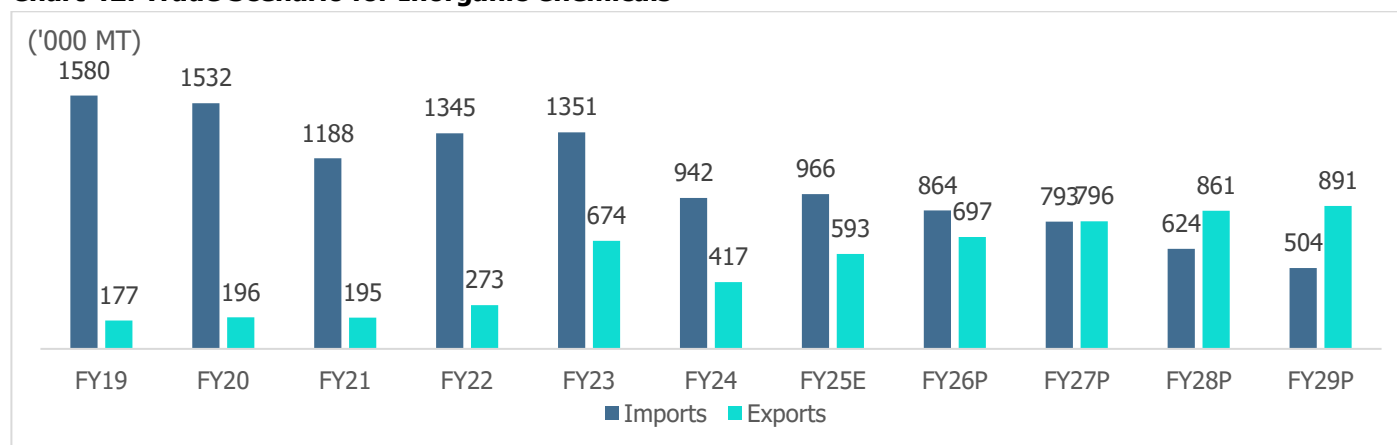
### 3.10 Forecast for Imports / Exports of Inorganic Chemicals of India

India's trade dynamics for inorganic chemicals are undergoing a fundamental shift. From FY19 to FY23, imports consistently outpaced exports, indicating heavy reliance on overseas suppliers for key inputs such as soda ash, caustic soda, and specialty inorganics. However, FY23 marked a clear turning point: exports surged more than 2.5x year-over-year, driven by improved domestic production capacity, cost competitiveness, and rising global demand for basic inorganics used in glass, textiles, and water treatment.

The narrowing gap between imports and exports in FY24 is further supported by backwards integration among Indian manufacturers and strategic moves to reduce import dependence under the "Atmanirbhar Bharat" initiative.

From FY25 onward, exports are likely to overtake imports by FY27. Export volumes are expected to grow at a CAGR of 15%, whereas imports are expected to decline by -17% from FY25 to FY29. The reversal in trend is backed by increased investments in capacity expansion, especially in segments like caustic soda and soda ash, and India's emergence as a viable alternative to China amid tightening global supply chains.

**Chart 42: Trade Scenario for Inorganic Chemicals**

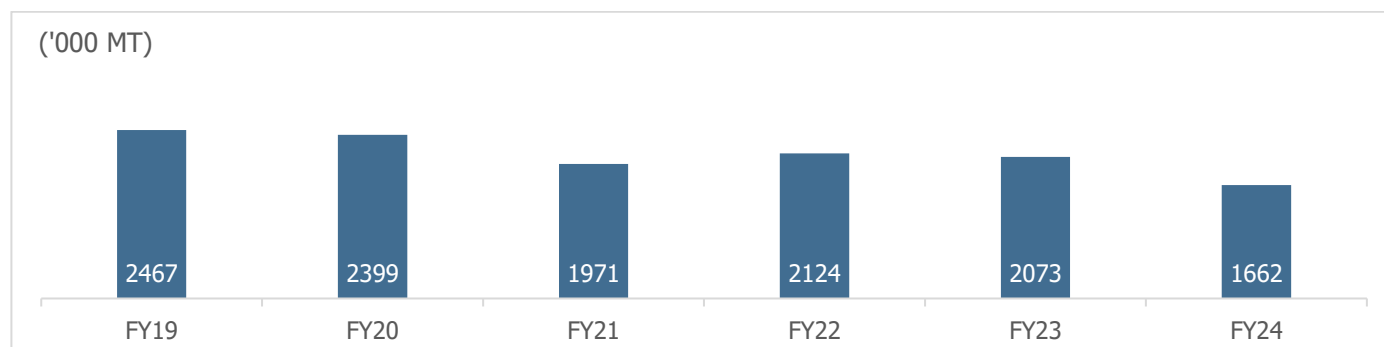


Source: Statistics at a Glance 2024, Department of Chemicals and Petrochemicals, CareEdge Research; P: Projected

### 3.11 Consumption Trend of Inorganic Chemicals in India

Consumption of inorganic chemicals in India has witnessed a declining trend over the past years. While the pandemic-induced slowdown partly contributed to the dip in FY21, the continued decline in subsequent years can be attributed by factors such as improved production efficiency, increased recycling, substitution by organic alternatives in some applications, and reduced dependence on certain imported intermediates might have curbed domestic offtake. Additionally, rising exports in recent years suggest that a portion of domestic production is being diverted to international markets, reshaping the demand-supply dynamics within the country.

**Chart 43: Consumption trend of Inorganic Chemicals**

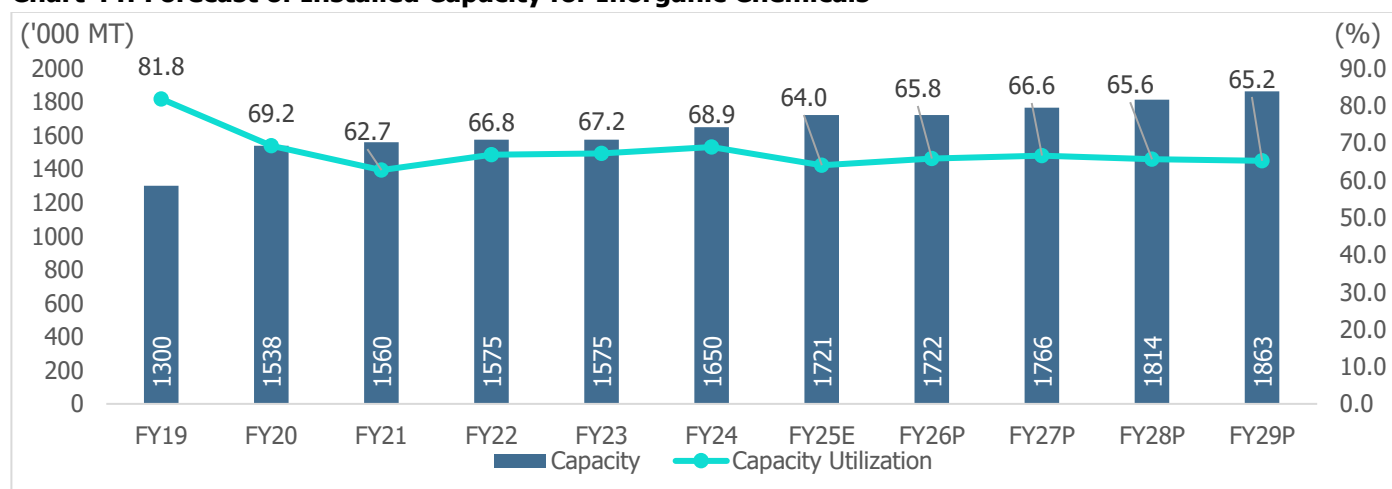


Source: Statistics at a Glance 2024, Department of Chemicals and Petrochemicals, CareEdge Research

