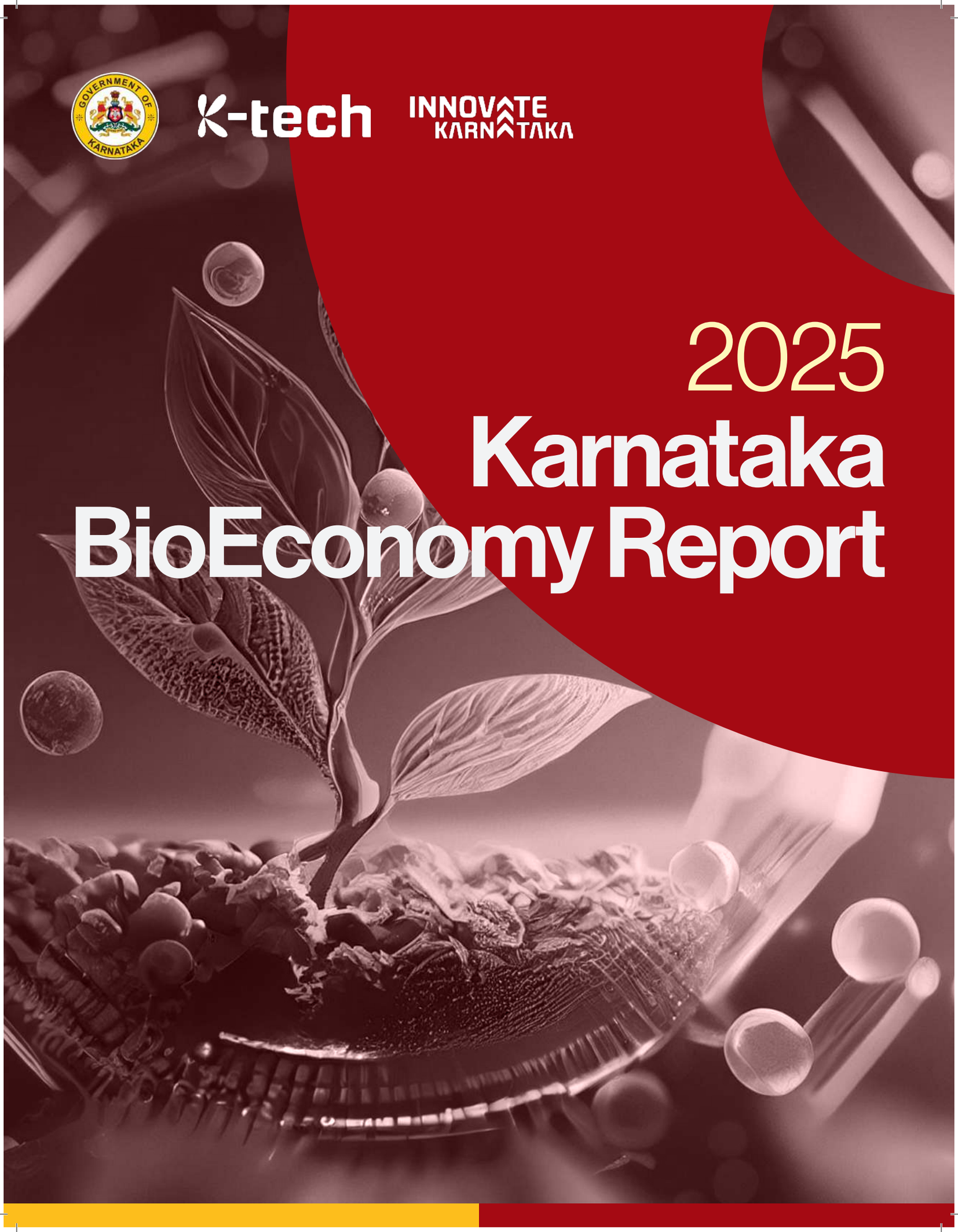

GOVERNMENT OF KARNATAKA
K-tech
INNOVATE KARNATAKA
2025
Karnataka
BioEconomy Report

able Pursuing Infinite Opportunities

Association of Biotechnology Led Enterprises

This report has been prepared for the Government of Karnataka by Narayanan Suresh, Advisor, the Association of Biotechnology Led Enterprises (ABLE), and Srinivas Rao Chandan, Editorial Consultant for ABLE. The project was undertaken under the guidance of G S Krishan, Honorary President of ABLE, and Dr Balasubramanya S, General Manager of ABLE.

