# Independent Market Research Report on Global Pharmaceutical, Active Ingredients, and Intermediates Market

*29th September 2025*

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*Assumptions: The conversion rates of USD to INR applied for the various periods included in this section are the prevailing conversion rates on March 31 and December 31 of each year stated as derived from RBI, and are as follows: ((i) FY 2020: 1 USD = 75.10 INR; (ii) FY 2021: 1 USD = 73.24 INR; (iii) FY 2022: 1 USD = 76.52 INR; (iv) FY 2023: 1 USD = 82.22 INR (v) FY 2024: 1 USD = 83.37 INR (vi) FY 2025 to FY 2030: 1 USD = 85.58 INR. For forecast years from FY 2026 to 2030, the conversion rate has been assumed to be the same as on March 31, 2025.*

*(i) CY 2019: 1 USD = 71.28 INR; (ii) CY 2020: 1 USD = 73.15 INR; (iii) CY 2021: 1 USD = 72.36 INR; (iv) CY 2022: 1 USD = 82.79 INR; (v) CY 2023: 1 USD = 83.12 INR; (vi) CY 2024 to CY 2029: 1 USD = 85.62 INR. For forecast years from 2025 to 2029, the conversion rate has been assumed to be the same as on December 31, 2024.*

*Fiscal Year (FY) refers to twelve months starting 1st April and ending 31st March. Accordingly, Fiscal Year (FY25) refers to the period starting 1st April 2024 and ending 31st March 2025. Unless otherwise specified, all referenced time periods pertain to the calendar year (CY).*

*Variations from the true value might occur because of rounding errors.*

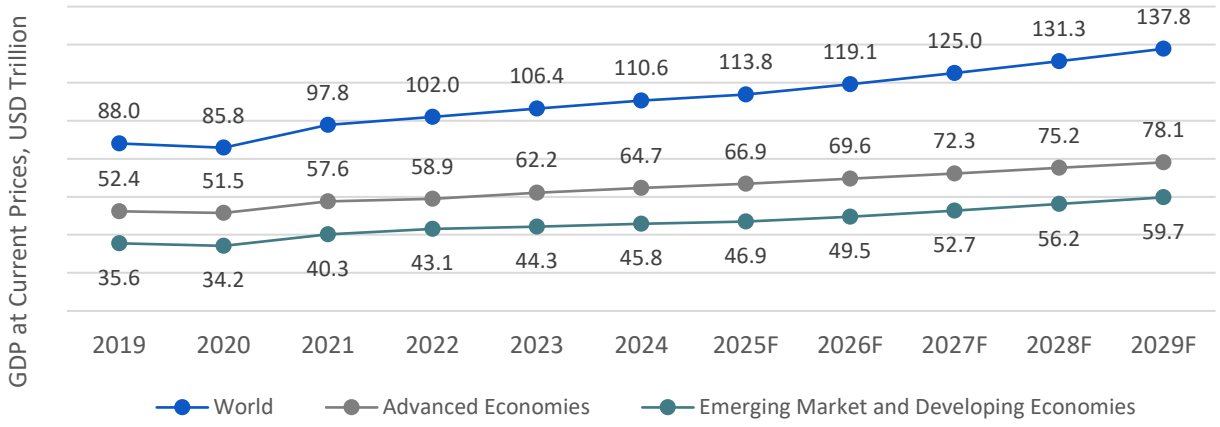
# 1 MACROECONOMIC OVERVIEW

## 1.1 OVERVIEW OF THE GLOBAL AND REGIONAL GDP

***Compelling evidence of robust economic growth and potential for expansion, despite short-term disruptions stemming from geopolitical and financial factors.***

The global economy continues to demonstrate remarkable resilience, with consistent growth and a rapid slowdown in inflation following its ascent. Against the backdrop of significant events, including post-pandemic supply disruptions, geopolitical tensions such as Russia's conflict with Ukraine, and the turmoil in the Middle East, as well as escalating energy and food crises, the economy has demonstrated remarkable adaptability.

**Exhibit 1.1: GDP at Current Prices, Global, 2019-2029F**



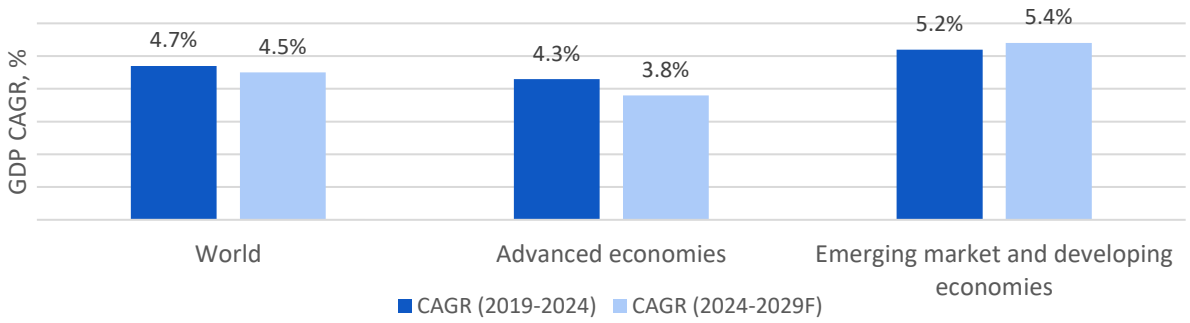

*Source: World Economic Outlook-April 2025, Frost & Sullivan*
*Note: The above GDP values at current prices are the country's GDP based on the same period during the year as their fiscal data. For countries whose fiscal data are based on a fiscal calendar (e.g., July to June), this series would be the country's GDP over that same period. For countries whose fiscal data are based on a calendar year (i.e., January to December), this series will be the same as "Gross domestic product, current prices." F - Forecast*

Resilient growth and a swift decline in inflation underscore favorable supply-side developments, such as the easing of energy price pressures and a marked recovery in labor market participation. These trends point to a promising economic outlook, with global Gross Domestic Product (GDP) projected to grow at a healthy 4.5% compounded annual growth rate (CAGR) from 2024 to 2029, mostly in line with the previous five-year average of 4.7%. This sustained momentum reflects not only short-term resilience but also the foundations for long-term expansion.

Advanced[1] economies remain central to this positive trajectory. With a projected 3.8% growth over the next five years, they are expected to maintain a stable growth path, supported by solid fundamentals. Together, these economies represented nearly 58.5% of global output in 2024, a dominant share that will continue to exceed 56% through 2029, underscoring their enduring influence on global economic dynamics.

[1] Advanced economies- Andorra, Australia, Austria, Belgium, Canada, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece Hong Kong SAR, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Macao SAR, Malta, The Netherlands, New Zealand, Norway, Portugal, Puerto Rico, San Marino, Singapore, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Taiwan Province of China, UK, US. All other economies fall under Emerging Market and Developing Economies

**Exhibit 1.2: GDP CAGR at Current Prices, Global, 2019-2029F**



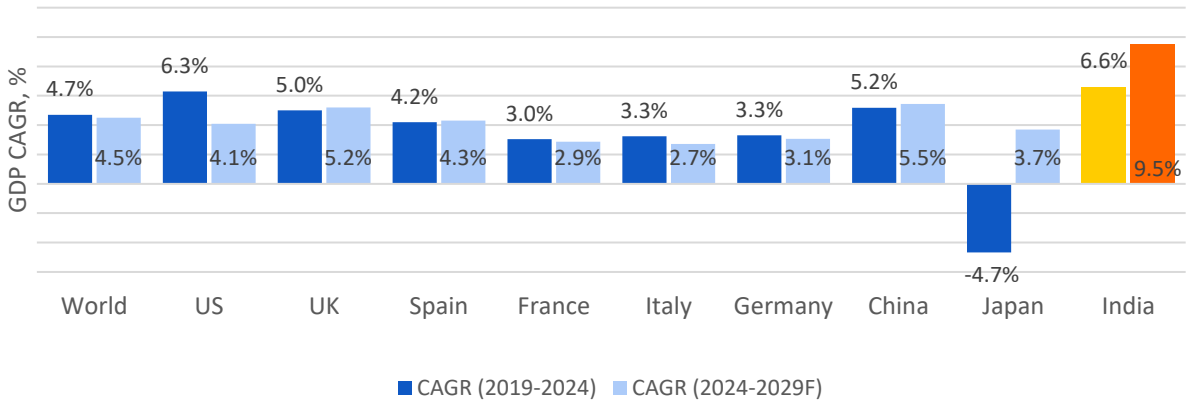

*Source: World Economic Outlook-April 2025, Frost & Sullivan*
*Note: F - Forecast*

The US, Western Europe, and the UK are particularly well-positioned to contribute meaningfully to this global expansion. In the US, growth is underpinned by strong consumer demand, technological leadership, and dynamic capital markets. Western Europe benefits from resilient manufacturing bases, deep integration across regional markets, and green transition investments, while the UK is leveraging its global financial services sector, innovation ecosystem, and expanding trade partnerships.

Most notably, Japan stands out among advanced economies as one poised for a marked acceleration in growth. The Japanese economy has exhibited resilience amid global uncertainties, buoyed by renewed corporate investment, a rebound in tourism, and sustained support from accommodative monetary policy. These factors, along with structural reforms and efforts to boost productivity and labor participation, are expected to reinforce Japan's growth momentum in the coming years.

While Japan's GDP declined by 4.7% between 2019 and 2024, the economy is projected to grow by 3.7% over the next five years (2024–2029), driven by structural reforms, increased capital investment, and advancements in digital transformation. Government initiatives, including policies to attract foreign talent, promote automation, and expand semiconductor production, are expected to support long-term growth.

**Exhibit 1.3: GDP CAGR at Current Prices, Select Countries, 2019-2029F**




*Source: World Economic Outlook-April 2025, Frost & Sullivan*
*Note: F - Forecast*

Nonetheless, the rising importance of emerging markets and developing economies[2] cannot be overlooked. Marked by rapid industrialization, urbanization, and demographic shifts, these regions are becoming substantial contributors to global GDP growth, consumption patterns, and investment inflows. Forecasts indicate a CAGR of 5.4% between 2024 and 2029, with significant prominence in emerging economies across Asia, particularly India. While China and India historically boasted growth rates of around 5-7% between 2019 and 2024, India's projected GDP growth is expected to surpass China's by nearly 1.7 times during the forecast period between 2024 and 2029. India's economic resilience amidst the pandemic, notably in the pharmaceutical sector, combined with emerging geopolitical dynamics such as the "China+1" strategy, has propelled India into the global spotlight as an alternative Formulations and Active Pharmaceutical Ingredient (API) supplier as economies decouple from China. Conversely, China faces challenges stemming from a weakening property sector, geopolitical uncertainties, unfavorable proposed policies like the Biosecurity Act, and declining export momentum.

[2] Emerging Markets and Developing Economies- Afghanistan, Albania, Algeria, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Azerbaijan, The Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belize, Benin, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, Brunei Darussalam, Bulgaria, Burkina Faso, Burundi, Cabo Verde, Cambodia, Cameroon, Central African Republic, Chad, Chile, China, Colombia, Comoros, Democratic Republic of the Congo, Republic of Congo, Costa Rica, Côte d'Ivoire, Djibouti, Dominica, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Eswatini, Ethiopia, Fiji, Gabon, The Gambia, Georgia, Ghana, Grenada, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hungary, India, Indonesia, Iran, Iraq, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kosovo, Kuwait, Kyrgyz Republic, Lao P.D.R., Lebanon, Lesotho, Liberia, Libya, Madagascar, Malawi, Malaysia, Maldives, Mali, Marshall Islands, Mauritania, Mauritius, Mexico, Micronesia, Moldova, Mongolia, Montenegro, Morocco, Mozambique, Myanmar, Namibia, Nauru, Nepal, Nicaragua, Niger, Nigeria, North Macedonia, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Qatar, Romania, Russia, Rwanda, Samoa, São Tomé and Príncipe, Saudi Arabia, Senegal, Serbia, Seychelles, Sierra Leone, Solomon Islands, Somalia, South Africa, South Sudan, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Sudan, Suriname, Syria, Tajikistan, Tanzania, Thailand, Timor-Leste, Togo, Tonga, Trinidad and Tobago, Tunisia, Türkiye, Turkmenistan, Tuvalu, Uganda, Ukraine, UAE, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, West Bank and Gaza, Yemen, Zambia, Zimbabwe

As a result, India is projected to become the world's third-largest economy by 2030[3], surpassing Japan and Germany, with a GDP forecast to exceed USD 5.0 trillion[4]. India aims to achieve developed economy status by 2047[5], driven by robust growth projections of 9.5% between 2024 and 2029. This surge in growth is underpinned by escalating domestic consumer demand across sectors, substantial government and private global investments, strengthened global partnerships, reforms centered on the Atmanirbhar Bharat initiative, and a flourishing micro, small, and medium-sized enterprise (MSME) sector.

Furthermore, manufacturing, which contributes 13-15% of the country's GDP[6] and is being prioritized across sectors, including automotive, engineering, chemicals, pharmaceuticals, and consumer durables, through the implementation of policies like the Production-Linked Incentive (PLI) scheme, PM Gati Shakti - National Master Plan (NMP), and industrial development schemes in states with industrial backwardness. As India strengthens its position in the global manufacturing landscape, the pharmaceutical industry holds significant potential with the IIP of pharmaceuticals, medicinal chemicals, and botanical products already reaching 231.0 in FY25, up from 214.0 in FY23[7]. By serving both domestic and export markets, pharmaceutical companies can harness the momentum of India's rise as a prominent manufacturing destination.

The projected expansion in emerging markets and developing economies, alongside consistent growth in advanced economies, is expected to stimulate demand across crucial sectors like healthcare and catalyze global investment. This alignment of favorable economic circumstances across advanced and emerging markets is set to propel long-term global economic development, harnessing the synergies between these markets' strengths and fostering a resilient and thriving global economic environment.

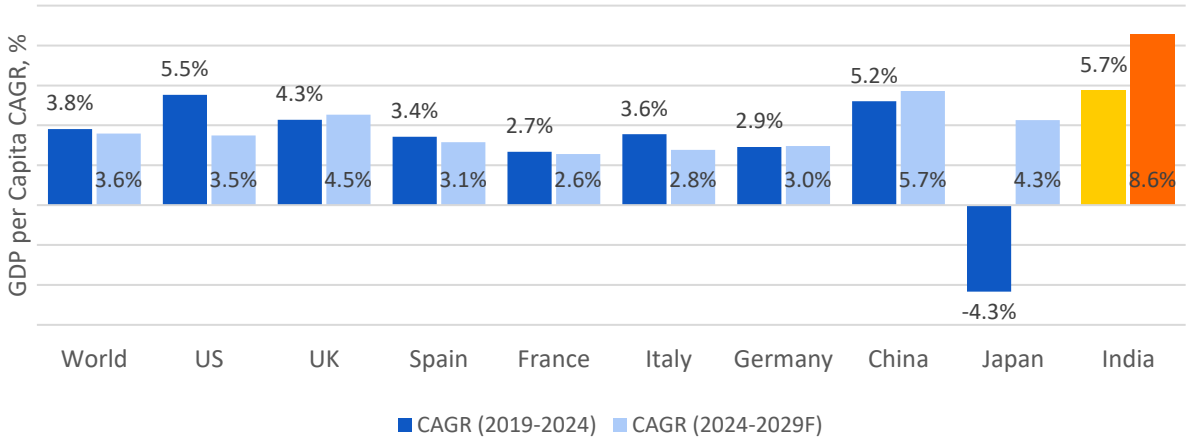
## 1.2 OVERVIEW OF THE GLOBAL AND REGIONAL GDP PER CAPITA

***The upward trend in GDP per capita further underscores economic growth, serving as an indirect measure of enhanced affordability.***

Economic growth is also reflected in the increasing GDP per capita, a pivotal metric for gauging economic prosperity, as it provides insights into the average income and subsequent spending capacity per individual. According to IMF data, global GDP per capita has shown significant expansion, rising from USD 11,550 in 2019 to USD 13,930 in 2024, indicating a CAGR of 3.8%. In 2024, among the G7 nations (Canada, France, Germany, Italy, Japan, the UK, and the US; additionally, the European Union as a non-enumerated member), the US led with the highest GDP per capita at current prices, reaching USD 85,810 in 2024, closely followed by Canada, Germany, and the UK. While GDP per capita growth in advanced economies is estimated to range between a projected 3-6% from 2024 to 2029, emerging economies are poised to experience nearly double that growth rate, with India standing out at 8.6% projected growth during the period. As incomes rise across developed and emerging economies, greater affordability will fuel voluntary demand for pharmaceutical products and, in turn, APIs.

[3] Press Information Bureau (PIB)
[4] International Monetary Fund (IMF)
[5] IBEF Report on Government's Ambition
[6] IBEF; Confederation of Indian Industries
[7] Ministry of Statistics and Programme Implementation

**Exhibit 1.4: GDP per Capita CAGR at Current Prices, Select Countries, 2019-2029F**

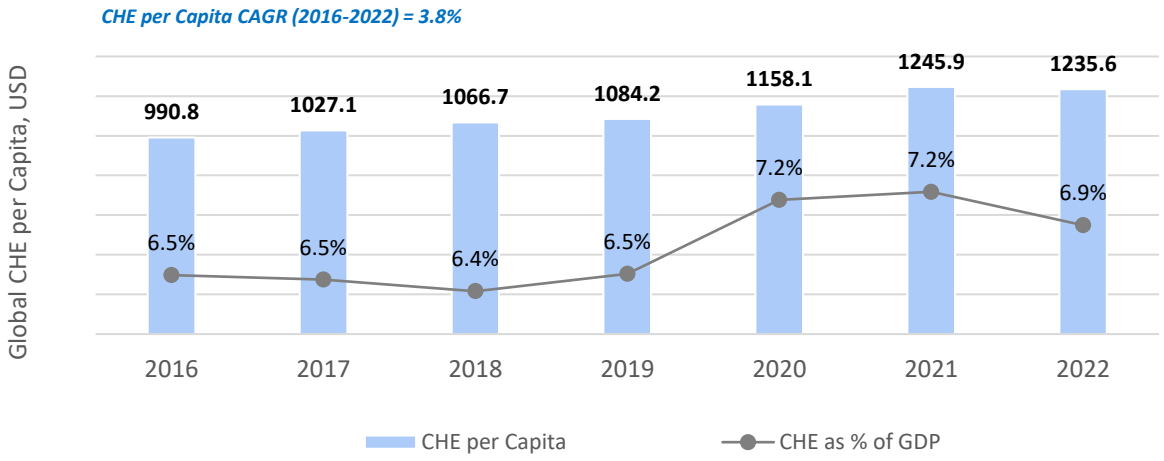



*Source: World Economic Outlook-April 2025, Frost & Sullivan*
*Note: F - Forecast*

## 1.3 OVERVIEW OF THE GLOBAL AND REGIONAL HEALTHCARE AND PHARMACEUTICAL (PHARMA) EXPENDITURE

***In the wake of the pandemic, heightened health and wellness consciousness, coupled with increased disposable income levels, has intensified focus on the healthcare sector. This has resulted in a discernible upsurge in discretionary spending within this domain.***

**Exhibit 1.5: Current Healthcare Expenditure (CHE), Global, 2016-2022**




*Source: World Health Organization - Global Health Observatory (2025), Frost & Sullivan*
*Note: CHE data is based on the same period during the year as a country's fiscal data. In the case of countries whose fiscal data are based on a fiscal calendar (e.g., July to June), this series would be the country's CHE over that same period.*
*The growth surge in healthcare expenditure in 2021 may be attributable to pandemic-related spending.*

Globally, CHE as a percentage of GDP is steadily increasing, driven by a confluence of factors. Economic growth has bolstered spending power, enabling greater investments in healthcare infrastructure and services, as well as an increase in insurance coverage, with a focus on enhancing accessibility, affordability, and quality. Concurrent efforts to improve affordability have further stimulated healthcare utilization. Moreover, the post-pandemic era has witnessed behavioral shifts towards wellness and pre-emptive testing, amplifying the demand for healthcare

services. However, advancements in medical technology, while beneficial, often entail higher costs. Additionally, the prevalence of chronic diseases and aging populations contributes to the upward trajectory of healthcare spending. Both voluntary and government expenditures have surged in response to the pandemic, leading to a substantial global increase in healthcare spending, from 6.5% of GDP in 2016 to 6.9% in 2022, reflecting a CAGR of 4.1% over the period.

**Notable regional variations in healthcare expenditures stem from the diverse healthcare landscapes across different parts of the world, which are also influenced by a complex interplay of economic, demographic, and societal factors.**

While global healthcare spending is rising, regional variations reflect diverse healthcare systems shaped by economic, demographic, and societal factors.

High-income countries such as the UK, France, Germany, Japan, and the US allocate higher healthcare expenditures than the global average, whereas most Asian countries (excluding Japan) spend nearly half the global average. For example, in the USA, healthcare expenditure as a percent of GDP stood at 16.5% in 2022, Spain at 12.6%, France at 11.8% and Japan at 11.4%. In contrast, India was only 3.3% in 2022. The large difference in spending arises from the maturity of healthcare delivery and reimbursement systems.

On a global scale, there has been a consistent upward trend in governmental involvement in Current Healthcare Expenditure (CHE), reflecting a broader adoption of policies aimed at achieving universal health coverage (UHC). Government schemes now contribute to over 60% of CHE, accompanied by a simultaneous decline in Out-of-Pocket (OOP) spending, which has decreased to nearly 16-17% as of 2022. However, significant regional disparities persist, particularly evident in the government's share of CHE. For instance, governmental contributions constitute approximately 86% of CHE in Japan and 55% of CHE in the USA, whereas in the EU4[8], governmental involvement exceeds 74% as of 2022. In contrast, governmental expenditures constitute only about 39% of CHE in India for the same period, despite the expansion of Ayushman Bharat, which covers 120 million families representing the bottom 40% of the population[9]. While the specific drivers and magnitudes may vary between regions, the overarching commitment to investing in healthcare is reflected in an increase in CHE as a percentage of GDP across both emerging and advanced economies.

***Pharmaceutical expenditures have increased in tandem with overall healthcare spending, primarily driven by a surge in chronic disease incidences, the growing elderly population, trends in self-medication practices, and the comparative affordability of medications when weighed against alternative treatment options.***

Global pharmaceutical spending has seen steady growth, propelled by various factors such as increasing healthcare needs, advancements in medical treatments, and expanding access to medications worldwide. With rising incidences of chronic diseases, the aging population, and a growing awareness of health issues, demand for pharmaceutical products continues to surge. Additionally, the launch of innovative drugs and therapies has further stimulated spending in the pharmaceutical sector. As countries strive to enhance healthcare infrastructure and ensure equitable access to medicines, pharmaceutical spending is anticipated to maintain its upward trajectory, shaping the future of healthcare spending on a global scale. Regionally, pharmaceutical expenditure mirrors similar trends to overall CHE, with high regional disparity. To illustrate, while the UK spent 9.6% of its CHE on pharma, Japan spent nearly 17.9%, and India spent 22.0% in 2019.

[8] France, Germany, Spain, Italy
[9] Ministry of Health and Family Welfare

**Exhibit 1.6: Current Healthcare Expenditure as % of GDP, Select Countries, 2016 and 2022**

| Country | CHE, 2022, USD Billion | CHE as % of GDP, 2016 | CHE as % of GDP, 2022 | Pharmaceutical and Other Durable Goods Spending, 2022, USD Billion | Pharmaceutical and Other Durable Goods Spending as % of GDP, 2022 | Pharmaceutical and Other Durable Goods Spending as % of CHE, 2022 |
|---|---|---|---|---|---|---|
| US | 4,246.8 | 16.8% | 16.5% | 521.3 | 2.0% | 12.3% |
| UK | 341.4 | 9.8% | 11.1% | 32.9 | 1.1% | 9.6% |
| Spain | 138.1 | 8.9% | 9.7% | 20.1 | 1.4% | 14.6% |
| France | 330.2 | 11.5% | 11.9% | 42.7 | 1.5% | 12.9% |
| Italy | 185.0 | 8.7% | 9.0% | 32.0 | 1.6% | 17.3% |
| Germany | 514.6 | 11.2% | 12.6% | 69.8 | 1.7% | 13.6% |
| China | 958.4 | 5.0% | 5.4% | - | - | - |
| Japan | 486.2 | 10.7% | 11.4% | 100.2^ | 2.0%^ | 17.8%^ |
| India | 113.3 | 3.5% | 3.3% | 18.5* | 0.6%* | 22.0%* |

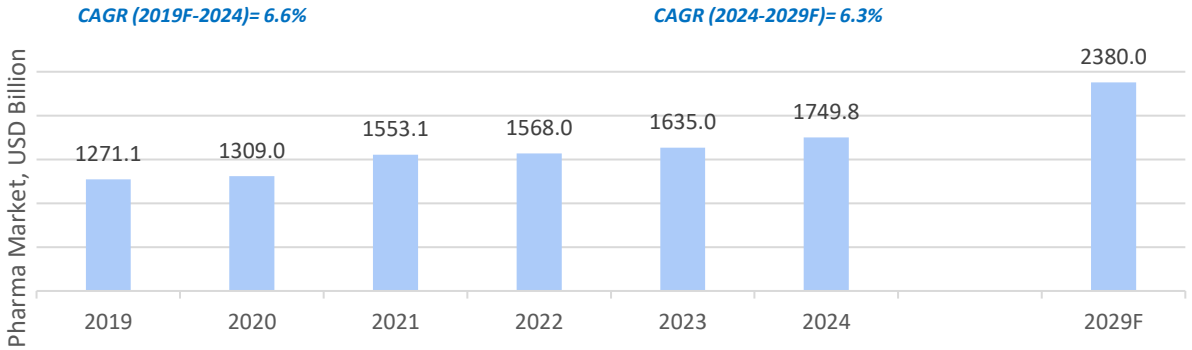
*Source: World Health Organization - Global Health Observatory (2025), Frost & Sullivan*
*Note: ^ Represents 2021 data, * represents 2019 data*

# 2 GLOBAL PHARMA MARKET OVERVIEW

## 2.1 OVERVIEW OF THE GLOBAL PHARMA MARKET

***The pharmaceutical market is set for robust growth driven by supply factors, including the introduction of new therapies and the launch of more generics due to the patent cliff, and demand factors such as an aging population, increased prevalence of chronic diseases, heightened prioritization of healthcare, and greater health awareness, to name a few.***

**Exhibit 2.1: Global Pharma Market, 2019-2029F**




*Source: IQVIA Global Use of Medicines, 2024 and 2025, Frost & Sullivan*
*Note: F - Forecast*

The global pharmaceutical industry is adapting to a complex interplay of scientific advances, demographic changes, and geopolitical developments that are reshaping the way therapies are discovered, developed, and delivered. Innovation is accelerating, driven by breakthroughs in biomedical research and a growing focus on therapies with curative potential. At the same time, the push to enhance access, affordability, and health system efficiency is

encouraging companies to broaden their generics and biosimilar portfolios. Market growth continues to be supported by established factors such as population ageing, the rising prevalence of chronic diseases, and the increasing consumer orientation of healthcare, particularly in the over-the-counter (OTC) space, alongside newer catalysts including precision medicine and complex modalities.