### 3.12 Forecast of Installed Capacity for Inorganic Chemicals

The capacity for inorganic chemicals is expected to grow at a CAGR of 4% from FY19 to FY29, reflecting addition in domestic capabilities for the country to reduce import reliance. However, capacity utilization is expected to remain decline marginally supported by a rise in capacity additions. Manufacturers are ramping up capacity ahead of demand to hedge against supply disruptions, reduce import reliance, and cater to emerging export opportunities. With capacity additions outpacing consumption growth, utilization is expected to remain subdued in the 65-69% range.

**Chart 44: Forecast of Installed Capacity for Inorganic Chemicals**



Source: Statistics at a Glance 2024, Department of Chemicals and Petrochemicals, CareEdge Research

### 3.13 Key growth drivers for the Inorganic Chemical Industry

#### Growth in End-Use Industries

The demand for inorganic chemicals is directly linked to India's expanding infrastructure and manufacturing sectors. According to DPIIT, construction and allied infrastructure attracted over Rs 2.5 lakh crore in investments in FY24 under the National Infrastructure Pipeline (NIP). The growth of the cement, glass, and textiles industries is driving demand for inputs like sodium silicate, calcium carbonate, and alum. For instance, India's glass industry has seen steady expansion, supported by the government's push for smart cities and affordable housing schemes (Ministry of Housing & Urban Affairs).

## Environmental Compliance & Wastewater Treatment

As per the Central Pollution Control Board (CPCB), over 70% of India's surface water is polluted, prompting stricter enforcement of effluent treatment standards. The National Mission for Clean Ganga (NMCG) and AMRUT 2.0 have significantly increased demand for chemical-based treatment solutions. Inorganic coagulants such as alum and ferric chloride are essential in water and sewage treatment, with CPCB identifying them as standard reagents in municipal and industrial effluent protocols.

## Fertiliser Demand from the Agriculture Sector

According to the Fertiliser Association of India (FAI), total fertiliser sales in India reached approximately 64.7 million tonnes in FY24, with rising usage of secondary and micronutrients such as zinc sulphate and borates. The government's continued subsidy support under the Nutrient Based Subsidy (NBS) scheme and targeted initiatives like PM-PRANAM are expected to drive demand for inorganic fertiliser inputs, including phosphates and ammonium salts, especially in customised fertiliser blends.

## Export Growth Backed by Global Diversification

India exported inorganic chemicals worth over USD 4.7 billion in FY24 (DGCI&S, Ministry of Commerce & Industry), with top-performing categories including aluminium compounds, chlorides, silicates, and borates. Major export markets include the UAE, Bangladesh, the USA, and Vietnam. India's strong chemical manufacturing base, cost advantage, and improved environmental compliance have enhanced its competitiveness globally, supported by recent bilateral trade agreements such as the India-UAE CEPA.

### 3.14 Impact of recent US Tariffs on sulphur based chemical sector

In May 2024, the United States Trade Representative (USTR) proposed new tariffs on select chemical imports, including sulphur-based inorganic compounds such as sulphuric acid, sodium bisulphite, and sodium metabisulphite.

While these measures are largely positioned within the broader strategy of safeguarding domestic industry and reducing import dependency, the scope includes certain categories where India has emerged as a credible and growing exporter. Although the implementation of these tariffs is currently on hold pending further consultation, the announcement has already created a cautious sentiment among Indian exporters, particularly those with a sizeable exposure to U.S.-bound shipments.

India's sulphur-based inorganic chemical sector primarily concentrated in Gujarat and Maharashtra has benefited in recent years from both China+1 sourcing strategies and growing demand across U.S. end-use segments like pulp & paper, food preservation, oilfield services, and water treatment. India exports around 16% of sulphur-based chemicals which is likely to have minimal impact. However, the proposed tariff, if enforced, could compress price competitiveness, disrupt established supply contracts, and shift procurement decisions in favour of other low-duty countries. Moreover, given the commodity nature of many sulphur-based chemicals and their thin operating margins, even a modest duty impact could translate into reduced realizations or necessitate re-routing exports to markets with weaker pricing power.

While the recently announced US tariffs could trigger reciprocal measures affecting trade dynamics, both India and the US are currently engaged in negotiations aimed at maintaining a constructive bilateral trade relationship and avoiding potential disruptions.

## 4. End-User Industry Assessment

### 4.1 Pharmaceutical Industry

#### 4.1.1 Industry Overview

The Indian pharmaceutical industry (IPI) ranks 3rd globally in terms of volume and 13th in terms of value. Its lower market share by value is largely due to the dominance of generic medicines, which make up around 70% of the industry's revenue and are priced lower.

The pharmaceutical industry in India is a significant consumer of inorganic chemicals, which serve as reactants, catalysts, pH adjusters, and excipients in drug formulation and manufacturing. Compounds like aluminium hydroxide, magnesium stearate, sodium bicarbonate, and phosphates are widely used in antacids, tablets, and injectable formulations. Whereas sulphur-based compounds such as sodium metabisulphite and sulphur dioxide are used as reducing agents, preservatives, and intermediates in the synthesis of active pharmaceutical ingredients (APIs) and antibiotics.

