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US President Donald Trump signs order to reduce US drug price

WASHINGTON, US: US President Donald Trump signed an executive order on May 12, 2025, directing drugmakers to reduce the prices of their medicines.

The order gives drugmakers to meet government price targets in the next 30 days, and will take further action if they don't lower prices.

Trump told, "US should not be forced to subsidize low-cost prescription drugs and biologics in other developed countries, and face overcharges for the same products in the United States. US must therefore have access to the most-favored-nation price for these products.

Trump further said that US Administration will take immediate steps to end global freeloading and, should drug manufacturers fail to offer American consumers the most-favored-nation lowest price, Administration will take additional aggressive action.

The United States has less than five percent of the world's population and yet funds around three quarters of global pharmaceutical profits, said Trump.

Trump told that US will no longer be forced to pay almost three times more for the exact same medicines, often made in the exact same factories. As the largest purchaser of pharmaceuticals, Americans should get the best deal.

Trump added that he was seeking cuts of between 59 per cent and 90 per cent.

"The Secretary of Commerce and the United States Trade Representative shall take all necessary and appropriate action to ensure foreign countries are not engaged in any act, policy, or practice that may be unreasonable or discriminatory or that may impair United States national security and that has the effect of forcing American patients to pay for a disproportionate amount of global pharmaceutical research and development, including by suppressing the price of pharmaceutical products below fair market value in foreign countries, added Trump.

Trump added, "The Secretary of Commerce, and the heads of other relevant agencies as necessary, shall review and consider all necessary action regarding the export of pharmaceutical drugs or precursor material that may be fueling the global price discrimination."

Dr Jitendra Singh calls for greater synergy between innovation and industry for sustainable StartUp ecosystem

New Delhi, India: Union Minister of State (Independent Charge) for Science and Technology; Earth Sciences and Minister of State for PMO, Department of Atomic Energy, Department of Space, Personnel, Public Grievances and Pensions, Dr. Jitendra Singh said that the time has come for Indian science to break silos and integrate with stakeholders including industry, investors, and the public.

Speaking at the Startup Conclave jointly organized by CSIR-IICT, CSIR-CCMB, and CSIR-NGRI in Hyderabad, Dr. Jitendra Singh highlighted that India's moment in science and innovation has arrived.

Addressing a gathering of scientists, entrepreneurs, students, and policymakers, Dr. Jitendra Singh lauded the rare joint initiative by the three Hyderabad-based CSIR labs, noting that "such an integrated scene of science and governance under one roof" reflects Prime Minister Narendra Modi's vision of collaborative and inclusive innovation.

The Minister made a strong pitch for dismantling the outdated image of government labs as "ghost-haunted places where frogs are dissected," narrating how villagers once misunderstood the work of CSIR labs due to lack of public outreach. "Science should not be confined behind gates. If your domain is agriculture, invite the farmers in. Let them see what you're doing," he asserted.

Dr Jitendra Singh underlined the need for early and deep industry involvement in research and innovation, pointing to the success of CSIR's Aroma Mission, where over 3,000 youth, many of them non-graduates, became successful agri-entrepreneurs with minimum annual earnings of ₹60 lakh. "That's the real transformation—a blend of technology, livelihood, and dignity," he said.

Referring to India's rapidly growing biotechnology sector, Dr. Jitendra Singh recalled that in 2014, there

were only 50 biotech startups. Today, the number exceeds 10,000. "It's not just numbers. We've moved from USD 10 billion to nearly USD 170 billion in biotech valuation. This is not just growth, it's a revolution," he said, citing the government's dedicated policies like Bio-E3 and the National Quantum Mission.

Zydus Lifesciences signs purchase agreement to acquire a majority stake in Amplitude Surgical SA

Ahmedabad, India: Zydus Lifesciences Limited has signed the share purchase agreement to acquire 75.4% of the share capital of Amplitude Surgical SA at a price of €6.25 per Amplitude share from PAI Partners, Olivier Jallabert and other managers of Amplitude, which together with the two share purchase agreements already signed on March 11, 2025 with two minority shareholders represent 85.6% of the share capital of Amplitude (the "Block Acquisition").

As indicated in the joint announcement of March 11, 2025, the completion of the Block Acquisition remains subject to the usual closing conditions, including authorization from the French Minister of Economy as part of the control of foreign investments in France, the re-investment by Amplitude CEO Olivier Jallabert into the company, as well as the absence of qualified material adverse events.

Subject to the fulfilment of the closing conditions, Zydus will acquire 85.6% of the share capital of Amplitude. The closing of the Block Acquisition is now expected to be completed by Q3 2025. After such completion, Zydus' mandatory simplified tender offer would be filed with the Autorité des Marchés Financiers ("AMF") and would be followed by a squeeze out if the conditions are met. The opening of the subsequent tender offer would then remain subject to the AMF's clearance decision.

In this respect and as announced on April 17, 2025, commitments to tender 4.7% of Amplitude's share capital have been executed with other minority shareholders of Amplitude. As a consequence, and subject to the condition precedents hereabove, Zydus will be in a position to acquire more than 90 % of the capital and voting rights of Amplitude at the end of the tender offer, and therefore to implement a squeeze-out procedure.

Biocon Biologics secures market entry date for Yesafili

Shreehas Tambe, CEO & MD, Biocon Biologics

Benguluru, India: Biocon Biologics' settlement and license agreement with Regeneron that clears the way to commercialize Yesafili (aflibercept-jbvf), an interchangeable* biosimilar aflibercept, in the United States. YESAFILI, a vascular endothelial growth factor (VEGF) inhibitor, is used to treat several different types of ophthalmology conditions, is a biosimilar of its reference product EYLEA® (aflibercept).

Biocon Biologics and Regeneron executed the settlement agreement to dismiss the pending appeal at the United States Court of Appeals for the Federal Circuit (USCAFC) of patent US11084865 ('865 patent) and the pending litigation at the U.S. District Court for the Northern District of West Virginia, Clarksburg Division.

This agreement enables the Company to launch in the United States in the second half of calendar year 2026 or earlier in certain circumstances. The terms of the settlement are confidential.

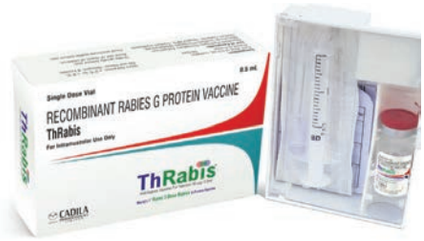
Shreehas Tambe, CEO & Managing Director, Biocon Biologics Ltd., said: "This settlement clears the path for Biocon Biologics to be among the first to bring a reliable, high-quality aflibercept biosimilar to patients and healthcare providers in the United States. As the first-to-file interchangeable biosimilar to Eylea®, YESAFILI affirms our scientific strength and marks our strategic entry into Ophthalmology, expanding our footprint in the U.S. and advancing our mission to increase access to life-changing treatments."

Previously, the U.S. Food and Drug Administration (U.S. FDA) approved Yesafili™ (aflibercept-jbvf), an interchangeable* biosimilar aflibercept in May 2024. Additionally, Biocon Biologics secured a settlement agreement in Canada with Bayer Inc. and Regeneron Pharmaceuticals, Inc., for the launch of YESAFILI™ no later than July 1, 2025.

YESAFILI is intended for the treatment of neovascular (wet AMD) age-related macular degeneration, visual impairment due to macular oedema secondary to retinal vein occlusion (branch RVO or central RVO), visual impairment due to diabetic macular oedema

(DME) and visual impairment due to myopic choroidal neovascularisation (myopic CNV). It is highly similar to the reference product Eylea® (aflibercept). Data shows that YESAFILI has comparable quality, safety, and efficacy to Eylea®.

Cadila Pharmaceuticals marks three years of ThRabis



Ahmedabad, India: In a significant milestone that reaffirms India's contribution to global healthcare innovation, Cadila Pharmaceuticals is marking the third anniversary of ThRabis, the world's first three-dose rabies vaccine, which has transformed the way rabies is treated and has significantly improved access and compliance.

Developed by Cadila Pharmaceuticals' in-house research and development team, ThRabis® was launched in April 2022 and has since been rolled out in multiple countries, offering a simpler, shorter vaccination schedule that improves treatment adherence and expands access. Unlike the traditional five-dose rabies regimen, ThRabis® requires just three intramuscular doses, a breakthrough that is reshaping global rabies prevention strategies.

Dr. Rajiv I. Modi, Chairman and Managing Director of Cadila Pharmaceuticals Limited, said, "With ThRabis, we set out to remove one of the biggest barriers to rabies treatment, the complexity of the traditional five-dose schedule. By reducing it to just three doses, we have made post-exposure prophylaxis faster, more accessible, and easier to complete, especially for vulnerable populations. ThRabis is not just a scientific breakthrough but a practical solution that reflects our commitment to 'Affordable Innovation for All' and our drive to deliver unmet medical needs with world-class Indian science."

Since its launch, ThRabis® has been adopted widely across India and several other countries where Cadila Pharmaceuticals operates. The shorter schedule has significantly improved vaccine compliance, a critical factor in post-exposure care, and helped reduce the pressure on already stretched public health systems.

Sun Pharma and Moebius Medical announce Dual Publications on MM-II's Phase 2b Clinical Trial

Mumbai, India: Sun Pharma and Israel-based Moebius Medical Limited announced the publication of two articles in Osteoarthritis and Cartilage, the official journal of the Osteoarthritis Research Society International (OARSI), highlighting MM-II, a novel non-opioid product for the treatment of symptomatic knee osteoarthritis.

MM-II is based on a proprietary suspension of large, empty, multilamellar liposomes designed to reduce joint friction and wear, thereby alleviating pain. The two publications offer complementary insights into MM-II's clinical efficacy and mechanism of action, underscoring its potential therapeutic value.

The first publication presents results from a Phase 2b randomized, double-blind, placebo-controlled trial (NCT04506463), which enrolled 397 patients across the US, Europe and Asia. Findings demonstrate that a single injection of MM-II provided clinically meaningful pain relief through 26 weeks, with a favorable safety and tolerability profile.

The second publication, titled "Empty large liposomes reduce cartilage degeneration in osteoarthritic rats by forming a lubricative coating," details MM-II's unique mechanism of action. The research shows that MM-II forms a lubricative layer over cartilage surfaces, reducing friction and slowing cartilage degeneration. The authors suggest that the results of the clinical trial may be mediated through the coating of the cartilage surfaces, though additional mechanisms may contribute to the long term pain reduction seen in Phase 2b study.

Indian Pharma Co's may face limited near-term Impact from US Executive Order on Generic Drug Pricing

Mumbai, India: India Ratings and Research opines the executive order to reduce the prices of prescription drugs in the US, once implemented, will have limited near-term impact on the Indian pharma companies, but it may have a bearing on their long-term capital allocation strategies.

"While we do not expect a material immediate impact on the US generics business of Indian pharma companies, its revenue growth and capital allocation strategies may likely be impacted, if the executive order gets implemented. Generic price realisations in the US

generic market may not be the highest in the world. We expect contract development and manufacturing organisation (CDMO) players to benefit", says Nishith Sanghvi, Director, Corporates, Ind-Ra.

Long-term Headwinds for Generics Likely; CDMO Players to Benefit: While Ind-Ra awaits more clarity on the details of the order (due on 13 May 2025) and its likely implementation, we do not expect a material immediate impact on the US generics business of Indian pharma companies.

Indian pharma companies are primarily involved in generic drugs which are 5% of the prescription drugs cost and over 80% cheaper for insurance payors, compared to prescription drugs, in our view. However, Indian CDMO players may benefit, given the cost arbitrage of manufacturing in lower cost destination such as India and strong chemistry skills.

The rating agency believes price realisations for generic products may not be the highest in the US generic market in relation to other geographies. Also, price comparisons in various markets may have to be seen in line with the regulatory set up and payor profile in the respective geographies which may have a bearing on the pricing in that market.

Morepen to launch Resmetirom- a New Drug for Fatty Liver

Sanjay Suri, Executive Director, Morepen Laboratories

Gurugram, New Delhi: Morepen Laboratories Ltd has received clearance from Subject Expert Committee ('SEC') of Central Drugs Standard Control Organization ('CDSCO') to conduct Bioequivalence ('BE') studies for Resmetirom 60 mg, 80 mg and 100 mg tablets as per the protocol submitted. This will be followed by clinical trials as per approved protocols.

Resmetirom is a highly promising therapy under development for non-alcoholic steatohepatitis('NASH'), a serious form of non-alcoholic fatty liver disease ('NAFLD') characterized by inflammation, liver damage, and fat accumulation in the liver, potentially leading to scarring (fibrosis), cirrhosis, and even liver cancer. It is often associated with obesity, metabolic syndrome, and type 2 diabetes, and while it can be a silent disease in the early stages, it can progress to severe liver damage if left untreated.

"This is a critical step forward in our journey to bring a much-needed innovation to the hepatology market," said Sanjay Suri, Executive Director, Morepen Laboratories. "We are proud to be one of the first few Indian companies gearing up to launch the finished formulation of Resmetirom. Our endto-end integration – from APIs to finished dosage – gives us a unique edge in speed, quality, and scalability."

As one of the first Indian companies to foray into this therapeutic area, Morepen is strategically positioned to serve both domestic and international markets and is also evaluating out-licencing opportunities with potential marketing partners.

NASH, a progressive liver disease that affects over 115 million people worldwide. According to industry estimates, the global NASH treatment market is projected to grow from USD 2.5 billion in 2024 to over USD 16 billion by 2032, driven by increasing prevalence, clinical awareness, and regulatory approvals.

Strides Pharma acquires 4 approved ANDAs from Nostrum Laboratories

Bengaluru, India: Strides Pharma Inc., a Step-down Whollyowned Subsidiary of the Company in the US, has acquired Four approved ANDAs for the US Market from Nostrum Laboratories, Inc., USA.

The portfolio consists of liquids and immediate release solid orals which are in the therapeutic segment to treat infections associated with UTIs (Urinary Tract Infections), Pain Management, Allergy Symptoms and Attention Deficit Disorder (ADD/ ADHD) and Narcolepsy. The cumulative market size for the acquired portfolio is ~USD 57 million as per IQVIA data of 2025.

Total consideration for acquisition of the said ANDAs is USD 2.075 million (~INR 176 million). Two (out of the Four) ANDAs acquired are commercial products and is expected to be launched within 12 months. With access to these products, Strides will expand its portfolio of niche and difficult to manufacture products.

TPG acquires 35% stake in SCHOTT Poonawalla from Serum Institute of India

Mumbai, India: SCHOTT Pharma, a pioneer in drug containment and delivery solutions, announced that TPG, a leading global alternative asset management firm, has entered into a binding agreement to acquire a 35% stake in its joint venture SCHOTT Poonawalla from Serum Institute of India (SII). SCHOTT Poonawalla is a joint venture of SCHOTT Pharma and SII, part of the

Cyrus Poonawalla Group and a global leader in vaccine manufacturing, dedicated to providing affordable vaccines worldwide.

TPG Growth, TPG's middle market and growth equity platform, is funding the investment, along with Novo Holdings as a co-investor. Following the transaction, SII will retain a minority stake in the company.

With deep healthcare investing experience and local expertise in India, having TPG join the partnership alongside SCHOTT Pharma and Serum Institute of India represents a significant milestone in SCHOTT Poonawalla's growth, equipping the company with additional resources and strategic insight to support its long-term global ambitions.

SCHOTT Poonawalla designs advanced drug containment and delivery solutions for pharmaceutical and biotechnology customers. The company's portfolio features a large range of products including cartridges for auto-injector pens, prefillable syringes for a wide variety of biologics, vials, ampoules, as well as regulatory services for biotech and pharmaceutical companies, and Contract Development and Manufacturing Organizations (CDMOs).

"We are excited to partner with SCHOTT Pharma and Serum Institute of India and build upon SCHOTT Poonawalla's market leadership position as India's largest injectables-focused drug containment solutions company," said Bhushan Bopardikar, Business Unit Partner at TPG Growth. "On the back of a world-class manufacturing infrastructure in India, SCHOTT Poonawalla has developed an industry leading reputation by offering a comprehensive product portfolio of the highest quality for over two decades. We look forward to partnering with the senior leadership team as they continue to innovate and improve the quality and standards of pharmaceutical drug containment solutions."

"Partnering with TPG marks an important step for us," said Adar Poonawalla, CEO of Serum Institute of India. "Their experience in healthcare investing and global network make them a strong partner as we scale and explore new opportunities. Our collaboration with SCHOTT Pharma will continue, ensuring supply chain resilience and advancing innovation in vaccine packaging and delivery."

"India continues to be one of the most dynamic and strategically important manufacturing hubs for SCHOTT Pharma. Welcoming TPG to the partnership marks an exciting step forward in our collaboration. SCHOTT Pharma's innovation capabilities and pure-play focus on injectables will be complemented by TPG's local market expertise, relationships, and experience from its strong presence in the Indian healthcare sector. As we continue to expand our local production capacities and leading role in the Indian market, we are confident that this step will further enhance our global footprint and deliver exceptional value to our customers," said Andreas Reisse, CEO at SCHOTT Pharma.