Note on data presentation

In this report, numerical figures have been rounded to improve clarity and ease of presentation in charts, tables, or the narrative text. These adjustments are made to enhance readability and should not be interpreted as errors or discrepancies. All data has been carefully sourced and rounded in a consistent manner to maintain accuracy across the report. In cases where figures are presented without rounding, they reflect the precise values as reported and are accurate as provided. Please note that due to rounding, totals, averages, or shares may dif- fer slightly from calculations using two decimal places. The rounding is intended to make the information more accessible and should not affect the overall analysis or conclusions drawn from the data.

Table of Contents

"Our 'Beyond Bengaluru' vision is reflected in every new startup, every partnership outside urban centers—making BioEconomy progress inclusive and regionally distributed."

PERSPECTIVE

Building Regional Strength and Inclusive Innovation

Shri Priyank M Kharge,

Hon'ble Minister for Rural Development and Panchayat Raj and Information Technology & Biotechnology, Government of Karnataka

Karnataka's progress in the BioEconomy has always been linked to its ability to connect the promise of innovation with the realities faced in every district. As the BioEconomy Report 2025 makes it clear, the state has reached $39.21 billion in BioEconomy value this year, a sign of its status as India's most mature and dynamic ecosystem. This growth has been driven by targeted investments, the creation of new biomanufacturing clusters, and sustained support for startups and research centers even outside major urban centers; nearly 1,451 biotechnology and life science startups are active by the end of 2025, demonstrating steady ecosystem expansion..

What sets Karnataka apart is its determination to bring technology and entrepreneurship to regions that previously did not have the infrastructure to compete. Programs such as Elevate and Fund of Funds have helped catalyze 100 new startups in Tier-II and Tier-III districts within the last year, ensuring that growth is not bound by geography but is accessible to those who have the drive and ability to solve local challenges. Belagavi, Dakshina Kannada, and Mysuru have emerged as important nodes in the state's BioEconomy map, each contributing unique strengths in biopharmaceutical manufacturing, bioindustrial production, and agricultural biotechnology.

Karnataka's approach is defined by openness and agility. By facilitating collaboration between academic institutions, young entrepreneurs, and global enterprises, the state has been able to achieve significant milestones in areas such as healthcare innovation, green manufacturing, and bioinformatics. The integration of AI and digital platforms boosts rural development, allowing solutions in diagnostics, farmer outreach, and remote patient care to reach new communities.

The continued expansion of startups and biomanufacturing projects shows our commitment to scale and inclusiveness. As investment in biotechnology infrastructure and human capital increases, Karnataka maintains its edge in national competitiveness, while establishing a reputation for balanced regional growth. The focus for the future remains clear: build resilient infrastructure, support emerging sectors, and ensure every citizen has access to the opportunities created by the BioEconomy.

The strength of Karnataka comes from its ability to empower its people. From remote villages to growing tech hubs, the state's strategy rests on a simple premise: that innovation is meaningful only when it solves real problems and brings benefits to all sections of society. Together, we will continue to create an environment where new ideas flourish, industries mature, and inclusive growth is the standard by which our success is measured.

PREFACE

Enabling Global Competitiveness Through Policy and Execution

Dr Manjula N,

Secretary to Government, Department of Electronics, IT, Biotechnology and Science & Technology, Government of Karnataka

"We aim to transform scientific ingenuity into broad-based prosperity for all the people of Karnataka."