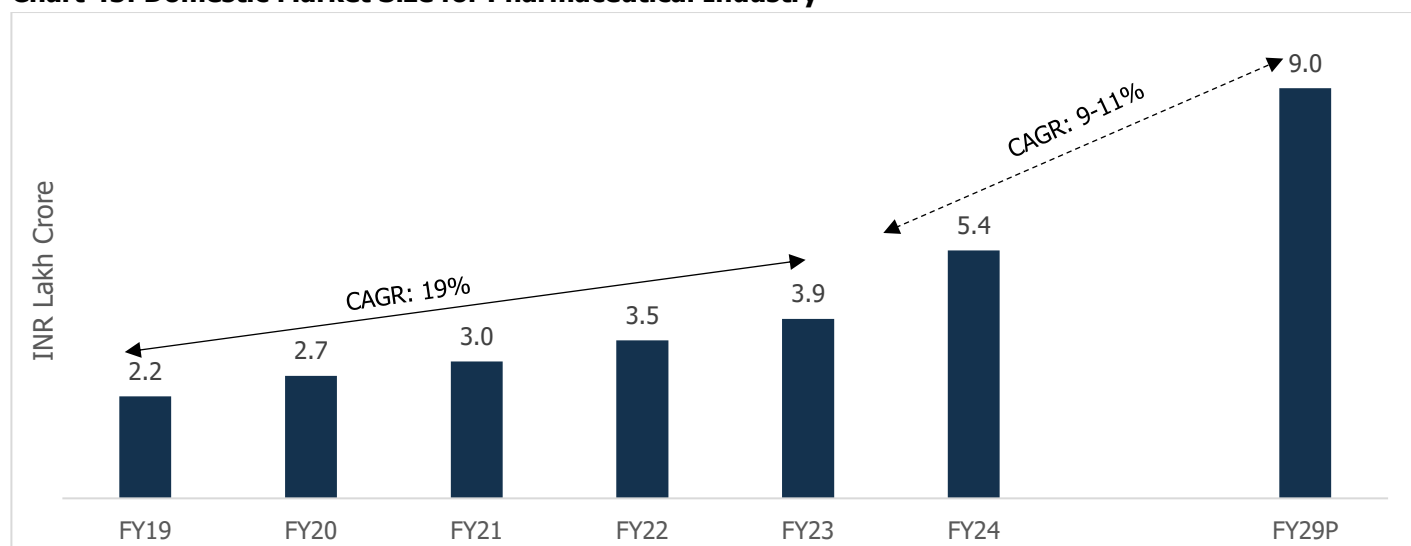
With India being a global hub for generic drugs and APIs, the demand for high-purity inorganic chemicals remains strong. Regulatory emphasis on GMP-compliant raw materials is also pushing manufacturers toward more refined and consistent chemical inputs.

#### 4.1.2 Industry Market Size

The Indian pharmaceuticals market has shown a robust growth since FY19. The pharmaceuticals market grew at a CAGR of 19% from FY19 to FY24 reaching about Rs. 5.4 lakh crore. Low cost of production without compromising on quality along with highest number of USFDA approved pharmaceutical plants (outside the USA) has placed India strategically to emerge out as one of the leading producers for pharma products, which has led to robust growth.

Going forward, industry is likely to continue growing at a CAGR of 9-11% reaching about Rs. 9 lakh crores by FY29. One of the key growth drivers for the Indian pharmaceutical industry is the increasing prevalence of non-communicable diseases such as cardiovascular disease, stroke, cancer, diabetes and chronic lung diseases.

**Chart 45: Domestic Market Size for Pharmaceutical Industry**



Source: IBEF, Department of Pharmaceuticals, CareEdge Research; E: Estimated; P: Projected

### 4.1.3 Key growth drivers

**Growth in the chronic diseases segment:** The chronic disease segment is poised for sustained growth in the medium term, driven by the need for long-term treatments and recurring prescriptions. Chronic care drugs, addressing non-communicable diseases like cancer, cardiovascular ailments, diabetes, and mental disorders, see higher prescription frequency due to their prolonged treatment cycles and the interconnected pharmaceutical supply chain.

**Government support via PLI schemes:** The support under PLI schemes is expected to promote the production of high-value products in the country and increase the value addition in exports as well as generate employment for both skilled and unskilled personnel, estimated at 20,000 direct and 80,000 indirect jobs because of growth in the sector.

**Growing Infrastructural development:** India has the greatest number of FDA-regulated drug manufacturing facilities after the U.S. Around 650 plants, constituting a quarter of all USFDA-approved facilities outside the United States, highlight its significant role in pharmaceutical production.

**With life expectancy improving and changing demographic profile, healthcare services a must:** India's improving life expectancy and demographic shift are driving increased healthcare needs. By 2031, 13% of the population is projected to be aged 60 or older, compared to 8% in 2011. According to the UNFPA's 2023 report, over 30% of elderly women and 28% of men suffer from chronic conditions such as arthritis, hypertension, and diabetes, with one-fourth experiencing multiple morbidities.

## 4.2 Oil Drilling Industry

### 4.2.1 Industry Overview

India's oil drilling industry plays a critical role in meeting the country's energy demand, with increasing focus on domestic exploration and production. The oil drilling industry in India relies heavily on inorganic chemicals for exploration and production activities.

Key chemicals such as bentonite, barite, calcium chloride, and sodium silicate are used in drilling fluids and mud systems to control pressure, lubricate the drill bit, and stabilize boreholes while sulphur-based chemicals like sodium bisulphite are used for oxygen scavenging in drilling fluids and to control corrosion in oilfield water injection systems and production pipelines.

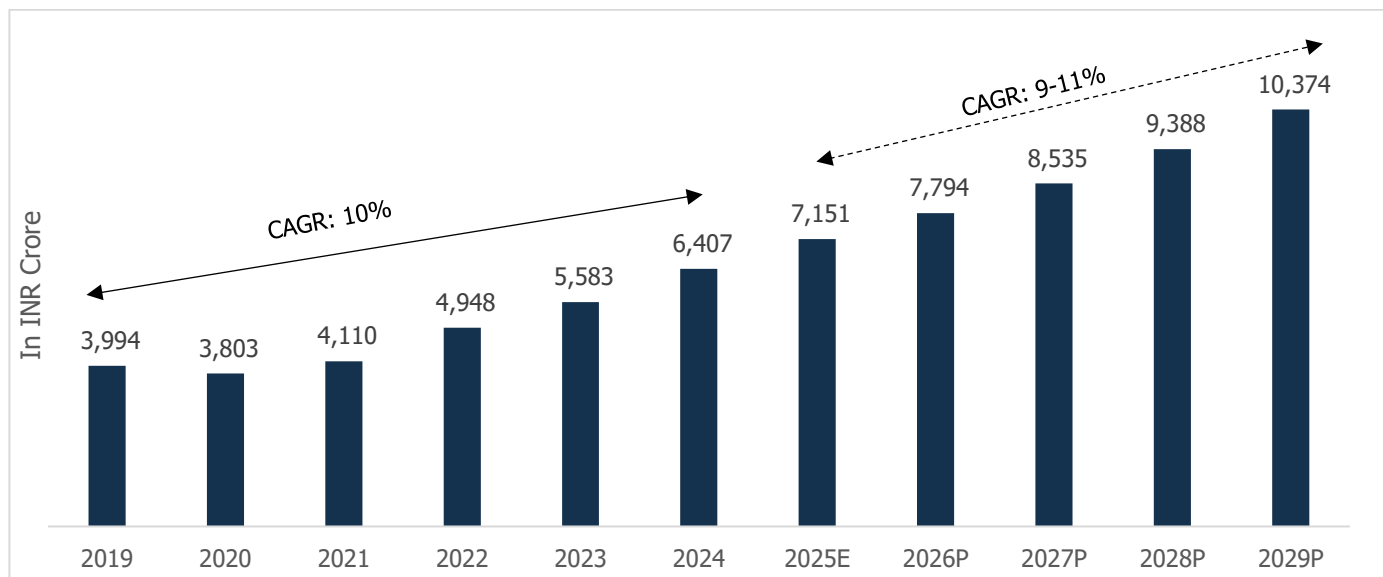
With increased focus on domestic oil and gas exploration, particularly in offshore and deepwater blocks, demand for these drilling additives is expected to grow. Additionally, India's shift toward energy security and enhanced recovery techniques is further driving the need for high-performance inorganic drilling chemicals.