"Now more than ever, our pharmaceutical customers are relying on us to supply next-generation cutting-edge drug delivery solutions, as they continue to innovate, expand operations and supply complex drugs," said Ashok Saxena, Managing Director, SCHOTT Poonawalla. "We are excited to welcome TPG onboard as an investor, and are confident that their proven track record of successfully driving healthcare businesses in the Indian market will greatly benefit SCHOTT Poonawalla."

The transaction is subject to customary closing conditions and is expected to close within the first half of 2025. Jefferies acted as the financial advisor to TPG. AZB & Partners acted as the legal advisors to TPG and SCHOTT Pharma. J. Sagar Associates (JSA) acted as the legal advisors to Serum Institute.

Gland Pharma receives approval from USFDA for Latanoprostene Bunod Ophthalmic Solution

Hyderabad, India: Gland Pharma Limited, a generic injectable & ophthalmicfocused pharmaceutical company, has received approval from the United States Food and Drug Administration (USFDA) for its Abbreviated New Drug Application for Latanoprostene Bunod Ophthalmic Solution, 0.024%.The Product is bioequivalent and therapeutically equivalent to the reference listed drug (RLD), VYZULTA Ophthalmic solution, 0.024%, of Bausch and Lomb, Inc.

This product is indicated for the reduction of intraocular pressure (IOP) in patients with open-angle glaucoma or ocular hypertension.Gland Pharma is the exclusive First-to-File and is eligible for 180 days of generic drug exclusivity. According to IQVIA, the product had US sales of approximately USD 171 million for the twelve months ending February 2025.

IOL Chemicals and Pharmaceuticals receives CDE Approval for Ibuprofen in China

Mumbai, India: IOL Chemicals and Pharmaceuticals Limited (IOL), a leading manufacturer of pharmaceutical (APIs) and specialty chemicals, announced that it has received approval from the Center for Drug Evaluation (CDE) of the National Medical Products Administration (NMPA), China, for its product Ibuprofen. This approval authorizes the Company to export its Ibuprofen API to the Chinese market.

Ibuprofen is a widely used non-steroidal anti-inflammatory drug (NSAID) known for its effectiveness in relieving pain, reducing inflammation, and lowering fever. With this certification, IOL will be able to cater to the growing demand for high-quality APIs in China, further strengthening its global footprint.

IOL maintains a diversified portfolio of more than 13 APIs, including Metformin Hydrochloride, Clopidogrel Bisulfate Form II, Pantoprazole Sodium, Losartan Potassium, among others. The Company remains committed to expanding its international reach through quality manufacturing and regulatory excellence.

R. STAHL expands Manufacturing Operations in India with New Facility at Sriperumbudur SEZ

Leadership team breaking ground at the future R. STAHL facility in Sriperumbudur SEZ

Sriperumbudur SEZ, Tamil Nadu: R. STAHL, a global leader in explosion protection and industrial safety solutions, has officially broken ground on its new, significantly expanded manufacturing facility at HI TECH SEZ, Sriperumbudur, near Chennai. This development marks a major milestone in the company's ongoing investment in India and its strategic vision to scale operations across the region.

The Groundbreaking Ceremony, was attended by senior leadership from R. STAHL India and Germany, dignitaries from the government, key industry partners, and over 180 employees. Highlights of the event included the unveiling of the project plaque, a ceremonial shovel dig, and a Tree Planting Ceremony symbolizing the company's long-term commitment to sustainability. Employees also participated in a "Wish Tree" activity, penning messages of hope and aspirations for R. STAHL's future.

Ramakrishnan Balasubramanian, Managing Director of R. STAHL India, described the expansion as a pivotal moment in the company's evolution, "We have been manufacturing in India for many years — this expansion represents a bold step forward. The new facility significantly scales up our capabilities and prepares us to meet the demands of our customers across the region with greater speed, flexibility, and innovation. It's a proud moment for R. STAHL India and our entire team."

The new facility will enable R. STAHL to increase its manufacturing capacity over time, enhancing responsiveness to market demand and overall operational agility.

Dr. Mathias Hallmann, CEO of R. STAHL Group, emphasized the strategic importance of the Indian market, "India remains one of our most important growth markets globally. This new facility represents a deepening of our long-standing commitment to local production, talent, and long-term value creation. We are building not just capacity, but a strong foundation for innovation and service excellence across the region."

Bringing a global operations perspective, Christian Frielinghaus, SVP – Global Operations & Supply Chain, added, "With every expansion, we assess how it strengthens our overall manufacturing ecosystem — and this site in India does exactly that. It's a strategic addition that integrates seamlessly into our global network, enhancing both flexibility and supply chain resilience. We are focused on creating smarter, more connected operations that align with our long-term manufacturing vision worldwide."

Strategically located in a well-established industrial zone, the Sriperumbudur site will also support workforce expansion and improved integration of manufacturing processes. The larger footprint is expected to boost operational efficiency, support more localized solutions, and reinforce R. STAHL's ability to serve critical industrial sectors including oil & gas, chemicals, pharmaceuticals, and Food & Beverage.

Akums Drugs gets patent for ER formulation of Doxylamine and Pyridoxine

Sanjeev Jain, Managing Director, Akums Drugs and Pharmaceuticals

New Delhi, India: (Akums Drugs & Pharmaceuticals Ltd.), one of India's leading pharmaceutical contract research and manufacturing organisation (CDMO), has been granted a patent for its breakthrough extended-release formulation of Doxylamine and Pyridoxine, designed specifically to address Nausea and Vomiting in Pregnancy (NVP).

Nausea and vomiting of pregnancy (NVP) is one of the most common conditions experienced by expectant mothers, affecting up to 80% of women to varying degrees. While many women find relief by the 16th week, about 20% continue to suffer throughout their pregnancy. NVP can significantly disrupt daily routines, nutrition, and overall well-being.

In response, Akums has developed a ground-breaking patented formulation that offers a solution designed to provide longer-lasting relief. This innovation marks a significant step forward in addressing a longstanding gap in maternal healthcare, offering much-needed support to those impacted by this common pregnancy challenge.

At the heart of this innovation is Akums' advanced "tablet-in-tablet" technology. This unique dosage form combines an outer layer that provides immediate drug release for rapid relief from nausea, with an inner core designed for sustained release, ensuring a longer therapeutic effect. The outer layer provides rapid relief from nausea, while the inner core maintains a prolonged action, reducing the need for frequent dosing. By combining immediate and sustained release in a single tablet, this dual-action design not only improves treatment outcomes but also enhances patient compliance—an essential factor in pregnancy care where safety, simplicity, and consistency are critical.

Following a rigorous bioequivalence study and successful approval from the Drug Controller General of India (DCGI), the extended-release formulation stands validated in terms of efficacy and safety. While specific subject numbers are not publicly disclosed as per regulatory norms, the findings have reinforced the formulation's promise in improving symptom control and the overall patient experience.

Speaking on the milestone, Sanjeev Jain, Managing Director Akums said, "At Akums, we believe real innovation starts with understanding the everyday challenges people face. This new formulation for managing nausea and vomiting during pregnancy underscores our commitment to women's health, ensuring access to safe and effective care during a critical phase of life. We're proud to take this step forward, making life a little easier for expectant mothers and helping healthcare move closer to where it should be—accessible, reliable, and full of care."

Akums has consistently focused on advancing drug delivery systems. With over 4,100 commercialised formulations and more than 220 Innovative products in development, it has established a strong presence in both Indian and international pharmaceutical markets.

With 12 manufacturing facilities, 4 R&D centres employing over 400 scientists, and a workforce of more than 16,000, Akums focuses on innovation and operational efficiency across a wide range of dosage forms and therapeutic areas in healthcare manufacturing

Granules India earns Gold Rating by EcoVadis in First-Ever Corporate-Level Assessment

Dr. Krishna Prasad Chigurupati, CMD, Granules India

Mumbai, India: Granules India Limited, a vertically integrated pharmaceutical company committed to sustainable and responsible healthcare, has been awarded a Gold rating by EcoVadis in its inaugural corporate-level assessment. This places the company in the 97th percentile, among the top 5% of all companies assessed globally across all industries.

EcoVadis is one of the world's trusted providers of business sustainability ratings, assessing companies on environment, labour & human rights, ethics, and sustainable procurement. This recognition affirms Granules' robust sustainability practices and transparency in its business operations.

The company's first-ever corporate-level submission to EcoVadis builds on years of operational and environmental excellence across its manufacturing footprint. The rating reflects the company's purpose-driven transformation journey — Healing lives responsibly through pioneering green science — and aligns with its broader sustainability goals, including science-based climate targets, greener chemistry platforms, and safer workplace practices.

"This Gold rating is more than a recognition — it's a reminder that we are choosing to grow differently by placing sustainability at the heart of our progress," said Dr. Krishna Prasad Chigurupati, Chairman and Managing Director of Granules India. "It is a moment of pride, but also one of responsibility to continue raising the bar as we build a more resilient and responsible future."

Priyanka Chigurupati, Executive Director, added: "We deeply value the trust and partnership of our customers and suppliers. This milestone is a shared win — a testament to what's possible when we act together with 'One Planet, One Purpose."

Venus Remedies appoints Ekta S. Chaudhary as Chairperson of Venus Foundation to spearhead its CSR initiatives

Mumbai, India: Venus Remedies Limited , a leading global pharmaceutical company, has appointed Ms. Ekta S. Chaudhary as the Chairperson of Venus Foundation, the dedicated social impact arm of the organization.

In this leadership role, Ms. Chaudhary will drive the company's corporate social responsibility (CSR) agenda, focusing on healthcare access, educational advancement, and inclusive community development. Her appointment marks a significant step in strengthening the Foundation's impact-driven initiatives aligned with Venus Remedies' core values of equity, empowerment and environmental stewardship.

"We are delighted to welcome Ms. Ekta as Chairperson of Venus Foundation. Her vision, dedication, and global perspective make her uniquely positioned to lead our mission of creating meaningful and sustainable social change. I am confident her leadership will accelerate our efforts in areas such as women's empowerment and healthcare equity," said Pawan Chaudhary, Chairman and Managing Director, Venus Remedies Ltd.

The appointment reflects Venus Remedies' commitment to evolving its CSR framework under future-ready leadership that blends scientific understanding with a passion for community welfare.

"Joining Venus Foundation is a unique opportunity to work alongside a purpose-driven team committed to operational excellence and social progress. I look forward to advancing the company's CSR footprint by fostering a culture of inclusive growth. Together, we aim to build enduring partnerships and programs that empower individuals to lead change in their communities," said Ekta S. Chaudhary, Chairperson, Venus Foundation.

A microbiologist by qualification, Ms. Chaudhary holds a degree from the University of Nottingham, a leading Russell Group institution in the UK. A passionate advocate for environmental action, she played a key role in launching Earthfest—London's first large-scale sustainability festival—bringing together change makers, innovators, and thought leaders to raise awareness about climate action and responsible living. With early experience in the biotech and AI space in London, she is now channeling her global exposure and scientific perspective into purpose-driven work, marking the beginning of her journey in corporate social responsibility and community impact.

Since its inception, Venus Remedies has remained steadfast in its commitment to making a meaningful difference in the society through its initiatives. The company views education as a fundamental pillar of societal progress and has made consistent investments in the upliftment and modernization of government schools in Panchkula, creating more conducive and empowering learning environments for students.

Senores Pharmaceuticals acquires ANDA for Topiramate HCl 25, 50, 100 and 200 mg tablets

Ahmedabad, India: Senores Pharmaceuticals Limited, through its wholly-owned subsidiary Senores Pharmaceuticals, Inc., USA, has signed agreement to acquire the USFDA-approved Abbreviated New Drug Application ("ANDA") for Topiramate HCl 25, 50, 100 and 200 mg tablets ("Topiramate") from Wockhardt Limited ("Wockhardt").

Topiramate is indicated as a treatment of epilepsy and migraine. The market size of Topiramate Tablet in the USA was ~USD 111.47 Mn (MAT December 2024)1 as per IQVIA. The acquisition will be funded through the Initial Public Offer ("IPO") proceeds raised by SPL. This is in line with the Objects of the IPO stated in the Red Herring Prospectus.

73 % think AI will revolutionize industry practices: KPMG global tech report

Mumbai, India: Globally, the life sciences sector is working on improving operations and creating new value by transforming digitally. In a highly regulated sector where companies are often fragmented and siloed, transforming at scale can be difficult. For these reasons, it can be helpful for tech function leaders to compare their decision making against their peers in the sector and other industries.

The report shows 73 per cent think AI will revolutionize industry practices, significantly enhancing efficiency and creating new business models.

To better understand how life sciences organizations are navigating the complexities of digital transformation, balancing speed, security, and deriving value from their tech investments, KPMG International has unveiled a report titled – 'KPMG global tech report: Life sciences insights.' The insights in this report were derived from the KPMG global tech report 2024, a survey of 2,450 technology leaders, including 123 senior life sciences technology function leaders from 26 countries across 8 industries.

This report examines the views of the life sciences technology function leaders from around the world that include chief digital officers, CIOs, CTOs, CISOs, chief AI officers and others. This report contains valuable insights into how life sciences organizations are navigating the complexities of digital transformation and covers topics that include technology investment decision making, data, AI and cyber security.

Vijay Chawla, Partner and Head – Life sciences, KPMG in India said, "Many companies in the life science sector are embracing Digital transformation to accelerate innovation and bring products to market faster. However, transformation initiatives come at a cost and organizations are increasingly mindful of their impact on margins. A key insight is that a siloed and fragmented approach to transformation often results in higher costs and inefficiencies. This report provides guidance to help companies make more strategic and cohesive investments in critical areas such as data, Ai and cyber security ultimately enabling more effective and sustainable digital transformation."

Agilent inaugurates India Solution Center to accelerate Innovation

Mumbai, India: Agilent announced the opening of it's first-ever India Solution Center at its LEED Platinum-certified office in Manesar, Haryana. Designed to provide integrated solutions, this strategic investment marks a major milestone in Agilent's global journey, highlighting strong focus on India as a high-growth, innovation-driven market. The facility was inaugurated in the esteemed presence of key opinion leaders and decision-makers from diverse sectors and markets that Agilent serves throughout India, who joined the ceremony to experience the center firsthand.

As India sees a rapid rise in chronic health conditions such as obesity and Type 2 diabetes, and a growing emphasis on environmental and food safety regulations, the demand for advanced, localized solutions is accelerating. The India Solution Center brings together Agilent's expertise across different disciplines to deliver holistic end-to-end solutions in sectors such as GLP-1 analysis, emerging food and environmental contaminants analysis, and PFAS detection.

"India is a strategic market for Agilent, and we are thrilled to open our state-of-the-art Solution Center in Manesar, said Jonah Kirkwood, Chief Commercial Officer at Agilent. "This facility is designed to provide our India customers with the resources and collaboration they need to address critical scientific and health challenges. By offering holistic and specialized workflows—from sample preparation to smart and fast results reporting—we aim to boost lab efficiency, support automation, and promote sustainable practices. Our goal is to help labs meet their financial, scientific, and sustainability objectives".

Spanning 12,500 square feet, the facility offers development of analytical workflow methods and novel applications, as well as proof-of-concept demonstration,

and collaborative R&D and training. With dedicated zones for chromatography, mass-spectrometry, spectroscopy, genomics, cell analysis and lab informatics, the India Solution Center aims to address critical areas such as pharmaceutical quality control, biopharmaceutical development across modalities, food safety, environmental monitoring, cell biology, and cancer research. The center will also align with national initiatives such as "Make in India" to advance the country's scientific and healthcare ecosystem.

HaystackAnalytics earns NABL-Accreditation for clinical genomics

Mumbai, India: After four years of transforming India's diagnostics landscape through world-class science, deep-tech innovation, and clinically relevant solutions, HaystackAnalytics, a pioneer in genomics-based diagnostics, has earned accreditation from the National Accreditation Board for Testing and Calibration Laboratories (NABL). This milestone cements HaystackAnalytics' position at the forefront of high-quality molecular diagnostic testing in India.

This NABL accreditation under ISO 15189:2022 validates the technical competence of HaystackAnalytics' central sequencing facility in Navi Mumbai across a broad spectrum of next-generation sequencing (NGS)-based diagnostics in both infectious diseases and human genomics.

Under infectious diagnostics it covers TB-ONE-NGS (drug resistance), Flu-NGS (NGS based detection of respiratory pathogens), Infexn-NGS (NGS based detection of bacteria and fungi. Under human genomics we are accredited for tests under whole exome sequencing (WES) and pharmacogenomics (PGx).

Commenting on this milestone, "HaystackAnalytics has always prioritised regulatory excellence and quality. Earlier we received ISO13485 and CE-IVD certifications for our manufacturing facility. Further to our commitment to quality, we are now accredited by NABL for our clinical genomics products and services. We will continue to seek other certifications with the aspiration of establishing the highest global standards of quality at HaystackAnalytics." said Dr. Anirvan Chatterjee, Co-founder & CEO of HaystackAnalytics.

"This accreditation is a pivotal step in our growth journey," added Gaurav Srivastava, Co-founder & COO, HaystackAnalytics.

Biocon Q4 revenue up 15% to touch ₹ 4,454 Crore

Kiran Mazumdar-Shaw, Chairperson, Biocon Group

Bengaluru, Karnataka, India: Biocon Limited, an innovation-led global biopharmaceuticals company, posted 15% rise in revenue at ₹ 4,454 Crore for the fiscal fourth quarter and the financial year ended March 31, 2025. The company's Net Profit was at ₹ 344 crore, Up 153%.