Karnataka's biotechnology sector is built on strategic vision and a sustained commitment to execution. As the 2025 BioEconomy Report outlines, the state is expected to account for 10.51% of its own GSDP thanks to the convergence of BioPharma, BioIndustrial, BioServices, and BioAgri fields. These figures—$39.21 billion in BioEconomy value and a one-fifth share of India's total BioEconomy output—reflect the impact of policies that prioritize focused research, entrepreneurial ambition, and effective scale-up.

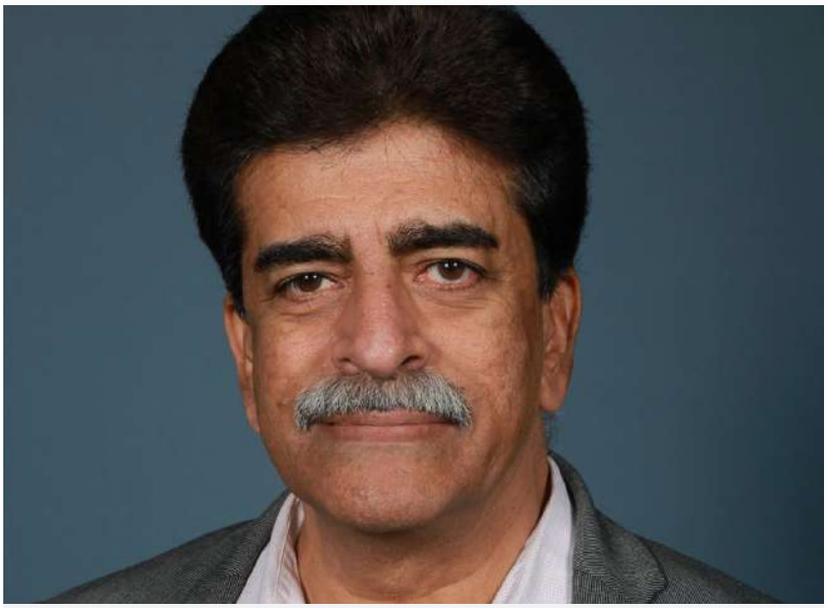
What has made Karnataka's BioEconomy a success is its policy infrastructure: a framework that supports innovation from ideation to industrialization. New initiatives like the Karnataka Innovation Authority Act enable startups and established enterprises to pilot, validate, and market their solutions more effectively. Biomanufacturing hubs and regional clusters represent a targeted shift from metropolitan dominance to a corridor-based statewide innovation network. Incubators have expanded into higher education institutions, supporting both skill-building and commercialization across districts.

Karnataka's strengths lie in its ability to convert policy intent into measurable impact. Integrated monitoring dashboards enable transparency across grant disbursement, incubator performance, and workforce development, while international research collaborations give companies access to global markets and best practices. Sectoral evolution has been rapid, with BioPharma, BioIndustrial, and BioServices accounting for over 97% of annual value, and BioAgri playing a strategic role in sustainable farming and input innovation.

The Department's role is to unlock potential and broaden the ecosystem. Registration of 218 new biotechnology enterprises in 2025 alone, along with nearly $1.14 billion in funding mobilized since January 2024, are evidence of a thriving innovation environment where ideas find investment and mentorship promptly.

As Karnataka moves forward, the challenge is to retain its edge while deepening regional innovation and embedding sustainability across sectors. Our focus will stay on expanding biomanufacturing, strengthening partnerships, and enhancing human capital through training and strategic engagement. The next phase will prioritize scalable infrastructure and the integration of global best practices, so that Karnataka remains at the forefront of India's BioEconomy transformation and a model for sustainable growth.

The journey ahead is one of collaboration, ambition, and purposeful action. Karnataka's BioEconomy will shape not only the narrative of our industries, but the quality of life. The opportunities are significant, and together, we will ensure that scientific achievement is matched by societal benefit, creating a legacy of growth and innovation that strengthens our state and country alike.



Mr. G. S. Krishnan

Hon. President, Association of Biotechnology Led Enterprises (ABLE)

"Karnataka's mature, innovation-led bioeconomy offers investors a de-risked, policy-aligned gateway to India's next bio-led growth."