### 4.2.2 Industry Market Size

The Indian oil drilling market has witnessed a moderate growth trajectory between 2019 and 2024, growing at a CAGR of 10%, driven by continued exploration efforts and rising energy demand. However, a sharper growth momentum is expected with the market likely to grow at a CAGR of 9-10% until 2029.

This growth is supported by increased upstream investments, renewed focus on deepwater exploration, and government initiatives to reduce import dependence. The rising activity will directly boost demand for critical inorganic drilling chemicals such as barite, bentonite, and calcium chloride—underscoring their strategic role in India's energy value chain.

#### Chart 46: Domestic Market Size for Oil Drilling Industry



Source: Custom Market Insights (CMI), CareEdge Research & Analysis; E: Estimated, P: Projected

### 4.2.3 Key growth drivers

**Growing Energy Demand:** India's expanding economy and rising population are driving higher energy consumption, increasing the need for domestic crude oil production. This is translating into greater drilling activity across both onshore and offshore basins.

**Policy Support and Import Substitution:** The government's emphasis on reducing crude oil imports—currently over 85% of total demand—is pushing upstream investment. Schemes like HELP and Open Acreage Licensing Policy (OALP) are streamlining exploration efforts, encouraging more drilling activity.

**Focus on Unconventional and Deepwater Resources:** With conventional fields maturing, companies are shifting focus to deepwater, ultra-deepwater, and unconventional reserves such as shale and tight oil. These complex operations require greater use of specialized inorganic chemicals like drilling fluids, cementing agents, and completion fluids.

**Increased Private and Foreign Investment:** Liberalized FDI norms, attractive licensing terms, and improving ease of doing business are drawing international oil companies and private players into India's upstream sector. This is catalysing drilling activity and boosting demand for chemical-intensive exploration operations.

## 4.3 Food & Beverages Industry

### 4.3.1 Industry Overview

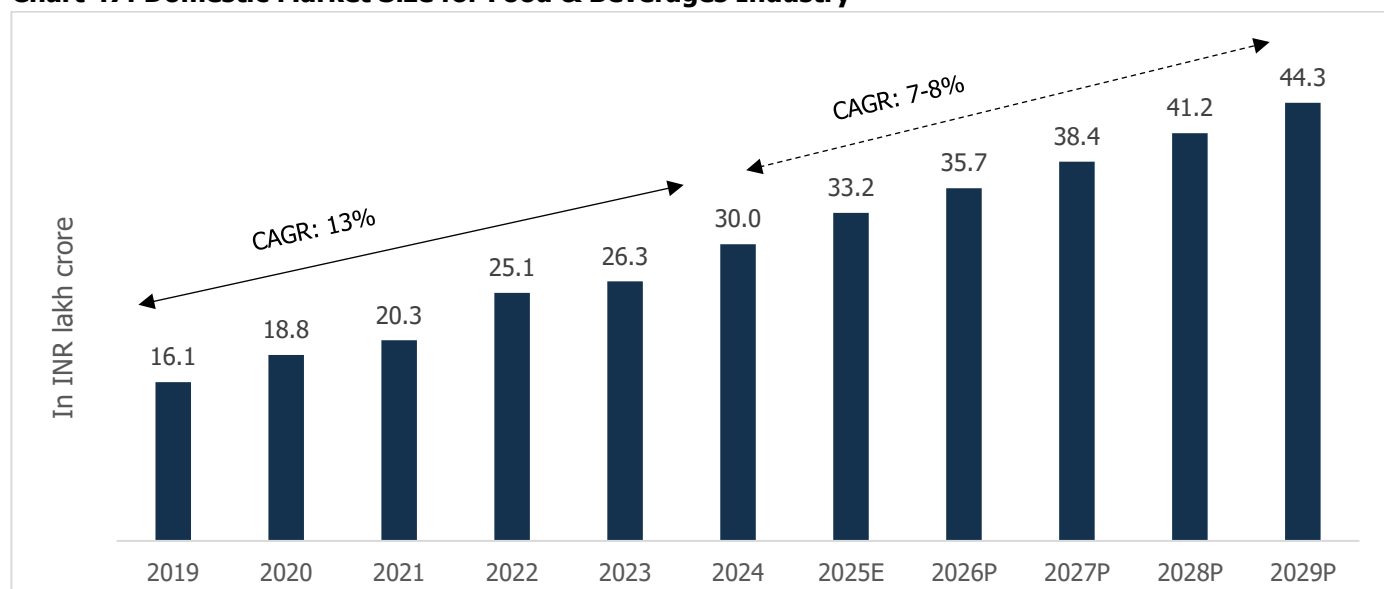
India's food & beverages industry is expanding steadily, supported by rising incomes, urbanization, and increased processed food consumption. Inorganic chemicals such as phosphates, carbonates, and acids play a crucial role in food preservation, pH regulation, leavening, and mineral fortification. Sulphur based chemicals such as sulphur dioxide and sodium metabisulphite are also used as preservatives and antimicrobial agents, particularly in dried fruits, juices, wines, and processed foods to prevent spoilage and microbial growth.

Regulatory focus on food safety and shelf-life enhancement has led to greater use of food-grade inorganic compounds. With rapid growth in packaged foods, bakery, dairy, and beverages, the demand for consistent, high-quality inorganic inputs is expected to grow in tandem.

### 4.3.2 Industry Market Size

India's Food & Beverage (F&B) industry has shown consistent and healthy growth, rising from Rs. 16.1 lakh crores in 2019 to Rs. 30 lakh crores in 2024, at a strong CAGR of 13%. This growth trajectory is set to continue, with the market projected to reach Rs. 44.3 lakh crores by 2029, driven by a steady 7-8% CAGR. The sector's expansion reflects increasing consumer demand, a growing middle class, rapid urbanization, and evolving food preferences driving long-term outlook for the industry.

**Chart 47: Domestic Market Size for Food & Beverages Industry**



Source: CareEdge Research & Analysis, P: Projected

### 4.3.3 Key growth drivers

**Rising Disposable Incomes and Urbanization:** As urban middle-class households expand, there is a clear shift in dietary habits toward packaged, ready-to-eat, and convenience foods. Higher disposable income is enabling consumers to spend more on branded and premium food products, boosting demand across categories like dairy, snacks, beverages, and processed foods.