"The Biocon Group ended the year with a strong performance across its businesses. The launch of Liraglutide in the UK market heralded our entry into the GLP-1 therapy segment. Our Biosimilars continue to build impressive shares in global markets with four biosimilars recording sales of USD 200 million each in FY25. We also launched our fifth biosimilar product Yesintek (bUstekinumab) in the U.S. market. This quarter marked the expansion of Syngene's biologics manufacturing footprint through an acquisition of a state-of-the-art manufacturing facility in the U.S.FY25 has been a year of consolidation and transition. We are now on a path of accelerating growth with a commitment to innovation, digital augmentation and operational excellence,"stated Kiran Mazumdar-Shaw, Chairperson, Biocon Group.

"The Generics business delivered a healthy 46% YoY and a robust 53% sequential growth in Q4, concluding FY25 with an overall 8% growth over the previous year. The performance was primarily driven by contributions from new product launches, notably Lenalidomide and Dasatinib in the U.S., supported by modest growth in our API business.Looking ahead, we remain focused on the strategic expansion of our differentiated GLP-1 portfolio into new markets, which will position us well for growth. In FY26, we also expect to see a recovery in the API business, aided by our cost improvement initiatives, enhancement of operational efficiencies, and new capacities coming on-stream, stated Siddharth Mittal, CEO & Managing Director, Biocon Limited.

JB Pharma records revenue growth of 10% to ₹ 949 crores in Q4 FY25


Nikhil Chopra, CEO and Wholetime Director, JB Pharma

Mumbai, India: JB Chemicals & Pharmaceuticals ltd, one of the fastest growing pharmaceutical companies in India, announced its financial results for the quarter and year ended 31st March, 2025. Quarterly Financial Performance – Q4 FY25 vs Q4 FY24 JB Pharma recorded revenue of INR 949 crores in fourth quarter of FY25 registering growth of 10% from ₹ 862 crores in Q4 FY24. Operating EBITDA* (Earnings before Interest Depreciation and Taxes) improved by 15% to ₹ 240 crores in Q4 FY25 as compared to INR 210 crores in Q4 FY24.

The company's Profit after Taxes registered growth of 15% to ₹ 146 crores in Q4 FY25 as against ₹ 126 crores in Q4 FY24 *Operating EBITDA is after excluding non-cash ESOP Charge.

Nikhil Chopra, CEO and Wholetime Director, JB Pharma mentioned, "We have closed the financial year FY25 on a strong note, in line with our strategic intent and sustained execution in the market. Our Domestic business continues to be one of the fastest growing in IPM. We have built a strong foundation over the last five years. With 75% of India branded formulations sales in progressive, faster-growing segments, we are confident in sustained strong performance going forward. The CDMO business which is another focus area bounced back strongly in second half of the year. Together our Domestic and CDMO business now constitute 69% of overall revenues - Both businesses enjoy high ROCEs & high operating margins and contributed strongly towards enhancing profitability of the organisation. Our outlook on growth is based on expansion within Domestic and CDMO businesses, as we have outlined consistently."

The company's Domestic business revenue registered YoY growth of 11% to INR 519 crores in Q4 FY25, while International business recorded revenue of INR 430 crores in Q4 FY25 registering YoY growth of 9%.

Piramal Pharma revenue up 8% in Q4 FY25


Nandini Piramal, Chairperson, Piramal Pharma

Mumbai, India: Piramal Pharma Limited, a leading global pharmaceuticals and wellness company, announced its standalone and consolidated results for the Fourth Quarter (Q4) and Full Year (FY) ended 31st March 2025.

The company's Revenue from Operations grew by 8% YoY and 12% YoY in Q4FY25 and FY25 respectively, driven primarily by CDMO business especially from on-patent commercial manufacturing, while EBITDA grew by 8% YoY and 15% YoY in Q4FY25 and FY25 respectively, on account of operating leverage, cost optimization, and operational excellence initiatives.

Nandini Piramal, Chairperson, Piramal Pharma Limited said, "FY25 has been a steady year for the company as we crossed $1Bn in revenues with 12% YoY growth accompanied by 17% EBITDA margin and 5x increase in Net Profits, in-line with our annual guidance. We also managed to maintain our Net Debt / EBITDA level below 3x, while making regular investments in capabilities and capacities for future growth. During the year, we progressed well on our key performance metrics such as growth in innovation related work and differentiated capabilities in the CDMO business, maintaining our leading position in inhalation anesthetic Sevoflurane in the US market, and healthy growth in our power brands in our consumer healthcare business. We believe, we are on track to deliver on our FY2030 aspirations of becoming a $2bn revenue company with 25% EBITDA margins and high teens ROCE."

In CDMO business, the company posted Robust growth in on-patent commercial manufacturing revenues, which Grew by over 50% YoY. The company's YoY improvement in EBITDA margin was driven by better procurement strategies, cost optimization and operational excellence initiatives.

Syngene International Q4 net profit stood at ₹ 183 Crore

Mumbai, India: Syngene International Limited announced its fourth quarter and full-year results for FY25. The company's revenue from operations was up 11% year-on-year to ₹ 1,018 Crore and up 8% sequentially from the prior quarter, while Operating EBITDA was up by 8% year-on-year with operating EBITDA Margin at 34%.The company reported profit after tax was ₹ 183 Crore.

Commenting on the results, Peter Bains, Managing Director and CEO, Syngene International Limited, said, "Syngene reported revenue growth of 11% year-on-year, and 8% sequentially crossing the ₹ 1,000 Crore in a quarter threshold for the first time. At the EBITDA level growth was 9% year-on-year reflecting good underlying fundamentals. The highlight of the quarter was the acquisition of a state-of-the-art biologics manufacturing facility in the US, strengthening Syngene's position in the fast-growing biologics CDMO sector and providing a strategic foothold in the US market. Our biologics CDMO business witnessed robust growth supported by commercial manufacturing alongside new development projects.

The full year results, led by reported revenue growth of 4%, are in line with our January guidance, reflecting a resilient performance in a challenging year. After a muted first half, driven by a sectoral downturn in US biotech funding, we are encouraged to see a return to growth in the second half of the year.

"Looking at the year ahead, while the wider global market dynamics remain uncertain, we expect the business momentum to continue with pipeline build in both small and large molecules, supported by new pilot programs and conversion of existing pilots in discovery services. The mid-term indicators for the CRDMO sector remain positive and I am confident that Syngene's diverse and well-balanced portfolio across research, development and manufacturing services positions us well to navigate the dynamics and continue our growth story," added Peter Brains.

Deepak Jain, Chief Financial Officer, Syngene International Limited, said, "Q4 growth was broad based across research, development and manufacturing services, underpinning full year growth of 4% on a reported basis and 2% in constant currency. Operating EBITDA growth came in at 3% maintaining a margin of 29% reflecting a sharp focus on operational efficiencies and cost optimization programs. We continued to make strategic investments to enhance our capabilities and capacities across business while maintaining a strong balance sheet and an improved net cash position."

Eris Lifesciences Q4 FY25 Revenue up 28% YoY to touch ₹ 705 Crore

Mumbai, India: Eris Lifesciences Limited, a leading Indian branded formulations manufacturing company, announced its earnings for the fourth quarter and full year FY25.

The company posted Revenue of Q4 FY 25 grew by 28% YoY to ₹ 705 Crore, while PAT for Q4 FY 25 is ₹ 102 Crore with 14% PAT margin.

Commenting on the results, Mr. Amit Bakshi, Chairman & Managing Director of Eris Lifesciences Ltd., said, "Our Branded Formulations business has delivered a 10% organic growth in Q4. Our Diabesity strategy is progressing in line with our expectations and we have created an exciting pipeline in Insulins, Analogues and GLPs. We will take the lead in ensuring continued supply of life-saving insulins to patients across the country following the impending exit of the innovator from the RHI Penfill market. With our FY23 and FY24 investments fully integrated and growth-ready, we look forward to an exciting phase of secular growth over the next 3 years."

Krishnakumar Vaidyanathan, Executive Director & Chief Operating Officer added, "We have realised significant operating margin improvements in our DBF business due to synergies from business integration and rapid progress in insourcing of manufacturing, including the start of insulin production from our Bhopal facility. We have made significant investments in Swiss Parenterals to create new revenue streams, the full potential of which will start getting realised from FY27. We are entering a 3-year period of secular organic growth with significant inflection expected in our EPS and ROCE trajectories."

Laurus Labs Q4 Revenues stood at ₹ 1,720 Crore

Hyderabad, India: Laurus Labs Ltd, a leading research and development driven pharmaceutical and biotech company in India announces its Q4 & Full Year FY25 results. The company's Revenues stood at ₹ 1,720 Crore; with 84% growth resulted in a margin of 27.7%.

Dr. Satyanarayana Chava, Founder & Chief Executive Officer commented;"We delivered a very good Q4 results and continued our transformative progress, reflecting robust demand for our CDMO offerings and meeting complex customer needs, supported by growth in FDF division. These results demonstrate the strength of our business model and give us confidence in our outlook. We are deepening our cooperation with major clients, and augmenting it with promising BD and capacity creation. Our business remains well positioned to evolve into a well-diversified CMO/CDMO company with promising pipeline, enabling several technology platforms and commercial excellence, thanks to team commitment to the unified vision of delivering high quality integrated solution and securing our long-term growth potential."

V V Ravi Kumar, Executive Director & Chief Financial Officer commented, "For Q4, we delivered ₹ 1,720 Crore in revenues, growth of 19% and ₹ 477 Cr EBITDA grew by 84%, resulting in 27.7% margin. Gross margins remained healthy at 55% due to favorable CDMO mix and process optimization measures. The fundamentals of our business remain healthy. Overall FY25 results, we have delivered revenues of ₹ 5,554 Cr, representing 10% growth and EBITDA stood at ₹ 1,115 Cr, growth of 40%. The EBITDA margin of 20.1% has substantially improved, supported by continuing operating leverage within CDMO business. Going ahead, we remain confident in our growth expectations as we look forward to execute on long lead programs, new assets ramp up with revenue increasing over FY25 with continued focus on operational excellence. Our capital allocation strategy remain unchanged, prioritizing investments into high value business opportunities."

Hester Biosciences FY25 consolidated net profit up 36%

Ahmedabad: India: Hester Biosciences Limited, one of India's leading animal health company, manufacturing vaccines and health products has reported consolidated net profit of ₹ 28.83 crore for the financial year ended March 2025, rise of 36% as compared to the net profit of ₹ 21.17 crore reported in the financial year 2023-24.

The company's Revenue from operations for the FY25 was reported at ₹. 311.10 crore, rise of 2% Y-o-Y as compared to the revenue from operations of ₹ 304.55 crore.

The Company has recommended dividend of 7 (Seven) per equity share of ₹ 10 each (70%) for the financial year 2024-25, subject to the approval of members at the ensuing Annual General Meeting.The company's Divisional Product Sales in FY25 was up by 13% and in Q4 FY25 it was up by 3%. Net Profit in FY25 up by 36% and in Q4 FY25 it was down by 76%

Looking ahead, Hester remains focused on deepening its presence across all core segments while maintaining strong operational discipline. The company is on track to launch the Avian Influenza vaccine and expand its portfolio of feed supplements and disinfectants in the Poultry Healthcare Division, creating new domestic and export opportunities.

In the Animal Division, efforts will be on broadening the nutritional and therapeutic product range to meet evolving market needs and strengthen market share. Continued investments in product development, supply chain efficiency, and customer engagement will drive sustainable growth.

Hester is also prioritising international expansion, with a strong focus on scaling its Africa operations and strengthening its presence in existing and new geographies, aligned with its long-term vision of global leadership in animal healthcare. The Consolidated results include operations of subsidiaries from Nepal and Tanzania:

Hester Nepal reported a net profit of ₹ 1.20 crore for FY25, supported by fulfilling export orders from international tenders for the LSD vaccine and meeting domestic vaccine demand for poultry.

Hester Africa reduced its net loss to ₹ 10.27 crore compared to ₹ 18.30 crore in FY24, backed by stronger sales and tender wins for the supply of PPR and CBPP vaccines. The subsidiary also received marketing authorisation for a new live combination vaccine covering PPR and Sheep & Goat Pox — an important development for ruminant health.

AGI Greenpac Q4 revenue up 13%

Gurugram, India: AGI Greenpac Limited, a leading Glass Container Company announced its financial results for the fourth quarter and year ending March 31, 2025.

In the fourth quarter of FY25, the company continued its growth trajectory achieving Consolidated Revenue of ₹705 crore, a 13% increase compared to ₹622 crore in Q4 FY24. The Company's EBITDA for the quarter stood at ₹191 crore, up 23% from ₹156 crore from the same period last year, resulting in an EBITDA margin of 27%. Profit After Tax (PAT) reached ₹97 crore, a significant 50% rise from ₹65 crore recorded in Q4 FY24.

The company reported strong financial results for the year ended March 31, 2025, achieving Consolidated Revenue of ₹2529 crore, registering year-over-year growth of 5% compared to ₹2418 crore in FY24. The Company delivered EBITDA of ₹689 crore, an increase of 17% over ₹588 crore in the previous year, resulting in an EBITDA margin of 27%. The company's net profit for the year stood at ₹322 crore, up by 28% compared to ₹251 crore in FY24.

The Company proposed setting up of a state-of-the-art manufacturing plant in Madhya Pradesh with a daily capacity of 500 tonnes, projected to increase the company's production capacity by approximately 25%, with an investment of ~₹700 crore. This strategic move aims to capitalize on the growing demand for glass packaging in the food, beverage, and pharmaceutical sectors.

Sandip Somany, Chairman and Managing Director, AGI Greenpac Limited said, " Our strong performance this year reflects our focus on innovation, operational efficiencies, and delivering a premium product mix. Looking ahead, we are making strategic investments to enhance our capacity and better serve our customers. The proposed state-of-the-art in Madhya Pradesh will increase our current capacity by 25% and will help us in meeting the growing demand for high-quality glass containers in North India."

He further added, "We will continue to seek opportunities aligned with our vision of pursuing profitable and return-accretive growth, with a strong focus on leveraging technology to make ourselves future-ready."

Dr. Reddy's Q4 revenue up 20%

Hyderabad, India: Dr. Reddy's Laboratories Ltd. announced its consolidated financial results for the quarter and year ended March 31, 2025. The company's revenues stood at ₹85,060mn , up 20%, while net profit stood at ₹15,939mn.

Commenting on the results, Co-Chairman & MD, G V Prasad said: "We achieved double-digit growth across our businesses, driven by successful product launches, increased revenues from key products in the U.S. and the integration of the acquired NRT business. We will continue to strengthen and grow our core businesses through portfolio management and operational excellence."

The company's Q4 FY25 consolidated revenues stood at ₹85.1 billion, YoY growth of 20% and QoQ growth of 2%. Excluding the NRT business, underlying growth was 12% YoY and 2% QoQ, while Q4FY25 India revenues was at ₹13.0 billion, YoY growth of 16% and QoQ decline of 3%.

The company's Global Generics (GG) Q4FY25 revenues was at ₹75.4 billion, YoY growth of 23% and QoQ growth of 2%. The company Received the Establishment Inspection Report (EIR) following a routine GMP inspection by the U.S. FDA at our API manufacturing facility (CT0-2) in Bollaram, Hyderabad. The inspection was classified as Voluntary Action Initiated (VAi).

Sun Pharma saw accelerated growth in its specialty segment over last three years: Equirus Securities

Dilip Shanghvi, Chairman and Managing Director, Sun Pharma

Mumbai, India: Sun Pharmaceutical Industries Ltd has seen accelerated growth in its specialty segment over last three years, with revenues reaching USD1.2bn (FY22: US$ 670mn), led by Ilumya, which now contributes 56% of this revenue, according to research report by Equirus Securities. The research firm is forecasting a USD500mn increase in specialty revenues by FY28E.

The company's gross sales for the fourth quarter ending March 31st, 2025. stood at ₹ 128,156 million, growth of

8.5%, while India formulation sales at ₹ 42,130 million, up 13.6%.

The company reported net profit for Q4FY25 was ₹ 21,499 million as against ₹ 26,546 million during Q4FY24. The company's Emerging Markets formulation sales at USD 261 million, up 6.3%. The company's EBITDA was at ₹ 37,161 million (including other operating revenues), up 22.4%, with resulting EBITDA margin of 28.7%.

Dilip Shanghvi, Chairman and Managing Director of the Company said, "Our businesses delivered a robust performance for the year, driven by improving market share in India and growth in Global Specialty. The near-term pipeline in Global Specialty is promising, with products such as Leqselvi and Unloxcyt—the latter through our recently announced Checkpoint acquisition—offering significant improvements in patient care. We look forward to Specialty becoming an increasingly important part of our business."

Sun Pharma's R&D efforts span across both specialty and generic businesses and the company continues to invest in building the pipeline for various markets. Sun's specialty R&D pipeline includes 8 novel entities in clinical stage. Sun has a comprehensive product offering in the US market consisting of approved ANDAs for 542 products while filings for 117 ANDAs await US FDA approval, including 33 tentative approvals. Additionally, the portfolio includes 57 approved NDAs while 13 NDAs await US FDA approval. For the quarter, 9 ANDA were filed and 1 ANDA approval was received.