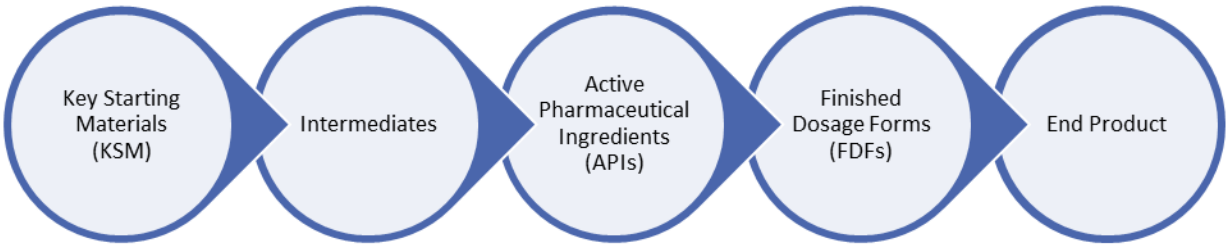
Between 2024 and 2029, the global pharmaceutical market is projected to grow at a CAGR of 6.3%, maintaining a comparable growth rate of 6.6% observed from 2019 to 2024, and reaching USD 2.4 trillion by 2029, up from USD 1.3 trillion in 2019. Some of the key growth drivers solidifying this growth momentum include:

### 2.1.1 Characteristics of the Global Pharma Market

The pharmaceutical industry operates within one of the most stringently regulated environments globally, characterized by high scientific, technical, and compliance complexities across its value chain. The process begins with Key Starting Materials (KSMs), which undergo chemical transformations into intermediates and subsequently into APIs. APIs represent the pharmacologically active core of medicines and are further processed into Finished Dosage Forms (FDFs), such as tablets, capsules, or injectables, which ultimately constitute the end packaged product delivered to patients.

This upstream value chain is particularly intricate due to the technical sophistication of multi-step synthesis, reliance on specialized infrastructure, and the necessity of maintaining consistent quality across global supply chains. Complexity is further amplified by regulatory heterogeneity, as requirements for sourcing, manufacturing standards, and approval pathways vary significantly across regions. While regulatory agencies such as those in the US, Europe, and Japan enforce rigorous and among the most stringent compliance frameworks, the lack of harmonization necessitates region-specific validation, documentation, and audits, thereby requiring both cost and operational excellence to operate successfully in this segment.

**Exhibit 2.2: Pharmaceutical Segment Value Chain**

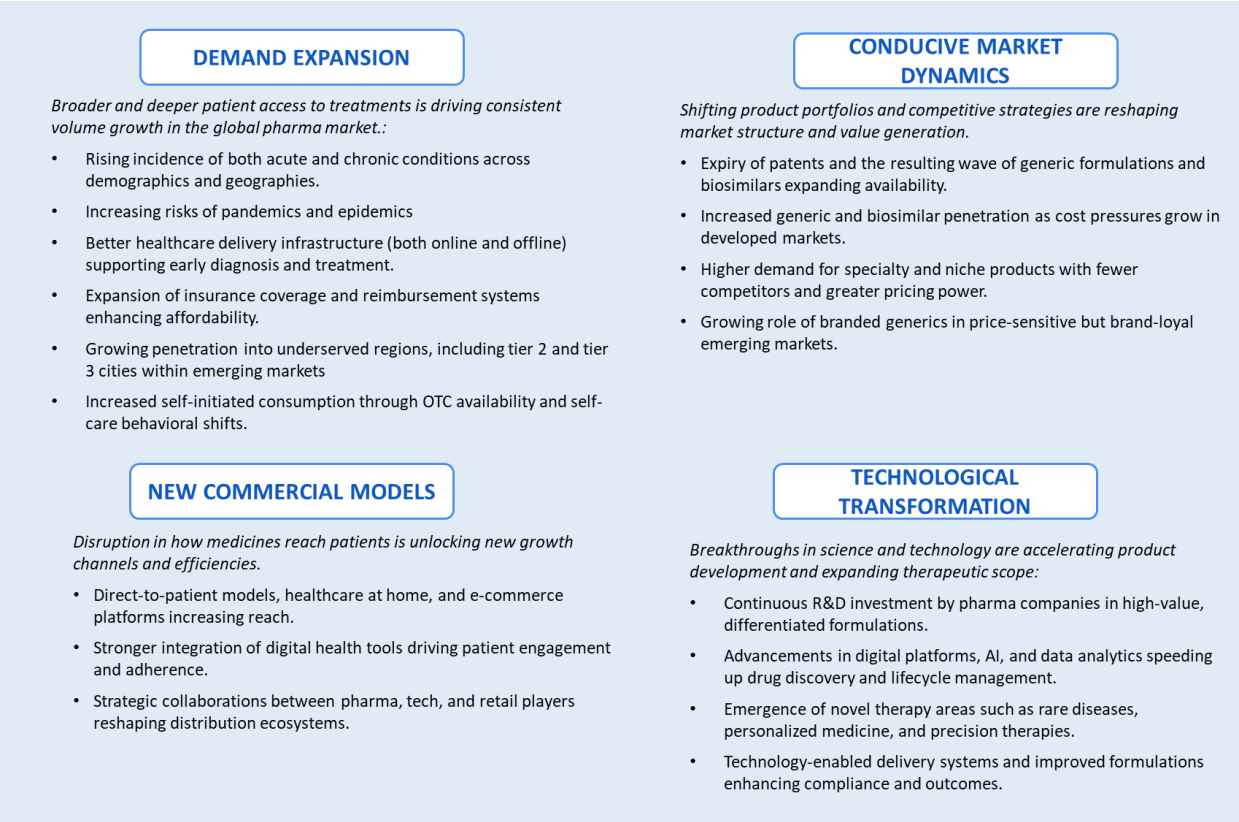



### 2.1.2 Growth Drivers of the Global Pharma Market

The global pharmaceutical market is poised for sustained expansion, propelled by a confluence of structural demand drivers and ongoing innovation. As populations age and the burden of chronic diseases intensifies, healthcare systems worldwide are witnessing increased demand for effective, accessible, and long-term treatment solutions. This is further supported by rising health awareness and greater prioritization of healthcare expenditure, particularly in emerging markets where demand for and access to treatment are rapidly improving. Governments and private insurers alike are expanding coverage, reinforcing pharmaceutical uptake across income segments.

On the supply side, the upcoming patent cliff is unlocking opportunities for generics and biosimilars, thereby broadening access and intensifying competition. At the same time, sustained investment in Research and Development (R&D) is yielding novel therapies across areas such as oncology, immunology, diabetes, obesity, and rare diseases.

Some of the key growth drivers solidifying this growth momentum include:




- **Ageing Population:** The global demographic shift towards an aging population significantly drives pharmaceutical market growth. The percentage of the global population over 60 is expected to nearly double from 12% to 22% by 2050, reaching approximately 2.1 billion people[10]. This is expected to increase the prevalence of chronic diseases and age-related conditions and drive demand for drugs targeting conditions like hypertension, diabetes, osteoporosis, and neurodegenerative diseases.
- **Growing Prevalence of Chronic Diseases:** Globally, one in three adults suffers from multiple chronic conditions (MCCs)[11]. Chronic diseases are increasingly affecting both aging and younger populations. For instance, in the US, nearly 50% of young adults reported at least one chronic condition in 2019, with obesity (25.5%), depression (21.3%), and hypertension (10.7%) being the most common.[12]. According to WHO, the global burden of cardiovascular diseases (CVD), the leading cause of mortality, accounted for 38% of premature deaths (under 70) in 2019. Cancer, another major contributor to chronic disease prevalence, continues to escalate. Global incidence is projected to rise by nearly 47% between 2020 and 2040, reaching approximately 28 million cases annually[13]. Given that the global cost of chronic diseases is projected to reach USD 47 trillion by 2030[14], pharmaceutical demand will continue to be bolstered by the need for sustained treatment regimens. Management of these diseases often requires lifelong pharmaceutical treatment, further driving the market growth.
- **Expansion of Health Insurance:** Expanding health insurance penetration has significantly enhanced access to pharmaceuticals worldwide. For example, in India, health insurance coverage has risen from approximately 482 million lives in FY 2014 to over 572 million lives in FY24[15], largely driven by

[10] WHO: Ageing and health, 2024
[11] NIH: The Global Burden of Multiple Chronic Conditions
[12] CDC: Morbidity and Mortality Weekly Report: Chronic Conditions Among Adults Aged 18–34 Years — US, 2019
[13] GLOBOCAN: Global Cancer Statistics
[14] NIH: The Burden of Chronic Diseases
[15] IRDAI

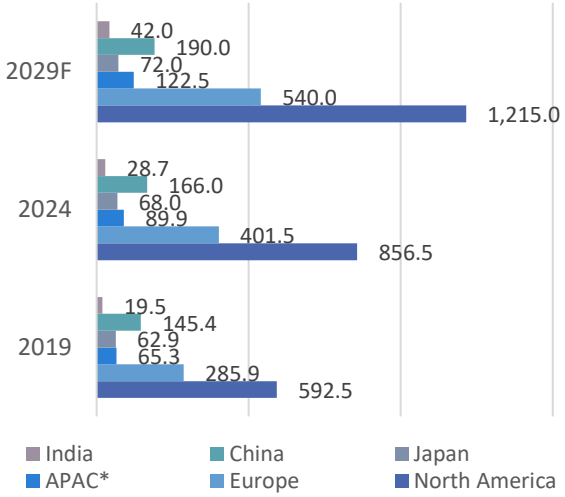
government schemes such as Ayushman Bharat. Globally, the share of people covered by essential health services (UHC service coverage index) increased from 51% in 2000 to 68% in 2021[16]. This expansion in coverage has played a crucial role in reducing out-of-pocket expenditures and improving affordability for essential medications.

- **Consumer Behavioral Shifts:** The COVID-19 pandemic catalyzed a global shift in health awareness, spurring demand for pharmaceuticals, particularly in the OTC and preventive medicine segments. Consumers are increasingly prioritizing early diagnosis, medication adherence, and proactive disease management, further fueling pharmaceutical sales.
- **R&D Driven Value Growth:** Innovation remains at the core of market growth, with global pharmaceutical R&D spending rising from USD 196 billion in 2019 to USD 306 billion in 2024[17]. This investment has facilitated the development of novel cell and gene therapies, monoclonal antibodies, and mRNA-based treatments. Beyond innovative drugs, R&D in generics has led to the introduction of complex and specialty generics, expanding treatment options across multiple therapeutic areas.
- **Patent-cliff Driven Value Growth:** The expiration of patents and subsequent exclusivity losses for many high-profile drugs have led to the introduction of low-cost generics, significantly enhancing drug accessibility for a larger population. For instance, between 2019 and 2024, several blockbuster drugs such as Revlimid, Tecfidera, and Vyvanse faced patent cliffs, paving the way for generic alternatives. Between 2025 and 2029, another looming patent cliff is expected to open up opportunities worth USD 152 billion for small molecules alone[18].

### 2.1.3 Pharma Market by Regions

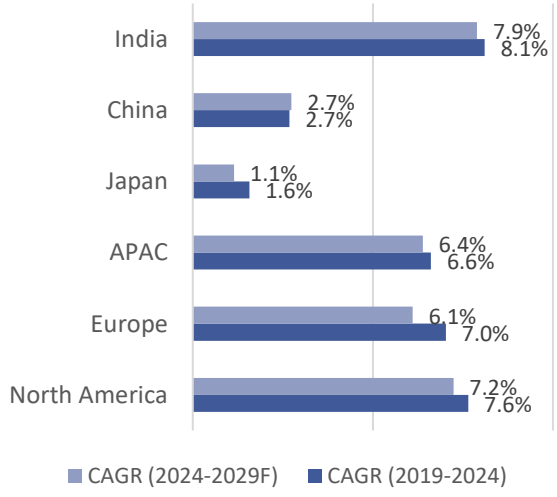
***Regulated markets, particularly the US, which accounted for 46.4% of the share in 2024, continue to exert dominance and influence over the global pharma market, driven by high demand, appetite for innovation, and comparatively higher prices for comparable products.***

**Exhibit 2.3A: Global Pharma Market by Region, 2019, 2024, 2029F, USD Billion**




*Source: IQVIA Global Use of Medicines, 2024 and 2025, Frost & Sullivan*
*Note: F- Forecast, APAC excludes India, China, and Japan*

**Exhibit 2.3B: Growth Rate of Global Pharma Market by Region, 2019-2029F**




*Source: IQVIA Global Use of Medicines, 2024 and 2025, Frost & Sullivan*
*Note: F- Forecast, APAC excludes India, China, and Japan*

[16] WHO: Universal Health Coverage
[17] Evaluate Pharma: World Preview
[18] Evaluate Pharma: The opportunity assessment is based on sales generated in 2024 and is indicative in nature, since patent litigation and other macro factors can delay or advance the introduction of generics.

North America, the largest regional market, reached USD 856.5 billion in 2024 and is expected to reach USD 1,215.0 billion by 2029, maintaining its dominance with a stable 45-55% share of the global pharmaceutical market. The United States alone contributes approximately 40-50%, driven by elevated healthcare spending, robust R&D infrastructure, and a progressive regulatory framework favoring innovation. The North American market grew at a CAGR of 7.6% between 2019 and 2024 and is expected to grow at 7.2% from 2024 to 2029, remaining steadfast despite macroeconomic and geopolitical fluctuations.

Europe is anticipated to grow from USD 401.5 billion in 2024 to USD 540.0 billion by 2029, reflecting a CAGR of 6.1%. This region accounts for roughly 23–25% of the global market and continues to benefit from strong R&D ecosystems, widespread insurance coverage, and high rates of diagnosis and treatment. Key drivers include tax incentives aimed at bolstering pharmaceutical R&D, particularly in countries like the UK, and a post-COVID rebound in demand for elective procedures and chronic disease management.

The Asia-Pacific (APAC) region, excluding India, China, and Japan, is forecast to expand from USD 89.9 billion in 2024 to USD 122.5 billion in 2029, with a CAGR of 6.4%. However, the real momentum within APAC is led by its three major markets:

- **India** is set to grow from USD 28.7 billion in 2024 to USD 42.0 billion in 2029, registering among the fastest CAGR globally at 7.9% (2024–2029). This growth is underpinned by a confluence of favorable factors: headroom for growth in healthcare spending, which was only 3.3% of GDP in 2022; rapid expansion of UHC through initiatives like Ayushman Bharat, rising private insurance uptake, increasing penetration of generic medicines (which constitute ~90% of prescriptions), and acute to chronic disease transition mirroring the West, driving greater and continued demand for pharma.

- **China**, one of the largest pharma markets, is expected to grow from USD 166.0 billion in 2024 to USD 190.0 billion in 2029, at a relatively moderate CAGR of 2.7%. While its pace of expansion has slowed compared to the previous decade due to pricing pressure from centralized procurement and regulatory tightening, growth continues to be driven by demographic shifts (By 2050, approximately 26% of China's population, or around 366 million people, will be over 65[19]), expansion of insurance coverage, and reforms in the drug approval process, which are driving rapid innovation adoption.

- **Japan** is one of the most stringent and regulated pharmaceutical markets in the world. It is projected to grow marginally from USD 68.0 billion in 2024 to USD 72.0 billion in 2029, with a CAGR of just 1.1%, reflecting market maturity marked by a declining population and cost-containment policies, including biennial drug price revisions and an aggressive push for generics. Nonetheless, niche segments like regenerative medicine, specialty drugs, and orphan drugs continue to attract investment, supported by regulatory pathways such as the Sakigake designation for accelerated approvals.

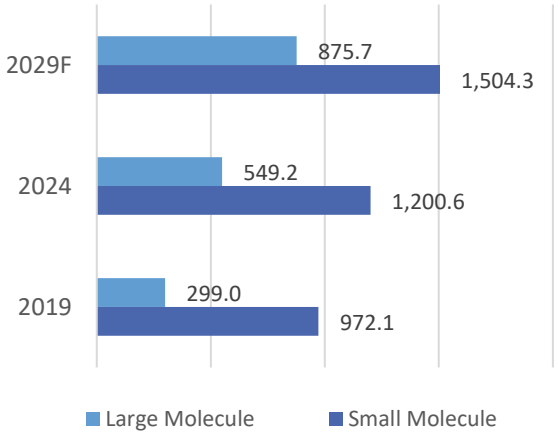
Beyond APAC's key economies, the Rest of the World (RoW), comprising Latin America, the Middle East, and Africa, is experiencing accelerated growth. RoW markets are expected to increase from USD 139.2 billion in 2024 to USD 198.5 billion in 2029, with a CAGR of 7.4%. This growth is fueled by improving healthcare infrastructure, increasing public and private health expenditures, and a growing reliance on cost-effective generic drugs, driving faster introduction of erstwhile unavailable drugs. Governments in these regions are expanding insurance coverage, incentivizing local manufacturing, and collaborating with global institutions to enhance pharmaceutical access and affordability.

[19] Population Reference Bureau

## 2.1.4 PHARMA MARKET BY MODALITIES

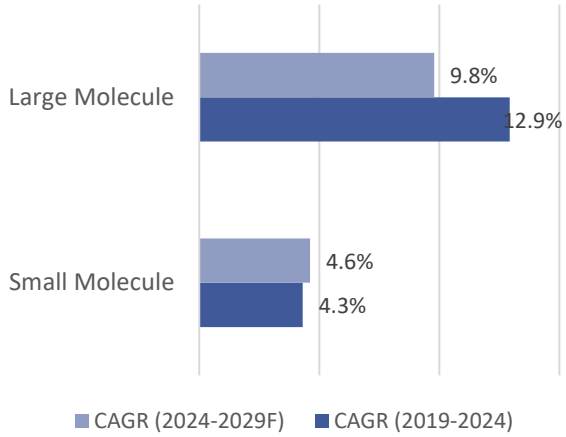
***Small molecules remain the cornerstone of pharma, accounting for nearly 70% of the market by value in 2024 and 55% of the R&D pipeline.***

**Exhibit 2.4A: Global Pharma Market by Modality, 2019, 2024, 2029F, USD Billion**




*Source: Frost & Sullivan*
*Note: F- Forecast*

**Exhibit 2.4B: Growth Rate of Global Pharma Market by Modality, 2019-2029F**




*Source: Frost & Sullivan*
*Note: F- Forecast*

Small molecules[20] continue to form the backbone of the global pharmaceutical market, driven by their affordability, broad-spectrum therapeutic applicability, ease of administration, and scalable manufacturing. As of 2024, small molecule drugs account for USD 1,200.6 billion, nearly 70% of the total global pharmaceutical market. Despite a relatively modest CAGR of 4.3% (2019–2024) and 4.6% (2024–2029F), their dominance by value remains intact due to widespread usage in both acute and chronic therapies, a strong generics base, and a high volume of global prescriptions.

The pace of innovation in small molecules remains robust, with continued R&D into advanced formulations, including small molecules targeting RNA splicing, stem cell activation, and conjugated therapies involving peptides or antibodies. In 2024, small molecules account for 55% of the global R&D pipeline and represent 68% of all new molecular entity approvals by the United States Food and Drug Administration's (US-FDA) CDER, underscoring their enduring relevance. Furthermore, small molecules remain pivotal in the expansion of access in underserved geographies, where pricing sensitivity, infrastructure limitations, and regulatory pathways favor their adoption over complex biologics.

At the same time, biologics[21] (large molecules) are gaining ground, growing at a significantly higher CAGR of 12.9% (2019–2024) and projected to sustain this momentum at 9.8% (2024–2029F). The segment is set to grow from USD 549.2 billion in 2024 to USD 875.7 billion by 2029, fueled by breakthrough innovations such as gene and cell therapies, monoclonal antibodies, and immuno-oncology products. Despite these advances, biologics are typically

[20] Small molecules refer to low molecular weight organic compounds, that can be chemically synthesized and are designed to interact with specific biological targets to treat disease. These compounds typically comprise of 20 to 100 atoms and have a molecular mass of less than 1000 g/mol or 1 kilodalton [kDa].

[21] Biotechnology therapies, or biologics, are based on biology and harness cellular and biomolecular processes. They include vaccines, blood and blood components, antibody therapies, gene therapy, tissues and recombinant therapeutic proteins. Biologics are typically greater than 1 kilodalton (kDa) in size.

high-cost therapies, often placing a considerable burden on healthcare systems and limiting penetration in cost-constrained markets. In contrast, small molecules offer scalable solutions for high-burden disease areas and continue to lead in volume-driven growth, global reach, and cost-effectiveness. With continued R&D pushing their therapeutic potential and ongoing patent cliffs generating new generics, small molecules are well-positioned to retain their commanding role in the global pharmaceutical landscape.

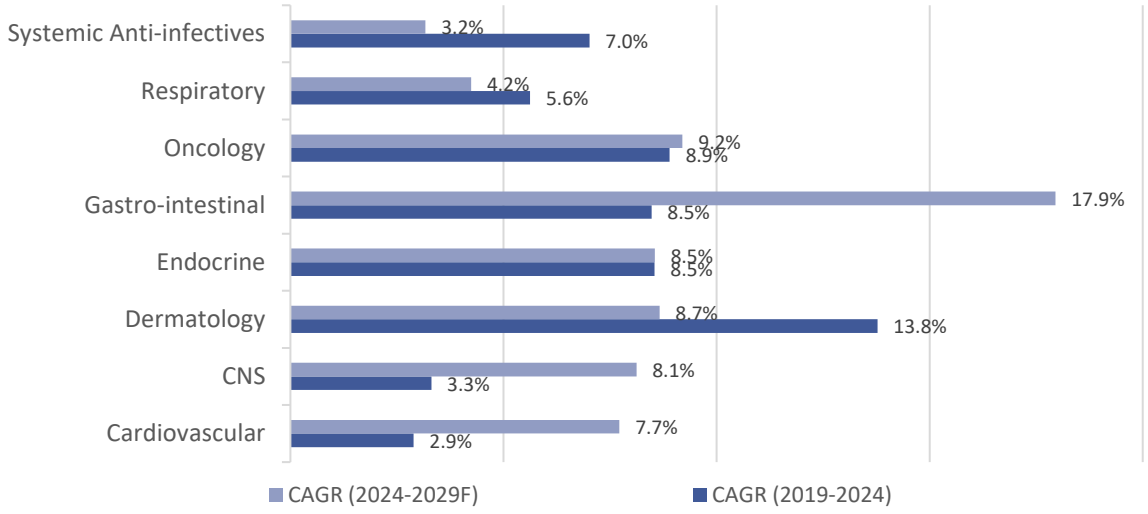
### 2.1.5 Pharma Market by Therapy Area

***Chronic disease therapies, such as for Cardiovascular, Central Nervous System (CNS), and metabolic disorders (including diabetes and obesity) dominate the global pharma market and will likely sustain the momentum because of repeat prescriptions and rapid introduction of new medicines.***

The composition of pharma spending is witnessing a therapeutic shift, shaped by innovation, rising chronic disease burden, and evolving treatment paradigms, particularly oncology, cardiovascular, CNS, immunology, and metabolic disorders, accounting for an increasingly dominant share of global expenditure.

Cardiovascular (CVS) therapies, despite experiencing slower growth historically due to extensive genericization, are forecasted to grow at an accelerated CAGR of 7.7% between 2024 and 2029. This resurgence is driven by novel lipid-lowering and heart failure treatments, as well as growing recognition of cardiovascular risk management in metabolic diseases. CNS therapies are similarly poised for expansion, growing at a CAGR of 8.1% between 2024 and 2029, as demographic shifts, neurodegenerative burden, and mental health awareness continue to drive demand.

**Exhibit 2.5: Growth Rate of Global Pharma Market by Therapy Area, 2019-2029F**




*Source: Evaluate Pharma; Frost & Sullivan*
*Note: F- Forecast*

As chronic diseases continue to account for a growing share of morbidity, mortality, and healthcare costs globally, their proportional footprint in the pharmaceutical market is expected to expand further, reaching an estimated 75–80% of total market value by 2029. The long-term use (often spanning a patient's lifetime) of medicines to manage chronic diseases, the high value of drugs for acute disease treatment, and specialty-driven therapies with curative potential will continue to shape the therapeutic paradigm.

#### *2.1.5.1.1 RESPIRATORY DRUGS*

Respiratory drugs include medications developed to treat a broad spectrum of conditions affecting the respiratory system, such as asthma, chronic obstructive pulmonary disease (COPD), pulmonary hypertension, and respiratory infections. In 2024, this market represented nearly 6% of total drug sales, with respiratory conditions involving more

drug-treated patients worldwide than any other therapeutic area. The market is expected to grow at a CAGR of 4.2% between 2024 and 2029, driven by innovative treatments. Within the respiratory segment, anti-histamines represented 3.4% of sales in 2024, driven by increasing cases of seasonal allergies and urticaria.

*2.1.5.1.2 SYSTEMIC ANTI-INFECTIVES*

Systemic anti-infective drugs form a key therapeutic area aimed at treating infections that affect multiple body systems through medications that act throughout the body rather than locally. This market includes antibiotics, antivirals, antifungals, and antiparasitic drugs used against conditions such as pneumonia, septicemia, and urinary tract infections. In 2024, systemic anti-infectives accounted for 13.5% of drug sales, with growth projected at a CAGR of 3.2% from 2024 to 2029.