**Rapid Growth of Organized Retail and E-commerce:** The proliferation of modern retail formats, supermarkets, and online grocery platforms is improving product accessibility and widening distribution reach. This structural change is enabling faster market penetration for packaged F&B products, particularly in Tier 2 and Tier 3 cities.

**Shift Toward Health, Nutrition & Fortified Foods:** Consumers are increasingly opting for foods with added nutritional value, such as fortified staples, functional beverages, low-sugar or gluten-free products. This is driving the use of food-grade inorganic chemicals like phosphates, citrates, and mineral salts for fortification and stability.

**Government Initiatives and Food Processing Push:** Policies such as the PMFME (Pradhan Mantri Formalisation of Micro Food Processing Enterprises) and incentives under the PLI scheme for food processing are encouraging capacity expansion, formalization, and innovation across the sector. This is spurring upstream demand for food additives, preservatives, and pH regulators.

## 4.4 Pulp and Paper Products Industry

### 4.4.1 Industry Overview

The pulp and paper industry in India is undergoing structural transformation, driven by rising domestic consumption, packaging demand, and export opportunities. Inorganic chemicals such as caustic soda, chlorine, hydrogen peroxide, and lime are integral to pulping, bleaching, and wastewater treatment processes. Sulphur compounds such as sulphur dioxide and sodium bisulphite are utilized in pulping processes to break down lignin and bleach pulp, enhancing paper whiteness and softness.

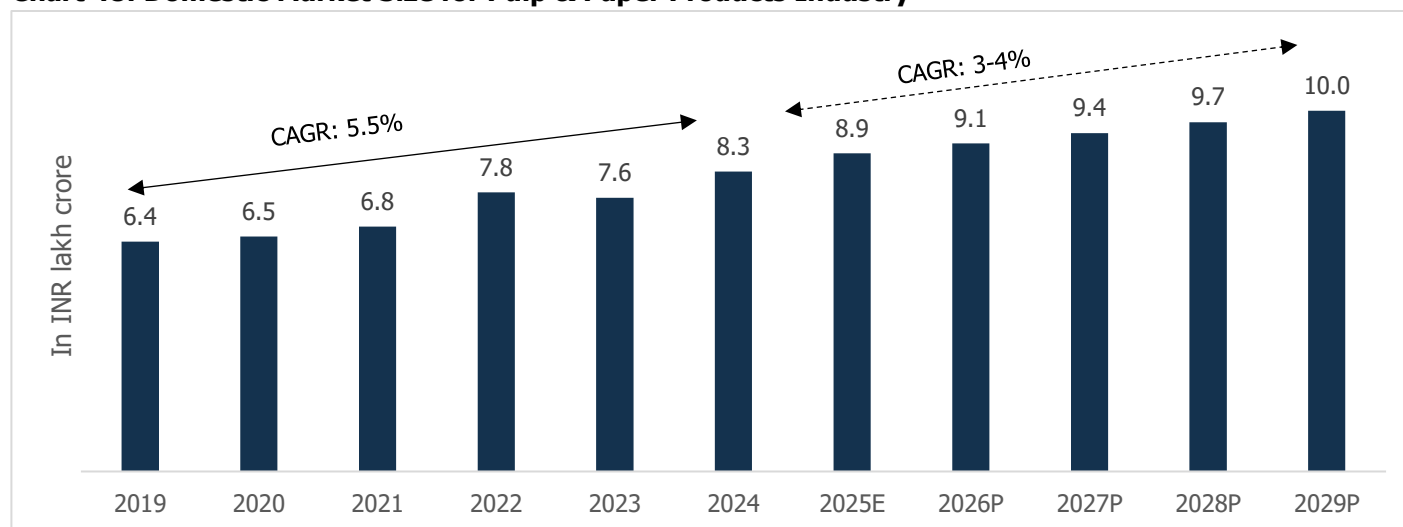
With growing emphasis on sustainability and cleaner processing, the demand for high-purity and specialty-grade chemicals is rising. Additionally, capacity additions in kraft and packaging paper are expected to sustain chemical consumption growth in the medium term.

### 4.4.2 Industry Market Size

India's pulp and paper products industry is witnessing a steady growth trajectory. The market grew at a steady CAGR of 5.5% from 2019 to 2024, reflecting structural challenges such as digitization-driven decline in printing paper and raw material constraints.

However, the outlook is turning positive, with an expected CAGR of 3-4% from 2024 to 2029, driven by rising demand for sustainable packaging, expansion in e-commerce, and increasing sanitary paper consumption. This growth is likely to support demand for inorganic chemicals such as bleaching agents, fillers, and sizing chemicals that are integral to paper manufacturing processes.

**Chart 48: Domestic Market Size for Pulp & Paper Products Industry**



Source: Custom Market Insights (CMI), CareEdge Research & Analysis; E: Estimated, P: Projected

### 4.4.3 Key growth drivers

**Surge in Packaging Demand:** The rapid growth of e-commerce, food delivery platforms, and FMCG sectors is significantly boosting demand for kraft paper, corrugated boards, and flexible packaging. In a move toward eco-friendly packaging materials, paper-based solutions are being increasingly opted for instead of plastics, promoting robust offtake of packaging-grade paper.

**Rising Per Capita Paper Consumption:** India's paper consumption per capita (around 15–16 kg) remains well below the global average (~55 kg), indicating vast untapped potential. As literacy rates improve, rural consumption grows, and organized retail expands, demand across writing, printing, and tissue segments is expected to accelerate steadily.

**Recovery in Education and Office Segments:** The reopening of schools, colleges, and workplaces post-COVID has revived demand for printing and writing paper, which had contracted during the pandemic. This structural rebound is aiding capacity utilization and improving product mix across integrated paper mills.

**Policy and Environmental Tailwinds:** Regulations phasing out single-use plastics and incentives for sustainable alternatives are boosting demand for paper straws, cups, cartons, and food wraps. This transition is encouraging capacity additions in specialty and recyclable paper segments.