Kilitch Drugs Q4FY25 PAT increases 212% YoY

Mumbai, India: Kilitch Drugs Limited, a leading pharmaceutical company specializing in the manufacturing and distribution of high-quality Parenteral, Injectables, Oral Solids, and Effervescent, announced its unaudited financial results for the quarter ended on 31 March 2025. The company's reported a 178% per cent year-on-year(Y-o-Y) remarkable rise in consolidated profit after tax (PAT) for the Q4 FY25 to ₹ 1,021.86 lakh from ₹ 368.07 lakh for the corresponding period previous year.

The company recorded its quarterly consolidated revenue from operations at ₹ 6,122.58 lakh in Q4FY25, experiencing 37 per cent of Y-o-Y excellence growth from Rs. 4,481.88 lakh in Q4FY24. The growth is achieved by continuous efforts to meet steady demand across globe and will continue further.

Consecutively, the company's standalone PAT rose by 212%% per cent, and revenue grew by 44% per cent to ₹ 1,137.41 lakh and ₹ 18,158.73 lakh recorded in Q4 FY25, respectively.

For the year ending March 2025, In FY25, Kilitch reported an over 77 percent YoY rise in standalone net profit to ₹ 3,115.69 lakh, compared to ₹ 1,757.38 lakh in FY24. The Standalone Revenue from operation for the period increased by 38 percent to ₹ 18,158.73 lakh from ₹ 13,159.90 lakh in the previous year.

Commenting on the Q4FY25 performance, Mr. Mukund Mehta, the Managing Director of Kilitch Drugs said, "We witnessed significant growth in our performance for this year; revenue from operations grew by 44% and PAT increased by 212% on standalone basis as compared to Q4FY2024. We remain focused on driving sustainable growth and delivering strong returns for our stakeholders."

Indoco Q4 revenues stood at ₹ 3,411 mn

Mumbai, India: During the fourth quarter of FY 2024-25, revenues of Indoco Remedies are at ₹ 3,411 mn, as against ₹ 4,351 mn, same quarter last year. The company's EBIDTA for the quarter is at ₹ 35 mn, as compared to ₹ 574 mn, same quarter last year. For the year, revenues are at ₹ 14,948 mn, as against ₹ 17,620 mn, same period last year. EBIDTA to net sales for the period is 8.6 % at ₹ 1,280 mn, compared to 14.6 % at ₹ 2,580 mn, same period last year. Profit After Tax are at ₹ (-)87 mn, compared to ₹ 1,166 mn, same period last year.

Aditi Panandikar, Managing Director, Indoco Remedies Ltd. said, "While this has been a challenging year for Indoco, there are several optimistic triggers which gives us confidence for a better future, both in the short as well as long term."

Indoco is a fully integrated, research-oriented pharmaceutical company with a strong global presence. The Company's turnover is US$ 180 million with a human capital of over 6000 employees, including over 400 skilled scientists and field staff who are the strength of the organization.

Emcure Pharma Q4FY25 net profit rises 63%

Pune, India: Emcure Pharmaceuticals announced its consolidated financial results for the quarter and year ended March 31st, 2025. The company said that the company's Revenue from operations at ₹ 2,116 crore, up 19.5% YoY, while PAT was at ₹ 197 crore, up 63.0% YoY.

The quarter saw strong performance across both our Domestic and International businesses. Emcure's Domestic business grew by 24.8% YoY led by our Women's Health and Cardio franchises and further aided by our new focus areas of Dermatology and OTC. The International business registered a growth of 15.6% led by a robust 39.3% growth in the Rest of the World segment. Our Canada business continues to perform well with Mantra now fully integrated. In Europe we recently acquired a portfolio of products and secured key regulatory approvals which will aid growth going forward.

Commenting on the results, Satish Mehta, CEO and Managing Director, Emcure Pharmaceuticals Ltd., said, "Emcure delivered a very strong performance in Q4 with all our businesses segments contributing to growth. Over the past year we have effectively executed our strategies across both Domestic and International markets. On the Domestic side we have expanded our covered market and built a strong product pipeline of upcoming launches. In the International markets we are seeing approvals for our differentiated product offerings. Moving forward, while we continue to drive growth, our key priorities will be improving margins through new product launches and operating efficiencies."

Emcure Pharmaceuticals Ltd. (EPL) is a leading Indian pharma company headquartered in Pune engaged in developing, manufacturing and globally marketing a broad range of pharmaceutical products. Known for its commitment to innovation, quality, and patient-centricity, Emcure is an R&D driven company that develops and manufactures a wide range of differentiated pharmaceutical products designed to improve patient health and well-being across several major therapeutic areas. Established in 1981, EPL is ranked as the 12th largest pharma company in India in terms of Domestic Sales for MAT June 2024. Emcure is present in 70+ countries globally including Europe and Canada.

Gland Pharma Q4 PAT stood at ₹ 1,865mn

Hyderabad, India: Gland Pharma Limited, a generic injectable-focused pharmaceutical company, announced its financial results for the fourth quarter and year ended on March 31st, 2025. In Q4 FY25, the company's consolidated revenue reached ₹ 14,249 million, with a healthy EBITDA margin of 24%. The company's PAT stood at ₹ 1,865mn.

Commenting on the results, Srinivas Sadu, Executive Chairman of Gland Pharma, said, "FY25 was a year of strategic realignment and investment in future growth. Through the year we mitigated many challenges and strengthened the core by advancing key pillars of manufacturing, quality, and R&D. Our approach involves expanding our core business into new emerging markets, carefully enhancing our manufacturing capabilities to encompass complex injectables and novel delivery systems and building pipeline through our robust in-house research and development efforts. Our progress in biologics CDMO and collaborations with leading partners reflect our intent to diversify and grow beyond traditional segments. We remain firmly focused on executing the Cenexi turnaround and leveraging targeted M&A to drive long-term, sustainable value for all stakeholders."

Commenting on the results, Mr. Shyamakant Giri, Chief Executive Officer of Gland Pharma, said, "In Q4 FY25 our consolidated revenue reached INR 14,249 million, with a healthy EBITDA margin of 24%. On the base business the EBITDA margin expanded to 38%, driven by volume traction in our U.S. portfolio and high-margin new product launches. Cenexi posted modest sequential improvement in revenue & gross margin and we remain firmly committed to its turnaround. Looking ahead, our strategic focus is on accelerating growth in RoW and India, deepening our U.S. presence through portfolio enhancement, and continuing to lead on quality and cost efficiency." .■

Roche to invest USD 50 billion in pharmaceuticals and diagnostics in US over the next five years

Basel: Roche plans to invest USD 50 billion into the United States of America in the next five years. These investments further strengthen Roche's already significant US footprint with 13 manufacturing and 15 R&D sites across the Pharmaceutical and Diagnostics Divisions, and are expected to create more than 12,000 new jobs, including nearly 6,500 construction jobs, as well as 1,000 jobs at new and expanded facilities.

As part of this investment, Roche will increase its existing footprint of more than 25,000 employees in 24 sites across eight US states. The investment will include expanded and upgraded US manufacturing and distribution capabilities for its innovative medicines and diagnostics portfolio in Kentucky, Indiana, New Jersey, Oregon and California.

"Roche is a Swiss company with a strong heritage in more than 130 countries globally. Today's announced investments underscore our long-standing commitment to research, development and manufacturing in the US," said Thomas Schinecker, Roche Group CEO. "We are proud of our 110 year legacy in the United States which has been a key driver for jobs, innovation and the creation of intellectual property in the US, across both our Pharmaceutical and Diagnostics Divisions. Our investments of USD 50 billion over the next five years will lay the foundation for our next era of innovation and growth, benefiting patients in the US and around the world."

Amgen invest USD900 mn for manufacturing expansion in Ohio

Thousand Oaks, California: Amgen announced a $900 million expansion of its Ohio manufacturing facility, bringing the total number of jobs created to 750 and the total investment in Central Ohio to over $1.4 billion.

"Amgen has been a leading U.S.-based manufacturer of biologic medicines since 1988. Today's investment reinforces our ongoing commitment to expanding U.S. manufacturing and ensuring patients around the world have access to our innovative medicines," said Robert A. Bradway, chairman and chief executive officer at Amgen. "Ohio offers a supportive business climate, skilled workforce, and strategic location, making it an ideal choice for this next phase of our investment."

Amgen first entered Ohio in June 2021, when it announced plans to invest in a state-of-the-art biomanufacturing facility in Central Ohio. This investment marked the company's expansion into the Columbus Region, which enhanced its U.S.-based manufacturing capabilities and created 400 jobs upon the facility's opening.

"Ohio has built a strong foundation for economic development, which has led companies like Amgen to see Ohio as a premier destination for growth," said Ohio Governor Mike DeWine. "We are happy to see Amgen deepen its commitment to our state and look forward to the innovation and economic impact it will drive."

Since passage of the Tax Cuts and Jobs Act of 2017, Amgen has invested almost $5 billion in direct capital expenditures in the United States, generating an additional downstream output to the U.S. economy of approximately $12 billion.

The Ohio expansion enhances the company's global biomanufacturing network, leveraging decades of operational expertise and technological advancements and follows the company's recent announcement that it would invest $1 billion to build a second manufacturing plant in Holly Springs, NC. With these investments across the U.S., Amgen is focused on building the most cutting-edge biologics manufacturing capabilities in the world. ■

INTERVIEW

"We aim to grow our CDMO revenues to USD 1.2 billion by FY2030"

Surinder Gulati
Executive Vice President – Manufacturing
Piramal Pharma Solutions

Surinder Gulati, Executive Vice President – Manufacturing, Piramal Pharma Solutions emphasizes about the current growth dynamics of CDMO(Contract Development and Manufacturing Organization) market. He also spoke about the challenges and opportunities for CDMO sector and expansion plans going ahead.

What is the market overview and growth dynamics of CDMOs in India's Pharmaceutical Market?

The CRDMO (Contract Research, Development, and Manufacturing Organization) Market size of Indian Pharma stood at USD3-3.5bn, While Global market stood at USD140bn. India CRDMO is projected to grow at 21% CAGR to USD 22-25bn by 2035

What are the challenges and opportunities for the CDMO sector?

The CDMO industry faces several challenges, including tariffs and geopolitical/economic situations, longer regulatory timelines (relative to the West), harder access to cost-efficient capital, over-reliance on China for starting materials, and an incomplete and inconsistent recovery in funding for emerging biopharma.

Realignment of global supply chains, value driven outsourcing backed by continuous improvement, favourable geopolitical and geoeconomics (eg. For PPL, we see this as an opportunity due to our network of facilities in strategic geographies with a mix of East & West), focus on emerging modalities, favourable ecosystem - a scenery of talent meets opportunities, focus on sustainability.

What are the new trends shaping the CDMO industry?

Current trends are emerging in new modalities and differentiated capabilities, including large molecules and biologics such as ADCs and mABs, sterile fill-finish, peptides, HPAPIs, hormonals, Cell & Gene Therapies, and oligonucleotides. Additionally, there is a growing emphasis on sustainability and enhancing supply chain resilience.

Can you throw more light on Piramal Pharma's CDMO business? What is the growth do you see for the coming quarters?

Our CDMO business has performed well over the past two years, with revenue growth of 19% in FY2024 and 15% in FY2025, and a significant improvement in EBITDA margin. This success is due to our focus on innovation-related work and investments in differentiated capabilities such as ADC, HP API, peptide, sterile fill-finish, hormones, liquid creams ointments (LCO), and on-patent API development. These services now account for 49% of CDMO revenues, up from 37% in 2023.

Customer enquiries and RFPs remain strong, particularly at our overseas sites such as Grangemouth, Riverview, Lexington, and Sellersville, driven by the need to diversify and de-risk supply chains but also at our Indian sites. Despite prolonged decision-making timelines due to funding inconsistencies and trade tariff uncertainties, we are well-placed to capitalize on CDMO opportunities with our globally diversified network and focus on superior execution. We aim to grow our CDMO revenues to US$ 1.2 billion by FY2030 with an EBITDA margin of 25%.

Our FY25 CDMO business saw better performance due to innovation-related and on-patent commercial manufacturing work. These long-duration contracts offer good growth potential and superior EBITDA margins but their contribution varies over time. We expect a brief period of inventory normalization in FY26, followed by growth resumption from FY27 onwards. Excluding this, our underlying CDMO business should grow at a mid-teen rate in FY26, driven by strong demand at our overseas sites and improved capacity utilization and profitability.

What are the emerging trends do you see for the Pharma industry?

New modalities are emerging, such as AI and ML in drug discovery, mRNA, and next-generation therapeutics. There is a strong emphasis on sustainability and green chemistry, along with an increased focus on supply chain resilience. Pharma-biotech collaborations are also crucial in accelerating innovation. For India to achieve accelerated growth and fully capitalize on these opportunities, it is essential to maintain leadership in small molecules while enhancing our capabilities in biologics and new modalities.

Research and development and innovation are critical factors for the growth of the pharma industry? How has India grown in this sector?

India has made significant strides in R&D and innovation-driven growth over the past decade, but there is still a journey ahead to achieve global prominence. To enhance innovation and competitiveness, we must strengthen collaboration with academia to expand our scientific talent pool, engage with the government to build a world-class regulatory and economic ecosystem, and ensure financial markets provide the necessary capital for growth. Without these actions, we risk losing global competitiveness and market opportunities. It is essential to transition from being a preferred outsourcing destination to a co-innovator on the world stage.

India has shown promise to grow and some lagging indicators include government participation and focus to

create an innovation system. We have also seen growing capabilities in new modalities, but need to double down to match the global demand. There are 40+ Indian startups working on NCE & NBE research. Govt is also increasing access to funding to drive local demand and participation, via programs such as BIRAC & PRIP to the tune of ~25k cr. Focus is also there on improving manufacturing quality to ensure consistent quality and safety (eg. Schedule M, Drugs and Cosmetics Act). India has also worked towards advancing patent ecosystem (eg. Intellectual Property Rights Policy 2016, which significantly aligns India's IPR regime with global standards). Improvement in GII Ranking (Global Innovation Index), from 81 in 2015 to 39 in 2024.6 [(Biotechnology Industry Research Assistance Council (BIRAC), Promotion of Research and Innovation in Pharma MedTech sector (PRIP)]

What are your future plans for the next 2-3 quarters?

We continue to remain focused in achieving our long-range plans to enable us to serve our customers and patients better. We are also closely monitoring the emerging geopolitical situation and realigning our efforts to minimize disruptions and capitalize on the opportunities.

In a BANI environment, agility is essential for business. With vast amounts of data available, it is crucial to synthesize and utilize it effectively. In line with this, we are making significant investments in digital transformation initiatives, and are increasing the use of AI in selected areas.

To support our revenue growth to 2x by FY2030, we have also undertaken an initiative to design a fit-for-purpose commercial model, to better align with our customer segments.

We have also recently announced a USD 90Mn expansion investment at two of our sites which includes addition of commercial-scale sterile injectables capabilities in Lexington and addition of development and commercial-scale capabilities in payload-linkers for bioconjugates in Riverview. Both of these site expansions, together play a vital role in our integrated ADC development and manufacturing programme.

What was the growth in patent commercial manufacturing?

On-patent commercial manufacturing grew from US$ 52 Million in FY2023 to US$ 179 Million in FY2025. As a result, the contribution of innovation-related revenue to our CDMO business also increased from 45% in FY2023 to 54% in FY2025

Brief us about your financials? What is your growth target for next year?

For FY25, PPL achieved a critical milestone of $1bn, closing at Rs. 9151cr, growing by 12% over FY24. Profitability saw an EBITDA margin of 17%, translating to a 15% growth over last year, despite one-off non-recurring expenses in our CHG business. Our net profit after tax increased fivefold to Rs. 91 crores compared to Rs. 18 crores last year.

To ensure continued growth, we invested approximately $80mn in capex during the year, maintaining our net debt to EBITDA ratio at 2.7x. This performance was achieved amidst an uncertain business environment characterized by inadequate and uneven funding for emerging biopharma companies, geopolitical disturbances, high interest rates, slow consumer demand in India, and uncertainty around the Biosecure Act and trade tariff policies.

Looking ahead to FY26, we anticipate mid-single digit consolidated revenue growth, followed by significant recovery in FY27 with mid to high-teen revenue growth. Our EBITDA margins are expected to moderate to mid-teen levels in FY26, with material improvement to about 19-20% in FY27. On the PAT front, if the geography mix of revenue aligns with our forecasts, we expect modest YoY growth in FY26, with multi-fold increases in FY27. Over the next two years, we aim to deliver revenue growth and EBITDA margin improvements in line with our FY30 aspirations of becoming a USD 2bn revenue company with 25% EBITDA margins and high teens ROCE. ■

"Our strategic agenda is to lead the next wave of biomanufacturing innovation"

Ankush Kapoor
Co-founder and Chief Executive Officer
PharmNXT Biotech

PharmNXT Biotech has made significant strides in producing Single-Use products and containment solutions. What inspired the shift to in-house manufacturing, and how does it give you a competitive edge in the global market?