The Karnataka BioEconomy Report 2025 underscores Karnataka's position as India's most mature and innovation-driven bioeconomy, with an estimated value of USD 39.2 billion in 2025 and a contribution of 10.51% to the State's GSDP. This is more than twice the national average.

Over the last two years, the BioEconomy has expanded by USD 8.2 billion, supported by strong growth in BioPharma, the rapid scale-up of BioIndustrial biotechnology and the steady expansion of BioServices. With 1,451 active biotechnology and life-sciences startups, including 218 new enterprises added in 2025 alone. The report also highlights USD 1.14 billion in investments mobilized during 2024–2025 and Karnataka anchor nearly one-fifth of India's total BioEconomy output. The emergence of regional innovation corridors beyond Bengaluru, and Karnataka's leadership across the full spectrum of biotechnology namely, BioPharma, BioIndustrial, BioServices, BioAgri, and BioIT positions the State as a national benchmark for translating science into scalable economic value.

ABLE remains committed to closely supporting the State Government in the effective implementation of biotechnology policies and flagship schemes, while systematically tracking BioEconomy growth and outcomes to inform evidence-based decision-making.

As India advances toward its BioEconomy goals for 2030, Karnataka offers significant opportunities for industry, startups, investors, and academia to contribute to its BioEconomy and in doing so, strengthen India's global bioeconomy leadership.

EXECUTIVE SUMMARY

Karnataka's BioEconomy represents India's most mature and innovation-driven biotechnology ecosystem — a $ 39 billion enterprise that contributes over one-fifth to the national bioeconomy and more than 10% to the State's GSDP. The last three years (2023-2025) marks the transition from growth to consolidation, where biotechnology in Karnataka evolved from a science-led sector into a full-scale, production-oriented bio-based economy anchored in research, entrepreneurship and sustainability.

Karnataka emerges as a pinnacle of India's biotech sectors, demonstrating rapid growth and innovative strength. Over the past few years, the ecosystem has transitioned from foundational research into a vibrant, production-oriented industry landscape driven by cutting-edge research, entrepreneurial spirit, and sustainable practices. This evolution signifies a maturing sector poised for further impact. The subsequent insights highlight key trends, achievements, and future strategies shaping this dynamic landscape, compounded with various proactive initiatives from infrastructure development to entrepreneurial funding support to the growth of the Biotech segment in Karnataka.

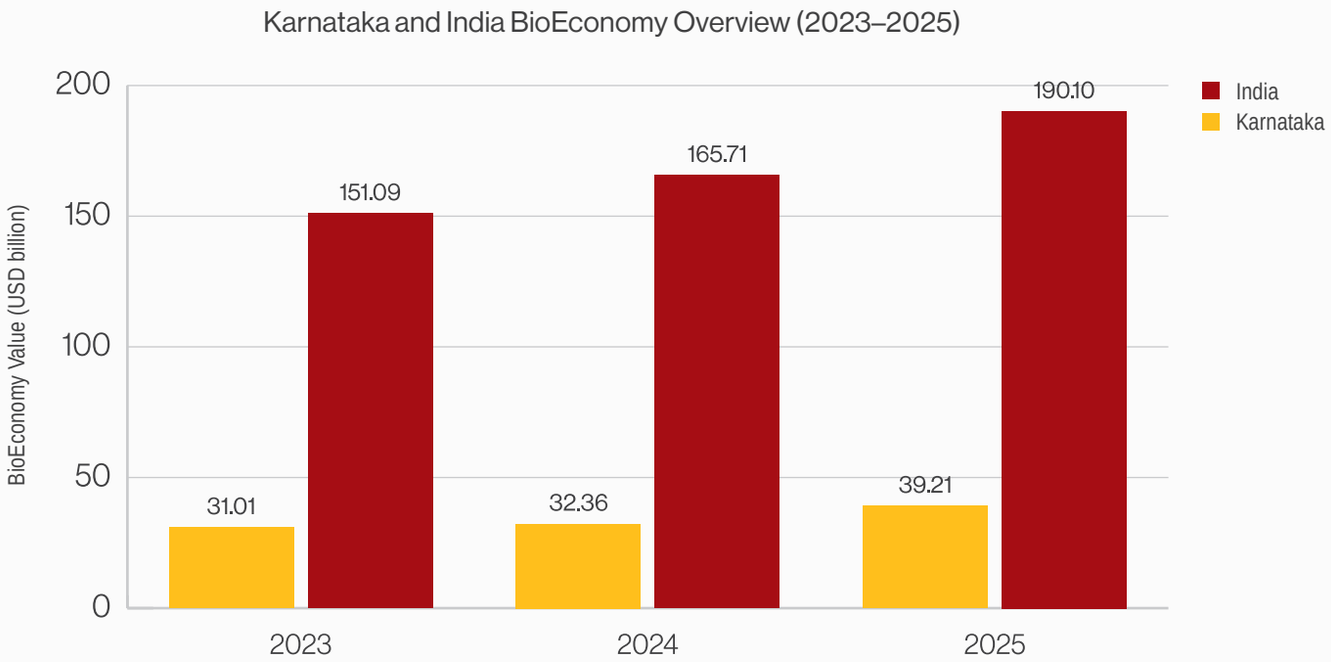
Karnataka BioEconomy Top Highlights (2025)