*2.1.5.1.3 GASTRO-INTESTINAL*

The gastro-intestinal drug therapy area addresses disorders of the digestive tract, including inflammatory bowel disease (IBD), irritable bowel syndrome (IBS), gastroesophageal reflux disease (GERD), and gastrointestinal cancers. Growth is driven by the rising prevalence of gastrointestinal disorders, with this segment accounting for 4.4% of drug sales in 2024 and projected to expand at a CAGR of 17.9% over the next five years.

*2.1.5.1.4 CENTRAL NERVOUS SYSTEM*

CNS therapies cover neurological and psychiatric disorders affecting the brain and spinal cord, including Alzheimer's disease, Parkinson's disease, multiple sclerosis, depression, schizophrenia, and epilepsy. This area represents 14% of the total industry R&D pipeline, making it the second-largest therapeutic area by pipeline size.

In 2024, CNS drugs accounted for nearly 10% of sales, with the market projected to grow at a CAGR of 8.1% from 2024 to 2029. Within this segment, demand for analgesics and antidepressants is rising due to the increasing prevalence of chronic pain and depressive disorders in adults. Analgesics are expected to grow at a CAGR of 6.9% during 2024–2029, and antidepressants are forecasted to expand at a CAGR of 11.7% over the same period.

*2.1.5.1.5 ENDOCRINE*

The endocrine therapy area addresses hormonal disorders and metabolic conditions, with diabetes as the dominant indication, primarily driven by GLP-1 agonists. The segment accounted for 9.5% of drug sales in 2024 and is projected to grow at a stable CAGR of 8.5% from 2024 to 2029. Anti-diabetic drugs dominate this area, representing a staggering 88% of sales and expanding at a CAGR of 8.6% over the same period.

*2.1.5.1.6 CARDIOVASCULAR*

The cardiovascular therapy area focuses on heart and circulatory system disorders, including hypertension, heart failure, coronary artery disease, and arrhythmias. CVDs remain the leading cause of death globally, and this therapeutic area consistently ranks among the largest markets for prescription drugs. In 2024, it accounted for 4.7% of drug sales and is projected to grow at a CAGR of 7.7% through 2029.

*2.1.5.1.7 DERMATOLOGY*

The dermatology therapy area includes treatments for skin, hair, and nail disorders, covering common conditions such as acne and psoriasis, as well as complex autoimmune and inflammatory skin diseases.

In 2024, the segment represented nearly 2% of all drug sales, while growth is expected at a CAGR of 8.7% between 2024 and 2029, driven by innovation in topical therapies, particularly novel JAK inhibitors and other targeted treatments that address new therapeutic pathways for immune-mediated skin conditions.

*2.1.5.1.8 ONCOLOGY*

The oncology therapy area is the largest and most dynamic segment of the global pharmaceutical market, covering treatments for cancers of the blood, solid organs, and tissues. It accounted for 21.8% of all drug sales in 2024 and is projected to grow at a CAGR of 9.2% over the next five years. Growth is driven by rising global cancer incidence, an aging population, advances in diagnostic capabilities, and expanding access to cancer treatments in emerging markets.

**Exhibit 2.6: Market Size of Select API and Intermediate Products, USD, 2024**

| Therapy Area | Therapy Area Subcategory | Product | Clinical Use | Mechanism | Types of Available Formulation* | Formulation Market Size, 2024, USD million |
|---|---|---|---|---|---|---|
| **Respiratory** | Anti-histamines | Fexofenadine Hydrochloride | Seasonal allergic rhinitis, chronic idiopathic urticaria, and relief of allergic symptoms | Selective peripheral H1 receptor antagonist that blocks histamine from binding to H1 receptors without crossing the blood-brain barrier. | Tablet, Suspension, Extended Release Tablet, Orally Disintegrating Tablet, Capsule | 795-815 |
| **Respiratory** | Anti-histamines | Bilastine | Allergic rhinitis, allergic rhinoconjunctivitis, urticaria, nasal symptoms (sneezing, rhinorrhea, nasal itching, congestion), and ocular symptoms | Selective H1 receptor inverse agonist with high specificity and binding affinity for H1 receptors. | Tablets, Oral Solutions | 520-540 |
| **Respiratory** | Anti-cholinergic | Salbutamol Sulphate | Asthma, chronic obstructive pulmonary disease (COPD), exercise-induced bronchospasm | Selective β2-adrenergic receptor agonist that activates adenylyl cyclase, increases cyclic AMP, and causes bronchial smooth muscle relaxation. | Metered Aerosol, Metered Powder, Solution, Syrup, Tablet, Metered Spray, Capsule, Extended-Release Tablet | 3,700-3,750 |
| **Respiratory** | Other respiratory agents | Dextromethorphan | Dry cough | NMDA receptor antagonist, sigma-1 receptor agonist, and nonselective inhibitor of serotonin and norepinephrine reuptake, suppressing the medullary cough center. | Syrup, Capsule, Extended-Release Tablet, Extended-Release Suspension | 2,590-2,610 |
| **Systemic Anti-infectives** | Anti-fungals | Fluconazole | Vaginal candidiasis, oropharyngeal and esophageal candidiasis, candidemia and disseminated candidiasis, cryptococcal meningitis | Inhibits fungal lanosterol 14-α-demethylase (cytochrome P450 enzyme), preventing conversion of lanosterol to ergosterol and disrupting fungal cell membrane integrity | Injectable, FOR Suspension, Tablet | 705-720 |
| **Systemic Anti-infectives** | Anti-fungals | Efinaconazole | Onychomycosis (fungal nail infections) | Inhibits ergosterol biosynthesis, causing accumulation of toxic sterol precursors. | Solution | 625-655 |
| **Systemic Anti-infectives** | Anti-fungals | Tavaborole | Onychomycosis (fungal nail infections) | Inhibits fungal leucyl-tRNA synthetase, preventing protein synthesis and ultimately causing fungal cell death | Solution | 2-5 |
| **Systemic Anti-infectives** | Anti-fungals | Isavuconazonium Sulfate | Invasive aspergillosis, invasive mucormycosis, invasive candidiasis | Inhibits cytochrome P450-dependent lanosterol 14-α-demethylase, disrupting ergosterol biosynthesis and fungal membrane function. | Oral, Injectable | 550-570 |
| **Systemic Anti-infectives** | Anti-fungals | Luliconazole | Fungal skin infections such as tinea pedis (athlete's foot), tinea cruris (jock itch), tinea corporis (ringworm), and onychomycosis (fungal nail infection) | Inhibits lanosterol 14-α-demethylase (ergosterol synthesis), disrupting fungal cell membrane formation. | Cream | 89-100 |

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|---|---|---|---|---|---|---|
| **Systemic Anti-infectives** | Anti-virals | Dolutegravir | HIV-1 infection in combination with other antiretroviral agents | Inhibits the HIV integrase enzyme, preventing integration of viral DNA into the host genome and blocking viral replication. | Tablet, FOR Suspension Tablet | 8,400-8,500 |
| **Gastro-Intestinal** | Cholagogues | Obeticholic Acid | Primary biliary cholangitis (PBC) | Potent agonist of farnesoid X receptor (FXR), reducing hepatic bile acid synthesis and increasing bile acid flow, thereby decreasing liver exposure to toxic bile acids and improving hepatobiliary function. | Tablet | 500-525 |
| **Central Nervous System** | Analgesics | Tramadol | Moderate to moderately severe pain, chronic musculoskeletal pain | Dual action μ-opioid receptor agonist (via active metabolite M1) and inhibitor of serotonin and norepinephrine reuptake | Extended-Release Capsule, Solution, Tablet, Extended-Release Tablet, Orally Disintegrating Tablet | 1,350-1,430 |
| **Central Nervous System** | Analgesics | Tapentadol Hydrochloride | Moderate to severe acute pain, chronic musculoskeletal pain, neuropathic pain associated with diabetic peripheral neuropathy | Dual mechanism μ-opioid receptor agonist and norepinephrine reuptake inhibitor without significant serotonin effects | Solution, Tablet, Extended-Release Tablet | 540-575 |
| **Central Nervous System** | Analgesics | Etoricoxib | Non-steroidal anti-inflammatory drug for osteoarthritis, rheumatoid arthritis, ankylosing spondylitis, acute gouty arthritis, and chronic low back pain | Highly selective cyclooxygenase-2 (COX-2) inhibitor that reduces the synthesis of pro-inflammatory prostaglandins while preserving gastric mucosal protection by not inhibiting COX-1. | Tablet | 675-700 |
| **Central Nervous System** | Anti-depressants | Citalopram | Major depressive disorder, anxiety | Selective serotonin reuptake inhibitor (SSRI) that blocks serotonin reuptake by inhibiting the serotonin transporter (SERT) | Capsule, Solution, Tablet, Orally Disintegrating Tablet | 255-280 |
| **Central Nervous System** | Anti-depressants | Escitalopram | Major depressive disorder, generalized anxiety disorder, panic disorder | Highly selective SSRI that binds to both orthosteric and allosteric sites on SERT, providing more efficient serotonin reuptake blockade. | Capsule, Solution, Tablet | 1,580-1,660 |
| **Central Nervous System** | Anti-depressants | Lurasidone Hydrochloride | Schizophrenia and depressive episodes associated with bipolar I disorder | Antagonism of dopamine D2, serotonin 5-HT2A, and 5-HT7 receptors; partial agonism at serotonin 5-HT1A receptor. | Tablet | 260-290 |
| **Central Nervous System** | Anti-depressants | Vilazodone Hydrochloride | Major depressive disorder in adults | Inhibits serotonin reuptake (SSRI activity) and acts as a partial agonist at 5-HT1A receptors. | Tablet | 130-165 |
| **Central Nervous System** | Anti-epileptics | Perampanel | Partial-onset seizures and primary generalized tonic-clonic seizures in epilepsy | Selective, non-competitive antagonist of AMPA-type glutamate receptors, reducing excitatory neurotransmission. | Tablet, Suspension | 455-485 |
| **Cardiovascular** | Cardiac therapy | Ranolazine | Chronic stable angina | Inhibits late sodium current in cardiac myocytes, reducing intracellular calcium overload and improving myocardial oxygen efficiency. | Extended-Release Granules, Extended-Release Tablet | 260-300 |
| **Cardiovascular** | Diuretics | Chlorthalidone | Hypertension, edema associated with congestive heart failure, hepatic | Thiazide-like diuretic that inhibits sodium-chloride cotransporter in the distal convoluted tubule, promoting diuresis and vasodilation. | Capsule, Tablet | 455-510 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | cirrhosis, and renal dysfunction | | | |
| **Cardiovascular** | Anti-hyperlipidaemics | Bempedoic Acid | Adjunct therapy with statins in hypercholesterolemia (high blood cholesterol levels) | Inhibits ATP citrate lyase, the enzyme upstream of HMG-CoA reductase in the cholesterol biosynthesis pathway. | Tablet | 540-610 |
| **Cardiovascular** | Other CNS drugs | Tafamidis | Transthyretin amyloid cardiomyopathy (ATTR-CM) | Selective stabilization of transthyretin tetramer, preventing dissociation into monomers and subsequent amyloid fibril formation | Capsule | 6,100-6,300 |
| **Endocrine** | Anti-diabetics | Linagliptin | Type 2 diabetes mellitus | Selective inhibitor of dipeptidyl peptidase-4 (DPP-4), increasing incretin hormone levels and improving glucose homeostasis. | Tablet, Extended-Release Tablet | 3,850-4,060 |
| **Endocrine** | Anti-diabetics | Vonoprazan Fumarate | Eradication of Helicobacter pylori infection, erosive esophagitis, and non-erosive gastroesophageal reflux disease | Potassium-competitive acid blocker (P-CAB) that reversibly binds to the gastric H+/K+-ATPase enzyme, providing sustained acid suppression. | Tablet | 940-990 |
| **Endocrine** | Anti-diabetics | Canagliflozin | Type 2 diabetes mellitus, diabetic nephropathy reduce the risk of cardiovascular events. | Inhibits SGLT2 in the renal proximal tubule, reducing glucose reabsorption and promoting glycosuria (increased urinary glucose excretion). | Tablet, Extended-Release Tablet | 970-1,010 |
| **Endocrine** | Anti-diabetics | Dapagliflozin Propanediol | Type 2 diabetes mellitus | Inhibits SGLT2 in the kidney, decreasing glucose reabsorption and increasing urinary glucose excretion; also improves cardiovascular and renal outcomes. | Tablet, Extended-Release Tablet | 16,000-16,200 |
| **Endocrine** | Anti-diabetics | Empagliflozin | Type 2 diabetes mellitus, heart failure, and chronic kidney disease | A selective SGLT2 inhibitor prevents renal glucose reabsorption, increasing urinary glucose excretion; it can additionally exert cardioprotective and nephroprotective effects. | Tablet, Extended-Release Tablet | 27,200-27,700 |
| **Endocrine** | Anti-diabetics | Vildagliptin | Type 2 diabetes mellitus | Selective, reversible inhibitor of DPP-4 that binds covalently to the catalytic site, preventing degradation of incretin hormones GLP-1 and GIP, thereby enhancing glucose-dependent insulin secretion and suppressing glucagon release. | Tablet | 1,100-1,200 |
| **Dermatology** | Topical anti-infectives | Crisaborole | Mild to moderate atopic dermatitis (eczema) | Phosphodiesterase 4 (PDE4) inhibitor that increases intracellular cAMP levels, reducing inflammatory mediator production. | Ointment | 180-205 |

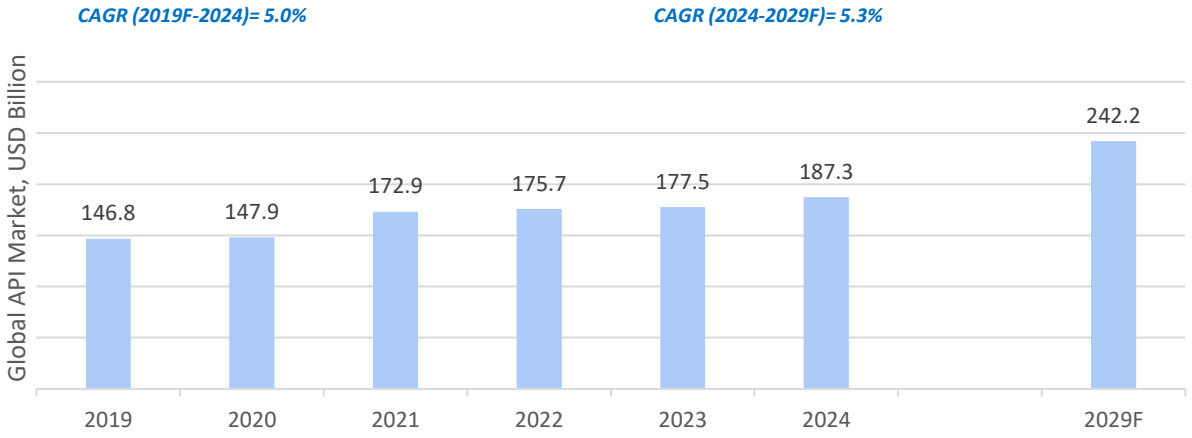
*Source: FDA Orange Book; Evaluate Pharma; Frost & Sullivan*
*Notes: * Based on FDA Approvals or other sources, if the product is not FDA approved*
*GLP-1 = Glucagon-Like Peptide-1*

# 3 GLOBAL API MARKET OVERVIEW

## 3.1 OVERVIEW OF THE GLOBAL SMALL MOLECULE API MARKET

***The growth in the pharma market also translates into corresponding growth in the API market. While the global API market is expected to grow at a CAGR of 5.3% between 2024-2029, the Indian API market is expected to grow at 7.5% in the same period.***

**Exhibit 3.1: Global API Market, 2019-2029F**




*Source: Frost & Sullivan*
*Note: F - Forecast, Only includes small molecule API market*

APIs are the biologically active components in medications that produce the intended therapeutic effects. They are the primary substances responsible for a drug's efficacy in treating specific conditions or diseases. The precision of API formulation directly influences drug safety and potency, making it a critical determinant of clinical outcomes. The demand for APIs is inherently tied to pharmaceutical consumption trends, with market expansion fueled by the increasing prevalence of chronic diseases, rising healthcare access, and the growing purchasing power of the middle class. As healthcare infrastructure strengthens and affordability improves, the consumption of pharmaceuticals increases, thereby accelerating demand for APIs.

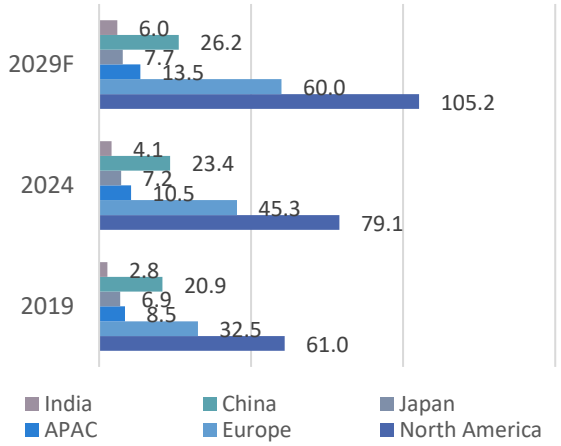
The API industry is witnessing a shift driven by the increasing adoption of innovative drugs, particularly novel modalities, and the expanding footprint of the generics segment. Specifically, the trend towards genericization is creating significant opportunities for API manufacturers to expand their product offerings and capture a larger market share. The accessibility and affordability of medicines are also improving, driven by various global health initiatives and policies aimed at increasing the availability of essential medications. This trend is especially pronounced in emerging markets, where demand for cost-effective, high-quality pharmaceuticals is experiencing substantial growth. As a result, API manufacturers that can deliver cost-effective solutions while maintaining high standards of quality and compliance are well-positioned to benefit from this growing demand. Another significant trend influencing API development is the rising preference for complex formulations, such as Highly Potent Active Pharmaceutical Ingredients (HPAPIs) and fermentation-derived APIs. These advanced APIs offer superior therapeutic outcomes and, at the same time, command better market value. Mirroring the trends in the pharmaceutical formulations market, small-molecule APIs continue to dominate, accounting for 65-70% of the total market share in 2024, while biological APIs represent the remaining 30-35%. The sustained demand for small-molecule drugs, driven by their well-established therapeutic applications, cost-effectiveness, and broad market penetration, has solidified the growth trajectory of the small-molecule API segment.

The global small-molecule API market was valued at approximately USD 187.3 billion in 2024 and is projected to reach USD 242.2 billion by 2029. Between 2019 and 2024, the market expanded at a CAGR of 5.0%, while the growth trajectory is expected to accelerate slightly, with a projected CAGR of 5.3% from 2024 to 2029. This sustained expansion is driven by ongoing technological advancements, evolving regulatory frameworks, and shifting disease burden patterns.

### 3.1.1 API Market by Regions

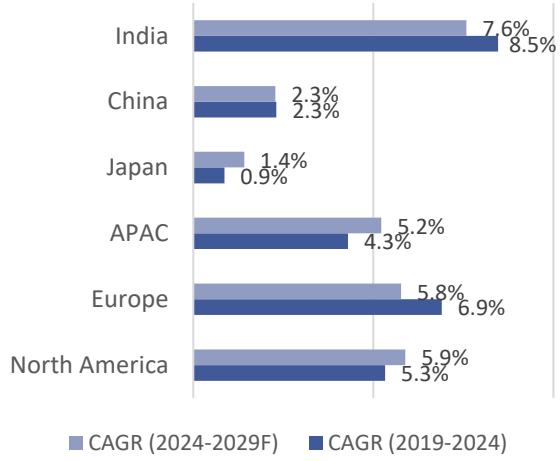
***Asia will continue to dominate API supply, particularly in the generic segment, while North America and Western Europe will remain the top demand centers for innovative and specialty APIs. Emerging markets in RoW are becoming attractive for both supply diversification and demand expansion, creating new frontiers for global API trade.***

**Exhibit 3.2A: Global API Market by Region, 2019, 2024, 2029F, USD Billion**




*Source: Frost & Sullivan*
*Note: F- Forecast, APAC excludes India, China, and Japan, Only includes small molecule API market*

**Exhibit 3.2B: Growth Rate of Global API Market by Region, 2019-2029F**




*Source: Frost & Sullivan*
*Note: F- Forecast, APAC excludes India and Japan, Only includes small molecule API market*

North America remains the largest regional market for APIs, reaching USD 79.1 billion in 2024 and projected to grow to USD 105.2 billion by 2029, reflecting a CAGR of 5.9%. The region accounts for ~30% of global API consumption, supported by sustained demand for HPAPIs, complex small molecules, and biologic APIs. The US alone accounts for nearly 90% of regional demand, driven by a robust specialty and oncology pipeline and continued growth drivers anchored in chronic disease prevalence and high access to medicines. In addition to demand, the US has renewed focus on strengthening its supply base and onshoring manufacturing.

Europe's API market is forecast to grow from USD 45.3 billion in 2024 to USD 60.0 billion in 2029 at a CAGR of 5.8%, comprising around 17–18% of global API demand. Growth is driven by steady pharmaceutical uptake and increasing focus on high-value innovative drugs. Although the region is a net importer of generic APIs, it is reinvesting in domestic production capacity to reduce reliance on Chinese imports. Germany, Italy, and Switzerland continue to lead regional API manufacturing, especially for high-margin and complex molecules.

APAC's API consumption (excluding India, China, and Japan) is projected to rise from USD 10.5 billion in 2024 to USD 13.5 billion by 2029, at a CAGR of 5.2%, underpinned by growing pharmaceutical usage in Southeast Asian countries and a gradual shift toward high-value innovator drugs. While demand continues to grow, Asia remains the dominant global supplier of APIs, accounting for over 60% of global volume, led by India and China.

- India's API market is expected to grow from USD 4.1 billion in 2024 to USD 6.0 billion by 2029, reflecting a CAGR of 7.6%, nearly 1.5x the global average. The surge in demand is fueled by the increasing demand for generic medications, expanding domestic pharmaceutical consumption, and government initiatives like the PLI scheme promoting production. The rapid supply growth is also driven by India's emergence as a preferred alternative to China in the pharmaceutical supply chain, a strategy often referred to as "China +

1". India's strong manufacturing capabilities, cost advantages, and favorable regulatory environment make it an attractive destination for pharmaceutical production and sourcing, allowing Indian API companies like Virupaksha to position themselves as global players of choice.

- China remains a key supplier of fermentation-based APIs, vitamins, and KSMs. However, API demand in China is expected to grow from USD 23.4 billion in 2024 to USD 26.2 billion by 2029 (CAGR of 2.3%), constrained by tighter environmental regulations, higher compliance costs, and state-led price controls. Despite this, China's technological strength and scale in API production keep it central to global supply chains.
- Japan's API market is anticipated to grow modestly from USD 7.2 billion in 2024 to USD 7.7 billion in 2029, with a subdued CAGR of 1.4%. While value growth remains flat, volumes are expected to rise with increased generic drug adoption and greater pharmaceutical use among an aging population. The market remains focused on high-purity APIs and niche compounds tailored to domestic needs.

The RoW, including Latin America, the Middle East, and Africa, is projected to grow from USD 17.6 billion in 2024 to USD 23.5 billion in 2029, with a robust CAGR of 5.9%. Demand is increasing due to improvements in healthcare access, expansion of public health programs, and a greater emphasis on local manufacturing of cost-effective generic APIs. Governments and private players are actively investing in building regional production capacity.

### 3.1.2 API Market for Select Products and the Competitive Landscape

For the purpose of this report, a select set of APIs and their suppliers has been analyzed below.

**Fexofenadine Hydrochloride (Fexofenadine):** Fexofenadine, a leading second-generation antihistamine, is widely relied upon for allergic rhinitis and chronic idiopathic urticaria. First introduced in 1996, it quickly gained prominence due to its non-sedating profile. Available today as tablets, capsules, orally disintegrating tablets, suspensions, and fixed-dose combinations with decongestants such as pseudoephedrine, the drug has transitioned to both prescription and OTC status across key markets. Generics first became available in the mid-2000s, further expanding accessibility. The global API market by volume for Fexofenadine was estimated to be 450-490 tons in 2024, while the global formulation market was estimated between USD 770–840 million, supported by consistent seasonal demand and the convenience of multiple OTC formats that sustain its broad consumer reach. In FY25, Virupaksha supplied 95.4 tons of Fexofenadine API in the market.

**Fluconazole**: Fluconazole, a triazole antifungal launched in 1990, remains a cornerstone treatment for candidiasis and cryptococcal meningitis, as well as for prophylaxis in immunocompromised patients. Widely available as oral tablets, capsules, oral suspension, and injectable formulations, it offers dosing flexibility for both outpatient and inpatient use. The first generic launches occurred in 2004, greatly expanding its global footprint. In 2024, the API market by volume was 110-140 tons while the formulation market was valued in the range of USD 690–750 million, underpinned by its central role in women's health, HIV care, and hospital-based prophylaxis. Ongoing demand in both developed and emerging healthcare systems continues to provide steady growth prospects. Among the 14 Indian DMF holders for regulated markets, Virupaksha supplied 81.1 tons of Fluconazole API in FY25.

**Tramadol Hydrochloride (Tramadol):** Tramadol, approved in 1995, is one of the most established centrally acting analgesics for the management of moderate to moderately severe pain. Its versatility lies in multiple formulations, including immediate-release and extended-release tablets, oral drops, injectables, and combinations with acetaminophen, making it a mainstay in both acute and chronic pain settings. Generics entered the market in 2002, ensuring wide availability across geographies. The 2024 global tramadol API market by volume was 525-570 tons, and the formulation market was estimated in the range of USD 530–570 million, with demand supported by broad formulary presence across primary care, hospitals, and pain clinics. The wide range of delivery formats and strong penetration across therapeutic settings continue to reinforce its relevance globally. Virupaksha was one of the key Indian API suppliers in FY25, supplying 246.9 tons of tramadol API.

