

How Asia is Emerging As Biomanufacturing Powerhouse

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Asia is poised to become a manufacturing powerhouse, building on its success in clinical trials and biotechnology innovations. While China has already established itself as a manufacturing leader, other countries in the region are following suit. With nations like Singapore, South Korea, and India recently launching ambitious policies to boost the sector, the region is gearing up for a significant transformation in its bio-manufacturing capabilities.



Countries like South Korea, Singapore, and others in Asia are making strides in enhancing their bio-manufacturing capabilities. The collective effort made by the respective countries helps to position Asia as a key player in the global biopharma industry towards fostering innovation, international collaborations and investments, as well as improving the regulatory environment. According to Market Data Forecast, the Asia Pacific biopharmaceuticals market was valued at \$44.3 billion in 2023 and is expected to be worth \$78.69 billion by 2029 with a CAGR of 10.05 per cent from 2024 to 2029.

“Asia-Pacific has emerged as a dynamic and influential region in the global biopharma industry in recent years and this transformation is driven by a confluence of factors, from rapid economic growth and significant government investments to a highly skilled workforce and a supportive regulatory environment,” said **Chua Keng Hock, Senior Vice President of Process Solutions, Asia Pacific, Life Science Business of Merck.**

The support of the local government and investment are pivotal in driving the growth of the biopharma sector in Asia. “The local governments in Asia have made substantial investments in the biopharma sector, focusing on building infrastructure and creating life science hubs to foster collaboration and innovation. For example, South Korea’s ‘Bio-Health Industry Promotion Plan’ aims to enhance the country’s biotechnology capabilities through initiatives like the National Synthetic Biology Initiative, which seeks to transition 30 per cent of the manufacturing industry to the bio-industry within a decade. Similarly, Singapore has built the Biopolis, a research and development hub, and Tuas Biomedical Park, a purpose-built estate for pharmaceutical and medical technology companies,” said Chua Keng Hock.

A skilled workforce is another crucial driver of biomanufacturing growth in Asia. Specialised training programmes and educational initiatives are in place offering targeted courses in biotechnology and bioprocessing. Additionally, Singapore and South Korea for example emphasise a close alignment between educational programmes and industry needs through industry-academic partnerships. These partnerships offer students’ hands-on experience via internships and industry projects to bridge the gap between academic learning and real-world applications in bioprocessing.

To facilitate biopharma companies in navigating the market, Asia has streamlined its regulatory environment to align with international standards, significantly enhancing its appeal for biopharma investments.

“Recent reforms in countries like China and India have improved the speed and transparency of drug approval processes, including accepting international clinical data and streamlining approvals. For example, China's regulatory changes have reduced the average drug approval time from 2-3 years to about 12 months, while South Korea has implemented fast-track approval processes to shorten new drug approval times. These improvements attract foreign investment, encourage domestic innovation, and ensure quicker market entry for new therapies,” said Chua Keng Hock

Strategic partnerships between government agencies and biopharma companies are forged to enhance research capabilities, develop new bioprocessing technologies, and support industry growth, to accelerate drug development and commercialisation. In May 2024, Merck signed a non-binding Memorandum of Understanding (MoU) with the Korea Advanced Institute of Science and Technology (KAIST) in Korea on a multi-dimensional programme aimed at advancing the research and development ecosystem in South Korea for industrial applications.

Bullish on Biomanufacturing

Singapore

The Biomedical Sciences industry, which comprises the biopharmaceutical and medical technology sectors, is a key contributor to Singapore's economy. In 2022, the industry accounted for 2.3 per cent of Singapore's Gross Domestic Product and manufactured close to S\$39 billion worth of products for the global market.

The Singapore government has taken various initiatives to boost biomanufacturing in the country. The Biologics Pharma Innovation Programme Singapore (BioPIPS) aims to strengthen local manufacturing capabilities and transform Singapore's biologics manufacturing facilities into agile factories of the future. It works through a consortium model consisting of leading biopharma companies and Singapore's public sector R&D agencies and universities. BioPIPS is modelled after PIPS.

“Singapore's pro-business environment, skilled talent, strong manufacturing capabilities and thriving research ecosystem have drawn global biopharmaceutical and medical technology firms here. These companies have significant innovation, manufacturing, and commercial presence in Singapore to serve global patients,” said **Chen Pengfei, Vice President, Healthcare, Singapore Economic Development Board**.

The bets are paying off. In recent months, Singapore has solidified its position as a key hub for biopharmaceutical manufacturing, with almost all major pharma companies establishing operations in the region. Notable developments include Pfizer's expansion of its manufacturing footprint with a new state-of-the-art facility announced on July 23, 2024. Wuxi Aptec also marked a milestone by breaking ground on a new R&D and manufacturing centre focused on active pharmaceutical ingredient (API) services for small molecules, oligonucleotides, peptides, and complex synthetic conjugates, which was reported on May 23, 2024.