- **$39.2 billion** — Total estimated value of Karnataka's BioEconomy in 2025, India's most mature biotechnology ecosystem.
- **$8.2 billion Added** — Value expansion between 2023 and 2025, driven by BioIndustrial scale-up and strong export performance.
- **1,451 Cumulative Startups** — Active biotechnology and life-science enterprises across Karnataka by end-2025.
- **$1.14 billion Invested** — Cumulative BioEconomy-linked funding mobilized between January 2024 and October 2025
- **~40 Investment Deals** — Recorded across biotech, life sciences, and health innovation sectors.
- **218 New Startups** — Added in 2025 alone, reflecting sustained innovation and entrepreneurial depth.
- **10.51% of GSDP** — Biotechnology's contribution to Karnataka's economy, reinforcing its position as a growth pillar.
- **3 Innovation Corridors** — Mysuru, Belagavi, and Dakshina Kannada emerging as regional bio-clusters under Beyond Bengaluru initiatives by Govt. of Karnataka
- **100+ Startups Funded** — Supported through Elevate, Idea2PoC, and Fund of Funds programs to advance biotech innovation
- **One among the states contributing to all segments of BT** — BioPharma, BioIndustrial, BioServices, BioAgri, and Bioinformatics driving Karnataka's bio-led transformation.

01 Growth Momentum

Karnataka's Expanding BioEconomy (2023–2025)