In a biopharma ecosystem where over 90% of inputs for biologics are still imported, we saw a structural inefficiency holding back Indian innovation. This industry point made shifting to in-house manufacturing a necessity. The government is making significant moves with Production-Linked Incentives (PLIs), with up to USD 3 billion earmarked for pharmaceutical and medical devices, attracting investments worth nearly $4 billion. However, there remains room to strengthen these programs to address India's dependence on a single source for bulk drug imports. Approximately 72% of overall bulk drug and intermediates imports by India in FY24 are from China.

At PharmNXT Biotech, we saw an opportunity to flip the narrative. Our modular Ekuse facility in Pune was built to localize the manufacturing of Single-Use Technologies (SUTs) and containment systems at a scale and precision that competes with global benchmarks. With the capacity to produce SUT bags at our facility in Pune that can match global quality standards, we have created a manufacturing engine that drives cost competitiveness, supply chain control, and rapid customizability.

With sustainability becoming a priority across industries, how is PharmNXT integrating eco-friendly practices in its manufacturing processes, especially for Single-Use products?

Sustainability is not a parallel track for us; it remains at the core of how we design, manufacture, and deliver. At PharmNXT, our single-use systems are engineered to reduce resource consumption. SUTs save up to 87% of water and 27% of labour compared to traditional systems. By eliminating clean-in-place and steam-in-place cycles, we reduce water and chemical wastage to enable faster bioprocessing. For example, the NXTbin container's design maximizes storage capacity and workflow efficiency, while its 100% drainability prevents product loss. For our clients, this translates into real ESG outcomes, lower emissions, smaller footprints, and more controlled operations. By enabling just-in-time delivery, we have also slashed unnecessary storage and inventory waste for clients. India's BioIndustrial segment alone is now worth $78.2 billion, and we believe the next frontier lies in circular biomanufacturing—where economic growth and planetary value go hand in hand.

As a pioneer in the bioprocess industry, what are PharmNXT Biotech's key focus areas for FY26?

FY26 is a scale-up year—strategically and scientifically. First, we are doubling down on infrastructure to support biologics, cell and gene therapies, and ADCs, where demand is outpacing global capacity. Second, we are rolling out next-generation hybrid containment systems that integrate real-time sensors and AI for precision control. Third, we are expanding globally with international partnerships—with a focus on ASEAN, LATAM, and European markets. With India's BioPharma segment growing at 8.6% YoY and the total bioeconomy projected to reach USD300B by 2030, our strategic agenda is clear: build smart, scale fast, and lead the next wave of biomanufacturing innovation from the front.

Sachin Joshi, Managing Director and Co-founder of PharmNXT Biotech spoke about outlook of the bioprocessing industry. He also spoke about expansion plans and the company's R&D strategy.

INTERVIEW

"Biomanufacturing is expected to shift from limited-scale to value creation by 2030 "

Sachin Joshi
Managing Director and Co-Founder
PharmNXT Biotech

The bioprocessing industry is rapidly evolving with various policy developments like Bio-E3 and Bio-RIDe. What is the future outlook of the industry as we stand at the cusp of a biotech revolution?

We are in the thick of a biotech transformation. The Indian bioeconomy stands at $165.7 billion today and is accelerating toward $300 billion by 2030, powered by bold policy moves like BioE3, Bio-RIDe, and the National Biopharma Mission. Biomanufacturing is expected to shift from limited-scale to value creation by 2030, with focus areas such as synthetic biology, precision biotherapeutics, and AI-integrated discovery platforms. For PharmNXT, as therapies evolve—from monoclonals to mRNA to gene editing—the need for agile, compliant, and scalable infrastructure will define growth and momentum.

Is PharmNXT Biotech planning to expand its footprint to global countries?

PharmNXT is already active in 12 countries, anchored by operational offices in Singapore and South Korea. In FY26, we are initiating few more commercial rollout into LATAM and the EU through strategic partnerships. We are positioning PharmNXT as an enabler of global biomanufacturing ecosystems.

These efforts are complemented by our unique value proposition of delivering global-quality bioprocessing solutions at local prices, which gives us a competitive advantage. Since our inception in 2017, PharmNXT Biotech has adhered to a clear and focused strategy to realize our vision of "Make in India for the World." Our growth has been driven by a two-pronged approach: expanding our global presence and building indigenous capacity to address critical biopharma needs.

Can you share insights into PharmNXT's R&D strategy and how it contributes to your product pipeline?

At PharmNXT Biotech, innovation is a function of intent. Our R&D strategy is rooted in precision engineering, powered by automation, and accelerated through end-to-end partnerships. We have institutionalized automation across the entire bioprocess lifecycle—from design and prototyping to scalable production—resulting in a 35–40% reduction in production costs without compromising global quality benchmarks.

The Ekuse facility, our advanced manufacturing nucleus, brings this to life through proprietary solutions like Xelta 2D/3D bags and the NXTmix levitating mixer—solutions that are engineered for speed, safety, and scale. Our focus areas, including mRNA, ADCs, and cell and gene therapies, demand reliability at the edge of complexity. That is why our innovation engine is calibrated not just to deliver breakthrough products, but to empower our clients to commercialize next-gen therapies efficiently, affordably, and globally.

Are there any partnerships or collaborations with other biotech firms or academic institutions that have been pivotal to PharmNXT's success?

Collaboration is at the heart of our growth strategy, and we view every partnership as a multiplier of innovation, scale, and access. Our co-development programs with many biotech majors across the globe have shaped several of our flagship solutions. These partnerships allow us to move from ideation to deployment faster. This partnership reflects a shared commitment to efficiency, quality, and, most importantly, accessibility.

India now hosts over 10,000 bioeconomy startups—and we believe the future belongs to collaborative builders. At PharmNXT, partnerships aren't just part of our model—they are part of our muscle memory. We innovate faster because we innovate together. ■

Pharma Packaging: Trends and Opportunities

The pharmaceutical industry has witnessed remarkable transformations across every facet of its business over the past three decades. Few changes have been as profound and multifaceted as those occurring in pharmaceutical packaging. What was previously considered to be nothing more than a container is now a vital factor that determines drug efficacy, patient compliance, brand security, and now, environmental responsibility. **Sheetal Arora, Promoter and CEO, Mankind Pharma** emphasizes about the challenges landscape, future trends and opportunities for Pharma Packaging.

As we navigate through 2025, the pharmaceutical packaging world finds itself at an interesting crossroads. The global market, valued at over USD 300 billion at present, is maintaining its robust growth trajectory with projections reaching USD 342.16 billion by 2034. This whopping CAGR of 8.88% is a reflection not only of expanding markets but also of the increasingly complex demands being placed on packaging solutions.

The Changing Landscape of Pharmaceutical Packaging

The pharma packaging industry has evolved by leaps and bounds from modest beginnings. The initial goal was to simply house and shield the drugs; however, the present packaging performs multiple functions beyond containment. Modern pharmaceutical packaging is a culmination of the convergence of scientific principles, technological innovation, regulatory compliance, and understanding of consumer behaviors.

The recent years have seen increased focus on patient-centered design, green packaging materials, anti-counterfeiting technology, and supply chain transparency. These have all collectively shifted the priorities and strategies of the industry towards packaging development.

The biopharma industry, by itself, produces a staggering 300 million tonnes of plastic waste annually, much of which is in the form of single-use packaging materials. This ecological cost has put the question of sustainability at the forefront of industry minds, compelling the manufacturers and the packaging partners to re-examine traditional methodologies.

Simultaneously, the increase in counterfeit medicines poses serious threats to public health and the integrity of the pharmaceutical sector. As estimated by the World Health Organization, the value of counterfeit drugs sold annually is close to $83 billion, with internet pharmacies being particularly vulnerable to this. A report by AstraZeneca indicates that over 50% of medicines bought online from illicit sources are counterfeit. These alarming statistics underscore the critical importance of robust anti-counterfeiting measures in modern pharmaceutical packaging.

Key Challenges in Pharmaceutical Packaging

Sustainability with Safety: Squaring the Circle

Perhaps the most pressing challenge facing pharmaceutical packaging today is product integrity as well as environmental stewardship. While consumer packages have no such requirements, pharma packages must continue to have superior barrier properties, stability, and safety aspects. These were historically served by materials such as plastic, glass, and aluminum foil.

The industry faces intense pressure to reduce environmental impact without compromising drug safety or regulatory compliance. As the Association of the British Pharmaceutical Industry notes, any changes to improve sustainability must ensure no increased risk to patient safety or product contamination.

The multi-component nature of drug packaging compounds the problems of sustainability. Blister packs consisting of plastic and foil, for example, are notorious for being difficult to recycle, which means millions of them end up in landfills each year.

Despite these obstacles, new solutions are starting to appear. One such solution is the mono-packaging of a single recyclable polymer. Other innovative companies have also worked together to create the first medicine container made from wood-based bio-PET, offering the same functionality one would find in conventional PET bottles but with a significantly reduced carbon footprint.

Industry collaboration is also accelerating progress in this domain. In Japan, four major pharmaceutical companies have formed a coalition to share knowledge and promote environmentally friendly packaging solutions. Such collaborative efforts across the industry are essential to achieving meaningful progress in sustainable packaging.

Anti-Counterfeiting and Supply Chain Security: Protecting Patient Trust

Counterfeit and substandard drugs are a threat to patient safety and the integrity of the pharma industry itself. Even with regulatory mechanisms like the EU Falsified Medicines Directive and the US Drug Supply Chain Security Act (DSCSA), which mandate the use of serial numbers on every package that is sold, the counterfeiters continue to adapt and change their strategies.

Instituting total anti-counterfeiting solutions is now a top priority program for R&D and operations staff throughout the pharmaceutical value chain. Serialization has become the industry's lead response. This provides an electronic pedigree to each pack and makes it more difficult to distribute counterfeits.

Beyond serialisation, advanced anti-counterfeiting features include:

- Tamper-evident seals and packaging designs that reveal if products have been opened or altered
- Sophisticated holograms and color-shifting inks that resist replication
- Embedded RFID or NFC tags enabling authentication via scanning
- Forensic markers such as microscopic taggants or chemical identifiers in packaging materials

While these technologies offer powerful tools against counterfeiting, implementation challenges remain significant. Cost considerations often restrict the most advanced solutions to high-value medications, and global harmonisation remains elusive, with varying levels of security infrastructure across markets.

Patient Usability and Compliance: Designing for the Human Element

The third major challenge confronting pharmaceutical packaging is enhancing patient-centricity through designs that are accessible, intuitive, and supportive of medication adherence. Traditionally, pharmaceutical packaging prioritised safety and compliance, sometimes at the expense of user-friendliness.

The consequences of poor packaging design extend beyond inconvenience; non-adherence to medication regimens costs healthcare systems billions annually and contributes to thousands of preventable hospitalisations. This recognition has catalysed a shift toward viewing packaging as an integral part of the product's user interface.

Several subscription-based medication services are at the forefront of this patient-centric revolution, delivering medications in personalised, perforated pouches labeled by date and time of dose. This represents a significant improvement over managing multiple traditional pill bottles for patients with complex medication schedules.

Digital enhancement of physical packaging represents another promising frontier. QR codes linking to instructional videos or medication reminders have gained traction, while regulatory bodies in the EU are exploring electronic product information (ePI) to complement traditional paper leaflets with digital, interactive content.

Implementation challenges include navigating regulatory requirements, such as child-resistant packaging mandates, while maintaining accessibility.

Serialisation: Meeting Global Regulatory Requirements

Serialisation requirements have become a defining feature of pharmaceutical packaging worldwide. These mandates aim to enhance supply chain security by enabling end-to-end product tracking, but implementation has proven complex and resource-intensive. Companies must navigate a patchwork of regional regulations while ensuring serialisation capabilities across their global manufacturing and distribution networks.

Rising Costs and Efficiency Demands

Economic pressures represent another significant challenge for pharmaceutical packaging. Raw material cost fluctuations, coupled with the growing complexity of packaging components and manufacturing processes, have strained budgets across the industry.

Contract packaging organisations (CPOs) have emerged as valuable partners in addressing these challenges. As industry experts note, experienced and flexible CPOs can efficiently handle small-batch projects that might be impractical for larger, less agile operations. This adaptability helps bridge the gap between cost efficiency and production flexibility.

Future Trends and Opportunities

As the industry navigates these challenges, several promising trends are emerging that will shape the future of pharmaceutical packaging:

Smart Packaging Technologies

Intelligent packaging features like electronic dose monitoring, environmental condition sensors, and connected communication capabilities represent a promising frontier. These technologies can enhance patient compliance, provide real-time quality monitoring, and enable deeper insights into medication usage patterns.

For instance, some prescription blister packs now incorporate concealed electronic trackers that record when a dose is removed, providing valuable adherence data for clinical trials and real-world usage monitoring. As these technologies mature and costs decrease, their potential applications will likely expand dramatically.

Precision Dosing and Combination Packaging

Innovation in dosage forms is driving corresponding evolution in packaging design. The growing adoption of flexible sachets for combination formulations, such as granulated powders and pharmaceutical pellets with different release profiles, is an excellent example of this trend.

This shift toward more sophisticated dosage combinations requires equally sophisticated packaging solutions. Modern Horizontal Form-Fill-Seal technology illustrates the industry's response, offering precision multi-dosing capabilities for complex formulations. Their systems can accurately measure granulated powder doses as small as 100mg and pellet doses as low as 10mg, enabling precise delivery of combination therapies in convenient single-dose formats.

Packaging for Novel Therapies

The emergence of advanced therapeutic modalities, particularly biologics, cell therapies, and mRNA-based treatments, is creating unique packaging challenges that demand novel solutions. The COVID-19 vaccine development effort highlighted these challenges, with Pfizer developing specialized thermal shippers equipped with GPS-enabled temperature sensors to distribute vaccines at -70°C.

Environmental, Social, and Governance (ESG) Priorities

ESG considerations have moved from peripheral concerns to core strategic priorities across the pharmaceutical value chain. As industry leaders have observed, pharmaceutical organisations are establishing specific ESG policies and targets and expecting the same commitments from their supply chain partners.

This shift extends beyond environmental concerns to encompass broader societal responsibilities, including ethical sourcing, community engagement, and governance practices. Companies throughout the

pharmaceutical ecosystem are responding by investing in sustainability certifications, implementing waste reduction initiatives, and enhancing transparency around ESG performance.

The Road Ahead: Strategic Priorities for Pharmaceutical Companies

As the pharmaceutical packaging landscape continues to evolve, several strategic priorities emerge for forward-thinking organizations:

Integrate Sustainability Throughout the Product Lifecycle

Rather than treating sustainability as a discrete packaging consideration, pharmaceutical companies should incorporate environmental responsibility throughout the product lifecycle, from initial formulation through delivery system design to end-of-life considerations. This holistic approach can identify opportunities for meaningful environmental impact reduction while maintaining or enhancing therapeutic efficacy and patient experience.

Embrace Technology as a Packaging Enabler

Digital technologies, from authentication systems to patient engagement tools, represent powerful opportunities to enhance packaging functionality while potentially reducing material requirements. By leveraging technologies like blockchain for supply chain transparency, augmented reality for patient education, and IoT-enabled monitoring for condition verification, companies can create packaging solutions that deliver value beyond physical protection.

Forge Strategic Partnerships Across the Value Chain

The complexity of modern pharmaceutical packaging necessitates collaboration across traditionally separate domains between drug developers and packaging engineers, material scientists and regulatory experts, sustainability specialists and security professionals. By fostering these cross-functional relationships both internally and with external partners, organizations can unlock innovative packaging approaches that address multiple challenges simultaneously.

Balance Quality, Innovation, and Affordability

As packaging experts thoughtfully observe, the industry must resist the temptation of a race to the bottom on price at the expense of quality. The pharmaceutical industry's fundamental mission, improving and saving lives, demands unwavering commitment to quality and safety. The challenge lies in identifying approaches that balance this commitment with accessibility and affordability, ensuring that innovative packaging solutions contribute to rather than hinder broader access to medications.

Conclusion: An Integrated Vision for Pharmaceutical Packaging

The pharmaceutical packaging landscape of 2025 presents both formidable challenges and tremendous opportunities. By approaching these challenges with creativity, collaboration, and unwavering commitment to patient welfare, the industry can develop packaging solutions that simultaneously enhance therapeutic outcomes, strengthen supply chain security, reduce environmental impact, and improve the patient experience.

Packaging represents not merely a container for products but an integral component of healthcare solutions. The ongoing journey of innovation and growth requires commitment to advancing packaging approaches that protect both patients and the planet, ensuring that medicines that reach patients are not only effective and authentic but delivered in packaging that reflects values and responsibilities as healthcare providers. ■

Author

Sheetal Arora
Promoter and CEO,
Mankind Pharma

Future Outlook and Opportunities for CDMOs in India's Pharmaceutical Market

India's pharmaceutical industry has emerged as a global force, driven by innovation, scale, and cost-efficiency. At the heart of this growth are Contract Development and Manufacturing Organizations (CDMOs), which play a strategic role in enabling global market access, accelerating product development, and mitigating operational risks. With a projected market size of USD 130 billion by 2030 and a CAGR of over 10%, India's pharma sector is set for exponential growth. The country already contributes nearly 20% of the global generic medicine supply by volume and over 60% of the world's vaccine production, reflecting its manufacturing strength and regulatory compliance.

Arushi Jain, Director – Growth and Strategy, Akums Drugs and Pharmaceuticals Ltd emphasizes about the role of Contract Development and Manufacturing Organizations (CDMOs) in enabling global market access and future outlook for the CDMO sector.

