

INDIA'S CHEMICAL INDUSTRY AT AN INFLECTION POINT: CAN IT LEAD THE SUSTAINABLE CHEMISTRY REVOLUTION?



VIJAY SRIVASTAVA
COO & WHOLE-TIME DIRECTOR
JUBILANT INGREVIA LIMITED

The global chemical sector is undergoing a seismic transformation. As decarbonisation, circularity, and regulatory pressures reshape business models, the race to develop sustainable chemicals and materials has intensified. For India, this shift presents both an extraordinary opportunity and a formidable challenge.

A TRILLION-DOLLAR OPPORTUNITY

India's chemical sector, already among the world's largest, is currently valued at around USD 220 billion. Projections suggest it could grow nearly fivefold to reach USD 1 trillion by 2040, powered by domestic consumption and rising export potential. A confluence of factors, from geopolitical supply chain diversification to sustainability-driven sourcing decisions, is redirecting global attention towards India as a manufacturing hub.

The country's strengths are hard to overlook: a large domestic market, skilled workforce, and improving infrastructure. Crucially, the policy environment is turning more supportive of green industrial growth. Flagship initiatives like BioE3 and biorefinery missions signal intent to build a low-carbon future through green chemistry. At the same time, Petroleum, Chemicals and Petrochemicals Investment Regions (PCPIRs) are being modernised with environmental safeguards and shared infrastructure to ease the cost of cleaner production.

India's private sector, too, is aligning rapidly with this vision. For instance, at Jubilant Ingrevia, we have demonstrated how technology, innovation, and sustainability can converge to deliver scalable impact. With deep capabilities across more than 30 chemistry platforms and advanced R&D centres in Greater Noida, Gajraula, and Bharuch, we are embedding green chemistry and AI/ML-driven process optimisation into every stage of manufacturing, and our efforts for digital transformation and sustainable production have been recognised by the World Economic Forum's Global Lighthouse Network.

Investment appetite is equally strong. India attracted USD 6.1 billion in FDI in renewable energy between April 2020 and September 2023, while future opportunities exceeding USD 500 billion have been identified across renewables, green hydrogen, and electric vehicles by 2030. Government agencies such as the Department of Biotechnology (DBT) and Department of Science and Technology (DST) are funding R&D in renewable feedstocks, enzymatic catalysis, and microbial fermentation – critical building blocks for sustainable chemicals.

BARRIERS ON THE ROAD TO COMMERCIALISATION

The path to large-scale adoption of sustainable chemicals is not without obstacles. Cost competitiveness remains a pressing concern, with bio-based and advanced materials often struggling to match conventional, fossil-based feedstocks. Emerging technologies such as bioprocessing and advanced recycling face hurdles in scalability and require significant capital investment.

Supply chains add further complexity. Fluctuations in feedstock availability, energy price swings, and tariff-led barriers can quickly erode competitiveness. Equally important is consumer and downstream industry acceptance, which depends on delivering sustainable alternatives with consistent quality, safety, and lifecycle performance.

Industry leaders are addressing these gaps through digital innovation and circular practices. On our part, we have implemented more than 200 digital interventions, including predictive analytics, Digital Twin deployment, and GenAI-driven R&D, to drive efficiency and reduce waste. Our ESG goal is to showcase how sustainable manufacturing can be both economically viable and globally competitive, with 45% of water recycled, over 90% of waste sustainably disposed, and 35% renewable energy sourcing targeted by FY 2026.

Experts argue that widespread adoption will hinge on targeted policy support, including Production Linked



Incentives (PLI) for chemicals and petrochemicals, and stricter enforcement of environmental standards to level the playing field.

The global macro environment further compounds these challenges. The industry today faces mounting headwinds, from escalating trade tariffs and supply chain fragmentation to geopolitical tensions and volatile energy markets. Such uncertainties are forcing manufacturers worldwide to rethink their cost structures and sourcing strategies. In this climate, sustainability is emerging not just as a moral imperative but as a strategic differentiator. Companies that can integrate green practices in an economically viable manner, balancing environmental goals with competitiveness, will be better equipped to withstand these external shocks. For India's chemical sector, embedding sustainability into core operations offers a dual advantage: insulating against global disruptions while building long-term trust with international partners seeking resilient and responsible supply chains.

INDIA'S ROLE IN A REGIONALISED WORLD

Globally, chemical value chains are being reshaped. Companies are shortening supply lines, regionalising production, and prioritising partners with cleaner, more transparent footprints. In this reconfigured landscape, India is seen as a natural candidate to emerge as a regional hub for sustainable chemicals.

Its established strengths in pharmaceuticals, agrochemicals, dyes, and speciality chemicals give India an edge. Yet, without addressing the twin challenges of cost and scalability, the country risks staying a volume player, supplying commodities rather than moving up the

value chain into high-value, speciality, and sustainable chemistries.

Our custom development and manufacturing (CDMO) capabilities, coupled with its customer-first ethos, are enabling global innovators to access reliable, sustainable, and high-quality chemistry solutions from India – a blueprint for how domestic companies can anchor the nation's rise as a regional hub.

THE ROAD AHEAD

The outlook remains promising. The Indian industry is upgrading capacities, investing in speciality units, and piloting bioprocessing and polymer recycling projects. Policy momentum aligns with global environmental commitments such as the Paris Agreement, while the government is increasingly embedding green chemistry principles across its industrial framework.

As the sector evolves, commodity chemicals will remain vital, but the real growth will be in speciality, bio-based, and circular chemistries. With decarbonisation, recyclability, and safer formulations becoming commercial imperatives, India has the chance to transition from follower to frontrunner in the sustainable chemicals race.

We exemplify this transformation, proving that sustainable growth, advanced technology, and responsible manufacturing can coexist as competitive advantages. If India can strengthen incentives, enforce sustainability standards, and foster public-private collaboration, it could anchor itself as a global hub for sustainable chemical manufacturing, reshaping not just its own industrial landscape, but also the way the world sources its materials.

ABOUT THE AUTHOR:

MR. VIJAY SRIVASTAVA is the Chief of Operations & Whole Time Director at Jubilant Ingrevia Limited, where he has been instrumental in driving operational excellence and achieving significant business results. With over 23 years of extensive experience in various industries, including petrochemicals, agrochemicals, and polymers, he has a proven track record of enhancing business practices, increasing productivity, and fostering innovation.