## 4.5 Steam Boilers Industry

### 4.5.1 Industry Overview

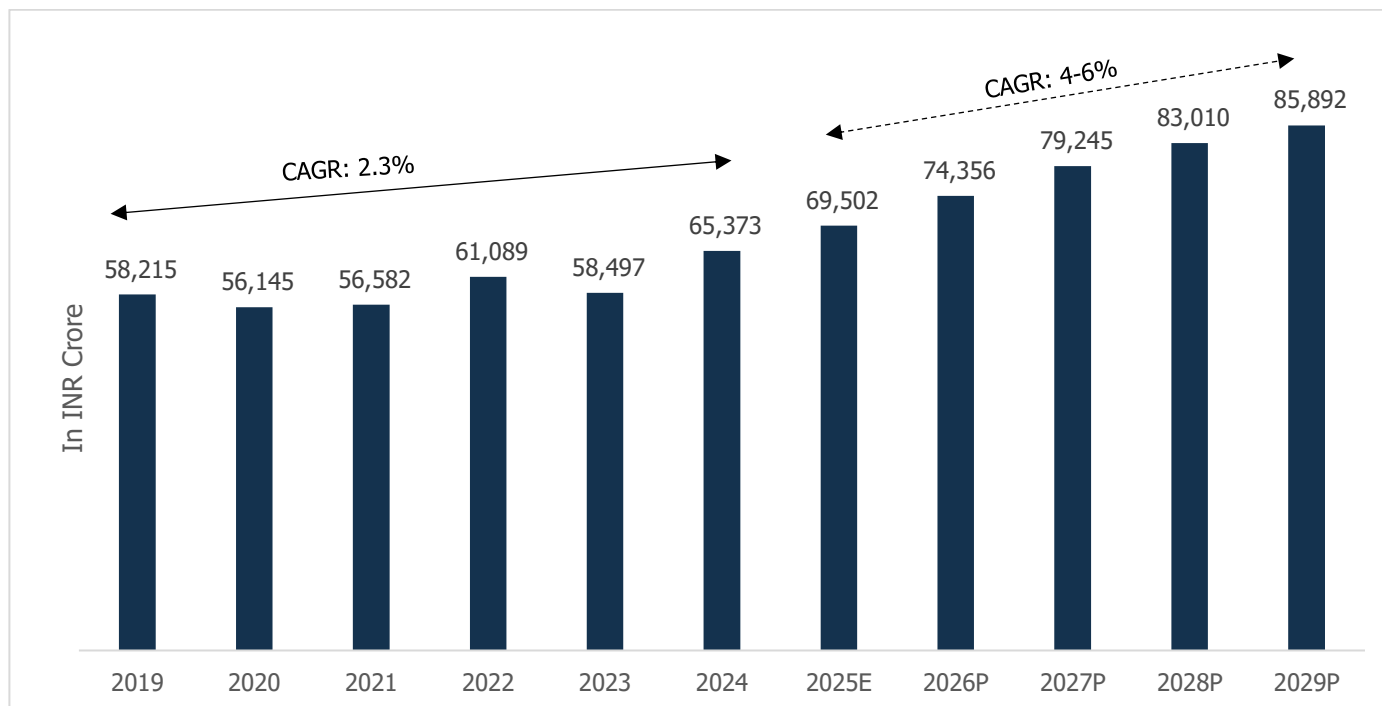
The steam boilers industry in India is closely linked to industrial growth across sectors like textiles, chemicals, power, and food processing. Inorganic chemicals such as phosphates, hydrazine, sodium sulphite, and ammonia are vital for boiler water treatment used to prevent scaling, corrosion, and foaming. Sodium bisulphite is used as an oxygen scavenger in boiler feedwater treatment to prevent oxidative corrosion and scaling inside boiler tubes and condensate systems.

As industries increasingly adopt energy-efficient and high-pressure boilers, the need for precise chemical conditioning has grown. Stricter environmental norms and focus on operational efficiency are also driving steady demand for high-performance inorganic water treatment chemicals.

### 4.5.2 Industry Market Size

The steam boilers industry in India witnessed a decline in growth at a CAGR of 2.3% between 2019 and 2024, largely due to subdued industrial activity during the pandemic years and slower capex cycles. However, the industry is poised for recovery, with growth projected at 4-6% CAGR from 2024 to 2029, backed by industrial production rebound, energy efficiency upgrades, and growing process steam requirements.

#### Chart 49: Domestic Market Size for Steam Boilers Industry



Source: Custom Market Insights (CMI), CareEdge Research & Analysis; E: Estimated, P: Projected

### 4.5.3 Key growth drivers

**Expanding Industrial Base Across Sectors:** Sectors like textiles, food processing, chemicals, and pharmaceuticals are witnessing steady growth, all of which require reliable process heat. This industrial expansion is directly driving demand for steam boilers, especially in small and medium-sized enterprises adopting automation and scale efficiency.

**Focus on Energy Efficiency and Process Optimisation:** With rising fuel costs and emission norms tightening, industries are replacing legacy boilers with high-efficiency, low-emission models. This transition is also increasing demand for inorganic boiler treatment, like phosphates, hydrazine, and sodium sulphite to enhance operational efficiency and longevity.

**Urbanisation and Infrastructure Growth:** Urban infrastructure projects—such as hospitals, commercial complexes, and residential high-rises—require centralized heating and hot water systems. This is boosting the adoption of compact and modular steam boilers, especially in Tier 1 and Tier 2 cities.

**Government Push for Cleaner Technologies:** Through policies like PAT (Perform, Achieve, and Trade) under the National Mission on Enhanced Energy Efficiency (NMEEE), the government is encouraging industries to adopt greener boiler technologies. This is accelerating demand for newer generation boilers along with high-purity water treatment chemicals to meet efficiency and emission targets.

## 4.6 Other End-Use Industries

### 1. Textile Industry

The textile sector remains one of the largest end-users of sulphur-based inorganic chemicals, particularly sodium hydrosulphite and sulphur dioxide, used as reducing agents in vat dyeing and desizing processes. These chemicals are integral to enabling consistent colour fixation and fibre preparation in natural and synthetic fabrics.

India's textile industry contributing ~2% to GDP and 11–12% of total exports is undergoing structural modernisation, driven by government initiatives such as the PLI Scheme and PM MITRA Parks. The textiles and apparel market is expected to reach USD 250 billion by FY30. As demand shifts towards value-added segments like technical textiles and synthetic blends, the requirement for precision chemical processing intensifies, sustaining demand for sulphur-based agents that offer controllable redox behaviour and compatibility with automated dyeing systems.

## **2. Leather Processing Industry**

Sulphur-based chemicals such as sodium sulphide and sodium hydrosulphite play a pivotal role in the beamhouse operations of leather processing, notably in dehairing, unhairing, and liming. India, being a top global exporter of leather goods, operates in a compliance-sensitive environment dictated by international norms such as REACH and ISO 14001.

The growing demand for 'green leather' has led to process optimisation, where controlled use of sulphur-based inputs enables efficient unhairing with reduced effluent load. The Indian footwear and leather market is expected to reach almost USD 47 billion by 2030. Additionally, the rise in demand for lightweight, high-quality leather from automotive and fashion sectors necessitates uniform chemical processing, reinforcing the relevance of high-purity sulphur-based intermediates.