CDMOs support pharmaceutical companies through end-to-end services—ranging from formulation development and technology transfer to large-scale commercial manufacturing, including models like loan licensing, contract development, and joint ventures.

This not only enables faster market entry but also reduces infrastructure investments and regulatory burdens. Backed by a robust talent pool and government initiatives, India continues to reinforce its position as the preferred global outsourcing hub. Among the key contributors to this success are large-scale CDMOs that have quietly powered domestic and international pharmaceutical growth through scale, trust, and quality.

Market Overview and Growth Dynamics

The Indian Contract Development and Manufacturing Organization (CDMO) market is undergoing a remarkable transformation, poised to reach USD 54.7 billion by 2031 with a compelling CAGR of 13.8%. This growth trajectory reflects India's rising prominence as a global hub for pharmaceutical innovation, cost-efficient manufacturing, and end-to-end development solutions.

Several factors are propelling this surge. India's vast scientific talent pool, regulatory expertise, and expanding infrastructure are aligning to create a conducive ecosystem for global pharmaceutical and biotech companies. Increasing demand for generics, biosimilars, and complex formulations, combined with a growing emphasis on specialty medicines, is driving clients to seek strategic CDMO partnerships in India. This dynamic expansion is exemplified by industry leaders who are scaling up capacities, diversifying dosage forms, and investing in R&D to stay ahead of the curve. Leading players are not only catering to domestic needs but are also serving regulated and semi-regulated markets like the EU, US , Canada. Australia , Brazil , meeting the highest quality and compliance standards.

Moreover, the shift towards integrated CDMO services—offering formulation development, analytical testing, manufacturing, and packaging under one roof—is reshaping client expectations. India's CDMOs are evolving into strategic allies, offering flexible models and accelerated timelines. With the government supporting, the momentum is only expected to grow. The next decade presents a golden opportunity for

Indian CDMOs to become indispensable partners in global pharmaceutical supply chains, contributing not just to manufacturing volume, but also to innovation and value creation.

Quality Management and Regulatory Framework

The Indian pharmaceutical manufacturing landscape is further strengthened by stringent quality management systems and regulatory compliance requirements. CDMOs must adhere to regulations set by global authorities such as the US FDA, EMA, and India's CDSCO, maintaining comprehensive Quality Management Systems (QMS), Good Manufacturing Practices (GMP), and detailed documentation procedures. The manufacturing capabilities of Indian CDMOs are particularly impressive, with industry leaders like Akums operating multiple manufacturing plants capable of producing over 49 billion formulation units annually. This scale of operations is supported by advanced manufacturing technologies, robust quality control systems, and a skilled workforce, with some facilities employing over 16,000 personnel.

Technological Advancements and Innovation

The integration of advanced technologies such as artificial intelligence, machine learning, and advanced analytics is revolutionizing R&D processes in the Indian pharmaceutical sector. These technological advancements are enhancing drug discovery, clinical trials, and personalized medicine initiatives, making India an increasingly attractive destination for clinical trials and R&D investments. The focus on biologics and biosimilars has also intensified, with Indian life sciences companies expanding their global footprint not only as providers of generic drugs but also as innovators in these advanced therapeutic areas.

Cost Advantages and Manufacturing Efficiency

The cost advantage remains a significant factor in India's pharmaceutical manufacturing success. Manufacturing costs in India are approximately 33% lower than in the United States, with labor costs being 50–55% cheaper than in Western countries. This cost efficiency has established India as a preferred destination for pharmaceutical outsourcing. The sector's growth is further bolstered by loan licensing arrangements, which have emerged as a strategic mechanism allowing companies to utilize existing manufacturing facilities through licensing agreements, enabling rapid market entry, efficient capacity utilization, and cost-effective production scaling.

Strategic Collaborations and Joint Ventures

Technical collaborations and joint ventures have become increasingly important in the Indian pharmaceutical sector. Companies are forming strategic alliances with global counterparts to enhance their market position and expand service offerings. These partnerships focus on leveraging cutting-edge technologies, sharing resources and expertise, implementing innovative production processes, and expanding global market reach .

The industry is witnessing a shift towards non-asset based R&D partnerships, including consortia involving multiple stakeholders such as life sciences companies, academia, and government entities .Notable industry examples have demonstrated the successful execution of both in-licensing and out-licensing models. Indian firms are not only absorbing and localizing global technologies but also actively licensing out indigenous innovations to international partners. These models highlight India's growing role not just as a manufacturing powerhouse, but also as a contributor to global pharmaceutical innovation

Technology Transfer and Process Implementation

Technology transfer in India's pharmaceutical industry has become a strategic cornerstone, enabling efficient scale-up from R&D to commercial manufacturing. It involves the structured transfer of knowledge, data, and processes between organizations—often between a drug innovator and a manufacturing partner. Leading Contract Development and Manufacturing Organizations (CDMOs) in India have built strong frameworks for technology transfer, incorporating detailed documentation, cross-functional coordination, validation protocols, and regulatory alignment.

Process implementation goes hand-in-hand with technology transfer, focusing on adapting and optimizing transferred processes for full-scale production. This involves pilot trials, stability studies, equipment adaptation, and continuous quality monitoring. Indian CDMOs have also embraced digital tools and quality-by-design (QbD) approaches to make process implementation more data-driven and reproducible. As India strengthens its role in global pharma supply chains, robust technology transfer and efficient process

implementation will continue to be differentiators—enabling faster market entry, cost competitiveness, and sustained product quality.

Government Support and Initiatives

Government support has played a crucial role in the sector's development through various initiatives and policies. The Production Linked Incentive (PLI) scheme, running from 2020 to 2028, aims to enhance the production of critical raw materials, including Active Pharmaceutical Ingredients (APIs) and drug intermediates, by offering financial incentives to encourage significant investments in the sector. The Bulk Drug Parks Initiative promotes local medicine production by providing government aid for infrastructure development, including testing centers, power plants, and waste management facilities.

Risk Mitigation Strategies

Risk mitigation strategies employed by CDMOs have become increasingly sophisticated, including backward integration for developing in-house processes for critical starting materials, comprehensive technology transfer procedures, and investment in advanced software solutions for quality management.

Future Outlook and Opportunities

The future outlook for India's CDMO sector remains highly promising, with global supply chain realignments creating a USD 10 billion opportunity for Indian CDMOs

Emerging trends include increasing demand for biologics and biosimilars, rising focus on specialty pharmaceuticals, growing adoption of advanced manufacturing technologies, and expansion into new therapeutic areas. The government's increased budget allocation for healthcare and initiatives further support the sector's growth trajectory .

India's CDMO Sector: Driving Global Pharma Growth with Resilience and Innovation

India's Contract Development and Manufacturing Organization (CDMO) sector continues to showcase exceptional growth and resilience, emerging as a critical pillar in the global pharmaceutical ecosystem. With its unique combination of robust manufacturing capabilities, cost efficiency, stringent quality compliance, and strategic alliances, the Indian CDMO landscape is redefining global pharma dynamics.

At the heart of this success lies a strong industrial foundation that enables high-volume production without compromising on quality. Indian CDMOs are known for their ability to meet regulatory requirements across diverse markets, including the US, EU, and Japan—making them reliable partners for multinational pharmaceutical companies.

Leading players like Akums exemplify the transformative role Indian CDMOs play. By integrating large-scale operations with world-class R&D, Akums demonstrates how Indian companies can deliver comprehensive, end-to-end pharmaceutical solutions that meet global standards. Their commitment to innovation, regulatory excellence, and customer-centricity reflects the broader strengths of the sector.

As the global pharmaceutical market becomes increasingly complex, Indian CDMOs are rising to the occasion—mitigating supply chain risks, reducing time-to-market, and providing agile manufacturing solutions. The continued focus on adopting advanced technologies, maintaining global quality benchmarks, and building long-term strategic partnerships will be critical in sustaining this momentum.

Government initiatives such as "Make in India" and the Production Linked Incentive (PLI) scheme are further accelerating growth, enhancing infrastructure, and attracting foreign investments.

Looking ahead, the Indian CDMO sector is well-positioned to play an even greater role in the global pharmaceutical value chain—not just as a manufacturing powerhouse, but as a strategic innovation partner. Its evolving capabilities and expanding global footprint signal a bright and impactful future for India in the world of pharmaceutical manufacturing. ■

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Why Chemistry Still Matters: The Heart of Successful CRDMO Execution

The development of small molecule drugs relies heavily on chemistry. As these compounds progress from discovery through preclinical studies, clinical trials to commercial manufacturing, chemistry enables the rational design, optimization, and control of every step in the development lifecycle.

Jayadeva Sajankila, Vice President - Operations, Aragen Lifesciences emphasizes about how chemistry plays an role in enabling Contract Research, Development and Manufacturing Organizations (CRDMOs) to transform molecular entities into effective therapeutics.

Despite advances in automation, regulatory sciences, and digital technologies, chemistry remains a core scientific discipline enabling Contract Research, Development and Manufacturing Organizations (CRDMOs) to transform molecular entities into effective therapeutics." The CRDMOs provide services from route design to final dosage form manufacture, with chemistry expertise informing every decision, from synthetic pathway selection to impurity clearance.

Reaction Mechanisms and Kinetics: Enabling Predictability and Control

Comprehending reaction mechanisms and kinetics is fundamental to successful API development. A reaction mechanism details the transformation of reactants into products, allowing chemists to anticipate side reactions, control stereochemistry, and select reagents and catalysts that ensure high product quality and regulatory compliance.

Concepts like transition state theory and intermediate mapping enables chemists to predict how factors like temperature, solvent polarity, and catalyst structure affect reaction outcomes. In asymmetric hydrogenations, for example, ligand–substrate interaction knowledge ensures high enantiomeric excess, vital in complex API synthesis.

Kinetic studies provide quantitative data on reaction rates and influencing factors. Techniques such as reaction calorimetry and real-time spectroscopy derive rate laws and activation energies, ensuring scalable and reproducible processes.

A noteworthy tool is the Kinetic Isotope Effect (KIE), where specific hydrogen atoms are replaced with deuterium to reveal the rate-determining steps of a reaction. This has improved Suzuki–Miyaura cross-coupling reactions by optimizing bases and ligands for better selectivity, yield, and efficiency. Advances in palladium-catalyzed coupling and metalla-aromatic reactions underscore the value of mechanistic understanding. Integrated with analytics, these insights ensure scalable processes that meet regulatory standards.

Thermodynamics and Solid-State Chemistry: Controlling Form and Function

Thermodynamics and solid-state chemistry are central to controlling the physicochemical behavior of APIs. Thermodynamic parameters like Gibbs free energy and entropy guides solubility, crystallization, and phase stability. Chemists use this to predict polymorph, solvate, and salt behavior, aiding purification and ensuring stability and bioavailability.

Solid-state chemistry focuses on molecular packing,

lattice energy, and intermolecular interactions in crystalline and amorphous forms. Polymorphism affects dissolution, mechanical properties, and shelf life. Crystallography and phase behavior are crucial for controlling solid forms. Tools like thermodynamic phase diagrams and computational models (e.g., COSMO-RS) help in solvent selection and process optimization.

Integrating thermodynamic modeling with solid-state characterization, CRDMOs to develop crystallization protocols ensuring polymorphic purity, particle size, and morphology—critical for product quality and intellectual property protection.

Formulation Chemistry: Intermolecular Interactions

Formulation chemistry optimizes the bioavailability and stability of drug products. Intermolecular interactions—such as hydrogen bonding, π–π stacking, van der Waals forces, dipole–dipole interactions, and ionic interactions—impact the solubility, stability, bioavailability, and overall performance of drug substances, particularly high-potency APIs (HPAPIs). Understanding these interactions is key to designing formulations that are both effective and manufacturable.

For example, hydrogen bonding affects crystallite size, polymorph stability, and API–excipient compatibility. π–π stacking and van der Waals interactions control aggregation and stability, while ionic interactions are key in salt formation and solubility. These forces are crucial in formulation strategies like solid dispersion development, salt screening, and co-crystal engineering.

Chemical modifications to APIs, such as altering logP, pKa, or hydrogen-bond profiles, strategically adjust intermolecular interactions. For instance, Dipyridamole was prodrugged for solubility, and Lopinavir was modified for better absorption. In developing amorphous solid dispersions, optimizing drug–excipient interactions is key. A favorable Δδp (difference in solubility parameters) indicates high miscibility. Techniques like differential scanning calorimetry (DSC), dynamic vapor sorption (DVS), and X-ray photoelectron spectroscopy provide insight interaction, guiding formulation.

Co-crystal engineering enhances the solubility and stability of poorly soluble drugs by forming co-crystals with a co-former through non-covalent interactions. This method allows the API to adopt new crystal lattices without altering its pharmacological activity. For example, the Theophylline–nicotinamide co-crystal significantly improves Theophylline's solubility, while the Losartan–saccharin enhances both solubility and bioavailability for antihypertensive treatments.

Scale-Up and Technology Transfer: Chemistry in Action

Scale-up in chemical processes is the transition from lab-scale experiments to full-scale manufacturing, ensuring that reactions can be efficiently and safely performed on a larger scale while maintaining product quality and stability. Key chemistry-driven factors include:

- **Thermodynamic Optimization:** Efficient heat transfer and mixing prevent thermal runaways. Reaction calorimetry, guided by enthalpy data, ensures safe thermal profiles.
- **Solvent Selection for Crystallization:** Polarity and temperature affect solubility. Van't Hoff plots help select solvents and optimize crystallization conditions.
- **Managing Reaction Kinetics and Intermediates:** Reactive intermediates can degrade products. Real-time spectroscopy and modelling help manage them effectively.
- **pH and Reflux Time Control:** pH influences ionization; reflux time affects conversion. Mechanistic insight helps optimize both for purity and yield.
- **Continuous Manufacturing:** Offers precise control over process variables, improving reproducibility—especially for sensitive or high-volume APIs.
- **Critical Process Parameters (CPPs) and Critical Quality Attributes (CQAs):** These are important for successful technology transfer requires. Defining and controlling CPPs like temperature, pH, and solvent choice, supported by mechanistic studies and stability testing, ensures regulatory compliance and consistent product quality during commercialization.

Flow Chemistry: Advancing Process Efficiency

Flow chemistry offers precise control of kinetics and thermodynamics in continuous systems, where reactants move through microreactors or tubular reactors under tightly regulated temperature, pressure, and residence time. Residence time-the duration

reactants spend in the reactor-is a key parameter, directly impacting reaction rate, conversion, selectivity, and product quality by dictating molecular interactions.

Flow systems finely tune residence time to match kinetics, outperforming traditional batch methods. For example, in the Simmons-Smith reaction, precise residence time control prevents intermediate decomposition and ensures efficient ring formation. In nitrations, critical for nitroaromatic compounds in antibiotics and cardiovascular drugs, short residence times reduce over-nitration and thermal risks. Optimized residence times in Grignard additions and transition-metal-catalyzed couplings enhance reactivity and minimize side products, crucial for building complex APIs.

Flow reactors maintain steady-state conditions, stabilizing challenging short-lived intermediates like carbenes and diazonium salts. Integrated in-line analytical tools (FTIR, UV-Vis, HPLC) enable real-time monitoring and dynamic adjustment of residence time and stoichiometry, supporting multistep reactions.

For CRDMOs, flow chemistry offers faster process development, improved safety, and scalable, energy-efficient production.

Biocatalysis: Enabling Selective and Efficient Chemical Transformations

Biocatalysis uses enzymes as natural catalysts to accelerate reactions under mild, aqueous conditions, making it highly valuable for CRDMOs. Its high stereoselectivity and substrate specificity are ideal for enantiomerically pure APIs, ensuring drug efficacy and safety. Enzyme-catalyzed reactions occur at specific active sites, offering precise control over chemo-, regio-, and stereoselectivity.

Advances in enzyme engineering and immobilization allow tailored properties and expanded reaction scope via techniques like directed evolution. In continuous flow systems, biocatalysis enhances scalability and sustainability. For CRDMOs, this enables cost-effective, selective, and eco-friendly manufacturing.

Bioconjugation: Bridging Chemistry and Biology

Bioconjugation enables covalent attachment of drugs or probes to biomolecules like proteins or nucleic acids, foundational for diagnostics, delivery, and imaging.

One of the most impactful applications of bioconjugation is in Antibody-Drug Conjugates (ADCs), targeted cancer therapies that combine monoclonal antibodies with potent cytotoxins via a chemical linker. This system relies on precise chemical engineering for effective, safe, and targeted drug delivery.

Linker Chemistry in ADC Design

The linker is critical to ADC performance, affecting pharmacokinetics and drug release. It must be stable in circulation but cleavable at the target site. Linkers fall into two main categories:

- **Cleavable linkers** respond to stimuli such as acidic pH, enzymatic cleavage (e.g., cathepsin B-sensitive peptides), or reducing conditions (e.g., disulfide bonds).
- **Non-cleavable linkers,** such as thioethers, rely on the complete antibody degradation to release the drug.

For example, trastuzumab emtansine (T-DM1) uses a non-cleavable thioether linker (SMCC) to attach the cytotoxic payload DM1, ensuring high plasma stability and controlled release upon internalization.