Besides, AstraZeneca unveiled plans for a \$1.5 billion manufacturing facility dedicated to antibody-drug conjugates (ADCs) on May 20, 2024. Wuxi Biologics is also investing in the region with a new Contract Research, Development and Manufacturing Organisation (CRDMO) centre, which will provide integrated biologics services, as announced on March 19, 2024. Novartis expanded its biopharmaceutical manufacturing site in March 2024, while AbbVie announced a \$223 million investment to enhance its biologics manufacturing capacity on January 25, 2024. Hilleman Laboratories opened a \$20 million facility in November 2023 to strengthen vaccine manufacturing resilience.

Singapore-based Biosyngen launched a new manufacturing facility in June 2023, with plans to hire 200 employees. Additionally, a new Thermo Fisher Scientific drug facility dedicated to vaccine manufacturing opened on May 26, 2023. Takeda also contributed to Singapore's biomanufacturing landscape by opening its first platinum positive energy building on March 30, 2023. Finally, GSK established its first high-potency manufacturing and testing facility for next-generation cancer treatments in Singapore on November 17, 2022. These developments underscore Singapore's commitment to becoming a leading destination for biopharmaceutical innovation and production.

Australia

Australia aims to be an RNA manufacturing hub. In 2023, the Prime Minister of Australia highlighted his role as chair of the Expert Advisory Group, which is focused on developing an RNA Sector Development Plan. This plan aims to capitalise on new investments across the country to manufacture mRNA vaccines, including the Moderna facility, and to establish a

comprehensive RNA research and development ecosystem. Australia is set to become one of the few countries globally with end-to-end mRNA manufacturing capabilities, presenting a significant opportunity to advance RNA technologies for both human and animal health. The plan emphasises improving commercialisation, building necessary skills, maximising enabling infrastructure, and translating world-class research into practical applications.

The Australian Government has established the National Reconstruction Fund Corporation (NRFC), a \$15 billion initiative aimed at supporting seven priority areas of the economy. One of the key focus areas is medical manufacturing.

Government's efforts are paying off. Pfizer, Moderna, and BioNTech are all establishing mRNA manufacturing plants in Australia, underscoring the country's growing prominence in the biotechnology sector. In addition to these significant investments, other initiatives are also taking shape. Monash University has launched Australia's first dedicated mRNA workforce training centre with a \$10 million grant, aimed at equipping professionals with the necessary skills for this emerging field. Furthermore, a new biotech research and manufacturing hub was opened at the University of Queensland, further enhancing the nation's capabilities in mRNA technology. The University of Sydney has announced the launch of its Biomanufacturing Incubator, a cutting-edge initiative aimed at bridging the gap between biological research and industrial application. Together, these developments position Australia as a leader in biomanufacturing and mRNA innovation.

Korea

South Korea has initiated several strategic efforts, including 'The Advanced Biotechnology Initiative,' a national strategy aimed at positioning the country as a leader in the biotechnology sector by 2035. This initiative leverages South Korea's accumulated scientific, technological, and ICT capabilities in response to the rapid growth of the global biotechnology market and intense competition for technological supremacy. Additionally, the 'National Synthetic Biology Initiative' has been launched to nurture synthetic biology and enhance innovative capabilities in biomanufacturing.

South Korea also aims to become a global vaccine hub. The government is promoting public-private partnerships to expand vaccine production capacity to meet both current and future needs, domestically and in low- and middle-income countries (LMICs). To bolster this strategy, the government has partnered with international organisations, including the WHO, ADB, and IVI, by establishing training hub programmes for a global biomanufacturing workforce.

Big pharma firms are taking a note. Merck has announced an investment of over €300 million in a new life science production site in Korea, signalling strong confidence in the market. Sartorius is investing substantially in expanding its activities in South Korea. The site is in South Korea's major Biopharma hub Songdo in Incheon.

India

In August 2024, India launched the BioE3 Policy, a strategic framework designed to propel the country into the next era of industrialisation through high-performance biomanufacturing. This policy outlines a roadmap for making India a global biomanufacturing hub by promoting innovation in bio-based products and developing the necessary infrastructure for scale-up and commercialisation.

The policy aims to empower Indian institutions, universities, startups, and industries to engage in transformative innovations by boosting domestic biomanufacturing capabilities by enabling synergy between science, technology, engineering, and manufacturing. The policy lays out plans for accelerating the transition to biomanufacturing by promoting integrated use of AI, digitalisation with 'omics', and upstream biotechnology innovations through bio-AI hubs, biofoundries, and biomanufacturing hubs across the country.

The BioE3 Policy emphasises six thematic areas of focus, with a particular spotlight on 'Precision Biotherapeutics'. The policy draws attention to biologics/biotherapies like Cell and Gene therapy, mRNA therapeutics, monoclonal antibodies, immunotherapy, as well as next-generation vaccines.

Asia already has considerable biomanufacturing capabilities, driven by China and Singapore, with other countries ramping up their capacities to move toward this goal. It's only a matter of time before the region is known as a bio-manufacturing powerhouse.

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