**Tapentadol Hydrochloride (Tapentadol):** Tapentadol, a newer-generation centrally acting analgesic with dual mechanisms of action, was first approved in 2008, followed by extended-release formulations in 2011. It is primarily indicated for acute pain, chronic severe pain, and diabetic neuropathic pain. Marketed under the brand Nucynta, the product is available as immediate-release and extended-release oral tablets, with exclusivity in several markets, ensuring strong brand positioning. The 2024 formulation market size was in the range of USD 1.4–1.5 billion, while the global API market by volume was 46-50 tons, reflecting robust uptake in North America and Europe. Tapentadol continues to gain recognition as a differentiated option within the analgesic landscape, with prospects supported by label expansions and growing awareness of its dual-action profile. Given the relative recency of the product, there were only 6 Indian companies with active regulated market DMFs for Tapentadol. One of the suppliers, Virupaksha, held a notable position in the market, supplying 130.5 tons of Tapentadol API in FY25.

The tables below indicate the API volumes of these products in 2024, the growth in demand between 2019 and 2024, and the API supply by Virupaksha in FY25.

**Exhibit 3.3: Global API Market for Select Products by Volume, CY 2024**

| Product | Therapy Area | Indications | Approximate Volume, 2024, Tons | Approximate Volume Growth, CAGR (2019-2024), % |
|---|---|---|---|---|
| **Fexofenadine** | Respiratory | Allergies, urticaria | 450-490 | 7.7% |
| **Fluconazole** | Systemic Anti-infectives | Fungal infections | 110-140 | 2.6% |
| **Tramadol** | Central Nervous System | Moderate-severe pain | 525-570 | -0.6% |
| **Tapentadol** | Central Nervous System | Chronic pain | 46-50 | 1.3% |

*Source: Frost & Sullivan*
*Note: API prices are very volatile and differ significantly across markets; therefore, volume is a stronger metric for depicting market dynamics*

**Exhibit 3.4: Competitive Landscape for Select Products, CY2024/FY2024**

| Product | Number of Global API Suppliers with regulated market DMFs | Number of Indian API Suppliers with regulated market DMFs | Virupaksha's Volume Sales, Tons (FY25) |
|---|---|---|---|
| **Fexofenadine** | 28 | 17 | 95.4 |
| **Fluconazole** | 24 | 14 | 81.1 |
| **Tramadol** | 34 | 19 | 246.9 |
| **Tapentadol** | 11 | 6 | 130.5 |

*Source: Pharmacompass, Company Data, Frost & Sullivan*
*Note: Regulated markets for this analysis include the US, Europe, and Japan; DMF data as of August 2025*

## 3.2 API SUPPLY VALUE CHAIN

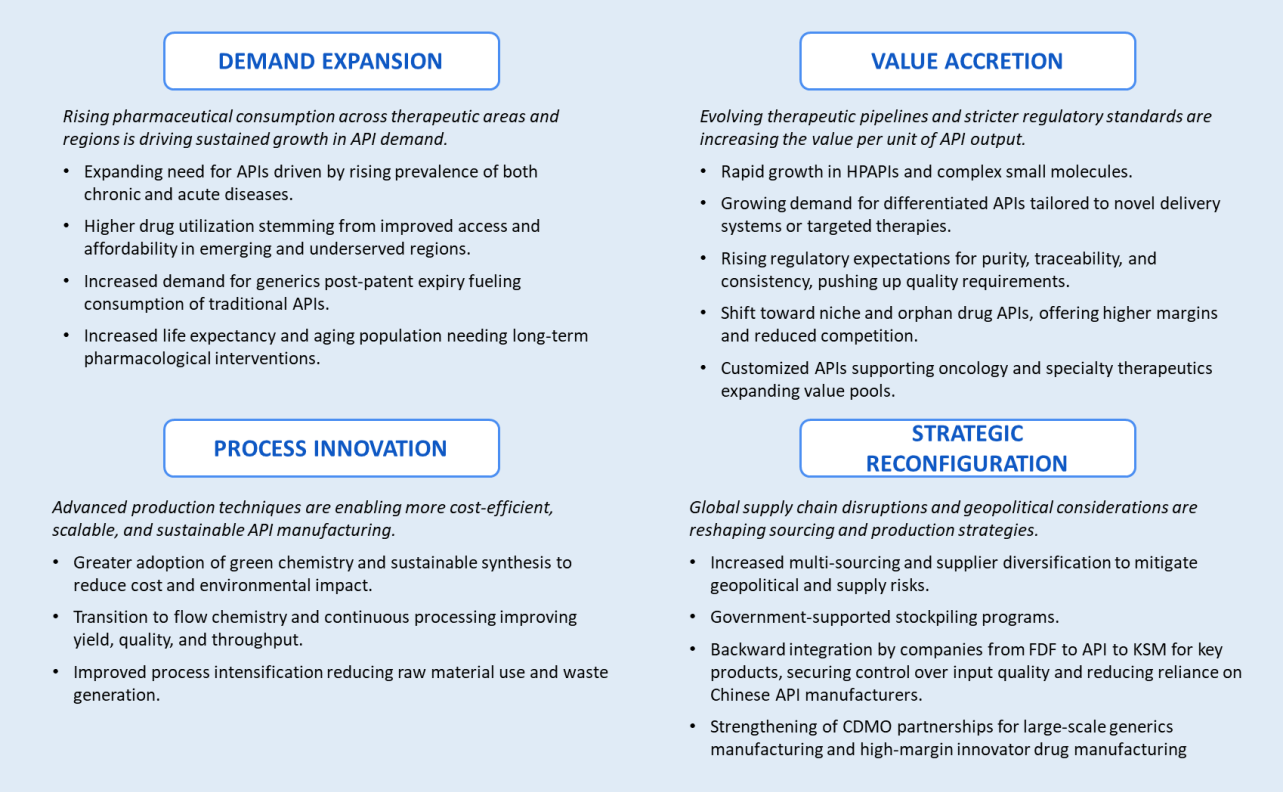
The flow of pharmaceutical APIs to the market is shaped by a combination of sourcing models, buyer profiles, regulatory requirements, and scale of supply. At the production level, APIs originate either from in-house manufacturing units, custom synthesis, or contract development and manufacturing (CDMO) engagements, contract manufacturing organizations (CMOs), or through off-the-shelf commodity suppliers and traders. These APIs are subsequently channeled to two broad buyer categories: innovator companies, which demand highly specialized and tightly regulated APIs for novel drugs, and generic manufacturers, which seek cost-efficient bulk APIs for established formulations.

The market destination adds another layer of differentiation. Regulated markets such as the US, EU, and Japan impose stringent quality, compliance, and documentation requirements (DMFs, CEPs, regulatory audits), while semi-regulated and unregulated markets (Latin America, Africa, and parts of Asia) operate under less rigorous oversight and are primarily price-driven. Finally, supply can occur at lab or pilot scale, typically in early research and clinical trial stages, or at commercial scale, where APIs are produced in bulk to serve approved innovator drugs or generic formulations.

The interplay of these factors dictates not only the flow of APIs but also the profit margins. Margins are typically highest in custom synthesis for innovators in regulated markets at lab and early commercial scale, given the high entry barriers, IP protection, and limited supplier competition. Margins are moderate in contract manufacturing and off-the-shelf supply to regulated generic companies, where compliance costs are significant, but volumes are large and relatively stable. In contrast, commodity APIs supplied through traders to unregulated markets operate at the lowest margins, as price sensitivity and oversupply drive down profitability.

## 3.3 GROWTH DRIVERS OF THE GLOBAL API MARKET

The growth of the API market is propelled by an expanding burden of chronic and lifestyle-related diseases and rising demand for generic drugs. Advancements in therapeutics are driving demand for high-quality and specialty APIs, coupled with technological advancements are fetching higher prices for APIs. Additionally, outsourcing trends, supported by favorable regulatory frameworks and the expansion of high-quality manufacturing capacities in emerging markets, continue to reinforce market growth by ensuring both cost competitiveness and global supply chain resilience. Some of the growth drivers for the API market are discussed below.



# 4 GLOBAL PHARMA INTERMEDIATES MARKET OVERVIEW

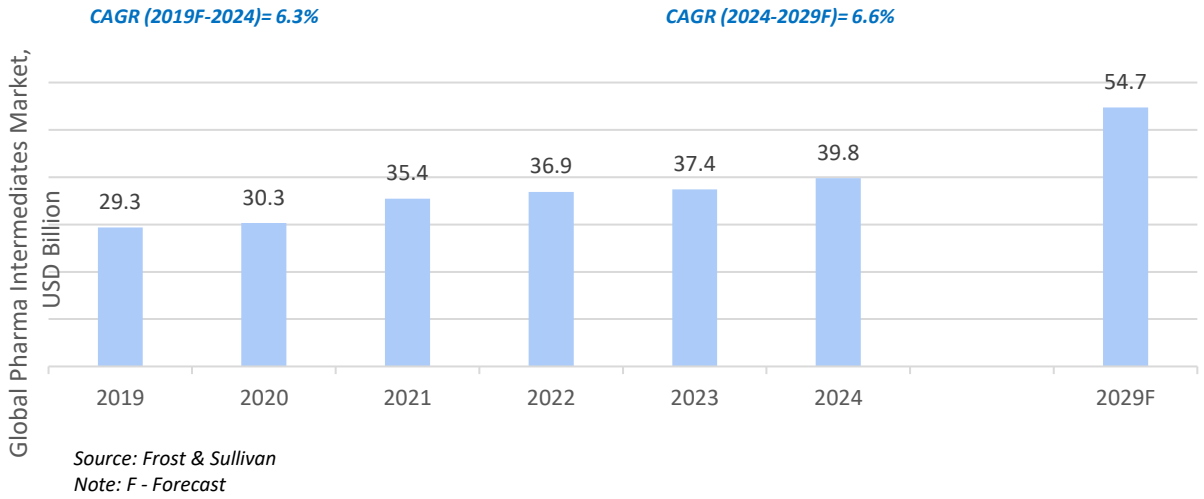
## 4.1 OVERVIEW OF THE GLOBAL PHARMA INTERMEDIATES MARKET

***Pharmaceutical intermediates are essential building blocks in drug synthesis, serving as the critical link in the multi-step process of producing final formulations. The market is expected to outpace the growth of formulations and APIs due to rising demand for high-purity and quality intermediates, which typically command a higher price.***

Pharma intermediates are chemically defined compounds produced during the multi-step synthesis of APIs. These intermediates undergo further molecular transformations through chemical reactions, such as functional group modifications, coupling reactions, or cyclization, to yield the final bioactive molecule. Intermediates form a critical link in pharmaceutical production since their purity, structural integrity, and synthetic efficiency are critical in ensuring the yield, efficacy, and safety of the final pharmaceutical product. Their market growth is directly influenced by the expansion of API production, with increasing pharmaceutical demand driving sustained momentum.

The global pharmaceutical intermediates market was valued at approximately USD 39.8 billion in 2024 and is projected to reach USD 54.7 billion by 2029. Between 2019 and 2024, the market expanded at a CAGR of 6.3%, with future growth expected at a CAGR of 6.6% from 2024 to 2029. This sustained expansion is underpinned by technological advancements in chemical synthesis, increased regulatory compliance requirements for higher purity intermediates, and manufacturing process optimization. Furthermore, the rise in the adoption of complex formulations will continue to intensify the need for high-quality intermediates, fetching higher market prices and thus overall market value.

**Exhibit 4.1: Global Pharma Intermediates Market, 2019-2029F**




*Source: Frost & Sullivan*
*Note: F - Forecast*

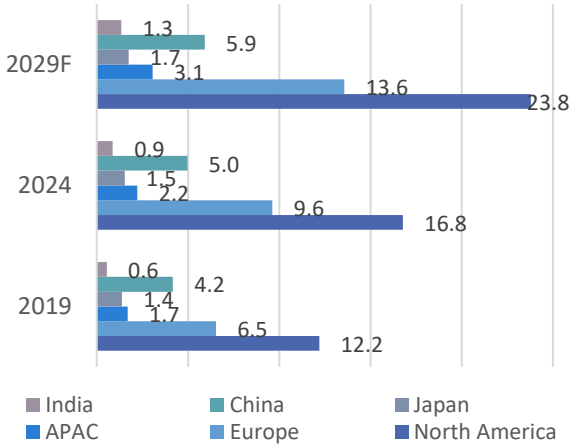
### 4.1.1 SMALL MOLECULE INTERMEDIATES MARKET BY REGIONS

***North America will retain its leadership in absolute terms, high-growth regions such as India and broader APAC are reshaping the global competitive landscape, driven by supportive policy environments, increasing manufacturing self-reliance, and expanding pharma exports.***

While the global small molecule intermediates market is poised for robust growth, regional trajectories diverge significantly due to varying levels of small molecule adoption vis-à-vis biologics, differing regulatory expectations

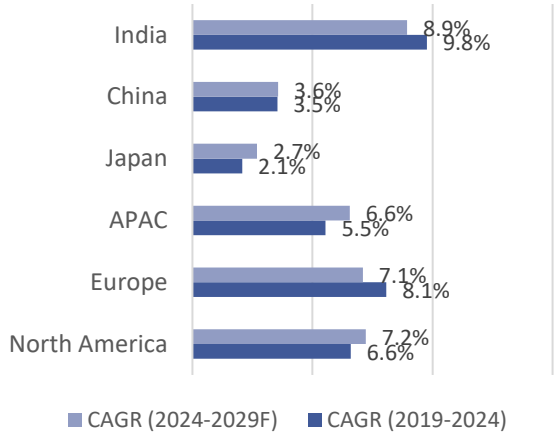
that increasingly favor high-purity and high-value intermediates, and disparities in backward integration that influence procurement strategies and intermediate pricing.

**Exhibit 4.2A: Global Small Molecule Intermediates Market by Region, 2019, 2024, 2029F, USD Billion**




*Source: Frost & Sullivan*
*Note: F- Forecast, APAC excludes India, China, and Japan*

**Exhibit 4.2B: Growth Rate of Small Molecule Intermediates Market by Region, 2019-2029F**




*Source: Frost & Sullivan*
*Note: F- Forecast, APAC excludes India, China, and Japan*

Regionally, North America remains the largest regional market, with demand growing from USD 12.2 billion in 2019 to USD 16.8 billion in 2024 and further to USD 23.8 billion by 2029. With a forecasted CAGR of 7.2% between 2024 and 2029, the region will continue to account for nearly half of global small molecule intermediate demand by 2029. This sustained dominance is attributed to the concentration of high-value pharmaceutical manufacturing, a strong pipeline of small molecule therapies, comprising high-volume generics as well as high-value complex and novel therapies.

Europe will maintain a steady trajectory, growing from USD 9.6 billion in 2024 to USD 13.6 billion in 2029, with a CAGR of 7.1%. Its share of the global market will remain relatively constant at 20-25%. Europe's demand growth is underpinned by consistent uptake of both branded and generic small molecule drugs, particularly in chronic and rare disease segments. Additionally, regulatory emphasis on quality and traceability continues to favor the use of advanced intermediates, supporting value-driven growth.

APAC (excluding India, China, and Japan) is one of the faster-growing demand centers, expanding from USD 2.2 billion in 2024 to an anticipated USD 3.1 billion in 2029, translating to a CAGR of 6.6%. This acceleration is largely driven by expanding pharmaceutical consumption, demographic tailwinds, and the growing manufacturing hubs within Southeast Asia. Governments in this region are also actively pursuing policies that encourage localization of finished dose production, which in turn lifts upstream demand for intermediates.

India is witnessing a sharp rise in domestic demand, projected to grow from USD 0.9 billion in 2024 to USD 1.3 billion by 2029, reflecting a robust CAGR of 8.9% for the period. India's share of the global intermediates market is set to increase significantly, underpinned by growing pharmaceutical exports, local formulation manufacturing, and a shift toward vertical integration. While supply-side policies such as the PLI scheme and incentives for bulk drug parks focus on backward integration, their impact is also visible on the demand side, as formulation manufacturers increasingly procure intermediates domestically to hedge against global supply disruptions.

China is expected to grow from USD 5.0 billion in 2024 to USD 5.9 billion by 2029, recording a CAGR of 3.6% over the forecast period. While its global share remains stable, demand is supported by the scale of domestic pharmaceutical

production and the rising use of advanced intermediates in branded generics. However, environmental and regulatory constraints, along with geopolitical shifts such as the China+1 strategy, may cap rapid expansion, especially in value terms.

Japan, although a relatively small market, will see demand rise from USD 1.5 billion in 2024 to USD 1.7 billion by 2029. The market remains largely self-contained, driven by consistent demand for premium quality intermediates in a mature pharmaceutical ecosystem. But a stronger push for generics is expected to drive volume demand for drugs and, in turn, intermediates.

The growth of the small molecule pharma intermediates market across regions is predominantly driven by downstream pharmaceutical demand and the rising complexity and value of small molecule APIs. While North America and Europe will retain their lead in absolute terms due to sustained demand for high-value therapies, emerging demand hubs such as India and Southeast Asia are reshaping the demand landscape. This regional shift reflects broader trends in therapeutic consumption, localization of manufacturing, and evolving regulatory and policy support frameworks.

## 4.2 GROWTH DRIVERS OF THE GLOBAL PHARMA INTERMEDIATES MARKET

The global small molecule pharma intermediates market is being propelled by a combination of rising pharmaceutical demand, increasing product complexity, evolving manufacturing strategies, and technological innovation. Together, these factors are driving both volume and value growth, while reshaping the competitive and operational landscape of intermediate production. Some of the growth drivers are listed below:

**VOLUME-DRIVEN GROWTH**

*Demand growth resulting from rising drug consumption across geographies and therapeutic areas arising from factors like:*

- Increasing prevalence of chronic and lifestyle-related diseases
- Improved access to healthcare and affordability in emerging markets
- Expansion of generic drug consumption and insurance penetration
- Demographic factors such as aging populations and urbanization

**VALUE-DRIVEN GROWTH**

*Growth in market value driven by the nature of evolving drug pipelines and increasing regulatory rigor and specific factors like:*

- Shift toward complex, high-potency small molecule APIs
- Regulatory emphasis on quality, traceability, and documentation
- Stricter compliance requirements in regulated markets
- Growing demand for differentiated, high-spec intermediates

**STRUCTURAL INDUSTRY SHIFTS**

*Industry-wide transformations in how intermediates are sourced, produced, and integrated into pharmaceutical operations:*

- Expansion of CDMO networks and contract manufacturing
- Backward integration by formulation players to secure input supply
- Government policy incentives for localizing intermediate production
- Supply chain de-risking and multi-source diversification post-COVID

**TECHNOLOGICAL TRANSFORMATION**

*Impact of innovation in chemical processes and manufacturing technologies on market evolution including factors like:*

- Adoption of green chemistry and sustainable process technologies
- Emergence of flow chemistry and continuous manufacturing
- Process intensification to improve yields and reduce waste
- Digitalization and automation in chemical synthesis and quality control

# 5 ROLE OF INDIAN COMPANIES IN THE GLOBAL PHARMA SUPPLY

## 5.1 ROLE OF INDIAN COMPANIES IN API AND FDF SUPPLY

***While the growth in the domestic market is undeterred, India has gained new strides in the export market, particularly since emerging as a reliable supplier during the pandemic.***

India has been aptly crowned the Pharmacy of the World, particularly for its manufacturing prowess and contributions to the global pharma sector. India is the largest provider of generic medicines worldwide, holding a 20% share in global supply by volume, encompassing a diverse range of 60,000 generic brands across 60 therapeutic categories. The industry's global reach is underscored by the fact that India exports pharmaceuticals to over 200 countries, supplying over 50% of Africa's generic medicine needs, almost 40% of the generic demand in the US, and about 25% of all medicines in the UK.[22].

With a robust infrastructure, India boasts the highest number of US-FDA-compliant pharmaceutical plants outside the US. It houses over 3,000 pharmaceutical companies and has an extensive network of over 10,500 manufacturing facilities. The sector is further supported by a highly skilled resource pool, including 500 API manufacturers contributing approximately 5.2% to the global API Industry by value.[23]. The total pharmaceutical exports (API + FDF[24]) for 2024 reached USD 27.8 billion, highlighting the sector's global competitiveness.

***While FDF exports have grown by 7.6% over the past five years, driven by strong demand in regulated markets, APIs have registered a slower growth rate of 3.4%, despite increased API production. This more modest growth reflects reduced import dependence among domestic formulation companies, which are increasingly sourcing APIs from local Indian manufacturers.***

Globally, India is the 12th largest exporter of pharmaceutical formulations by value in 2024. Formulation exports from India grew from USD 15.9 billion in 2019 to USD 22.9 billion in 2024 and are projected to reach USD 35.4 billion by 2029, reflecting a CAGR of 7.6% during 2019–2024 and a stronger 9.1% CAGR over 2024–2029. Regulated markets account for more than 50% of formulation exports by value, partly due to higher price realization per unit. In 2019, exports to regulated markets stood at USD 8.9 billion and increased at a CAGR of 8.7% to USD 13.4 billion in 2024. These are forecast to rise further to USD 20.9 billion by 2029, growing at a CAGR of 9.2%. Formulation exports to emerging markets (including semi-regulated and unregulated markets) rose from USD 7.0 billion in 2019 to USD 9.5 billion in 2024 (CAGR of 6.2%) and are projected to reach USD 14.5 billion by 2029, growing at a CAGR of 8.8%.

While India imports some bulk drugs, it is also one of the largest API exporters globally. India has a long-standing history in API manufacturing, once holding global leadership before losing ground to China due to relatively higher production costs, which pushed its dependence on Chinese APIs to as high as 60% for certain products. However, the landscape is shifting as India re-emerges as a key supplier of APIs and intermediates, supported by government production-linked incentive schemes, backward integration initiatives by formulation companies, and growing private sector investments. India's emergence as a preferred alternative to China in the pharmaceutical supply chain is bolstered by its strong manufacturing capabilities, cost advantages, and favorable regulatory environment.

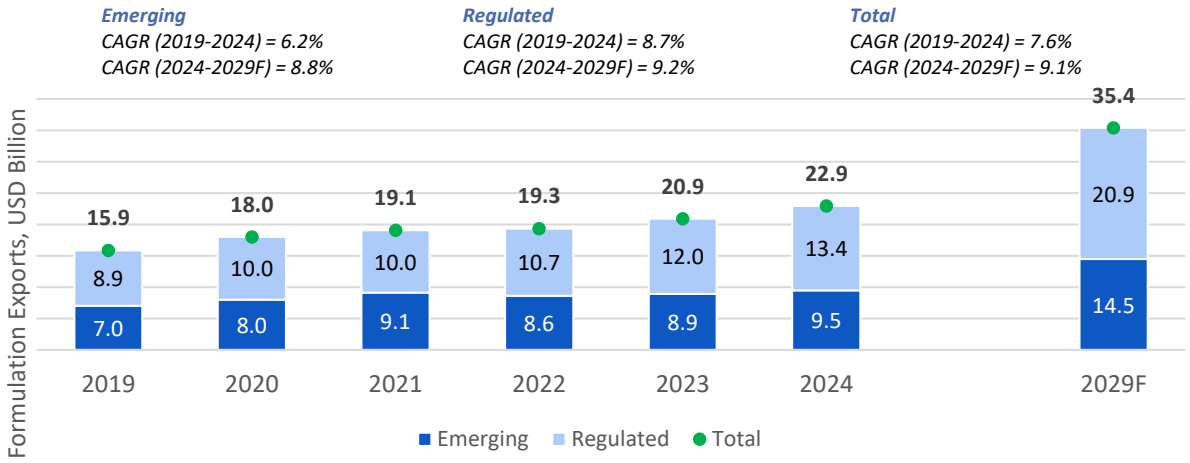
High process efficiencies, strong regulatory track record, and inherent cost advantages continue to strengthen India’s position in the global API value chain. API exports, which stood at USD 4.1 billion in 2019, increased modestly to USD 4.8 billion in 2024, reflecting a slower CAGR of 3.4% during this period as increased domestic utilization absorbed a larger share of output. Indian formulation companies have consciously reduced reliance on imports, sourcing more APIs locally. In tandem, exports are projected to grow from USD 4.8 billion in 2024 to USD 6.3 billion by 2029 at a CAGR of 5.5%, driven by rising global pharma demand and the cost competitiveness of Indian suppliers. Exports to regulated markets grew from USD 1.9 billion in 2019 to USD 2.3 billion in 2024 (CAGR of 3.9%) and are projected to reach USD 3.1 billion by 2029 (CAGR of 6.4%). Similarly, exports to emerging markets grew from USD 2.2 billion to USD 2.5 billion (CAGR of 2.9%) and are expected to reach USD 3.2 billion by 2029 (CAGR of 4.7%).