A $39.2 billion innovation economy driving India's biotechnology transformation

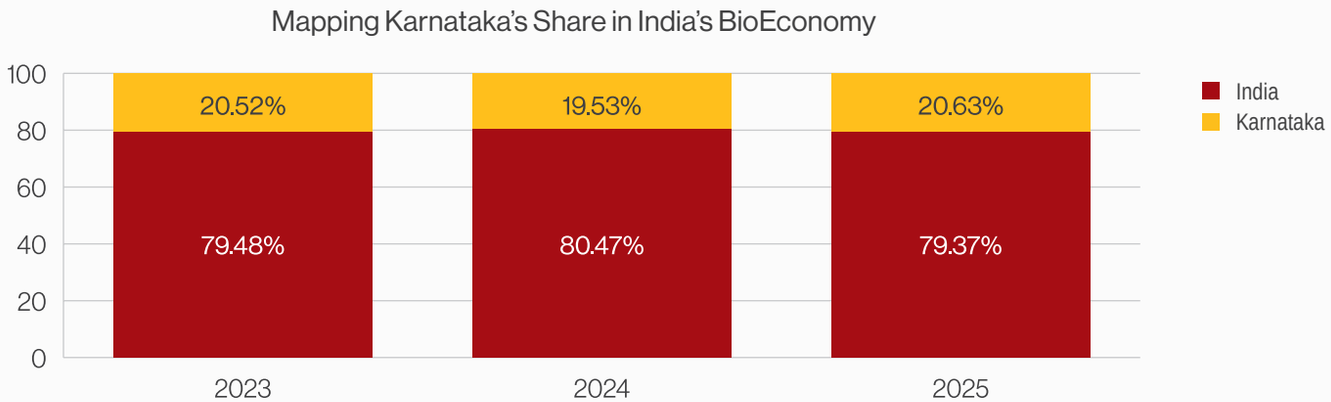


Source: ABLE Research | Totals may not match because of rounding. The figures are final for the year ended, but they may be revisited during the preparation of the all-India dataset if newer information emerges.

Karnataka has firmly established itself as India's Biotechnology powerhouse, contributing to approximately one-fifth of the nation's BioEconomy. Between 2023 and 2025, the State's BioEconomy expanded from $31.0 billion to $39.2 billion, representing a cumulative rise of 26.5%.

This expansion was driven by three structural factors: a robust BioPharmaceutical base, rapid BioIndustrial diversification, and strong BioServices integration. Karnataka's innovation ecosystem — anchored in research institutions, startups, and global R&D centers — has transitioned from being research-heavy to production-oriented and globally competitive.

The growth also reflects an adaptive recovery following post-pandemic adjustments, showing consistent quarter-on-quarter acceleration through 2025. Karnataka's contribution to India's BioEconomy rose to 20.63%, reaffirming its pivotal role in shaping India's biotechnology-led industrial transformation.



Source: ABLE Research | Totals may not match because of rounding. The figures are final for the year ended, but they may be revisited during the preparation of the all-India dataset if newer information emerges.

02 Economic Significance

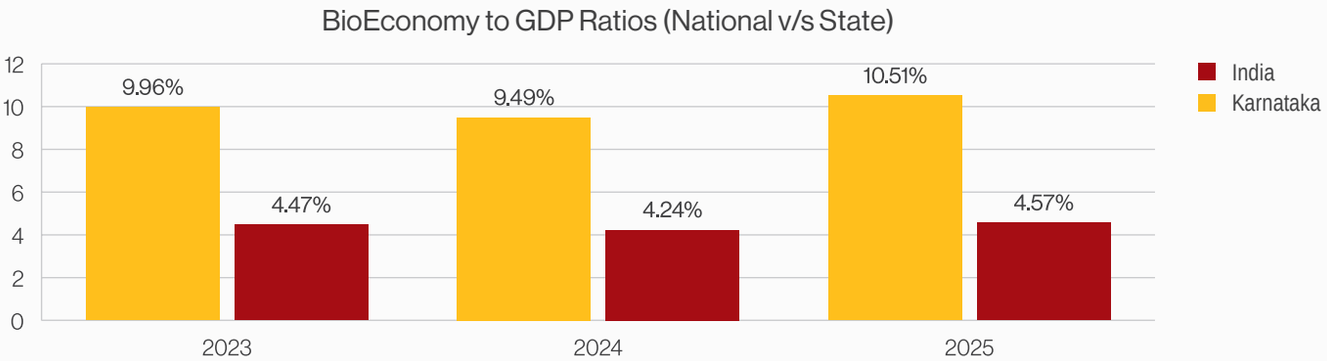
A Core Pillar of Karnataka's Economy

Biotechnology now contributes to over 10% of GSDP — twice the national average.

By 2025, Karnataka's BioEconomy accounted for 10.51% of the Gross State Domestic Product (GSDP) — a ratio more than twice India's national average of 4.57%. This positions biotechnology not merely a scientific discipline but as an economic pillar central to the State's development model.

While the sector's GSDP share temporarily dipped to 9.49% in 2024 due to faster growth in services and IT exports, it rebounded strongly in 2025, reflecting the underlying resilience and high-value nature of Biomanufacturing and BioServices. The sector's integration with healthcare, agriculture, industrial biotechnology, and renewable energy creates extensive multiplier effects across Karnataka's economy.