## **3. Food Preservation Industry**

In the food processing value chain, sulphur-based preservatives like sulphur dioxide and sodium metabisulphite are essential for microbial control and oxidation prevention in dried fruits, juices, and pickled goods. These compounds inhibit enzymatic browning and maintain product stability during storage and distribution. India's food processing industry expected to grow at robust rate doubling from USD 307 billion in 2023 to almost USD 700 billion by 2030. The growth is likely to be backed from rising packaged food demand, export incentives under the Agriculture Export Policy, and infrastructure expansion under schemes such as the Mega Food Park initiative. Sulphur-based preservatives, being cost-effective and regulatory-approved at controlled doses, remain preferred agents for meeting extended shelf-life requirements while adhering to FSSAI and Codex Alimentarius limits.

## 5. Regulatory Framework

### 5.1 Policy Landscape for Indian Chemicals Industry

The policy landscape for India's chemicals industry is evolving rapidly to foster self-reliance, align with global best practices, and address sustainability imperatives. The following sections outline the key regulatory and policy initiatives impacting the sector:

#### 1. Chemical Management and Safety Regulations

Chemical (Management and Safety) Rules, 2024 (CMSR):

Introduced to replace the MSIHC Rules, 1989, the CMSR will:

- Mandate pre-registration and registration for substances exceeding 1 tonne per annum.
- Require submission of Safety Data Sheets (SDS), exposure scenarios, and risk assessments.
- Apply to domestic manufacturers, importers, and downstream users.
- Align India with frameworks such as EU REACH, facilitating better trade compliance.

#### 2. Investment Promotion – PCPIR Policy

- The revised Petroleum, Chemicals and Petrochemicals Investment Region (PCPIR) policy supports infrastructure-led development in designated clusters:
- Key regions: Dahej (Gujarat), Paradeep (Odisha), Cuddalore (Tamil Nadu), and Visakhapatnam (Andhra Pradesh).
- Focus on integrated logistics, CETPs, effluent management, and common utilities.
- States to act as nodal authorities for infrastructure and approvals.

#### 3. Trade Measures and Import Substitution

- Customs duties increased on select feedstocks and intermediates to reduce import dependency (e.g., ethylene dichloride, phenol).
- Anti-dumping duties extended on products such as soda ash, caustic soda, and aniline.
- Mandatory BIS standards implemented for several chemicals (e.g., titanium dioxide, acetic acid) to curb low-quality imports.

#### 4. Environmental and Safety Regulations

Enhanced enforcement of EHS norms under:

- Environment Protection Act, 1986
- Factories Act, 1948
- Hazardous and Other Wastes Rules, 2016

Focus on:

- Zero Liquid Discharge (ZLD) systems in industrial clusters.
- Real-time monitoring of emissions and effluents.
- Adoption of green chemistry practices and waste minimization.

### 5.2 Policy Initiatives by the government for Chemicals Industry

#### 1. Proposed Production Linked Incentive (PLI) Scheme for Chemicals

The government has considered extending the PLI scheme to the specialty chemicals sector, with a proposed financial outlay in the range of ₹6,000–₹8,000 crore. The aim of this proposed scheme is to incentivize domestic manufacturing of critical chemical intermediates such as fluorochemicals, agrochemical ingredients, and high-performance polymers. Although the Department of Chemicals and Petrochemicals (DCPC) submitted the proposal to the Ministry of Finance, the scheme has not yet been approved or notified. As such, while industry stakeholders have expressed strong support, the PLI framework for chemicals remains under evaluation and is yet to be rolled out.

## **2. Revised PCPIR (Petroleum, Chemicals and Petrochemicals Investment Region) Policy**

The revised PCPIR policy promotes infrastructure-led growth by developing integrated chemical clusters in identified regions like Dahej (Gujarat), Paradeep (Odisha), Cuddalore (Tamil Nadu), and Visakhapatnam (Andhra Pradesh). These zones are supported with common infrastructure such as water supply, effluent treatment systems, logistics networks, and captive power. The policy also streamlines environmental and industrial clearances through single-window mechanisms, thereby improving ease of doing business. This cluster-based approach aims to enhance economies of scale, attract global players, and facilitate integrated value chain development in chemicals.

## **3. Chemical Management and Safety Rules (CMSR), 2024**

The CMSR, notified in 2024, replaces the legacy MSIHC Rules and introduces a comprehensive framework for safe chemical management. It mandates registration and risk assessment for all substances manufactured or imported above 1 tonne per annum. The rules require detailed data submissions such as Safety Data Sheets (SDS), exposure scenarios, and hazard classifications. By aligning closely with international systems like EU REACH, the CMSR aims to improve transparency, promote safe usage of chemicals across the value chain, and facilitate smoother trade with regulatory-compliant markets.

## **4. Tariff Reforms and Import Substitution**

To curb import dependence and promote local manufacturing, the government has rationalized customs duties on several chemical intermediates. Higher import duties have been levied on products like ethylene dichloride, phenol, and acetone to make domestic production more viable. In addition, anti-dumping duties have been imposed or extended on chemicals such as soda ash, caustic soda, and aniline to protect Indian manufacturers from low-priced imports. These measures support the competitiveness of local players and enable capacity expansion in critical segments.

## **5. BIS Quality Standards and Environmental Norms**

To ensure quality compliance and safeguard domestic industry standards, the Bureau of Indian Standards (BIS) has made certification mandatory for a growing list of chemical products. This move helps reduce the influx of substandard imports while improving customer confidence in Indian-made chemicals. Simultaneously, environmental regulations have become stricter, with emphasis on Zero Liquid Discharge (ZLD), continuous emissions monitoring, and solid waste management in industrial clusters. These measures encourage the adoption of sustainable practices and green chemistry across the industry.

## **6. Skill Development and R&D Support**

The government is also focusing on human capital and innovation to drive long-term competitiveness. Through collaborations with the National Skill Development Corporation (NSDC) and the Sector Skill Councils, several training programs have been launched to build capabilities in chemical handling, safety protocols, and process optimisation. Additionally, financial support is being extended for setting up R&D centres and chemical technology parks, with the aim of strengthening innovation, improving product quality, and enabling faster adoption of advanced technologies in the sector.

## 6. Threats and Challenges for Inorganic Chemicals Industry

### Environmental Compliance Pressure on Industry

The inorganic chemical industry faces acute regulatory pressure due to the inherently pollutive nature of its processes. High salinity wastewater, gaseous emissions (like SO<sub>2</sub>, Cl<sub>2</sub>), and sludge disposal attract strict scrutiny under CPCB norms. Delays in obtaining environmental clearances frequently lead to production halts.

### Global Feedstock Dependency and Supply Instability

India imports a large portion of essential inputs such as sulphur, soda ash, and potash, leaving domestic producers exposed to global price volatility. Disruptions in maritime trade, geopolitical crises, or export restrictions by major producers like China or Russia cause raw material shocks. These fluctuations are hard to absorb in a price-sensitive, low-margin environment, particularly for basic inorganics.