India’s supply has particularly expanded in the fast-growing pharmaceutical markets of Africa, the Middle East, and APAC. The competitive advantage of Indian pharmaceutical products stems from their integration of cost efficiency with stringent quality compliance standards, a value proposition that resonates strongly with emerging markets in

[22] Invest India: Formulating success: The Indian pharmaceutical industry.
[23] Invest India Report
[24] FDF represents the final, patient-ready pharmaceutical product that has undergone complete processing and manufacturing to achieve its intended therapeutic form for administration.

search of cost-effective and reliable healthcare solutions. Some of the key markets that import from India are listed below:

**Exhibit 5.1: India's Formulation Exports by Value, 2019-2029F**



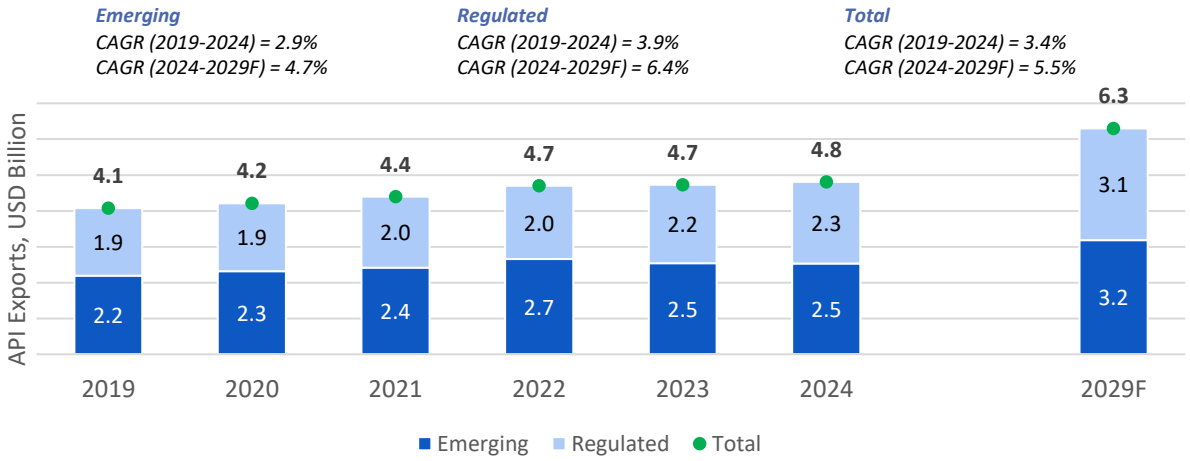

*Source: Ministry of Commerce and Industry, Trade Map, Frost & Sullivan*
*Note: Regulated markets as defined by WHO as 'Stringent Regulatory Authority' 2022 and 'WHO Listed Authorities' 2024 includes 38 countries as of 2024. All other countries are classified as emerging markets and include semi-regulated and unregualted markets, F - Forecast*

**Exhibit 5.2: India's Formulation Export to Select Countries, 2019 and 2024**

| Country | Export Value, 2019, USD Million | Market Share, 2019, % | Export Value, 2024, USD Million | Market Share, 2024, % | CAGR (2019-2024) |
|---|---|---|---|---|---|
| US | 6277.8 | 39.5% | 8,786.9 | 38.3% | 7.0% |
| UK | 449.8 | 11.0% | 764.9 | 15.9% | 11.2% |
| France | 214.3 | 5.3% | 588.6 | 12.2% | 22.4% |
| Germany | 264.7 | 6.5% | 341.0 | 7.1% | 5.2% |
| Japan | 61.5 | 1.5% | 95.2 | 2.0% | 9.1% |
| China | 35.2 | 0.9% | 84.2 | 1.7% | 19.0% |
| Spain | 54.5 | 1.3% | 74.1 | 1.5% | 6.3% |
| Italy | 35.6 | 0.9% | 62.1 | 1.3% | 11.8% |

*Source: Ministry of Commerce and Industry, Trade Map, Frost & Sullivan*

**Exhibit 5.3: India's API Exports by Value, 2019-2029F**




*Source:Ministry of Commerce and Industry, Trade Map, Frost & Sullivan*
*Note: Regulated markets as defined by WHO as 'Stringent Regulatory Authority' and 'WHO Listed Authorities' includes 38 countries as of 2024. All other countries are classified as emerging markets and include semi-regulated and unregualted markets, F - Forecast*

**Exhibit 5.4: India's API Export to Select Countries, 2019 and 2024**

| Country | Export Value, 2019, USD Million | Market Share, 2019, % | Export Value, 2024, USD Million | Market Share, 2024, % | CAGR (2019-2024) |
|---|---|---|---|---|---|
| US | 342.3 | 8.4% | 460.2 | 9.6% | 6.1% |
| China | 230.3 | 5.7% | 215.0 | 4.5% | -1.4% |
| Japan | 135.3 | 3.3% | 132.3 | 2.7% | -0.4% |
| Germany | 189.5 | 4.7% | 131.6 | 2.7% | -7.0% |
| Spain | 94.4 | 2.3% | 127.4 | 2.6% | 6.2% |
| Italy | 81.9 | 2.0% | 116.0 | 2.4% | 7.2% |
| France | 85.3 | 2.1% | 104.8 | 2.2% | 4.2% |
| UK | 93.6 | 2.3% | 89.1 | 1.9% | -1.0% |

*Source: Ministry of Commerce and Industry, Trade Map, Frost & Sullivan*

## 5.2 COMPETITIVE ADVANTAGES OF INDIAN COMPANIES

***Cost competitiveness, robust industrial infrastructure, and progressive intellectual property reforms position India as a global hub for both API and FDF manufacturing.***

India is emerging as a comprehensive pharmaceutical manufacturing powerhouse, with competitive advantages not only in API production but also in FDF capabilities. The country's cost-efficient and quality-compliant production ecosystem, underpinned by a strong legacy of serving highly regulated markets, places it in a unique position to address evolving global pharmaceutical supply needs. As global pharma companies grapple with escalating pricing pressures and increasing therapeutic complexity, India offers a compelling value proposition anchored in technical prowess, manufacturing scalability, and regulatory readiness.

- **A thriving chemicals industry forms the bedrock for API and intermediate production:** India hosts one of the world's most expansive specialty chemicals industries, producing over 70,000 products, and ranks as the sixth-largest chemical producer globally and the third largest in Asia by output[25]. This sector provides a vital foundation for the synthesis of intermediates and KSMs, including high-purity and advanced intermediates. As pharmaceutical innovation accelerates towards more structurally intricate therapies, India's capabilities in intermediate chemistry will be pivotal in supporting sophisticated API production that enhances drug efficacy, bioavailability, and performance.
- **A robust R&D ecosystem fuels continuous improvement in API and FDF manufacturing:** API and FDF manufacturing demand significant scientific and technological rigor—from complex multi-step synthesis and purification to biotechnological operations involving fermenters and bioreactors. India's expansive R&D backbone, bolstered by over 3,500 engineering institutions and a pool of 1.5 million engineering graduates annually[26], enables continual process innovation, cost optimization, and sustainability in manufacturing. In tandem, the country's burgeoning startup ecosystem and growing international research collaborations amplify its capacity for novel process development and large-scale implementation—essential for ensuring consistency in quality and environmental stewardship.
- **Proactive government initiatives catalyze scale and competitiveness:** Under the aegis of the 'Atmanirbhar Bharat' initiative, India has unveiled a series of structural enablers to enhance manufacturing self-reliance and global competitiveness. Strategic reforms include increasing the foreign direct investment (FDI) cap, instituting a modernized intellectual property regime, and implementing targeted production-linked incentives (PLI. Central to this effort is the PLI Scheme for Pharmaceuticals, launched in 2021 with a total outlay of INR 15,000 crore, spanning FY20-21 to FY28-29. The goals include reducing import dependence (especially on China), promoting innovation and diversification, including diagnostics, cell- and gene-therapy, boosting employment, and driving incremental sales and exports of APIs and high-value pharmaceutical products. In parallel, a dedicated PLI Scheme for Bulk Drugs operates with an outlay of INR 6,940 crore focused on 41 critical bulk drugs (APIs/KSMs). It spans FY20-21 to FY29-30, incentivizing manufacturing through graded rates: 20% of eligible sales for the first four years (incentives taper to 15% in year five and 5% in year six) for fermentation-based APIs; and 10% of eligible sales for six years for chemical synthesis-based products[27]. As of March 2025, investment commitment for this scheme was INR 3,938.5 crore over six years, already surpassed with actual investments of INR 4,570 crore. These have generated cumulative sales of INR 1,817 crore (including exports of INR 455 crore) and avoided import costs of INR 1,362 crore by creating domestic capacity for 25 identified KSMs/Intermediates/APIs. Simultaneously, the Bulk Drug Parks Scheme was inaugurated in 2020 to create specialized industrial zones with shared infrastructure for API production, such as solvent-recovery units, testing labs, steam/power systems, warehouses, logistics, regulatory support centers, and more. Investments in bulk drug parks, shared R&D infrastructure, and fermentation technologies, spearheaded by entities such as CSIR-NCL, are poised to expand the domestic manufacturing base and reduce reliance on imported raw materials, further bolstering India's position as a reliable global supplier.
- **Proven regulatory track record in APIs and FDFs ensures global market readiness:** India's deep-rooted credibility in highly regulated markets underscores its end-to-end manufacturing competence. In Q1 2025, Indian companies accounted for 43% of all US Drug Master File (DMF)[28] submissions. By the end of 2024, Indian companies operated 216 US FDA-approved API manufacturing facilities, significantly outpacing counterparts in the US and China. Additionally, India had 155 facilities approved for either formulations or formulations plus APIs, demonstrating its manufacturing capabilities[29]. This regulatory proficiency

[25] Indian Trade Portal: Chemical Industry and Export in India
[26] All India Council for Technical Education
[27] Ministry of Chemicals and Fertilizers
[28] Pharmacompass: USDMF Analysis
[29] FDA: GDUFA

empowers India to seamlessly meet the global demand for APIs and FDFs, offering a reliable, high-quality, and scalable supply base across therapeutic categories.

- **Superior cost efficiency enables global pharma to navigate margin pressures:** Amid increasing pricing constraints from health systems and payers, pharmaceutical manufacturers are under pressure to secure high-quality inputs at competitive costs. India offers unmatched cost advantages across infrastructure, operations, and workforce. The capital investment required to establish an FDA-compliant facility in India is approximately 50% lower than in developed countries, while operating costs are 40–70% lower. Labor costs are equally compelling - India's average minimum wage in 2024 was USD 55/month, substantially lower than China's USD 267/month[30]. As wage inflation rises in China, India has become increasingly more cost-effective for global players to anchor both API and FDF manufacturing operations in the country.

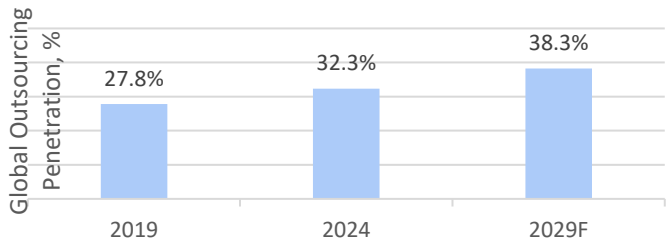
# 6 GLOBAL CONTRACT DEVELOPMENT & MANUFACTURING ORGANIZATION (CDMO) MARKET OVERVIEW

## 6.1 OVERVIEW OF THE GLOBAL CDMO MARKET

***Given the dominance of small molecules in the total pharma market and their strong legacy, these products have accounted for the dominant share (~75% of the total CDMO Market in 2024) of CDMO services. Growth in the small molecule CDMO market is expected to outpace the growth of the global pharma market by nearly 100 basis points between 2024 and 2029.***

Given the enduring dominance of small molecules in the global pharmaceutical landscape, their well-established legacy continues to shape CDMO service demand. In 2024, small molecules accounted for approximately 75% of the total CDMO market, reflecting their central role in drug development and commercialization. Notably, growth in the small molecule CDMO segment is set to outpace the expansion of the overall pharmaceutical market by nearly 100 basis points between 2024 and 2029, underscoring the rising preference for outsourced manufacturing solutions.

**Exhibit 6.1: Global CDMO Outsourcing Penetration, 2019-2029F**




*Source: Industry KOL, Frost & Sullivan*
*Note: F- Forecast*

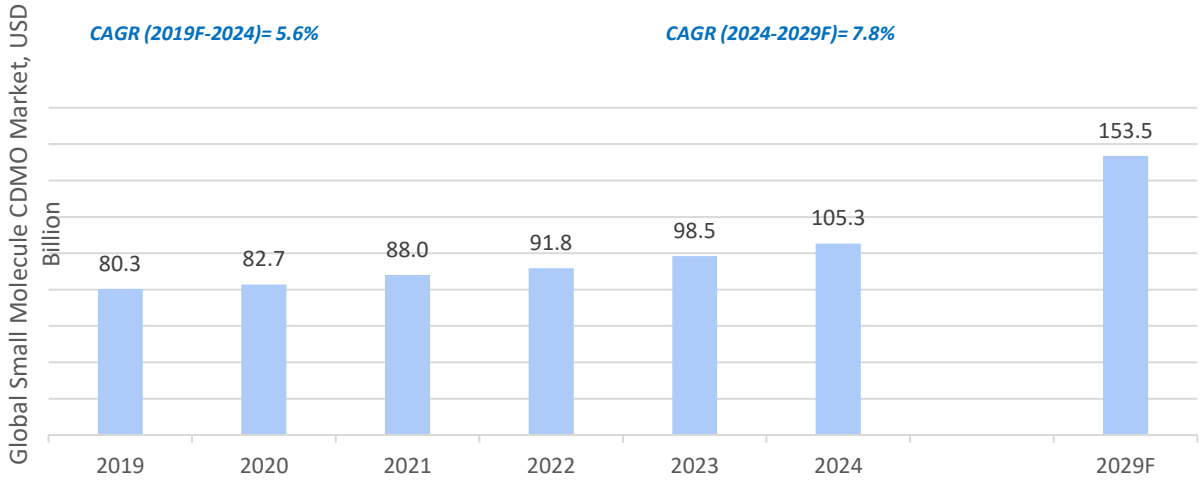
Several structural drivers underpin this accelerated growth. Outsourcing penetration, which stood at 28% in 2019, is expected to reach 38% by 2029, driven by increasing drug complexity, rapid technological advancements, and a strategic shift within pharmaceutical companies from capital expenditure (Capex) to operational expenditure (Opex) models. Furthermore, the impending loss of exclusivity (LOE) for key blockbuster drugs is fueling demand for generics, further reinforcing the need for specialized CDMO capabilities.

The small molecule CDMO market is projected to expand from USD 105.3 billion in 2024 to USD 153.5 billion in 2029, reflecting its sustained relevance and expanding role within the industry. More broadly, the overall CDMO market is set to grow at a CAGR of 7.8% between 2024 and 2029, accelerating from its historical CAGR of 5.6% from 2019 to 2024. This growth trajectory is supported by the expansion of asset-light pharmaceutical business models, the drive for cost efficiency and manufacturing optimization, the increasing demand for comprehensive end-to-end CDMO

[30] Country economy

services, and the strategic advantage of economies of scale, all of which position CDMOs as indispensable partners in the evolving pharmaceutical ecosystem.

**Exhibit 6.2: Global Small Molecule CDMO Market, 2019-2029F**




*Source: Frost & Sullivan*
*Note: F - Forecast, Only includes market for small molecules*

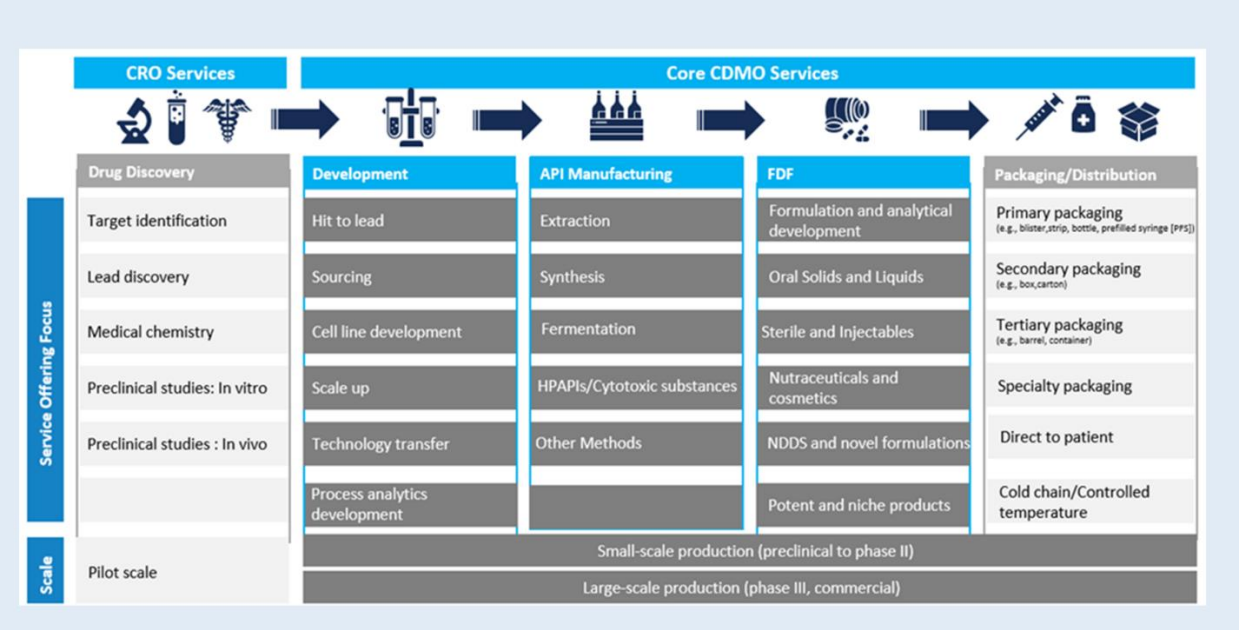
### 6.1.1 Service Model

***CDMOs are increasingly participating in larger parts of the pharma value chain, from drug discovery to commercialization across multiple geographies, in response to evolving demands from pharma sponsors.***

As CDMOs expand their scope of services, they are forging deeper collaborations with Contract Research Organizations (CROs) and pharmaceutical sponsors, ensuring a seamless transition from R&D to development and commercial manufacturing. Beyond the post-research and discovery phase, CDMOs now offer comprehensive support across formulation development, bioavailability/bioequivalence (BA/BE) studies for generics, and essential ancillary services such as clinical trial packaging, inventory management, and logistics coordination for both trial and commercial-scale distribution.

At the core of pharmaceutical manufacturing, CDMOs oversee the production of intermediates and starting materials, which are subsequently synthesized into APIs and formulated into finished drug products. Given the diversity in drug modalities, manufacturing processes vary significantly, necessitating specialized capabilities. For instance, the production of oral solid dosage forms, sterile injectables, hormonal therapies, nutraceuticals, ayurvedic medicines, and even cosmetics demands distinct expertise, infrastructure, and compliance with stringent regulatory standards. CDMOs cater to multiple production scales, from small lab-scale batches and clinical trial supplies to full-scale commercial manufacturing, offering flexibility tailored to the drug's lifecycle stage.

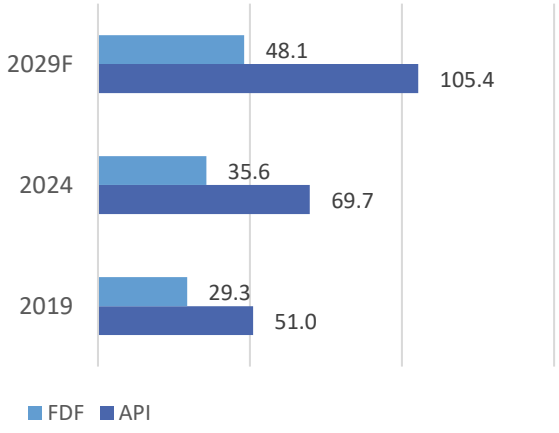
Recognizing the need for integrated end-to-end solutions, CDMOs are strengthening their value proposition by streamlining operations, enhancing technology transfer efficiency, and fostering long-term partnerships with pharmaceutical sponsors. The increasing preference for single-CDMO partnerships throughout the drug development continuum enhances client retention, as pharma companies seek to minimize the complexities associated with transitioning between multiple service providers. This structural shift underscores the growing strategic importance of CDMOs, as they evolve from outsourced manufacturers to indispensable, full-spectrum drug development and production partners.




## 6.1.2 Global CDMO Market by Product Type

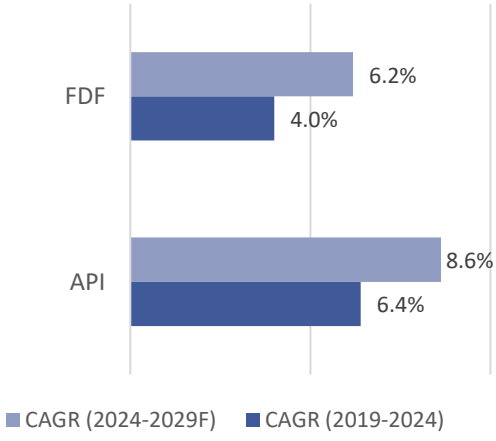
***Together, the API and FDF CDMO segments represent distinct yet interconnected growth avenues, with integrated service providers gaining a strategic advantage in the evolving market landscape. The API segment dominated the small molecule CDMO market in 2024, accounting for approximately 66% of the total market, while the FDF segment contributed 34%, with comparable growth in both segments forecasted between 2024 and 2029.***

**Exhibit 6.3A: Global CDMO Market by Product Type, 2019, 2024, 2029F, USD Billion**




*Source: Frost & Sullivan*
*Note: F- Forecast*

**Exhibit 6.3B: Growth Rate of Global CDMO Market by Product Type, 2019-2029F**




*Source: Frost & Sullivan*
*Note: F- Forecast*

As the small molecule CDMO market continues to evolve, services are generally classified into two major categories—API manufacturing and FDF manufacturing. While some CDMOs specialize in one of these segments, others offer integrated, end-to-end solutions that span the entire value chain. Notably, API services represent the larger share of the market, accounting for approximately 66% of total revenues, with FDF services contributing the

remaining 34%. The shift toward integrated offerings reflects growing demand from pharmaceutical companies for simplified supply chains and single-partner models.

The API CDMO segment has expanded from USD 51.0 billion in 2019 to an estimated USD 69.7 billion in 2024, registering a CAGR of 6.4% during this period. Looking ahead, the segment is projected to reach USD 105.4 billion by 2029, implying a stronger CAGR of 8.6%. This acceleration—roughly 1.3x the historical pace—is fueled by the increasing complexity of API synthesis, rising demand for high-potency APIs (HPAPIs), and a heightened focus on specialized containment, quality compliance, and advanced process capabilities. The shift away from China as the dominant manufacturing base, driven by supply chain resilience strategies and regulatory scrutiny, is compelling pharma companies to relocate production to costlier yet more dependable regions such as India, Europe, and North America—further inflating the value of outsourced API production. Additionally, sustainability imperatives are catalyzing investment in green chemistry and continuous manufacturing, adding a layer of technological sophistication to API services.

The FDF CDMO market has also grown steadily, rising from USD 29.3 billion in 2019 to approximately USD 35.6 billion in 2024, translating into a CAGR of 4.0%. Forecasts suggest the segment will reach USD 48.1 billion by 2029, implying a continued CAGR of 6.2% over the next five years. This growth is driven by early integration of formulation development across the drug life cycle—from preclinical stability testing to commercial scale-up—which helps de-risk development timelines and enhance drug performance. Demand is particularly strong in complex formulations such as oral solids, injectables, sustained-release, and nano-formulations. The increasing popularity of 505(b)(2) regulatory pathways, which allow for reformulated or repurposed drugs, has led to greater reliance on formulation expertise. Moreover, sterile manufacturing is emerging as a key differentiator, especially with the rise of biologics-derived small molecules and peptide-based drugs. The proliferation of generic FDFs, particularly in price-sensitive markets, is also expanding opportunities for CDMOs offering cost-efficient, high-throughput solutions.

## 6.2 GROWTH DRIVERS OF THE CDMO MARKET

***The sustained growth of outsourcing can be attributed to its multifaceted advantages, including cost efficiency, accelerated time-to-market, and access to specialized global expertise, to name a few, ultimately driving growth for CDMOs.***

Some of the key growth drivers for the CDMO market include:

**ECONOMIC AND OPERATIONAL ADVANTAGE**

*CDMOs help reduce costs and streamline operations through scale, infrastructure readiness, and integrated services.*

- Lower manufacturing costs enabled by scale and multi-client operations
- Elimination of capital expenditure through externalization of facilities and equipment
- Integrated, end-to-end services reducing handovers and project complexity
- Established infrastructure and regulatory expertise accelerating time-to-market

**STRATEGIC FOCUS FOR INNOVATORS**

*Outsourced manufacturing enables pharma companies to prioritize core strategic areas through:*

- Greater focus on R&D, pipeline optimization, and IP generation
- Agile, asset-light operating models requiring fewer internal resources—especially suited to small and mid-sized innovators
- Enhanced commercialization planning through reallocation of internal capabilities
- Shift from transactional sourcing to long-term strategic partnerships

**ACCESS TO EXPERTISE AND CAPABILITIES**

*CDMOs enable access to specialized capabilities critical for complex drug development through:*

- Dedicated infrastructure for high-potency and sterile products ensuring safety and compliance
- Deep scientific and technical expertise across diverse modalities and platforms
- Robust regulatory and tech transfer know-how minimizing delays and facilitating global approvals
- Advanced formulation and analytical systems supporting accelerated and high-quality development

**FLEXIBILITY AND RISK MANAGEMENT**

*CDMOs ensure manufacturing flexibility and business continuity through*:

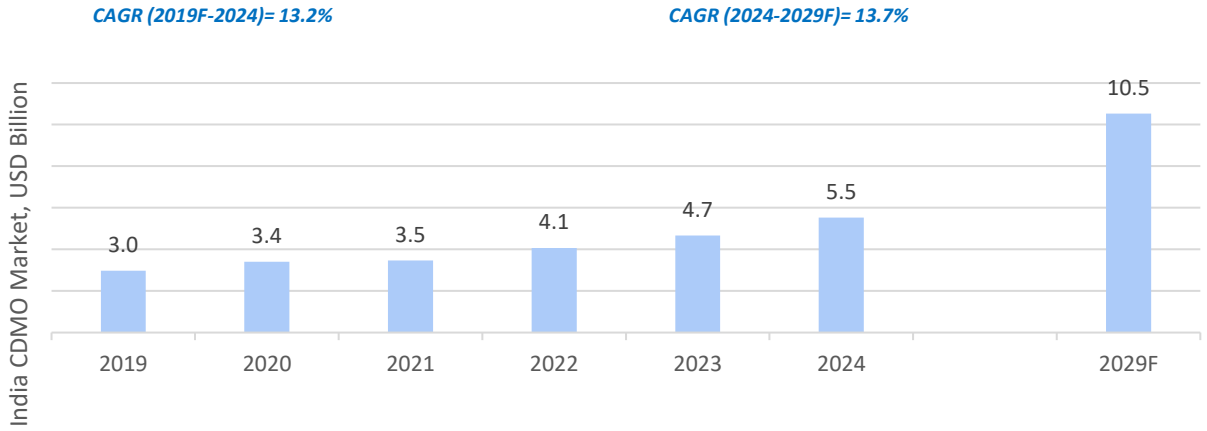
- Scalable capacity tailored to clinical and commercial needs across diverse product types
- Adaptability to manufacture both high-value innovator drugs and large-volume generics
- Ability to reallocate resources and shift sites in response to demand shifts or disruptions
- Global site networks mitigating geopolitical, logistical, and supply chain risks

# 7 ROLE OF INDIAN COMPANIES IN THE GLOBAL CDMO MARKET

## 7.1 INDIA CDMO MARKET OVERVIEW

***Large-scale, low-cost, and yet high-quality manufacturing capabilities with a high number of globally accredited plants, a surplus of highly skilled workforce, broad portfolio expertise, and technology innovation will propel the Indian CDMO industry; in 2024, it accounted for 6% of the global small molecule CDMO market.***

**Exhibit 7.1: India CDMO Market, 2019-2029F**




*Source: Frost & Sullivan*
*Note: F - Forecast, Only includes market for small molecules*

India's prowess in pharmaceutical manufacturing lies in its ability to produce vast quantities of affordable generic drugs while maintaining extensive manufacturing capabilities that align with international regulatory standards. As the world's most populous nation with a burgeoning working-age population, India offers access to a substantial labor force and boasts the highest number of FDA-approved manufacturing facilities outside the United States. India's strong contract manufacturing capabilities were particularly evident during the pandemic when global pharmaceutical supply chains were severely constrained. Indian CDMOs played a critical role in ensuring the continued supply of essential drugs and vaccines, reinforcing India's reputation as a reliable global manufacturing hub. These achievements underscore the strategic importance of India's domestic contract services in forming partnerships that expand the capacities of both Indian and multinational pharmaceutical companies to meet escalating demand.