Advances in Conjugation Chemistry

The chemical method used to attach the drug to the antibody significantly affects ADC homogeneity, stability, and therapeutic index. Traditional approaches like lysine or cysteine conjugation often result in heterogeneous drug-to-antibody ratios (DARs). Modern ADCs employ site-specific conjugation techniques such as:

- **Engineered cysteines or unnatural amino acids** (e.g., p-acetylphenylalanine) that enable selective reactions like click chemistry or oxime ligation.
- **Enzyme-mediated strategies,** using transglutaminase, sortase A, or glycosyltransferases, allow precise modification at defined peptide or glycan sites, enhancing reproducibility and pharmacological predictability.

Bioorthogonal and Responsive Chemistries

Click reactions—particularly strain-promoted azide-alkyne cycloaddition (SPAAC)—offer high selectivity and are increasingly used to create ADCs that release drugs only after reaching the tumor microenvironment. These strategies provide spatiotemporal control and reduce systemic toxicity.

Hydrophilicity and Payload Optimization

Many potent cytotoxic drugs are highly hydrophobic, risking aggregation and rapid clearance. Chemical solutions to this challenge include:

- **PEGylated linkers,** which enhance solubility, reduce aggregation, and shield labile functional groups.
- **Hydrophilic-hydrophobic balance tuning** within the linker architecture, which improves delivery and release kinetics, especially in high-DAR constructs.

Conclusion

Chemistry remains central to drug development and manufacturing. CRDMOs apply chemical expertise—understanding mechanisms, solid-state behaviour, and formulation science—to efficiently scale discoveries into therapies. Advances in flow chemistry, biocatalysis, and conjugation support selective and sustainable manufacturing. Through predictive modelling and process control, chemistry enables high-quality, compliant therapeutics. As technologies evolve, chemistry remains the engine driving innovation and patient impact. ■

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Charting a New Era in CDMO Leadership

The pharmaceutical industry is entering a new era—one defined by collaboration, agility, and continuous innovation. As this transformation unfolds, Contract Development and Manufacturing Organizations (CDMOs) are taking center stage. Valued at approximately USD 136.6 billion in 2024, the global CDMO market is projected to grow to USD 191.6 billion by 2029, at a CAGR of 7.0%, underscoring their rising importance in the drug development ecosystem.

Ankur Shah, Chairman & Managing Director, Invengene Limited emphasizes that CDMO segment has firmly established itself as a cornerstone of the pharmaceutical ecosystem. He also stated that CDMOS are stepping into leadership role.

CDMOs have evolved into co-architects of pharmaceutical success—empowering innovation from early-stage development to regulatory pathways, complex formulations, and sustainable supply chains. With their agility and expertise, they help pharma companies enter new markets faster, adapt to global shifts with confidence, and deliver quality medicines with precision.

At this inflection point, the definition of a successful CDMO is being rewritten. It is no longer about scale alone, but about foresight, integration, and the ability to align with a rapidly changing global landscape.

Let us explore how CDMOs are evolving into strategic architects of global healthcare—driving innovation, expanding access, and shaping the next frontier of pharmaceutical advancement.

Rethinking What Pharma Needs

For decades, CDMOs were judged by their capacity—how many batches they could produce, how fast they could scale. But the needs of pharma clients have evolved. Today, it's not about how much you can make, but how smartly you can deliver.

Take the case of a mid-sized biotech firm preparing for a global launch of a complex injectable. They didn't just need a facility—they needed a partner who could walk with them from molecule to market. A partner who could understand the nuances of injectable formulation, co-develop stability protocols, navigate regulatory submissions across the US, EU, LATAM, and Southeast Asia, and do it all without a single delay in tech transfer.

This is the new benchmark.

Pharma companies now seek integration—not just execution. They want CDMOs who bring development and manufacturing under one roof, who understand global regulatory complexity, and who can offer real-time data, not just retrospective reports.

In an industry where timelines define outcomes, every handoff matters. Seamless tech transfers, digital quality systems, and traceable documentation are no longer bonuses—they are prerequisites.

Geopolitics and the New Pharma Map

In recent years, the pharmaceutical supply chain has found itself navigating not just science—but shifting geopolitics.

What once seemed like stable routes and long-established sourcing strategies are now being re-evaluated under a new lens. As global dynamics shift, drug development is no longer influenced by biology alone—it's increasingly shaped by borders, diplomacy, and trade policies.

Heightened geopolitical uncertainty is driving companies to diversify their manufacturing bases—building resilience through decentralized hubs and dual sourcing strategies. Escalating conflicts have disrupted

key production zones, pushing pharmaceutical players to reevaluate their risk exposure and strengthen contingency planning.

At the same time, emerging security challenges along major trade routes are creating new logistical chokepoints, prompting a reassessment of transport corridors, warehousing footprints, and supply chain agility. Growing emphasis on localized manufacturing and reduced external dependency is also creating opportunities for nimble, well-aligned partners who can deliver with speed, flexibility, and regulatory precision.

India's Moment: From Volume to Value

For years, India was known as the world's pharmaceutical workhorse—a reliable engine of volume, efficiency, and generics manufacturing. But today, that perception is evolving. What began as strength in scale is transforming into leadership in sophistication.

India is no longer just filling orders; it's co-creating innovation.

With the highest number of US FDA–approved manufacturing sites outside the United States, India's credibility is well established. But beyond infrastructure lies deep expertise—particularly in complex injectables, sterile formulations, and tech-enabled development.

As global demand shifts toward high-value therapies, rapid tech transfers, and regulatory agility, Indian CDMOs are stepping up with integrated offerings that combine science, speed, and scalability. India's CDMO market is currently valued at USD 22.51 billion in 2024 and is expected to double to USD 44.63 billion by 2029, reflecting a robust CAGR of 14.67%.

And with over 120 drugs expected to go off-patent in the coming decade, the timing could not be better. India is positioned not just to manufacture the next wave of generics and biosimilars—but to shape how and where they reach the world.

From Execution to Co-Creation: The Rise of Innovation-Led CDMOs

The role of the CDMO is undergoing a quiet revolution.

Once seen as efficient executors—brought in after the blueprint was drawn—today's leading CDMOs are joining the table much earlier. They're helping sketch the blueprint itself. The transition from being backend manufacturing partners to front-end innovation enablers is well underway.

What's driving this shift is technology—and mindset.

Generative AI and digital twins are being used to simulate formulation outcomes before physical trials begin, accelerating timelines and reducing risk. Paperless labs are no longer a futuristic idea—they're a reality that strengthens data integrity and audit-readiness across borders.

Platform-based development approaches are enabling modular scalability, giving pharma companies the flexibility to pivot without losing momentum. And integrated fill-finish capabilities within development facilities are eliminating one of the most common bottlenecks in the path to commercial launch.

It's a fundamental change: CDMOs are not just being asked to manufacture—they're being trusted to collaborate, innovate, and lead.

Tailoring Strategies for Emerging Markets

Emerging markets are often grouped together in boardrooms, but on the ground, they tell very different stories.

In Latin America, for instance, regulatory approvals require more than compliance—they demand cultural fluency, local language submissions, and region-specific portfolio positioning. In the Middle East and North Africa (MENA), government-driven procurement models and WHO Prequalification (PQS) are prerequisites for access—especially in public health segments.

Russia and the broader CIS region favor local manufacturing relationships, often preferring CDMO partners who can bring fill-finish capabilities closer to home. Meanwhile, Africa operates at an entirely different rhythm—high-volume, price-sensitive, and powered by public-private collaborations where innovation must meet affordability head-on.

The lesson is clear: there is no universal playbook.

Success in emerging markets doesn't come from duplicating a strategy—it comes from designing one. CDMOs that recognize the nuance, build local alliances, and customize their regulatory and commercial approach are the ones earning long-term trust.

Regulatory Fluidity: The Hidden Advantage

In an industry where timing can define success, regulatory agility is often the quiet differentiator—the edge that doesn't always make headlines, but changes outcomes.

For global pharmaceutical companies navigating diverse regulatory landscapes, the ability to adapt, align, and submit across markets isn't just a compliance function—it's a competitive necessity. This is where Indian CDMOs are stepping into a leadership role.

Over the years, India has cultivated deep regulatory expertise—not just with its own agency, CDSCO, but with international bodies like the USFDA, EMA, WHO PQS, TGA, and others. Teams are trained not only to meet guidelines, but to anticipate regulatory expectations across jurisdictions. Rolling submissions, harmonized dossiers, region-specific adaptations—all are now standard capabilities, executed with confidence and speed.

This fluidity isn't built overnight. It's the result of decades of exposure to complex filings, multidisciplinary development, and partnerships that span the globe. It allows Indian CDMOs to support both large pharma and fast-moving biotech startups alike—helping them scale without getting stuck in submission cycles.

Sustaining Competitive Edge in the CDMO Landscape

While the CDMO segment has firmly established itself as a cornerstone of the pharmaceutical ecosystem, it is also witnessing intensified competition. With many players offering similar service portfolios, long-term relevance hinges on differentiation.

This differentiation must go beyond capacity or compliance. It demands a unique identity—built around proprietary platforms, specialized delivery modalities, or niche formulation expertise. These are not just marketable traits; they are trust-builders that strengthen the CDMO's value proposition.

But differentiation is not branding alone. It's earned through proven execution—demonstrated by successful, timely delivery of complex programs. Such reliability is only possible with deep talent pools, robust infrastructure, and integrated development-to-commercialization frameworks.

Future-ready CDMOs also anticipate change. As novel modalities—from mRNA to antibody-drug conjugates—begin to reshape the pipeline, the ability to adapt early will determine who stays ahead. Leadership, in this context, means preparing not only for today's needs but for tomorrow's breakthroughs.

The CDMO of Tomorrow

The pharmaceutical landscape of tomorrow will demand more than supply—it will demand strategy. And the CDMO of tomorrow is already taking shape.

It will be digitally native, using automation, AI, and real-time analytics to make decisions at the speed of science. It will be innovation-led, contributing not just to how medicines are made, but how they are conceived, tested, and delivered. It will be geopolitically agile, offering stability in an uncertain world. It will be regulatory smart, fluent across regions and responsive to evolving frameworks.

In this future, CDMOs won't be downstream executors. They will be upstream enablers—helping pharma companies bring therapies to market faster, reach underserved populations, and respond to global health priorities with resilience and responsibility.

This isn't a distant vision. It's already happening.

As the lines between development and delivery blur, and the pressure to innovate grows, CDMOs are no longer standing behind—they're standing beside. And in many cases, they're leading.

Beyond Manufacturing—Towards Meaning

The future of pharmaceuticals will not be defined solely by pipelines or patents—it will be shaped by partnerships. Contract research is no longer a service. Manufacturing is no longer just a step. Together, they form a powerful platform for creating global health impact.

As CDMOs evolve from vendors to visionaries, they're not just helping deliver the next medicine. They're helping define what access, resilience, and equity look like in tomorrow's healthcare. ■

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India's API Industry: Trends and Challenges to Growth

The Indian active pharmaceutical ingredients (API) industry, with an estimated size of ₹ 1,050-1,150 billion in CY2024, contributes ~25% to the Indian pharmaceutical industry. In terms of volume, India is the third largest API manufacturer globally, after the US and China, and its position has been supported by its cost competitiveness and large base of skilled manpower. The domestic market accounts for ~65% of the Indian API industry, with the balance being accounted for by exports to regulated and semi-regulated markets.

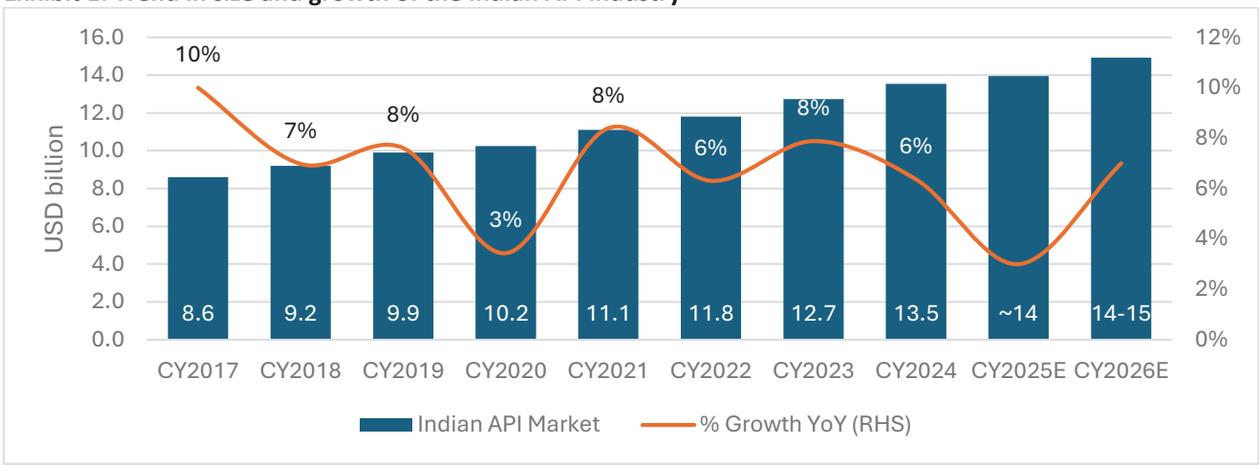
Kinjal Shah, Senior Vice President & Co Group Head, Corporate Ratings, ICRA Limited emphasizes about size and growth of Indian API industry. She also spoke about trends in India's import of APIs.

The industry has grown at a compounded annual growth rate (CAGR) of ~7% over CY2017 to CY2024 aided by increase in volumes as well as realisation, and is estimated to grow at a CAGR of ~6-7% over CY2024 to CY2029. This will be driven by steady growth in the formulations industry, which in turn will be aided by the increasing geriatric population and growing prevalence of chronic diseases, and increasing demand for contract manufacturing driven by growing initiatives by global vendors to diversify their supply chain beyond China to alternative geographies.

Further, the Government of India's (GOI's) support through the production linked incentive (PLI) scheme under its broader Atmanirbhar Bharat mission will boost the API industry's growth, helping to reduce the dependence on Chinese imports.

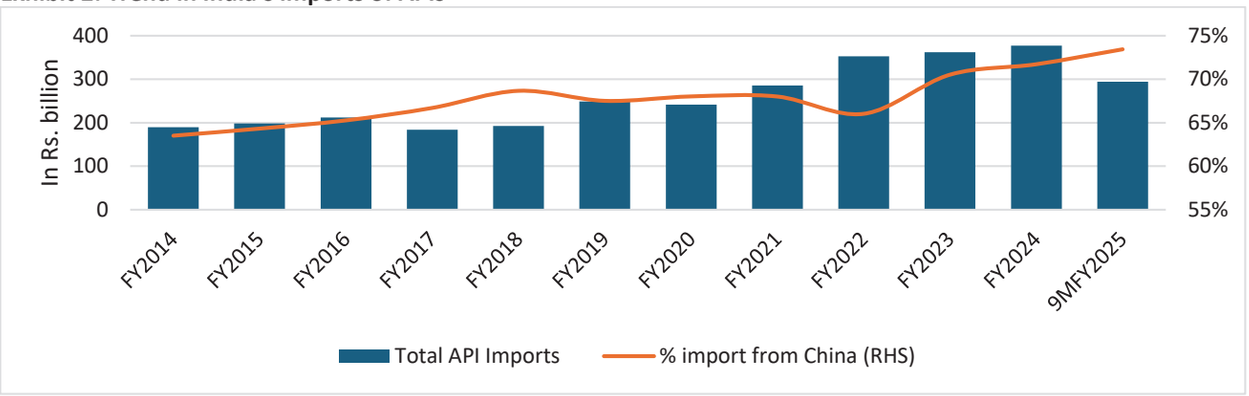
API exports from India have grown at a CAGR of 6.1% over FY2015 to FY2024 and 7.7% over the five years ending March 2024. The YoY growth in 9M FY2025 was 2.2%. Region-wise, exports are fairly diversified, with Europe (includes Belgium, Germany, Turkey, the Netherlands, Spain and France) being the highest contributor with ~17% share of exports in 9M FY2025, followed by USA at 10%. Over the medium to long term, growth in Indian exports will be driven by improved domestic manufacturing of APIs aided by Government

Exhibit 1: Trend in size and growth of the Indian API industry



Source: ICRA Research

Exhibit 2: Trend in India's imports of APIs



Source: Ministry of Trade and Commerce; ICRA Research

push through various initiatives like PLI scheme, bulk drug parks scheme and increasing efforts by global formulations manufacturers towards diversification of suppliers across geographies/countries.

China accounts for ~40% of the global API requirement. Furthermore, for certain antibiotics, such as cephalosporin, azithromycin and penicillin, China's share of production in the global API market is as high as 90-95%. India imported Rs. 294.1 billion worth of APIs and bulk drugs in 9M FY2025, accounting for ~35% of its total API requirement. Within this, China's share was ~73%.

India's dependence on Chinese imports of APIs for essential medicines is as high as 80-100%, with almost entire requirement of certain fermentation-based APIs like ciprofloxacin and erythromycin sourced from China. Even when the APIs are manufactured domestically, the key starting materials (KSMs) are still primarily sourced from China. The cost advantages with the Chinese API industry and the volatility in the prices of the APIs have made domestic production of certain APIs unviable for Indian manufacturers, resulting in such high dependence on China.