### Rising Energy Costs and Infrastructure Bottlenecks

The chemical sector is highly energy-intensive, and fluctuations in industrial power tariffs and fuel prices (e.g., natural gas, coal) can significantly affect margins. While some large players have invested in captive power plants or renewable energy, many mid-sized firms rely on state electricity boards, where power reliability and pricing remain inconsistent. Additionally, inland logistics inefficiencies, lack of dedicated chemical transport corridors, and underdeveloped pipeline infrastructure contribute to higher freight costs and longer turnaround times, especially for exporters.

### Rising Compliance Costs for Handling and Transport

Inorganic chemicals are often corrosive, reactive, or hazardous in nature, requiring specialized storage, handling, and transport. Compliance with transport safety regulations and hazardous cargo norms has become more stringent. Lack of availability of certified logistics infrastructure and corrosion-resistant tankers adds to operational risk and increases distribution costs.

### Limited R&D and Innovation in Product Value Chain

Compared to specialty chemicals, the inorganic segment in India sees minimal research toward product innovation or application development. As global demand shifts toward higher-purity, custom-grade inorganic materials (e.g., battery-grade sulphates, electronic-grade chlorides), Indian players are struggling to move up the value chain. Low R&D intensity limits long-term competitiveness.

### Geopolitical and Global Market Risks

The Indian chemical industry is heavily integrated into global supply chains, making it vulnerable to geopolitical tensions and trade disruptions. The ongoing trade disputes between major economies (such as the US-China trade war and the Russia-Ukraine conflict) have led to volatility in chemical prices and supply shortages. In addition, anti-dumping tariffs imposed by foreign countries, particularly for products like caustic soda and phenol, pose significant risks to Indian exporters. As global markets shift and competition increases, the industry faces the challenge of maintaining its position as a cost-competitive supplier while balancing environmental and social expectations.

## 7. Competitive Landscape

### 1. Shanti Inorganics Limited

Shanti Inorganics, is a Gujarat-based manufacturer of sulphur-based inorganic chemicals, established in 1998 in Ahmedabad. The company began with Sodium Bisulphite in powder form and later innovated its solution form through in-house R&D. The company holds one of the largest domestic production capacities for Sodium Bisulphite with a capacity of 24,000 TPA. During FY24, the company's overall production capacity stood at 16,200 MTPA, of which Sodium Bisulphite Solution/Powder accounted for 7,800 MTPA, Ammonium Bisulphite was at 6,200 MTPA and Sodium Meta Bisulphite was at 2,200 MTPA.

| Financial indicators                     | FY22   | FY23   | FY24   | FY25   |
|------------------------------------------|--------|--------|--------|--------|
| Net Sales (Rs. Lakhs)                    | 2,810  | 4,573  | 4,488  | 5,711  |
| Operating Profit (EBITDA) (Rs. Lakhs)    | 486    | 713    | 865    | 1211   |
| Operating Margin (in %)                  | 17.29% | 15.58% | 19.27% | 21.21% |
| Net Profit (Rs. Lakhs)                   | 298    | 476    | 522    | 828    |
| Net Profit Margin (in %)                 | 10.60% | 10.41% | 11.63% | 14.50% |
| Total Debt (Rs. Lakhs)                   | 261    | 563    | 2,434  | 2,538  |
| Debt -to- Equity                         | 0.31   | 0.43   | 1.35   | 0.98   |
| Current Ratio                            | 1.61   | 1.35   | 1.12   | 0.78   |
| Return on Capital Employed (ROCE) (in %) | 50.31% | 49.11% | 25.85% | 32.83% |
| Return on Equity (ROE) (in %)            | 35.86% | 36.42% | 29.06% | 31.97% |
| Return on Assets (ROA) (in %)            | 17.97% | 17.18% | 9.91%  | 12.54% |

Source: Company Reports

### 2. Shalibhadra Dyechem Private Limited

Founded in 1989, Shalibhadra Dyechem Private Limited (part of the Shalibhadra Group of Industries) is a manufacturer and exporter of chemicals like Sodium Sulphite, Potassium Sorbate, and Sodium Phosphate. Based in Ahmedabad, Gujarat, the company is known for delivering pure, reliable, and long-lasting products. With a modern facility, strong distribution network, and experienced leadership under Darshan Sanghvi and Pankaj Sanghvi, it ensures timely service and consistent quality to its clients.

| Financial indicators                     | FY22   | FY23   | FY24   |
|------------------------------------------|--------|--------|--------|
| Net Sales (Rs. Lakhs)                    | 2,975  | 3,119  | 3,117  |
| Operating Profit (EBITDA) (Rs. Lakhs)    | 48     | 69     | 133    |
| Operating Margin (in %)                  | 1.63%  | 2.21%  | 4.27%  |
| Net Profit (Rs. Lakhs)                   | 27     | 46     | 44     |
| Net Profit Margin (in %)                 | 0.90%  | 1.46%  | 1.42%  |
| Total Debt (Rs. Lakhs)                   | 709    | 765    | 977    |
| Debt -to- Equity                         | 4.77   | 0.56   | 0.96   |
| Current Ratio                            | 1.86   | 1.61   | 1.59   |
| Return on Capital Employed (ROCE) (in %) | 8.95%  | 12.09% | 10.21% |
| Return on Equity (ROE) (in %)            | 18.00% | 3.37%  | 4.37%  |

|                               |       |       |       |
|-------------------------------|-------|-------|-------|
| Return on Assets (ROA) (in %) | 1.88% | 2.74% | 2.55% |
|-------------------------------|-------|-------|-------|

Source: Company Reports

### 3. Nilkanth Organics Private Limited

Nilkanth Organics was established in 1996 and based in Mumbai. The company specializes in sodium chemical compounds, industrial chemicals, inorganic chemicals and pharmaceutical intermediates. The company has a wide market presence, supplying products across Europe and Asia with timely and consistent delivery.

| Financial indicators                     | FY22   | FY23  | FY24  |
|------------------------------------------|--------|-------|-------|
| Net Sales (Rs. Lakhs)                    | 11,103 | 5,486 | 7,859 |
| Operating Profit (EBITDA) (Rs. Lakhs)    | 731    | 123   | 531   |
| Operating Margin (in %)                  | 6.59%  | 2.24% | 6.76% |
| Net Profit (Rs. Lakhs)                   | 467    | 80    | 123   |
| Net Profit Margin (in %)                 | 4.21%  | 1.45% | 1.57% |
| Total Debt (Rs. Lakhs)                   | 1,665  | 9,663 | 9,466 |
| Debt -to- Equity                         | 0.49   | 2.64  | 2.47  |
| Current Ratio                            | 0.93   | 0.99  | 1.30  |
| Return on Capital Employed (ROCE) (in %) | 17.69% | 2.41% | 4.11% |
| Return on Equity (ROE) (in %)            | 13.86% | 2.18% | 3.22% |
| Return on Assets (ROA) (in %)            | 4.41%  | 0.42% | 0.75% |

Source: Company Reports

## Contact

|                |                                 |                                                                            |               |
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