The Indian CDMO market has benefited from a three-pronged growth trajectory: global pharmaceutical companies outsourcing to India, domestic companies leveraging CDMOs to meet local pharmaceutical demand, and Indian firms outsourcing to CDMOs to cater to export markets. This confluence of factors has propelled the market's expansion, with its value growing from USD 3.0 billion in 2019 to USD 5.5 billion in 2024. By 2029, the market is projected to reach USD 10.5 billion, driven by the increasing reliance of pharmaceutical companies on Indian CDMOs to scale operations efficiently while maintaining cost advantages.

Beyond demand-side drivers, Indian CDMOs have rapidly evolved in both capacity and capabilities, positioning themselves as strategic partners for the global pharmaceutical industry. Their ability to scale production, work with innovator drugs, and manufacture complex APIs and formulations has significantly strengthened their value proposition.

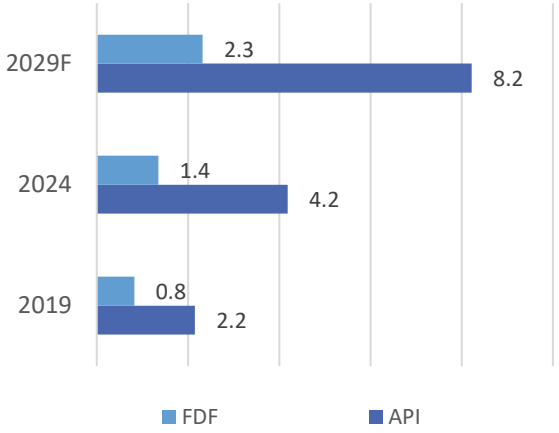
The rapid growth of the Indian CDMO industry is expected to increase the market share of Indian players, attracting further outsourcing to the country and creating a sustainable demand cycle. The initial disruption to the global pharmaceutical industry occurred in 2017 when the supply chain was disrupted due to China’s environmental crackdown. Under the Blue-Sky policy, thousands of industrial parks and chemical companies were forced to shut down, either temporarily or permanently, leading to steep price hikes and shortages of raw materials and APIs across the globe. The Covid-19 pandemic compounded these pressures by intensifying anti-China sentiment and accelerating the urgency for supply chain diversification. This gave rise to the China+1 strategy, whereby global pharmaceutical companies sought to reduce dependence on China by developing additional suppliers across other geographies. India has emerged as the most promising beneficiary of this strategic pivot, with domestic API manufacturers already reporting a surge in enquiries from global innovators keen to establish India as a reliable second source. Geopolitical shifts, including the adoption of China+1 and proposals such as the Biosecure Act, which

aims to limit Chinese manufacturers' access to US federal funding, are further diverting business to Indian CDMOs, solidifying India's position as a preferred outsourcing hub.

### 7.1.1 India CDMO Market by Product Type

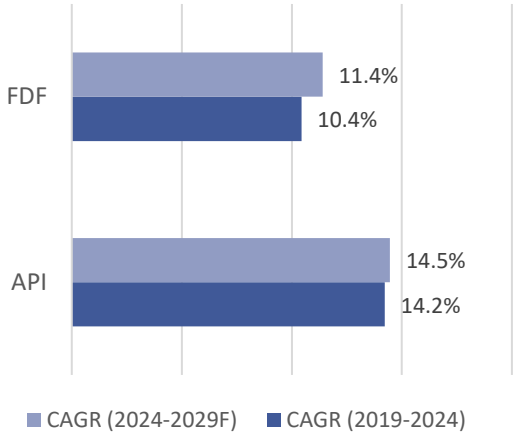
***Mirroring global trends, India's API CDMO segment dominates with a ~79% share of the total CDMO market in 2024. As pharma shifts manufacturing away from China, India's scale advantages and strong compliance track record are catalyzing rapid growth, with both the FDF and API CDMO segments projected to expand at an 11–12% CAGR between 2024 and 2029.***

**Exhibit 7.2A: India CDMO Market by Product Type, 2019, 2024, 2029F, USD Billion**




*Source: Frost & Sullivan*
*Note: F- Forecast*

**Exhibit 7.2B: Growth Rate of India CDMO Market by Product Type, 2019-2029F**




*Source: Frost & Sullivan*
*Note: F- Forecast*

India's small molecule CDMO market is witnessing accelerated growth, led by a structural shift in global supply chains and rising export opportunities. The API CDMO segment, which forms the bulk of the market, has expanded from USD 2.2 billion in 2019 to USD 4.2 billion in 2024 (CAGR: 14.2%) and is projected to reach USD 8.2 billion by 2029, growing at a faster CAGR of 14.5% in the forecast period. This acceleration is driven by pharma companies' strategic push to de-risk from China, with India emerging as a preferred alternative due to its scale, cost advantage, and strengthening compliance track record. The trend is further supported by increased investments in high-potency APIs and backward-integrated manufacturing capabilities aimed at serving regulated markets.

The FDF CDMO segment, while smaller, is steadily gaining traction. Growing from USD 0.9 billion in 2019 to USD 1.4 billion in 2024 (CAGR: 10.4%), the market is expected to reach USD 2.3 billion by 2029, reflecting a CAGR of 11.4%. Rising global demand for generic formulations, coupled with India's large-scale capacity and competitive cost structure, is driving export-led growth in this segment. Increasing complexity in formulations and greater outsourcing by mid-sized global pharma players are also enhancing India's position as a key partner for oral solids, injectables, and complex FDFs.

## 7.2 COMPETITIVE ADVANTAGES FOR INDIAN CDMOS

***Indian CDMOs benefit from a convergence of global outsourcing trends and India-specific policy and market shifts. Global pharmaceutical companies are increasingly outsourcing to India to optimize costs, enhance supply chain resilience, and access advanced manufacturing capabilities.***

India-based CDMOs have traditionally been recognized for their cost advantage. However, in recent years, they have made significant investments in advanced technologies and built a broad suite of technical capabilities across various

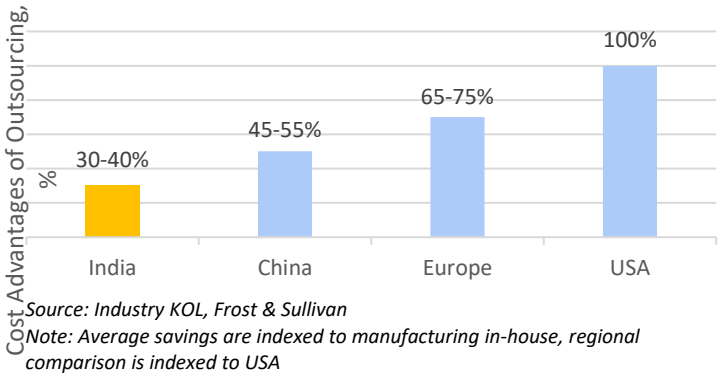
services. Today, Indian CDMOs are best positioned to take up complex chemistries for global pharma and are now being benchmarked against leading global firms. Some of the key factors contributing to the growth of Indian CDMOs include:

- **Regulatory Reforms: GMP Compliance and Schedule M Updates-** The revised Schedule M guidelines and stricter Good Manufacturing Practices (GMP) compliance requirements are reshaping India's pharmaceutical sector. Companies struggling to meet these heightened standards are increasingly turning to CDMOs, leading to market consolidation and higher outsourcing volumes. CDMOs with robust regulatory expertise and advanced infrastructure are emerging as preferred partners for both domestic and global pharmaceutical firms seeking to ensure compliance with evolving quality benchmarks.
- **Evolving Intellectual Property (IP) Policy; Encouraging Innovation-Driven Growth-** India's shifting IP policies and patent reforms, such as reduced examination timelines, amendments to the Patent Rules to simplify filings, and stronger alignment with international frameworks such as the Patent Cooperation Treaty (PCT), are fostering a more innovation-friendly environment, especially for novel patented drugs. With streamlined patent processes and increased government support for R&D, Indian CDMOs are enjoying greater outsourcing of non-genericized products, a significant growth driver for high-value services away from traditional high-volume generics manufacturing services.
- **PLI Schemes and API Self-Sufficiency Initiatives-** The Production-Linked Incentive (PLI) schemes are driving India's self-sufficiency in API and formulation manufacturing. With incentives ranging from INR 20 crore to INR 400 crore and the establishment of bulk drug parks, Indian CDMOs are investing in vertical integration, enhancing cost efficiencies, and securing raw material supply chains. This strategic push not only reduces dependence on Chinese imports for APIs but also strengthens India's position as a competitive hub for pharmaceutical manufacturing.
- **BioE3 Policy and Biologics-Led Growth Momentum**- India's BioE3 policy is catalyzing CDMO growth by promoting innovation-driven biomanufacturing through regulatory support, R&D incentives, and infrastructure development. The policy is expanding opportunities for CDMOs in biosimilars, novel biologics, and sterile injectables by encouraging investment in GMP-compliant facilities, skilled talent, and advanced technologies. As India shifts from a generics-focused model to a biologics innovation hub, CDMOs are well-positioned to capture both domestic and export demand.
- **Foreign Direct Investment (FDI) Policy and Pharma-Sector Growth-** India's liberalized FDI policy has been instrumental in attracting investments in pharmaceutical manufacturing. The government allows 100% FDI in the pharma sector, and from April 2000 to June 2023, FDI inflows reached USD 21.55 billion, ranking the sector 8th in total FDI inflows. This influx of capital has enabled Indian CDMOs to expand manufacturing capacities, invest in cutting-edge technologies, and enhance regulatory compliance—key factors driving the sector's rapid expansion.
- **Ease of Doing Business: A More Predictable Industrial Environment-** India's business environment has become more consistent and predictable, allowing pharmaceutical firms to undertake long-term planning with lower risk exposure. In the Economist Intelligence Unit (EIU) Business Environment Rankings (BER) for 2023-27, India ranks 10th among 17 Asian economies, an improvement from 14th in the 2018-22 period. These improvements in regulatory clarity and operational efficiency make India an attractive destination for global pharmaceutical outsourcing.
- **Expert Talent Pool: A Growing Workforce Advantage-** India's demographic advantage plays a crucial role in the CDMO sector's expansion. In April 2023, India became the world's most populous nation, surpassing China, with 1.42 billion residents. With 65% of the population under 35, India enjoys a demographic dividend that strengthens its labor force. The World Bank notes India's working-age population increased from 65% in 2012 to 68% in 2022, and India's regional labor market ranking improved from 16th in 2018-22 to 13th in 2023-27, surpassing China, Sri Lanka, and Bangladesh. This confluence of a young, skilled workforce and cost-effective labor makes India a highly attractive destination for pharmaceutical outsourcing.
- **Regulatory-Compliant Infrastructure: A Competitive Edge-** Indian CDMOs have heavily invested in upgrading quality control frameworks, obtaining certifications from global regulatory bodies such as the FDA, EMA, WHO-GMP, and ISO, as well as semi-regulated markets like Saudi Food and Drug Authority

(SFDA) and South Africa's SAHPRA. India boasts over 3,000 pharmaceutical companies operating across 10,500 manufacturing facilities, ensuring high-quality and regulatory-compliant production.

- **Advancements in Complex Formulation Development: The demand for complex formulations**—requiring enhanced solubility and bioavailability—is growing. About 70% of new drugs have low aqueous solubility, making cost-effective solubilization technologies critical. Indian CDMOs have invested in cutting-edge solutions such as particle manipulation, amorphous dispersions, salt/co-crystal engineering, and lipid-based delivery systems.

**Exhibit 7.3: Cost Advantages of Outsorucing to CDMO by Region, 2024**




*Source: Industry KOL, Frost & Sullivan*
*Note: Average savings are indexed to manufacturing in-house, regional comparison is indexed to USA*

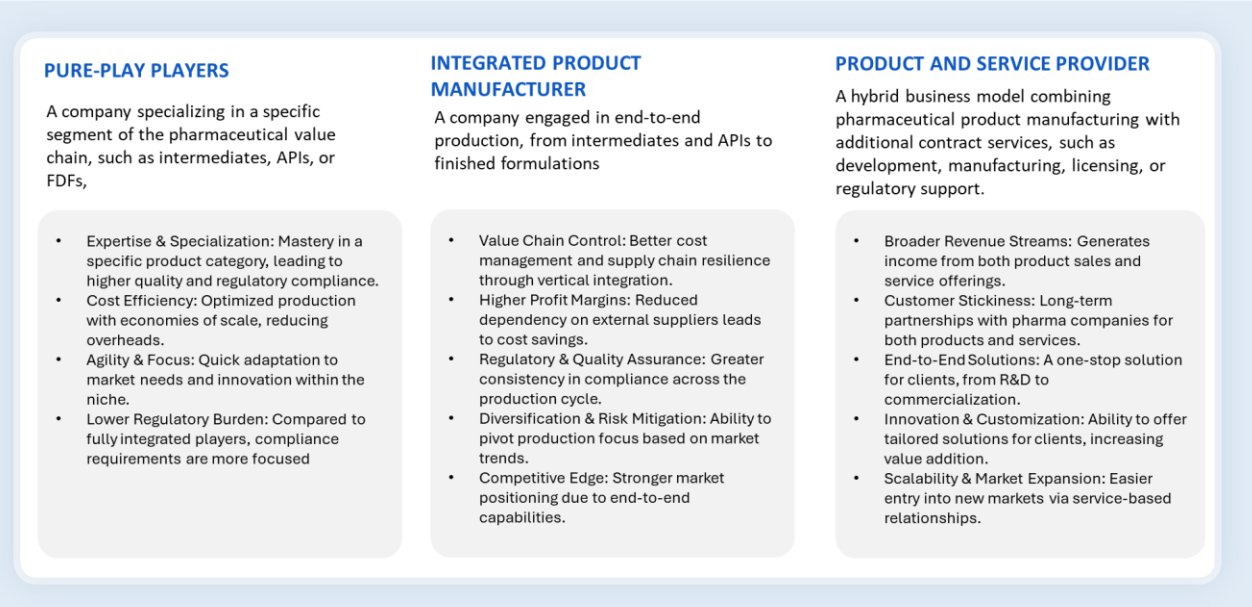
- **Cost Advantage: Solution to combating global pricing pressure-** India continues to offer significant cost advantages in manufacturing over its Asian as well as Western peers. Markedly, drug development and manufacturing costs in India are approximately 30-40% lower than in the US or Europe, reinforcing its cost competitiveness and benefits to global pharma companies reeling from increasing drug price erosion and shrinking profit margins.

- **Shifting Growth from China to India: A Structural Trend-** China's dominance in the CDMO market is diminishing, leading global pharmaceutical companies to diversify their manufacturing bases. India is emerging as a preferred alternative, driven by several key factors:
    - Trade Wars and Tariffs – The US-China trade war and tariffs on pharmaceutical raw materials have accelerated the shift to India as multinational corporations seek alternative suppliers.
    - Supply Chain Diversification – The COVID-19 pandemic exposed the risks of over-reliance on China, prompting pharmaceutical companies to diversify their supply chains, with India being a key beneficiary.
    - Regulatory and Compliance Issues in China – China's crackdown on industrial pollution and regulatory scrutiny has impacted pharmaceutical manufacturing. India, with its strong regulatory track record, is gaining traction as a more stable manufacturing hub.
    - Cost Considerations – Between 2010 and 2020, China's labor costs increased by 120%, while India's grew only by 80%, making India a more cost-effective destination for contract manufacturing.
    - Impact of the US BIOSECURE Act – The proposed BIOSECURE Act (pending Senate approval) seeks to limit US companies' use of Chinese biotech services. If passed, this would further reduce demand for Chinese CDMOs, benefiting Indian firms.

# 8 COMPETITIVE LANDSCAPE OF THE GLOBAL PHARMA PRODUCT AND SERVICES MARKET

## 8.1 BUSINESS MODELS

The pharmaceutical market is experiencing a notable surge in competition, fueled by its inherent attractiveness driven by its size, growth prospects, and the sector's critical role in healthcare. As a result, an influx of companies, ranging from multinational powerhouses to agile startups, is entering the fray, intensifying competition as each strives to capture a slice of this lucrative market. In this fiercely competitive landscape, pharmaceutical entities employ diverse tactics to distinguish themselves.




The pharmaceutical industry, shaped by its complexity and evolving market needs, sees companies adopting a range of business models to optimize value creation, operational efficiency, and competitive positioning. These models, often determined by companies' technological capabilities, strategic vision, and risk appetite, vary widely—from single-play approaches focusing solely on APIs or FDFs, to integrated manufacturing setups, and finally to hybrid models that straddle both product commercialization and contract services.

Pure-play API or FDF manufacturers tend to anchor their strategy on specialization. API-focused companies typically invest in process chemistry, scale, and cost leadership to remain relevant in a crowded space marked by price pressures and regulatory scrutiny. These players thrive by being reliable backend suppliers to global pharmaceutical firms, where their ability to maintain quality and navigate inspections becomes a critical differentiator. Similarly, companies focused purely on FDFs may rely on external sourcing of APIs and emphasize formulation know-how, regulatory compliance, and access to markets. While this model offers focus and operational nimbleness, it may expose companies to supply-side vulnerabilities or pricing pressures in commoditized segments.

At the other end of the spectrum are fully integrated pharmaceutical manufacturers that span the value chain from API to FDF. These firms aim to create synergies between upstream and downstream operations, resulting in better cost controls, supply reliability, and margin capture across the value chain. Integration is particularly valuable in volatile markets where dependency on third parties can erode responsiveness and control. Moreover, integrated players are better equipped to handle backward or forward integration strategies, enabling faster speed to market and greater resilience against supply chain disruptions.

In parallel, a growing cohort of companies is adopting a hybrid business model, wherein they balance commercialized product portfolios with a CDMO arm. This model allows companies to diversify revenue streams and enjoy overall strong revenue growth while monetizing excess capacity, scientific know-how, or regulatory infrastructure. For example, Virupaksha, a company with offerings across small molecule APIs, KSMs, intermediates, and contract manufacturing and development services, experienced an operating revenue CAGR of 12.2% between FY23 and FY25, higher than most of its assessed peers, as demonstrated in the table below. By offering services to third parties while also launching their products, these companies hedge against market-specific risks and capitalize on global outsourcing trends. The hybrid model is increasingly attractive in a landscape where biopharma clients are actively seeking specialized, quality-assured partners for both small- and large-molecule needs, and where manufacturers can flexibly scale based on demand cycles.

As the pharmaceutical industry continues to evolve, shaped by regulatory shifts, cost pressures, and innovation, companies are expected to recalibrate their operating models, accordingly, often blending elements of each approach to optimize resilience, scale, and long-term growth.

## 8.2 KEY COMPETITORS IN THE MARKET

In addition to employing different business models, pharmaceutical companies also differentiate themselves by focusing on quality, regulatory compliance, product portfolio selection, brand recognition and trust, and investment in technology and innovation. In the fiercely competitive global pharmaceutical market, Indian companies have left a considerable imprint, evident in their remarkable export market growth.

Some of the Indian companies catering to the global markets through their hybrid approach of offering product and contract services are analyzed below.

**Figure 8.1: Operational Benchmarking of Select Competitors, FY25**

| Company | Virupaksha | Supriya | Alivus | Divi's | Laurus | Aarti | Neuland |
|---|---|---|---|---|---|---|---|
| **Geographical Presence (Commercial)** | 100+ countries | 120+ countries | 75+ countries | 100+ countries | 60+ countries | 100+ countries | 80+ countries |
| **Number of Manufacturing Facilities** | 6 | 1** | 4 | 3 | 15* | 14 | 3 |
| **Regulatory Approvals for Manufacturing Sites (Non-Exhaustive)** | USFDA, EUGMP, PMDA, KFDA, COFEPRIS-Mexico, ANVISA, EDQM, ANSM, WHO-GMP, CDSCO | USFDA, EDQM, EUGMP, TGA Australia, BfArM-Germany, KFDA Korea, PMDA-Japan, SFDA-China, COFEPRIS-Mexico | USFDA, PMDA-Japan, COFEPRIS, Health Canada, MFDS-Korea, KFDA-Korea, MHRA, FIMEA, Gujarat FDCA, Maharashtra FDA, Swissmedic, EDQM, ANVISA-Brazil, WHO, CDSCO | USFDA, EUGMP, Health Canada, TGA, ANVISA, COFEPRIS, PMDA, MFDS | USFDA, WHO, EU EMA, PMDA-Japan | USFDA, EUGMP, ANVISA-Brazil, WHO-GMP, KFDA, COFEPRIS-Mexico | USFDA, EDQM, CFDA, PMDA, ANVISA |
| **Total Manufacturing Capacity (Disclosed)** | 988 KL | 932 KL | 1,424 KL | 16,550 KL | 7,800 KL | 61,053 MT | 1,174 KL |
| **Number of Reactors** | 223 | NA | NA | 160 | NA | NA | NA |

*Source: Annual Reports, Earnings Calls, Investor Presentations, Company Websites, as accessed on 21st August 2025*

*Note: * Includes development and manufacturing facilities; **One facility split into multiple blocks*

*TGA = Therapeutic Goods Administration; BfArM-Germany = Federal Institute for Drugs and Medical Devices (Germany); KFDA = Korea Food & Drug Administration; PMDA = Pharmaceuticals and Medical Devices Agency; SFDA = State Food & Drug Administration; MHRA = Medicines and Healthcare Products Regulatory Agency; FIMEA = Finnish Medicines Agency; ANSM = Agence Nationale de Sécurité du Médicament et des Produits de Santé; CDSCO = Central Drugs Standard Control Organization*

*Virupaksha Organics Ltd. (Virupaksha), Supriya Lifescience Ltd. (Supriya), Alivus Life Sciences Ltd. (Alivus), Divi's Laboratories Ltd. (Divi's), Laurus Labs Ltd. (Laurus), Aarti Drugs Ltd. (Aarti), Neuland Laboratories Ltd. (Neuland)*

**Figure 8.2: Operational Benchmarking of Select Competitors, FY24**

| Company | Virupaksha | Supriya | Alivus | Divi's | Laurus | Aarti | Neuland |
|---|---|---|---|---|---|---|---|
| Geographical Presence (Commercial) | 100+ countries | 100+ countries | 75+ countries | NA | 20+ countries | 100+ countries | 80+ countries |
| Number of Manufacturing Facilities | 6 | 1** | 4 | 2 | 12 | 13 | 3 |
| Total Manufacturing Capacity (Disclosed) | 938 KL | 597 KL | 1,198 KL | 14,600 KL | 7,762 KL | 57,179 MT | 941 KL |
| Number of Reactors | 213 | NA | NA | 160 | NA | NA | NA |

*Source: Annual Reports, Earnings Calls, Investor Presentations, Company Websites, as accessed on 21st August 2025*

*Note: * Includes development and manufacturing facilities; **One facility split into multiple blocks*

*Virupaksha Organics Ltd. (Virupaksha), Supriya Lifescience Ltd. (Supriya), Alivus Life Sciences Ltd. (Alivus), Divi's Laboratories Ltd. (Divi's), Laurus Labs Ltd. (Laurus), Aarti Drugs Ltd. (Aarti), Neuland Laboratories Ltd. (Neuland)*

**Figure 8.3: Operational Benchmarking of Select Competitors, FY23**

| Company | Virupaksha | Supriya | Alivus | Divi's | Laurus | Aarti | Neuland |
|---|---|---|---|---|---|---|---|
| Geographical Presence (Commercial) | 100+ countries | 86 countries | 75+ countries | NA | NA | 100+ countries | 80+ countries |
| Number of Manufacturing Facilities | 6 | 1** | 4 | 2 | 10 | 12 | 3 |
| Total Manufacturing Capacity (Disclosed) | 800 KL | 547 KL | 1,198 KL | 14,600 KL | 7,674 KL | 51,126 MT | 907 KL |
| Number of Reactors | 197 | NA | NA | 160 | 1,129 | NA | NA |

*Source: Annual Reports, Earnings Calls, Investor Presentations, Company Websites, as accessed on 21st August 2025*

*Note: * Includes development and manufacturing facilities; **One facility split into multiple blocks*

*Virupaksha Organics Ltd. (Virupaksha), Supriya Lifescience Ltd. (Supriya), Alivus Life Sciences Ltd. (Alivus), Divi's Laboratories Ltd. (Divi's), Laurus Labs Ltd. (Laurus), Aarti Drugs Ltd. (Aarti), Neuland Laboratories Ltd. (Neuland)*