Some of the key factors supporting the Chinese API industry include

- **Economies of scale -** With significantly higher manufacturing capacities and capacity utilisation levels, Chinese manufacturers benefit from economies of scale, leading to lower prices.
- **Lower capital expenditure (capex) requirement -** With significantly larger Special Economic Zones offering benefits like subsidised land and common utilities, capex requirements for manufacturers in China are lower than India.
- **Lower power and fuel costs -** Manufacturing cost in China is lower due to lower logistics and power and fuel charges.
- **Fiscal incentives -** The industry benefits from fiscal incentives provided by the Government for promoting domestic manufacturing of APIs and also exports.

FY2021-FY2023 was fairly challenging for the Indian API industry amidst multiple headwinds such as rising raw material costs, crude oil prices, inflationary pressures and increased energy costs in Europe, as well as heightened volatility in foreign exchange rates. However, these headwinds are in remission. That said, more recently, the Indian API industy is impacted by a confluence of headwinds, which include among others,

- **Softening demand in export markets -** Demand was subdued in FY2024 and FY2025 on account of lower offtake in key global markets owing to high channel inventory buildup.
- **Supply chain disruptions –** Tthe Red Sea crisis and the geopolitical situation in Europe have resulted in some supply disruptions over the last two years.

Revenues of ICRA sample set companies grew at a CAGR of 11% between FY2019 and FY2024, supported by volume growth as well as increase in realisations. Revenues remained rangebound in FY2025E on

account of relatively lower demand from the export market owing to high channel inventory buildup. Confluence of factors such as high raw material prices, power and fuel and logistics cost had exerted pressure on operating profit margins (OPM) of API players in FY2023 (declined YoY by 420 bps for ICRA sample set companies) and H1 FY2024. However, there has been subsequent recovery since then (OPM improved by 250 bps in FY2024 and by upto 130 bps to 13.5-14.5% in FY2025E), aided by softening raw material costs and restoration of gross margins. The trend is expected to sustain in FY2026.

The API industry is characterised by high working capital intensity, led by the need to maintain critical raw material inventory levels for uninterrupted supply and relatively higher receivable days. Working capital intensity for ICRA sample set companies had firmed up during the pandemic period due to supply chain constraints, with sequential easing out in FY2023. Overall, working capital intensity has largely remained at similar levels (net working capital intensity/ operating income of 29-31%), with some increase in inventory levels in FY2024 and FY2025, as companies tried to ensure production continuity while various geopolitical disruptions (including Red Sea crisis) continued to impact supply chains.

With an increasing focus on domestic manufacturing of APIs, capex for the industry increased over FY2022-FY2024 with some moderation in FY2025 on account of completion of a few projects. Notwithstanding some moderation in debt coverage metrics and return indicators in FY2023 due to pressure on OPM, the credit metrics remained healthy (Total Debt/ OPBDITA of 1.4 times in FY2024 and 1.2-1.4 times in FY2025E), supported by improvement in OPM. Credit metrics are expected to remain healthy in FY2026 as well with expectations of further improvement in OPM.

On April 9, 2025, the US levied tariffs of 145% on imports of APIs from China. If these high tariiffs continue on Chinese exports of APIs to the US, it may result in increased exports of APIs from China to India, thus leading to an oversupply situation in India and a consequent decline in API prices. While this would be favourable for the formulation entities in India for whom APIs are essential raw materials, this would have an adverse impact on domestic API manufacturers because of increased price competition.

On April 14, 2025, the US Department of Commerce Bureau of Industry and Security (BIS) announced initiation of investigations into the effects of imports of pharmaceuticals and pharmaceutical ingredients on US national security. Further, on May 05, 2025, an executive order was signed to incentivise drug manufacturing in the US in order to reduce the amount of time it takes to approve manufacturing plants. Impact of the above measures, if any, on expots from India to the US and any incremental tariffs imposed by the US on pharmaceutical imports will remain a monitorable.. ■

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ICRA Limited

How do logistics providers and pharma companies collaborate to build more resilient & future-ready facilities?

Over the past few years, the pharmaceutical supply chain has undergone a dramatic transformation. Global disruptions from the COVID-19 pandemic to climate events and geopolitical shifts have tested the resilience of even the most advanced distribution systems. In response, the industry is moving away from reactive strategies and instead focusing on proactively building agile, future-proof infrastructure that can withstand ongoing uncertainty. **Yash Sharma, Executive Director, CCI Group** emphasizes about how India has become a powerhouse for pharmaceutical logistics and pharma companies and logistic providers come together for future expansion.

Today, resilience is no longer defined solely by the ability to recover. It's about developing systems that can anticipate, adapt, and advance ensuring continuous availability of life-saving drugs and therapies. For pharmaceutical companies, this means collaborating with logistics partners who don't just move goods but understand the complexity of the industry and deliver integrated, compliant, and tech-driven solutions.

India, as a Strategic Manufacturing Partner

India's Contract Research, Development, and Manufacturing Organization (CRDMO) industry is projected to grow from USD 7 billion to USD 14 billion by 2028, driven by pharmaceutical outsourcing and regulatory support. The industry's growth could reach a high-teens CAGR due to factors like the US Biosecure Act, potentially pushing it to USD 22 billion by 2030.

As global pharmaceutical companies look for cost-effective and reliable manufacturing partners, India is emerging as a preferred destination for drug research development and production. India is increasingly becoming the preferred choice for pharmaceutical outsourcing due to multiple factors such as a favourable regulatory environment, competitive cost structures, and rising global demand for outsourced pharmaceutical manufacturing. These advantages collectively position India's CRDMO sector for sustained and accelerated growth in the years to come.

Today, resilience is not just about bouncing back but building systems that can anticipate, adapt, and advance. For pharma, that means aligning with logistics partners who understand the nuanced demands of the industry and can deliver not just services, but solutions.

The Evolution of Logistics: From Vendors to Value Partners

Traditionally, logistics partners were viewed as extensions of a transportation network focused on moving goods from point A to point B efficiently. But in today's landscape, logistics firms are becoming critical co-creators of value. Collaborations are now starting at the infrastructure planning stage, with both parties jointly designing facilities that are compliant, tech-enabled, and capable of scaling to future demand.

These facilities are no longer generic warehouses. They are specialized pharma-grade environments designed with GDP compliance, multiple temperature zones, air filtration systems, real-time monitoring capabilities, and contingency protocols built in. The emphasis is on flexibility and modularity, ensuring that facilities can accommodate fluctuating inventory, new product lines, or emergency needs without compromising product integrity.

Adoption of Technology for Visibility and Control

Digital transformation is central to these collaborations. With real-time visibility becoming non-negotiable in

pharma logistics, modern facilities are now embedded with smart technology from the ground up. Advanced Warehouse Management Systems (WMS), Transport Management Systems (TMS), and IoT-enabled cold chain tracking are no longer add-ons — they are foundational.

This level of integration empowers pharma companies with control and foresight. It allows for continuous temperature and humidity monitoring, predictive alerts for potential excursions, and automated compliance documentation all of which significantly reduce risk and improve decision-making speed.

Moreover, the adoption of AI and data analytics tools is allowing for better demand forecasting and inventory optimization. In many cases, these tools are co-developed or customized through collaboration, ensuring alignment with the specific operational and regulatory frameworks of each partner.

Prioritizing Sustainability and Compliance

As environmental accountability takes center stage, pharma-logistics partnerships are also becoming vehicles for shared ESG goals. Companies are jointly investing in green infrastructure such as solar-powered warehouses, electric/LNG fleets, energy-efficient HVAC systems, Rain water harvesting pits, Sewage treatment plants to reduce water waste and sustainable packaging solutions.

Sustainability is also being integrated into operations through reverse logistics programs that ensure safe and compliant returns, recycling, and disposal. These initiatives reduce environmental impact while maintaining the highest standards of product handling and traceability.

Compliance, naturally, remains paramount. Leading logistics providers are actively aligning with global regulatory bodies and engaging in continuous training and audits. When infrastructure is built in partnership with pharma stakeholders, it ensures that every element right from racking systems to documentation protocols, meets the highest standards of regulatory readiness.

India: An Emerging Powerhouse in Pharma Logistics

India's prominence in global pharmaceutical production makes it a compelling case study. The country is seeing a wave of investment in pharma-focused logistics hubs particularly in regions like Pune, Bhiwandi, and Hyderabad. These hubs are not only strategically located but are also designed specifically for pharma distribution, with multi-temperature storage, tech-enabled dock management, and rapid fulfillment capabilities.

We've seen firsthand how such collaborative models work in practice. In one instance, a leading pharma brand partnered with our team to co-develop a smart, compliant distribution center that enabled 30% faster delivery to healthcare providers during peak demand periods. The success of that initiative was rooted not in technology alone, but in a shared understanding of the mission: safeguarding human health through reliable, transparent logistics.

A Glimpse Into the Future

Looking ahead, the future of pharma logistics will likely include greater automation, integration of digital twins, and enhanced collaboration through shared data platforms. The convergence of robotics, AI, and cloud-based control towers will enable unprecedented levels of precision and responsiveness.

But beyond the technology, what truly defines a future-ready facility is the strength of its partnerships. It's about building trust, aligning on long-term goals, and embracing co-innovation as the default mode of operation.

As the pharmaceutical industry continues to evolve, one thing remains clear: its ability to deliver critical therapies and vaccines to the world will depend not just on scientific breakthroughs, but on the strength and sophistication of the logistics networks that support them. Together, pharma companies and logistics providers are building the future of - one resilient facility at a time. ■

Author

Yash Sharma
Executive Director
CCI Group

Noack N 760 blister packaging machine debuts

The N 760 blister packaging machine from Romaco Noack will be making its trade fair debut at this year's PCI Days in Warsaw, Poland. Romaco, the one stop solutions supplier, will also be presenting innovative processing technologies that set new standards when it comes to granulating, drying, coating and tableting oral solid dosage forms.

This is the first time that Romaco will be showing the new Noack N 760 platen sealing blister machine at a trade fair. At the upcoming PCI Days in Warsaw, Poland, this compact standalone machine will manufacture recyclable blister packs from PET mono-material.

Romaco will additionally be presenting more key technologies along the pharmaceutical process chain, such as the VENTILUS® Pilot fluid bed processor from Romaco Innojet and the KTP 420X C containment tablet press from Romaco Kilian. The one stop supplier's solutions for manufacturing and packaging oral solid dosage forms are offered as standalone machines or as fully integrated pharmaceutical lines. They ship in a variety of configurations and performance classes from laboratory-scale models to high-volume production equipment and high-speed packaging lines.

All Romaco technologies share the same focus on sustainable system design and are therefore ideal for energy-efficient production processes that make sparing use of resources, hence reducing the carbon footprint of the end products. In 2024, Romaco was awarded its first-ever gold medal in the EcoVadis sustainability ratings for its commitment to climate protection.

The N 760 from Romaco Noack is an intermittent motion blister packaging machine in balcony design for universal use. It is perfect for packaging a very broad range of products from solid dosage forms, ampoules and medical devices to semi-solids. Blisters with a maximum forming area of 155 x 138 mm and a maximum forming depth of 25 mm can be produced in this way. Product changes can be carried out quickly and easily, because only a very few compact and lightweight format parts need to be replaced and all parameters are electronically stored. The N 760 has an exceptionally space-saving layout and is easy to operate, fulfilling all of the requirements of the contract packaging sector, which needs to respond quickly and flexibly at any time to dynamic market situations. ■

Thermo Fisher Scientific launches Krios 5 Cryo-Transmission Electron Microscope (TEM)

Thermo Fisher Scientific, the world leader in serving science, has introduced the Thermo Scientific Krios 5 Cryo-TEM. This next-generation, atomic-resolution platform leverages enhanced optics and AI-enabled automation to study molecular structures and interactions at a throughput and fidelity that was previously unattainable.In the rapidly evolving field of structural biology, single particle analysis (SPA) and cryo-electron tomography (cryo-ET) are powerful techniques that allow scientists to better understand the intricacies of biology, providing atomic-level insights that reveal how viruses, proteins and cells work.

The Krios 5 Cryo-TEM optimizes productivity and performance to enhance these techniques. With a throughput improvement of up to 25% compared to previously released models, the Krios 5 enables 3D visualization of proteins, as well as their interactions and dynamics within the biological cell. Other Krios 5 advantages include AI-powered experimental set-up and upgraded data acquisition. For the cryo-ET workflow, the innovative vacuum capsule transfer helps prevent contamination of samples.

Collectively, these enhancements build on Thermo Fisher's cryo-EM legacy with a new generation of Krios that will enable researchers to pioneer new treatments and advance drug discovery.

"Our innovation has always been driven by the needs of our customers, and the Krios 5 Cryo-TEM is no exception," said Trisha Rice, vice president and general manager of life sciences for Materials and Structural Analysis at Thermo Fisher Scientific. "By delivering unparalleled automation and throughput, we are empowering researchers and the pharmaceutical industry to unlock new insights and fight diseases better than ever before." ■

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Bio Pharma World Expo 2026
Refining & Petro CHEMICALS 2026
Industry AUTOMATION & Control 2026
PVF Pumps, Valves & Fittings WORLD EXPO 2026
WaterEX WORLD EXPO 2026
Surface Engineering Coating & Corrosion World Expo 2026
Chlor-Alkali World Expo & Conferences 2026
BOILER World Expo 2026
SCALE@ CHEMTECH World Expo 2026
Student Outreach Program 2026 Develop Future Leaders

Scope for ChemTECH World Expo 2026

- Plant Machinery & Industrial Consumables
- Engineering Consultants
- OEMs for Chemicals & Pharmaceutical Processing Equipment
- Metals & Metallurgy
- Bioprocessing Equipment
- Construction Services Providers
- Plant Maintenance Services Providers
- Logistics & Supply Chain Solutions Providers
- Instrumentation & Process Control
- Industry Automation (Process & Factory)
- Systems Integration & ERP Solutions Providers
- Water & Waste Water Treatment Consultants
- Environment Solutions Providers
- Waste Management Consultants
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- Fire & Safety Solutions Providers
- Material Handling Solutions
- Certification Bodies
- Welding Solutions
- Quality Health & Environment Solutions
- Analytical & Laboratory
- Packaging Materials, Machinery & Systems
- Business Consultants

Scope for Biopharma World Expo 2026

- Materials Processing
- Pharma Machinery
- Pharma Ingredients
- Plant Engineering, Process Plants & Equipment
- Laboratory & Analytical Solutions
- Process Measurement & Inspection
- Sterilization & Clean Room Solutions
- Biopharma R&D And Manufacturing
- IT Solutions
- Water & Waste Treatment Solutions

Scope for Specialty Chemicals World Expo 2026

- Agrochemicals Intermediates
- Adhesives & Sealants
- Agrochemicals & Crop Protection
- Bulk Drugs & Intermediates
- Enzymes
- Colorants, Dyes & Pigments
- Cosmetics & Personal Care Ingredients
- Hygiene & Cleaning Chemicals
- Laboratory Chemicals
- Surfactants
- Water Treatment Chemicals
- Catalysts
- Electronic Chemicals
- Flavours & Fragrances
- Contract Manufacturers

FACT & FIGURES 2024

- 750 EXHIBITORS FROM 15+ COUNTRIES
- 25871 VISITORS FROM 53 COUNTRIES
- SCALE@ CHEMTECH World Expo 2024: 60+ GLOBAL CLIMATE TECH STARTUPS FROM 20 COUNTRIES; 40 TECHNICAL PRESENTATIONS
- 8 TECHNICAL CONFERENCES
- 1500+ BUSINESS DELEGATES
- 250+ GLOBAL SPEAKERS
- BRICS WORKING GROUP BRAIN STORMING SESSION
- 2500+ ENGINEERING PHARMA & SCIENCE STUDENTS AT STUDENT OUTREACH PROGRAM FROM 28 STATES & UNION TERRITORIES

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HIGHLIGHTS OF BIO-PHARMA WORLD EXPO 2024

Bio Pharma World Expo 2024

NAVIGATING THE PATH TO LEADERSHIP IN BIOPHARMA EXCELLENCE

(L to R) Guest of Honour Dr Krishna Ella , Executive Chairman, Bharat Biotech International Ltd, Prof (Dr) Samir Kulkarni , Head, Department of Biological Sciences & Biotechnology, Coordinator, DBT – ICT Centre, Dr Rajesh Gokhale, Secretary , DBT, Ministry of Science & Technology, Govt. of India & Chief Guest, Mr Suresh Prabhu Former Union Minister, Govt. of India & Chief Patron & Brand Ambassador, ChemTECH World Expo 2024

Biotech is one of the fastest-growing industries in the world right now, especially in India. The Indian bioeconomy registered a remarkable 28% growth in 2022. The past three years have been enormously successful, especially considering the challenges posed by the COVID-19 pandemic. The Indian bioeconomy is forecasted to reach USD 300 billion by 2030, a significant increase from its current valuation of USD 140 billion, which constitutes 4% of the total GDP of our country's growth. The BioPharma industry contributes approximately 43% to the economy and extends beyond pills; it encompasses aspects of healthcare, wellbeing, and cognitive enhancement. To capitalize on green growth and the bio economy, we are establishing Bio enablers in the form of Bio manufacturing hubs through Public-Private Partnerships.

Dr Rajesh Gokhale
Secretary, DBT, Ministry of Science & Technology, Govt. of India

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