**Figure 8.4: Financial Benchmarking of Select Competitors, FY25**

| Company | Virupaksha | Supriya | Alivus | Divi's | Laurus | Aarti | Neuland |
|---|---|---|---|---|---|---|---|
| Revenue from Operations | 8,117.09 | 6,964.85 | 23,868.84 | 93,600.00 | 55,539.60 | 23,870.30 | 14,768.37 |
| Revenue from Operations CAGR (FY23 – FY25) | 12.20% | 22.92% | 5.15% | 9.78% | -4.11% | -6.25% | 11.35% |
| Gross Profit Margin | 45.48% | 66.63% | 54.72% | 60.20% | 55.40% | 38.93% | 60.21% |
| EBITDA | 1,442.40 | 2,608.00 | 7,171.54 | 33,200.00 | 11,150.00 | 3,050.00 | 3,428.00 |
| EBITDA Margin | 17.77% | 37.45% | 30.05% | 35.47% | 20.08% | 12.69% | 22.90% |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Profit Before Tax** | 1,035.84 | 2,484.80 | 6,541.31 | 29,160.00 | 4,842.90 | 2,117.71 | 3,463.29 |
| **Profit After Tax** | 787.14 | 1,879.58 | 4,856.27 | 21,910.00 | 3,544.10 | 1,680.00 | 2,601.08 |
| **PAT Margin** | 9.70% | 26.99% | 20.35% | 23.41% | 6.38% | 7.04% | 17.61% |
| **ROCE** | 19.12% | 26.87% | 24.94% | 19.69% | 9.70% | 12.52% | 17.90% |
| **Return on Equity** | 21.51% | 18.90% | 18.86% | 15.35% | 8.13% | 12.70% | 13.88% |
| **NWC Days** | 90 | 205 | 177 | 187 | 179 | 120 | 114 |
| **Net Debt / EBITDA** | 1.82 | -0.29 | -0.10 | -1.12 | 2.25 | 1.98 | -0.29 |
| **Net Debt / Equity** | 0.58 | -0.08 | -0.03 | -0.25 | 0.55 | 0.45 | -0.08 |
| **Gross Fixed Assets Turnover** | 2.13 | 1.58 | 2.47 | 2.33 | 1.33 | NA | 1.60 |
| **% of Revenue from Exports** | 17.49% | 85.00% | 51.72% | 88.17% | 68.42% | 36.25% | 67.61% |
| **% of Revenue from Domestic Market** | 82.51% | 15.00% | 48.28% | 11.83% | 31.58% | 63.75% | 29.52% |
| **% of Revenue from API Segment** | 96.49% | NA | 94.00% | NA | NA | 81.00% | 51.00% |
| **% of Revenue from CDMO Segment** | 3.51% | NA | 6.00% | NA | 25.00% | NA | 43.00% |
| **% of Revenue from Analgesics** | 58.42% | NA | NA | NA | NA | NA | NA |
| **% of Revenue from Anti-histamines** | 20.80% | NA | NA | NA | NA | NA | NA |
| **% of Revenue from Anti-fungals** | 9.05% | NA | NA | NA | NA | 9.00% | NA |
| **% of Revenue from Anti-depressants** | 1.49% | NA | NA | NA | NA | NA | NA |
| **% of Revenue from Anti-diabetics** | 0.57% | NA | NA | NA | NA | 14.00 | NA |
| **% of Revenue from Other Therapeutic Areas** | 9.66% | NA | NA | NA | NA | 77.00% | NA |

*Source: Annual Reports, Earnings Calls, Investor Presentations*

*Note: The Above values are taken directly from the company's Annual Reports and may or may not converge with below-listed formulae.*

*Revenue from operations means the revenue from operations as set out in the Restated Consolidated Financial Information; Revenue from Operations CAGR is calculated as the compounded annual growth rate in Revenue from operations for the current period as compared to Revenue from operations for the period two years before; Gross Profit Margin is calculated as Gross Profit divided by Revenue from Operations. Gross Profit is calculated as Revenue from operations less Cost of Goods Sold. Cost of goods sold is the sum of Cost of materials consumed, Purchase of Stock-in-trade, and increase/ decrease in inventories; EBITDA is calculated as profit before tax, depreciation and amortization expense and finance cost as per the Restated Consolidated Financial Information; EBITDA Margin is calculated as EBITDA divided by Revenue from Operations; PBT represents total profit before tax for the year as per the Restated Consolidated Financial Information; PAT refers to Profit after Tax for the year as appearing in the Restated Consolidated Financial Information; PAT Margin is calculated as Profit after Tax for the year divided by Revenue from Operations; ROCE is calculated as Earnings before Interest and Taxes (EBIT) divided by the Average Capital Employed. EBIT is calculated as profit before tax and finance cost. Average Capital Employed is calculated as average of sum of Total Equity, Total Debt and Deferred Tax Liability as per the Restated Consolidated Financial Information. Total Debt is calculated as sum of short-term borrowings and long-term borrowings; Return on Equity is calculated as Profit for the year divided by Average Equity for the year. Average Equity is calculated as average of the total equity at the beginning of the year and at the end of the year; Net Working Capital Days is calculated as Inventory Days Plus Receivables Days minus Payable Days. Inventory days are calculated as Average Inventory divided by Revenue from Operations multiplied by 365 days. Average Inventory is calculated as average of the total Inventory at the beginning of the year and at the end of the year. Receivable days are calculated as Average*

*Trade receivable divided by Revenue from Operations multiplied by 365 days. Average Trade receivable is calculated as average of the total Trade receivable at the beginning of the year and at the end of the year. Payable days are calculated as Average Trade Payable divided by Revenue from operations multiplied by 365 days. Average Trade Payable is calculated as average of the total Trade payable at the beginning of the year and at the end of the year; Net Debt to Equity is Net Debt divided by Total Equity. Net Debt is calculated as total borrowings (Current & Non-Current) minus (total of cash and cash equivalents, bank balances other than cash and cash equivalents); Gross Fixed Asset Turnover is calculated as Revenue from operations for the period divided by average gross Property, plant and equipment as appearing in the Restated Consolidated Financial Information; Revenue from operations from exports % is calculated as Revenue from operations outside India divided by total Revenue from operations; Revenue from operations from domestic market % is calculated as Revenue from operations from India divided by total Revenue from operations; % of Revenue from API Segment is calculated as sale of APIs and Intermediates divided by Revenue from operations for the period; % of Revenue from CDMO Segment is calculated as sales from CDMO business divided by Revenue from operations for the period.*

*Therapy area classifications in this report may differ from those used by peer companies. Since product-level revenue data is not publicly disclosed and classification practices vary by company, some differences may exist between reported revenues and the categorizations applied here.*

*NA – Not Applicable*

*CAGRs are based on a constant currency conversion rate.*

*All revenues and expenses in INR million.*

*Virupaksha Organics Ltd. (Virupaksha), Supriya Lifescience Ltd. (Supriya), Alivus Life Sciences Ltd. (Alivus), Divi's Laboratories Ltd. (Divi's), Laurus Labs Ltd. (Laurus), Aarti Drugs Ltd. (Aarti), Neuland Laboratories Ltd. (Neuland).*

**Figure 8.5: Financial Benchmarking of Select Competitors, FY24**

| Company | Virupaksha | Supriya | Alivus | Divi's | Laurus | Aarti | Neuland |
|---|---|---|---|---|---|---|---|
| Revenue from Operations | 7,659.91 | 5,703.40 | 22,832.14 | 78,450.00 | 50,408.30 | 25,285.77 | 15,585.81 |
| Gross Profit Margin | 43.66% | 66.44% | 56.11% | 60.19% | 51.70% | 36.82% | 62.96% |
| EBITDA | 1,391.77 | 1,880.00 | 6,862.88 | 25,440.00 | 7,980.00 | 3,210.00 | 4,745.00 |
| EBITDA Margin | 18.17% | 32.96% | 30.06% | 32.43% | 15.83% | 12.69% | 30.20% |
| Profit Before Tax | 1,015.22 | 1,656.90 | 6,312.90 | 21,630.00 | 2,363.60 | 2,355.28 | 4,014.37 |
| Profit After Tax | 736.82 | 1,191.14 | 4,708.88 | 16,000.00 | 1,682.10 | 1,716.53 | 3,000.79 |
| PAT Margin | 9.62% | 20.88% | 20.62% | 20.40% | 3.34% | 6.79% | 19.25% |
| ROCE | 24.51% | 21.40% | 27.71% | 15.78% | 6.40% | 14.60% | 32.80% |
| Return on Equity | 30.38% | 15.00% | 21.07% | 12.15% | 4.12% | 13.87% | 18.10% |
| NWC Days | 88 | 188 | 164 | 199 | 181 | 120 | 119 |
| Net Debt / EBITDA | 1.80 | -0.41 | -0.44 | -1.56 | 2.94 | 1.73 | -0.07 |
| Net Debt / Equity | 0.91 | -0.09 | -0.13 | -0.29 | 0.57 | 0.44 | -0.03 |
| Gross Fixed Assets Turnover | 2.88 | 1.74 | 2.65 | 1.74 | 1.30 | NA | 2.03 |
| % of Revenue from Exports | 26.14% | 79.00% | 87.46% | 87.46% | 60.86% | 34.13% | 78.28% |
| % of Revenue from Domestic Market | 73.86% | 21.00% | 51.09% | 12.54% | 39.14% | 65.87% | 18.97% |
| % of Revenue from API Segment | 89.23% | NA | NA | NA | 51.00% | 80.00% | 46.00% |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **% of Revenue from CDMO Segment** | 10.77% | NA | NA | NA | 18.00% | NA | 49.00% |
| **% of Revenue from Analgesics** | 41.59% | 46.00% | NA | NA | NA | NA | NA |
| **% of Revenue from Anti-histamines** | 28.88% | 15.00% | NA | NA | NA | NA | NA |
| **% of Revenue from Anti-fungals** | 10.53% | NA | NA | NA | NA | 9.00% | NA |
| **% of Revenue from Anti-depressants** | 1.47% | NA | NA | NA | NA | NA | NA |
| **% of Revenue from Anti-diabetics** | 1.12% | NA | NA | NA | NA | 15.00 | NA |
| **% of Revenue from Other Therapeutic Areas** | 16.42% | 39.00% | NA | NA | NA | 76.00% | NA |

*Source: Annual Reports, Earnings Calls, Investor Presentations*

*Note: The Above values are taken directly from the company's Annual Reports and may or may not converge with below-listed formulae.*

*Revenue from operations means the revenue from operations as set out in the Restated Consolidated Financial Information; Revenue from Operations CAGR is calculated as the compounded annual growth rate in Revenue from operations for the current period as compared to Revenue from operations for the period two years before; Gross Profit Margin is calculated as Gross Profit divided by Revenue from Operations. Gross Profit is calculated as Revenue from operations less Cost of Goods Sold. Cost of goods sold is the sum of Cost of materials consumed, Purchase of Stock-in-trade, and increase/ decrease in inventories; EBITDA is calculated as profit before tax, depreciation and amortization expense and finance cost as per the Restated Consolidated Financial Information; EBITDA Margin is calculated as EBITDA divided by Revenue from Operations; PBT represents total profit before tax for the year as per the Restated Consolidated Financial Information; PAT refers to Profit after Tax for the year as appearing in the Restated Consolidated Financial Information; PAT Margin is calculated as Profit after Tax for the year divided by Revenue from Operations; ROCE is calculated as Earnings before Interest and Taxes (EBIT) divided by the Average Capital Employed. EBIT is calculated as profit before tax and finance cost. Average Capital Employed is calculated as average of sum of Total Equity, Total Debt and Deferred Tax Liability as per the Restated Consolidated Financial Information. Total Debt is calculated as sum of short-term borrowings and long-term borrowings; Return on Equity is calculated as Profit for the year divided by Average Equity for the year. Average Equity is calculated as average of the total equity at the beginning of the year and at the end of the year; Net Working Capital Days is calculated as Inventory Days Plus Receivables Days minus Payable Days. Inventory days are calculated as Average Inventory divided by Revenue from Operations multiplied by 365 days. Average Inventory is calculated as average of the total Inventory at the beginning of the year and at the end of the year. Receivable days are calculated as Average Trade receivable divided by Revenue from Operations multiplied by 365 days. Average Trade receivable is calculated as average of the total Trade receivable at the beginning of the year and at the end of the year. Payable days are calculated as Average Trade Payable divided by Revenue from operations multiplied by 365 days. Average Trade Payable is calculated as average of the total Trade payable at the beginning of the year and at the end of the year; Net Debt to Equity is Net Debt divided by Total Equity. Net Debt is calculated as total borrowings (Current & Non-Current) minus (total of cash and cash equivalents, bank balances other than cash and cash equivalents); Gross Fixed Asset Turnover is calculated as Revenue from operations for the period divided by average gross Property, plant and equipment as appearing in the Restated Consolidated Financial Information; Revenue from operations from exports % is calculated as Revenue from operations outside India divided by total Revenue from operations; Revenue from operations from domestic market % is calculated as Revenue from operations from India divided by total Revenue from operations; % of Revenue from API Segment is calculated as sale of APIs and Intermediates divided by Revenue from operations for the period; % of Revenue from CDMO Segment is calculated as sales from CDMO business divided by Revenue from operations for the period.*

*Therapy area classifications in this report may differ from those used by peer companies. Since product-level revenue data is not publicly disclosed and classification practices vary by company, some differences may exist between reported revenues and the categorizations applied here.*

*NA – Not Applicable*

*CAGRs are based on a constant currency conversion rate.*

*All revenues and expenses in INR million.*

*Virupaksha Organics Ltd. (Virupaksha), Supriya Lifescience Ltd. (Supriya), Alivus Life Sciences Ltd. (Alivus), Divi's Laboratories Ltd. (Divi's), Laurus Labs Ltd. (Laurus), Aarti Drugs Ltd. (Aarti), Neuland Laboratories Ltd. (Neuland).*

**Figure 8.6: Financial Benchmarking of Select Competitors, FY23**

| Company | Virupaksha | Supriya | Alivus | Divi's | Laurus | Aarti | Neuland |
|---|---|---|---|---|---|---|---|
| Revenue from Operations | 6,448.39 | 4,609.38 | 21,612.20 | 77,670.00 | 60,405.50 | 27,160.54 | 11,911.98 |
| Gross Profit Margin | 39.19% | 59.36% | 53.08% | 60.98% | 54.10% | 34.93% | 59.85% |
| EBITDA | 909.09 | 1,289.00 | 6,712.50 | 27,130.00 | 15,940.00 | 3,080.00 | 2,811.00 |
| EBITDA Margin | 14.10% | 27.96% | 31.06% | 34.93% | 26.39% | 11.34% | 23.40% |
| Profit Before Tax | 588.35 | 1,234.87 | 6,286.09 | 23,690.00 | 11,089.40 | 2,241.82 | 2,157.46 |
| Profit After Tax | 430.90 | 898.57 | 4,669.61 | 18,240.00 | 7,966.40 | 1,660.00 | 1,635.18 |
| PAT Margin | 6.68% | 19.49% | 21.61% | 23.48% | 13.19% | 6.11% | 13.73% |
| ROCE | NA* | 18.37% | 29.47% | 17.81% | 21.30% | 14.30% | 21.30% |
| Return on Equity | NA* | 12.90% | 22.28% | 14.89% | 21.51% | 14.90% | 11.10% |
| NWC Days | NA* | 244 | 158 | 199 | 145 | 115 | 150 |
| Net Debt / EBITDA | 2.53 | -1.02 | -0.46 | -1.55 | 1.20 | 1.95 | 0.22 |
| Net Debt / Equity | 1.10 | -0.20 | -0.14 | -0.33 | 0.48 | 0.the 51 | 0.06 |
| Gross Fixed Assets Turnover | NA* | 1.81 | 2.88 | 1.64 | 1.75 | NA | 1.82 |
| % of Revenue from Exports | 32.92% | 80.00% | 47.57% | 87.43% | 72.29% | 39.45% | 72.96% |
| % of Revenue from Domestic Market | 67.08% | 20.00% | 52.43% | 12.57% | 27.71% | 60.55% | 24.50% |
| % of Revenue from API Segment | 81.16% | NA | 93.00% | NA | 43.00% | NA | 59.00% |
| % of Revenue from CDMO Segment | 18.84% | NA | 7.00% | NA | 36.00% | NA | 37.00% |
| % of Revenue from Analgesics | 31.51% | 44.00% | NA | NA | NA | NA | NA |
| % of Revenue from Anti-histamines | 39.95% | 15.00% | NA | NA | NA | NA | NA |
| % of Revenue from Anti-fungals | 12.33% | NA | NA | NA | NA | 8.00% | NA |
| % of Revenue from Anti-depressants | 2.21% | NA | NA | NA | NA | NA | NA |
| % of Revenue from Anti-diabetics | 0.63% | NA | NA | NA | NA | 15.00 | NA |
| % of Revenue from Other Therapeutic Areas | 13.38% | 41.00% | NA | NA | NA | 77.00% | NA |

*Source: Annual Reports, Earnings Calls, Investor Presentations*

*Note: The Above values are taken directly from the company's Annual Reports and may or may not converge with below-listed formulae.*

*Revenue from operations means the revenue from operations as set out in the Restated Consolidated Financial Information; Revenue from Operations CAGR is calculated as the compounded annual growth rate in Revenue from operations for the current period as compared to Revenue from operations for the period two years before; Gross Profit Margin is calculated as Gross Profit divided by Revenue from Operations. Gross Profit is calculated as Revenue from operations less Cost of Goods Sold. Cost of goods sold is the sum of Cost of materials consumed, Purchase of Stock-*

*in-trade, and increase/ decrease in inventories; EBITDA is calculated as profit before tax, depreciation and amortization expense and finance cost as per the Restated Consolidated Financial Information; EBITDA Margin is calculated as EBITDA divided by Revenue from Operations; PBT represents total profit before tax for the year as per the Restated Consolidated Financial Information; PAT refers to Profit after Tax for the year as appearing in the Restated Consolidated Financial Information; PAT Margin is calculated as Profit after Tax for the year divided by Revenue from Operations; ROCE is calculated as Earnings before Interest and Taxes (EBIT) divided by the Average Capital Employed. EBIT is calculated as profit before tax and finance cost. Average Capital Employed is calculated as average of sum of Total Equity, Total Debt and Deferred Tax Liability as per the Restated Consolidated Financial Information. Total Debt is calculated as sum of short-term borrowings and long-term borrowings; Return on Equity is calculated as Profit for the year divided by Average Equity for the year. Average Equity is calculated as average of the total equity at the beginning of the year and at the end of the year; Net Working Capital Days is calculated as Inventory Days Plus Receivables Days minus Payable Days. Inventory days are calculated as Average Inventory divided by Revenue from Operations multiplied by 365 days. Average Inventory is calculated as average of the total Inventory at the beginning of the year and at the end of the year. Receivable days are calculated as Average Trade receivable divided by Revenue from Operations multiplied by 365 days. Average Trade receivable is calculated as average of the total Trade receivable at the beginning of the year and at the end of the year. Payable days are calculated as Average Trade Payable divided by Revenue from operations multiplied by 365 days. Average Trade Payable is calculated as average of the total Trade payable at the beginning of the year and at the end of the year; Net Debt to Equity is Net Debt divided by Total Equity. Net Debt is calculated as total borrowings (Current & Non-Current) minus (total of cash and cash equivalents, bank balances other than cash and cash equivalents); Gross Fixed Asset Turnover is calculated as Revenue from operations for the period divided by average gross Property, plant and equipment as appearing in the Restated Consolidated Financial Information; Revenue from operations from exports % is calculated as Revenue from operations outside India divided by total Revenue from operations; Revenue from operations from domestic market % is calculated as Revenue from operations from India divided by total Revenue from operations; % of Revenue from API Segment is calculated as sale of APIs and Intermediates divided by Revenue from operations for the period; % of Revenue from CDMO Segment is calculated as sales from CDMO business divided by Revenue from operations for the period.*

*Therapy area classifications in this report may differ from those used by peer companies. Since product-level revenue data is not publicly disclosed and classification practices vary by company, some differences may exist between reported revenues and the categorizations applied here.*

*NA – Not Applicable*

*CAGRs are based on a constant currency conversion rate.*

*All revenues and expenses in INR million.*

**Not included as the comparative period figures under Ind AS for Fiscal 2022 are not available.*

*Virupaksha Organics Ltd. (Virupaksha), Supriya Lifescience Ltd. (Supriya), Alivus Life Sciences Ltd. (Alivus), Divi's Laboratories Ltd. (Divi's), Laurus Labs Ltd. (Laurus), Aarti Drugs Ltd. (Aarti), Neuland Laboratories Ltd. (Neuland).*

## 8.3 THREATS AND CHALLENGES IN THE INDUSTRY AND KEY SUCCESS FACTORS FOR INDIAN COMPANIES

### 8.3.1 PRODUCT COMPANIES

***To expand their global footprint and compete with leading international players, Indian formulation and API companies must leverage their existing strengths while addressing structural and operational gaps. Much like CDMOs, sustained growth will depend on strategies rooted in quality, compliance, innovation, scalability, and sustainability. At the same time, companies need to overcome challenges related to regulatory compliance, regional certifications, and data protection to secure a stronger position in global markets.***

The API competitive landscape is highly differentiated between regulated and semi-regulated markets, with stringent compliance requirements forming key entry barriers for suppliers targeting advanced economies. In regulated markets such as the US, EU, and Japan, access is contingent on extensive technical dossiers and certifications that demonstrate adherence to global quality, safety, and traceability standards. A fundamental requirement for supplying APIs into the US is the DMF, which provides the US FDA with detailed confidential information on facilities, processes, and materials used in the manufacturing, processing, and packaging of APIs. While not a marketing authorization in itself, a DMF is essential for innovator and generic companies to reference when seeking approval for FDFs. Similarly, in Europe, the Certificate of Suitability to the Monographs of the European Pharmacopoeia (CEP), issued by the European Directorate for the Quality of Medicines (EDQM), certifies that an API complies with pharmacopoeia standards, enabling streamlined approvals across all EU member states. A large portfolio of DMFs, therefore, is indicative of a company's capability to service the markets with a wider portfolio of

products. For example, Virupaksha, as of September 2025, held 11 active US DMFs and 25 overall DMFs across Japan, South Korea, Europe, and the USA, giving it access to these highly regulated markets[31].

Beyond DMF and CEP submissions, compliance with current Good Manufacturing Practices (cGMP) is non-negotiable, with audits conducted by regulators such as the FDA, EMA, and PMDA. Facilities are also expected to maintain comprehensive quality management systems, batch traceability, validated processes, and robust data integrity practices. These regulatory frameworks collectively create formidable entry barriers, as establishing a fully compliant manufacturing facility requires high capital investment, sustained quality culture, and long lead times for regulatory approvals. Consequently, only a limited pool of API manufacturers operates at the global scale in regulated markets, while others are confined to domestic or semi-regulated geographies.

Some of the critical success factors for Indian API players include:

- **Regulatory Compliance and Quality Assurance:** Maintaining regulatory compliance across global markets remains the foremost success factor. As of 2024, India had the highest number of US FDA-approved pharmaceutical manufacturing facilities outside the US, with nearly 400 sites. However, regulatory alerts such as over 50 FDA warning letters issued to Indian companies between 2019–2024 underscore the need for continuous quality monitoring. Proactive remediation, investments in quality infrastructure, and robust audit readiness mechanisms are necessary to maintain global trust.
- **Backward Integration for Supply Chain Resilience:** Given India's high dependence on China for APIs, backward integration is pivotal. Typically, backward-integrated companies have demonstrated higher profitability and supply reliability by developing in-house capabilities for KSMs and intermediates. The government's PLI scheme for APIs, with a planned investment of INR 6,940 crore, is further incentivizing domestic capacity building. Companies that develop internal manufacturing capabilities for intermediates or KSMs achieve greater cost efficiency and supply chain resilience, providing a distinct advantage during geopolitical uncertainties. In addition to meeting in-house demands, these companies can also serve as a strong alternative to Chinese companies and emerge as a global supplier of intermediates and KSMs.
- **Scale and Cost Efficiency:** Indian players already benefit from low manufacturing costs. However, to maintain this edge, companies must continuously drive scale and operational efficiency. Consolidation of operations and investing in process intensification technologies (e.g., continuous flow chemistry) can further enhance output and reduce costs.
- **Portfolio Complexity and Differentiation:** The global generics market is increasingly saturated; hence, success now depends on moving beyond to more complex and novel products. Indian companies can have a curated product portfolio focusing on complex generics (e.g., inhalers, transdermal patches, ophthalmic suspensions), and high-barrier APIs such as oncology, peptides, steroids, and HPAPIs. Indian companies can also focus on high-value innovator drug manufacturing for APIs and formulations to gain a competitive edge.
- **R&D Investment and Filing Pipeline:** R&D intensity is another determinant of long-term success. A strong development pipeline of differentiated generics, 505(b)(2) products, and first-to-file Para IV applications can further offer a lucrative upside. Offering differentiated products confers pricing power and mitigates exposure to price erosion typically observed in commoditized generic markets.
- **Geographic Diversification and Market Access:** Indian formulation exports are highly concentrated, with 40%+ going to the US. To mitigate regulatory and pricing pressures, companies are expanding into emerging markets like LATAM, Southeast Asia, and Africa. For instance, Virupaksha has a diversified global presence across 100+ countries, including European countries, Japan, the US, Mexico, and Brazil, to name a few, with exports accounting for 17-33% of total revenue across FY23, FY24, and FY25. In Japan alone, where Virupaksha holds PMDA regulatory approval, the company generated USD 0.8 million (INR 73.3

[31] Company

million) in revenue in FY25. For export market-focused companies, developing region-specific portfolios, local partnerships, and in-country regulatory expertise will be key to success in these markets.

- **Skilled Workforce and Capability Building:** With rising product complexity and regulatory expectations, maintaining a workforce with advanced skills and ongoing training is imperative for operational excellence. India produces over 250,000 pharmacy graduates annually, yet gaps in industry readiness persist. Companies should invest in building technical excellence across key domains such as regulatory affairs, advanced chemical synthesis, analytical methodologies, and quality assurance systems.
- **Robust IP Management and Data Protection**: IP-related risks continue to be a concern for global clients. Indian companies must demonstrate strong internal controls and legal frameworks for protecting proprietary client information and product/process IP. The increase in India's pharmaceutical patent filings, from 2,140 in 2015 to over 3,500 in 2022, signals a more mature innovation ecosystem. Establishing cleanroom development processes and ensuring data integrity will help build trust with global innovator clients.
- **Advanced Technologies**: Advanced technologies such as flow chemistry platforms and characterization methods play a crucial role in ensuring API quality. Flow chemistry enables precise and efficient reactions with better control over safety and scalability. Infrared spectroscopy helps identify functional groups in molecules, while proton nuclear magnetic resonance provides insights into molecular structure and purity. Mass spectrometry confirms molecular weight and detects impurities at very low levels, and x-ray diffraction reveals the crystal structure of compounds. Together, these tools ensure quality from raw material verification to final product release, supporting the delivery of safe and effective medications that meet global standards. Indian manufacturers are adopting these technologies to reduce costs, strengthen backward integration, and enable production starting from KSMs.

### 8.3.2 SERVICE COMPANIES

***To achieve larger scale and compete with global CDMOs, Indian CDMOs must prioritize quality, enhance scalability, flexibility, and technical competency, and expand their presence across broader segments of the pharmaceutical value chain. At the same time, they face key challenges including evolving regulations, stringent compliance requirements, and geopolitical threats such as raw material dependence, inflation, and tariffs.***

Similar to other pharmaceutical sectors, certain risks and challenges are prevalent in the Indian CDMO industry. For instance, rapidly changing regulations, increased stringency for quality compliance, challenges in importing raw materials due to geopolitical tensions, and rising costs due to a global increase in inflation, to name a few. However, certain critical success factors can aid Indian CDMOs in navigating through these challenges, emerging as true and long-term partners for pharma sponsors and competing with global CDMOs, as discussed below.

- **Emphasis on quality and compliance**: Regulatory bodies across the globe are intensifying their scrutiny to ensure the delivery of high-quality pharmaceuticals within their respective jurisdictions. For example, the Directorate General of Foreign Trade (DGFT) has instituted a requirement for quality assessments at central labs before the export of drugs, enhancing trust in Indian pharmaceutical exports. Under this directive, drugs intended for export will undergo stringent testing at designated laboratories sanctioned by the central government, effective June 1, 2023. Since CDMOs cater to clients across diverse geographical regions, stringent quality standards must be upheld. A commendable track record in successfully navigating regulatory audits with favorable outcomes and a higher number of accreditations from regulatory agencies can allow Indian CDMOs to cater to a larger number of clients globally. For example, Virupaksha has manufacturing facilities accredited by multiple global regulatory authorities like the USFDA, PMDA, KFDA, Federal Commission for the Protection Against Sanitary Risks (COFEPRIS GMP), Mexico, National Health

Surveillance Agency (ANVISA GMP), Brazil, World Health Organization (WHO-GMP), Central Drugs Standard Control Organization (CDSCO GMP), India, and European Union (EU-GMP), allowing it to serve more customers across 100+ countries.

- **Full-Service offerings**: CDMOs are consolidating and becoming one-stop shops that offer end-to-end services. These services range from the late stages of drug discovery to development and commercial manufacturing. Moreover, a qualified CDMO should be able to manage the supply chain end-to-end, including inventory, storage, and other logistical needs. In addition to offering integrated services to sponsors, CDMOs must implement new business models based on risk-sharing, particularly with smaller pharma companies.
- **Extensive operational capacities for diverse drug types, delivery models, and dosage forms**: A CDMO should demonstrate proficiency across multiple drug modalities and complexity such as products with complex active ingredients (e.g., peptides, polymeric compounds); complex formulations (e.g., liposomes, colloids); complex routes of delivery (e.g., locally acting drugs, complex ophthalmological products and innovative dosage forms that are formulated as suspensions, emulsions, or gels); or complex dosage forms (e.g., implantable, transdermal, metered dose inhalers, extended-release injectables). The ability to innovate and stay abreast with ever-evolving pharma requirements enhances the CDMO's value proposition.
- **Operational capabilities**: CDMOs need to be able to offer services for all types of drug substances and project timelines. The drugs now have a higher molecular weight, a larger number of chiral centers, or a stronger toxicity profile, requiring additional specialized processes to manage these products. At the same time, the volume requirement of drugs also fluctuates based on the nature of the drugs and the end market use and can be as high as 10 tons a year to less than half a ton a year. Additionally, CDMOs, which manufacture APIs along with formulations, can integrate backward and reap higher cost benefits for raw materials while ensuring a reliable and timely supply to markets.
- **Investments in continuous improvement and unique capabilities**: CDMOs must continually enhance their capabilities and infrastructure to maintain a competitive edge and address the evolving requirements of pharmaceutical clients. For instance, increased use of highly potent compounds requires CDMOs to invest in improved containment, process automation, closed-loop product transfers between processes, and skilled labor to handle potent compounds. Continuous investment in state-of-the-art manufacturing technologies, including process intensification and digital transformation, is necessary for CDMOs to enhance efficiency and profitability.
- **Delivery track record**: Robust quality management systems and demonstrated experience in multi-client project delivery are fundamental for CDMOs seeking to establish long-term partnerships with sponsors. CDMOs need mature systems to prevent quality, logistics, regulations, and product and process IP issues, mainly when operations are scattered across geographies. Parallel to this, CDMOs also need a solid and reliable network of KSM and Intermediate suppliers (in case they are not backward integrated) to keep on track with the timeline and associated milestones, but more importantly, to prevent any fallout from contamination and impurities. A CDMO with a successful delivery track record can build a long-term relationship with pharma sponsors.
- **R&D expertise to drive formulation innovation**: Robust R&D capabilities within a CDMO are indispensable. These capabilities empower the development of novel formulations and improvements to existing drugs, ultimately impacting sales positively. A heightened number of patent filings and approvals from esteemed regulatory bodies such as the FDA are tangible indicators of a CDMO's strength in R&D capabilities.
- **Technical proficiency in manufacturing complex products**: CDMOs with expertise in the intricate chemical processes such as associated with beta-lactams, heterocyclic chemistry, carbohydrate chemistry, steroids, peptides, and stereochemistry are poised to excel in the industry. Moreover, proficiency in the

development of HPAPIs and Antibody-Drug Conjugates (ADCs), which are gaining prominence due to their targeted response and enhanced efficacy, is an imperative skill set for CDMOs striving for success in the market. Currently, the Indian market has a relatively limited number of API suppliers with competencies in complex APIs.

- **Capacity and scalability:** Upcoming patent expirations for novel small molecule drugs will increase demand for generic manufacturing, leading to increased demand for CDMO services. The larger CDMOs in the country are working towards capacity expansion by building capabilities or acquiring companies, thereby providing customers with large manufacturing capacities that smaller competitors cannot match. Hence, offering large manufacturing capacities similar to the bigger players can be a large barrier to entering the market, and it is a key success factor for larger and established CDMOs.
- **Commitment to sustainability:** Sustainability initiatives, including waste reduction, energy consumption minimization, and a reduction in carbon footprint, have assumed pivotal significance within the pharmaceutical industry. Collaborating with CDMOs that align their manufacturing practices with sustainability objectives to reduce carbon emissions allows pharmaceutical companies to benefit from these environmentally responsible initiatives.

# 9 APPENDIX

**Figure 9.1: Financial Benchmarking of Select Competitors (USD million), FY25**

| Company | Virupaksha | Supriya | Alivus | Divi's | Laurus | Aarti | Neuland |
|---|---|---|---|---|---|---|---|
| Revenue from Operations | 94.90 | 83.54 | 279.07 | 1,094.37 | 649.37 | 279.09 | 172.67 |
| Revenue from Operations CAGR (FY23 – FY25) | 12.20% | 22.92% | 5.15% | 9.78% | -4.11% | -6.25% | 11.35% |
| Gross Profit Margin | 45.48% | 66.63% | 54.72% | 60.20% | 57.28% | 38.93% | 60.21% |
| EBITDA | 16.80 | 32.46 | 83.85 | 388.17 | 132.16 | 35.66 | 49.13 |
| EBITDA Margin | 17.77% | 38.85% | 30.05% | 35.47% | 20.35% | 12.78% | 28.45% |
| Profit Before Tax | 12.07 | 29.80 | 76.48 | 340.94 | 56.62 | 24.76 | 40.49 |
| Profit After Tax | 9.17 | 22.54 | 56.78 | 256.17 | 41.44 | 19.84 | 30.41 |
| PAT Margin | 9.70% | 26.99% | 20.35% | 23.41% | 6.38% | 7.11% | 17.61% |
| ROCE | 19.12% | 26.87% | 24.94% | 19.69% | 10.00% | 12.52% | 22.45% |
| Return on Equity | 21.51% | 20.74% | 18.86% | 15.35% | 8.13% | 12.80% | 13.88% |
| NWC Days | 90 | 205 | 177 | 187 | 179 | 120 | 114 |
| Net Debt / EBITDA | 1.82 | -0.29 | -0.10 | -1.12 | 2.25 | 1.98 | -0.29 |
| Net Debt / Equity | 0.58 | -0.08 | -0.03 | -0.25 | 0.55 | 0.44 | -0.08 |
| Gross Fixed Assets Turnover | 2.13 | 1.58 | 2.47 | 2.33 | 1.33 | NA | 1.60 |
| % of Revenue from Exports | 17.49% | 84.51% | 51.72% | 88.17% | 68.42% | 36.25% | 67.61% |
| % of Revenue from Domestic Market | 82.51% | 15.49% | 48.28% | 11.83% | 31.58% | 63.75% | 29.52% |
| % of Revenue from API Segment | 96.49% | NA | 94.00% | NA | NA | 81.00% | 51.00% |
| % of Revenue from CDMO Segment | 3.51% | NA | 6.00% | NA | 25.00% | NA | 43.00% |
| % of Revenue from Analgesics | 58.42% | NA | NA | NA | NA | NA | NA |
| % of Revenue from Anti-histamines | 20.80% | NA | NA | NA | NA | NA | NA |
| % of Revenue from Anti-fungals | 9.05% | NA | NA | NA | NA | 9.00% | NA |
| % of Revenue from Anti-depressants | 1.49% | NA | NA | NA | NA | NA | NA |
| % of Revenue from Anti-diabetics | 0.57% | NA | NA | NA | NA | 14.00 | NA |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **% of Revenue from Other Therapeutic Areas** | 9.66% | NA | NA | NA | NA | 77.00% | NA |

*Source: Annual Reports, Earnings Calls, Investor Presentations*

*Note: Revenue from operations means the revenue from operations as set out in the Restated Consolidated Financial Information; Revenue from Operations CAGR is calculated as the compounded annual growth rate in Revenue from operations for the current period as compared to Revenue from operations for the period two years before; Gross Profit Margin is calculated as Gross Profit divided by Revenue from Operations. Gross Profit is calculated as Revenue from operations less Cost of Goods Sold. Cost of goods sold is the sum of Cost of materials consumed, Purchase of Stock-in-trade, and increase/ decrease in inventories; EBITDA is calculated as profit before tax, depreciation and amortization expense and finance cost as per the Restated Consolidated Financial Information; EBITDA Margin is calculated as EBITDA divided by Revenue from Operations; PBT represents total profit before tax for the year as per the Restated Consolidated Financial Information; PAT refers to Profit after Tax for the year as appearing in the Restated Consolidated Financial Information; PAT Margin is calculated as Profit after Tax for the year divided by Revenue from Operations; ROCE is calculated as Earnings before Interest and Taxes (EBIT) divided by the Average Capital Employed. EBIT is calculated as profit before tax and finance cost. Average Capital Employed is calculated as average of sum of Total Equity, Total Debt and Deferred Tax Liability as per the Restated Consolidated Financial Information. Total Debt is calculated as sum of short-term borrowings and long-term borrowings; Return on Equity is calculated as Profit for the year divided by Average Equity for the year. Average Equity is calculated as average of the total equity at the beginning of the year and at the end of the year; Net Working Capital Days is calculated as Inventory Days Plus Receivables Days minus Payable Days. Inventory days are calculated as Average Inventory divided by Revenue from Operations multiplied by 365 days. Average Inventory is calculated as average of the total Inventory at the beginning of the year and at the end of the year. Receivable days are calculated as Average Trade receivable divided by Revenue from Operations multiplied by 365 days. Average Trade receivable is calculated as average of the total Trade receivable at the beginning of the year and at the end of the year. Payable days are calculated as Average Trade Payable divided by Revenue from operations multiplied by 365 days. Average Trade Payable is calculated as average of the total Trade payable at the beginning of the year and at the end of the year; Net Debt to Equity is Net Debt divided by Total Equity. Net Debt is calculated as total borrowings (Current & Non-Current) minus (total of cash and cash equivalents, bank balances other than cash and cash equivalents); Gross Fixed Asset Turnover is calculated as Revenue from operations for the period divided by average gross Property, plant and equipment as appearing in the Restated Consolidated Financial Information; Revenue from operations from exports % is calculated as Revenue from operations outside India divided by total Revenue from operations; Revenue from operations from domestic market % is calculated as Revenue from operations from India divided by total Revenue from operations; % of Revenue from API Segment is calculated as sale of APIs and Intermediates divided by Revenue from operations for the period; % of Revenue from CDMO Segment is calculated as sales from CDMO business divided by Revenue from operations for the period.*

*Therapy area classifications in this report may differ from those used by peer companies. Since product-level revenue data is not publicly disclosed and classification practices vary by company, some differences may exist between reported revenues and the categorizations applied here.*

*NA – Not Applicable*

*CAGRs are based on a constant currency conversion rate.*

*All revenues and expenses in USD million.*

*Virupaksha Organics Ltd. (Virupaksha), Supriya Lifescience Ltd. (Supriya), Alivus Life Sciences Ltd. (Alivus), Divi's Laboratories Ltd. (Divi's), Laurus Labs Ltd. (Laurus), Aarti Drugs Ltd. (Aarti), Neuland Laboratories Ltd. (Neuland).*

**Figure 9.2: Financial Benchmarking of Select Competitors (USD million), FY24**

| Company | Virupaksha | Supriya | Alivus | Divi's | Laurus | Aarti | Neuland |
|---|---|---|---|---|---|---|---|
| **Revenue from Operations** | 91.87 | 68.41 | 273.85 | 940.94 | 604.61 | 303.28 | 186.94 |
| **Gross Profit Margin** | 43.66% | 66.44% | 56.11% | 60.19% | 53.95% | 36.82% | 62.96% |
| **EBITDA** | 16.69 | 22.02 | 82.31 | 305.13 | 96.41 | 38.45 | 56.99 |
| **EBITDA Margin** | 18.17% | 32.19% | 30.06% | 32.43% | 15.95% | 12.68% | 30.49% |
| **Profit Before Tax** | 12.18 | 19.87 | 75.72 | 259.43 | 28.35 | 28.25 | 48.15 |
| **Profit After Tax** | 8.84 | 14.29 | 56.48 | 191.91 | 20.18 | 20.59 | 35.99 |
| **PAT Margin** | 9.62% | 20.88% | 20.62% | 20.40% | 3.34% | 6.79% | 19.25% |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **ROCE** | 24.51% | 21.40% | 27.71% | 15.78% | 6.56% | 14.20% | 31.96% |
| **Return on Equity** | 30.38% | 15.73% | 21.07% | 12.15% | 4.12% | 13.87% | 18.10% |
| **NWC Days** | 88 | 188 | 164 | 199 | 181 | 120 | 119 |
| **Net Debt / EBITDA** | 1.80 | -0.41 | -0.44 | -1.56 | 2.94 | 1.73 | -0.07 |
| **Net Debt / Equity** | 0.91 | -0.09 | -0.13 | -0.29 | 0.57 | 0.43 | -0.03 |
| **Gross Fixed Assets Turnover** | 2.88 | 1.74 | 2.65 | 1.74 | 1.30 | NA | 2.03 |
| **% of Revenue from Exports** | 26.14% | 78.89% | 87.46% | 87.46% | 60.86% | 34.13% | 78.28% |
| **% of Revenue from Domestic Market** | 73.86% | 21.11% | 51.09% | 12.54% | 39.14% | 65.87% | 18.97% |
| **% of Revenue from API Segment** | 89.23% | NA | NA | NA | 51.00% | 80.00% | 46.00% |
| **% of Revenue from CDMO Segment** | 10.77% | NA | NA | NA | 18.00% | NA | 49.00% |
| **% of Revenue from Analgesics** | 41.59% | 46.00% | NA | NA | NA | NA | NA |
| **% of Revenue from Anti-histamines** | 28.88% | 15.00% | NA | NA | NA | NA | NA |
| **% of Revenue from Anti-fungals** | 10.53% | NA | NA | NA | NA | 9.00% | NA |
| **% of Revenue from Anti-depressants** | 1.47% | NA | NA | NA | NA | NA | NA |
| **% of Revenue from Anti-diabetics** | 1.12% | NA | NA | NA | NA | 15.00 | NA |
| **% of Revenue from Other Therapeutic Areas** | 16.42% | 39.00% | NA | NA | NA | 76.00% | NA |

*Source: Annual Reports, Earnings Calls, Investor Presentations*

*Note: Revenue from operations means the revenue from operations as set out in the Restated Consolidated Financial Information; Revenue from Operations CAGR is calculated as the compounded annual growth rate in Revenue from operations for the current period as compared to Revenue from operations for the period two years before; Gross Profit Margin is calculated as Gross Profit divided by Revenue from Operations. Gross Profit is calculated as Revenue from operations less Cost of Goods Sold. Cost of goods sold is the sum of Cost of materials consumed, Purchase of Stock-in-trade, and increase/ decrease in inventories; EBITDA is calculated as profit before tax, depreciation and amortization expense and finance cost as per the Restated Consolidated Financial Information; EBITDA Margin is calculated as EBITDA divided by Revenue from Operations; PBT represents total profit before tax for the year as per the Restated Consolidated Financial Information; PAT refers to Profit after Tax for the year as appearing in the Restated Consolidated Financial Information; PAT Margin is calculated as Profit after Tax for the year divided by Revenue from Operations; ROCE is calculated as Earnings before Interest and Taxes (EBIT) divided by the Average Capital Employed. EBIT is calculated as profit before tax and finance cost. Average Capital Employed is calculated as average of sum of Total Equity, Total Debt and Deferred Tax Liability as per the Restated Consolidated Financial Information. Total Debt is calculated as sum of short-term borrowings and long-term borrowings; Return on Equity is calculated as Profit for the year divided by Average Equity for the year. Average Equity is calculated as average of the total equity at the beginning of the year and at the end of the year; Net Working Capital Days is calculated as Inventory Days Plus Receivables Days minus Payable Days. Inventory days are calculated as Average Inventory divided by Revenue from Operations multiplied by 365 days. Average Inventory is calculated as average of the total Inventory at the beginning of the year and at the end of the year. Receivable days are calculated as Average Trade receivable divided by Revenue from Operations multiplied by 365 days. Average Trade receivable is calculated as average of the total Trade receivable at the beginning of the year and at the end of the year. Payable days are calculated as Average Trade Payable divided by Revenue from operations multiplied by 365 days. Average Trade Payable is calculated as average of the total Trade payable at the beginning of the year and at the end of the year; Net Debt to Equity is Net Debt divided by Total Equity. Net Debt is calculated as total borrowings (Current & Non-Current) minus (total of cash and cash equivalents, bank balances other than cash and cash equivalents); Gross Fixed Asset Turnover is calculated as Revenue from operations for the period divided by average gross Property, plant and equipment as appearing in the Restated Consolidated Financial Information; Revenue from operations from exports % is calculated as Revenue from operations outside India divided by total Revenue*

*from operations; Revenue from operations from domestic market % is calculated as Revenue from operations from India divided by total Revenue from operations; % of Revenue from API Segment is calculated as sale of APIs and Intermediates divided by Revenue from operations for the period; % of Revenue from CDMO Segment is calculated as sales from CDMO business divided by Revenue from operations for the period.*

*Therapy area classifications in this report may differ from those used by peer companies. Since product-level revenue data is not publicly disclosed and classification practices vary by company, some differences may exist between reported revenues and the categorizations applied here.*

*NA – Not Applicable*

*CAGRs are based on a constant currency conversion rate.*

*All revenues and expenses in USD million.*

*Virupaksha Organics Ltd. (Virupaksha), Supriya Lifescience Ltd. (Supriya), Alivus Life Sciences Ltd. (Alivus), Divi's Laboratories Ltd. (Divi's), Laurus Labs Ltd. (Laurus), Aarti Drugs Ltd. (Aarti), Neuland Laboratories Ltd. (Neuland).*

**Figure 9.3: Financial Benchmarking of Select Competitors (USD million), FY23**

| Company | Virupaksha | Supriya | Alivus | Divi's | Laurus | Aarti | Neuland |
|---|---|---|---|---|---|---|---|
| Revenue from Operations | 78.91 | 56.40 | 264.47 | 950.44 | 739.18 | 332.36 | 145.77 |
| Gross Profit Margin | 39.19% | 59.36% | 53.08% | 60.98% | 56.65% | 34.93% | 59.85% |
| EBITDA | 11.12 | 16.93 | 82.14 | 331.99 | 195.57 | 37.48 | 34.46 |
| EBITDA Margin | 14.10% | 30.02% | 31.06% | 34.93% | 26.46% | 11.28% | 23.64% |
| Profit Before Tax | 7.20 | 15.11 | 76.92 | 289.89 | 135.70 | 27.43 | 26.40 |
| Profit After Tax | 5.27 | 11.00 | 57.14 | 223.20 | 97.48 | 20.17 | 20.01 |
| PAT Margin | 6.68% | 19.49% | 21.61% | 23.48% | 13.19% | 6.07% | 13.73% |
| ROCE | NA* | 18.37% | 29.47% | 17.81% | 22.62% | 14.56% | 19.88% |
| Return on Equity | NA* | 13.66% | 22.28% | 14.89% | 21.51% | 14.79% | 11.10% |
| NWC Days | NA* | 244 | 158 | 199 | 145 | 115 | 150 |
| Net Debt / EBITDA | 2.53 | -1.02 | -0.46 | -1.55 | 1.20 | 1.95 | 0.22 |
| Net Debt / Equity | 1.10 | -0.20 | -0.14 | -0.33 | 0.48 | 0.50 | 0.06 |
| Gross Fixed Assets Turnover | NA* | 1.81 | 2.88 | 1.64 | 1.75 | NA | 1.82 |
| % of Revenue from Exports | 32.92% | 78.75% | 47.57% | 87.43% | 72.29% | 39.45% | 72.96% |
| % of Revenue from Domestic Market | 67.08% | 21.25% | 52.43% | 12.57% | 27.71% | 60.55% | 24.50% |
| % of Revenue from API Segment | 81.16% | NA | 93.00% | NA | 43.00% | NA | 59.00% |
| % of Revenue from CDMO Segment | 18.84% | NA | 7.00% | NA | 36.00% | NA | 37.00% |
| % of Revenue from Analgesics | 31.51% | 44.00% | NA | NA | NA | NA | NA |
| % of Revenue from Anti-histamines | 39.95% | 15.00% | NA | NA | NA | NA | NA |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **% of Revenue from Anti-fungals** | 12.33% | NA | NA | NA | NA | 8.00% | NA |
| **% of Revenue from Anti-depressants** | 2.21% | NA | NA | NA | NA | NA | NA |
| **% of Revenue from Anti-diabetics** | 0.63% | NA | NA | NA | NA | 15.00 | NA |
| **% of Revenue from Other Therapeutic Areas** | 13.38% | 41.00% | NA | NA | NA | 77.00% | NA |

*Source: Annual Reports, Earnings Calls, Investor Presentations*

*Note: Revenue from operations means the revenue from operations as set out in the Restated Consolidated Financial Information; Revenue from Operations CAGR is calculated as the compounded annual growth rate in Revenue from operations for the current period as compared to Revenue from operations for the period two years before; Gross Profit Margin is calculated as Gross Profit divided by Revenue from Operations. Gross Profit is calculated as Revenue from operations less Cost of Goods Sold. Cost of goods sold is the sum of Cost of materials consumed, Purchase of Stock-in-trade, and increase/ decrease in inventories; EBITDA is calculated as profit before tax, depreciation and amortization expense and finance cost as per the Restated Consolidated Financial Information; EBITDA Margin is calculated as EBITDA divided by Revenue from Operations; PBT represents total profit before tax for the year as per the Restated Consolidated Financial Information; PAT refers to Profit after Tax for the year as appearing in the Restated Consolidated Financial Information; PAT Margin is calculated as Profit after Tax for the year divided by Revenue from Operations; ROCE is calculated as Earnings before Interest and Taxes (EBIT) divided by the Average Capital Employed. EBIT is calculated as profit before tax and finance cost. Average Capital Employed is calculated as average of sum of Total Equity, Total Debt and Deferred Tax Liability as per the Restated Consolidated Financial Information. Total Debt is calculated as sum of short-term borrowings and long-term borrowings; Return on Equity is calculated as Profit for the year divided by Average Equity for the year. Average Equity is calculated as average of the total equity at the beginning of the year and at the end of the year; Net Working Capital Days is calculated as Inventory Days Plus Receivables Days minus Payable Days. Inventory days are calculated as Average Inventory divided by Revenue from Operations multiplied by 365 days. Average Inventory is calculated as average of the total Inventory at the beginning of the year and at the end of the year. Receivable days are calculated as Average Trade receivable divided by Revenue from Operations multiplied by 365 days. Average Trade receivable is calculated as average of the total Trade receivable at the beginning of the year and at the end of the year. Payable days are calculated as Average Trade Payable divided by Revenue from operations multiplied by 365 days. Average Trade Payable is calculated as average of the total Trade payable at the beginning of the year and at the end of the year; Net Debt to Equity is Net Debt divided by Total Equity. Net Debt is calculated as total borrowings (Current & Non-Current) minus (total of cash and cash equivalents, bank balances other than cash and cash equivalents); Gross Fixed Asset Turnover is calculated as Revenue from operations for the period divided by average gross Property, plant and equipment as appearing in the Restated Consolidated Financial Information; Revenue from operations from exports % is calculated as Revenue from operations outside India divided by total Revenue from operations; Revenue from operations from domestic market % is calculated as Revenue from operations from India divided by total Revenue from operations; % of Revenue from API Segment is calculated as sale of APIs and Intermediates divided by Revenue from operations for the period; % of Revenue from CDMO Segment is calculated as sales from CDMO business divided by Revenue from operations for the period.*

*Therapy area classifications in this report may differ from those used by peer companies. Since product-level revenue data is not publicly disclosed and classification practices vary by company, some differences may exist between reported revenues and the categorizations applied here.*

*NA – Not Applicable*

*CAGRs are based on a constant currency conversion rate.*

*All revenues and expenses in USD million.*

**Not included as the comparative period figures under Ind AS for Fiscal 2022 are not available.*

*Virupaksha Organics Ltd. (Virupaksha), Supriya Lifescience Ltd. (Supriya), Alivus Life Sciences Ltd. (Alivus), Divi's Laboratories Ltd. (Divi's), Laurus Labs Ltd. (Laurus), Aarti Drugs Ltd. (Aarti), Neuland Laboratories Ltd. (Neuland).*