Biotechnology's deep linkage with innovation-led manufacturing, exports, and employment generation ensures that it functions as both a growth accelerator and a diversification engine — positioning Karnataka at the forefront of the global transition toward a sustainable, bio-based economy.



Source: ABLE Research | Totals may not match because of rounding. The figures are final for the year ended, but they may be revisited during the preparation of the all-India dataset if newer information emerges.

03 Sectoral Dynamics

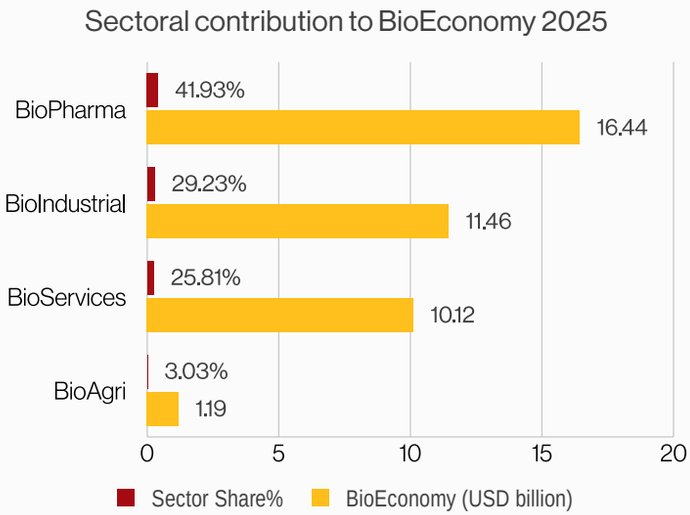
Multi-Sectoral Structure and Growth Drivers

From research-led to production-integrated — BioPharma, BioIndustrial, and BioServices lead the way.

Karnataka's BioEconomy is now defined by a balanced and synergistic multi-sectoral structure, each contributing to the State's broader economic goals. In 2025, BioPharma (41.93%), BioIndustrial (29.23%), and BioServices (25.81%) formed the three dominant pillars, while BioAgri (3.03%) represented a focused agricultural biotechnology segment.

Between 2024 and 2025, the BioIndustrial segment grew 72.59% by rapid expansion in biofuels and fermentation-based industries. BioPharma maintained steady growth of 8%, supported by strong vaccine, biosimilar, and diagnostics exports. BioServices at 8.12% and BioAgri at 4.39% has shown moderate gains, reinforcing the sector's stability.

This evolving structure signals Karnataka's shift from a research-led cluster to a full-spectrum biomanufacturing economy, encompassing discovery, production, and commercialization. It also underscores the State's alignment with circular economy principles, emphasizing sustainability, carbon reduction, and bio-based industrial transformation.



Source: ABLE Research | Totals may not match because of rounding. The figures are final for the year ended, but they may be revisited during the preparation of the all-India dataset if newer information emerges.

04 Quarterly and Half-Yearly Trends

Consistent Momentum and Year-Round Growth

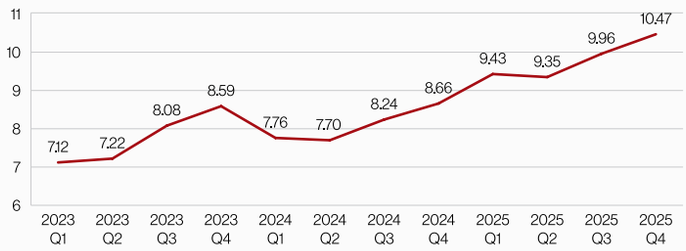
Quarterly and half-year trends highlight stability, resilience, and structural balance.

The quarterly and half-yearly data for 2024–2025 reveal Karnataka's strong intra-year performance stability and predictable growth cycles. BioEconomy expanded from $7.76 billion in Q1 2024 to $10.47 billion in Q4 2025, marking a steady 21% year-on-year increase.

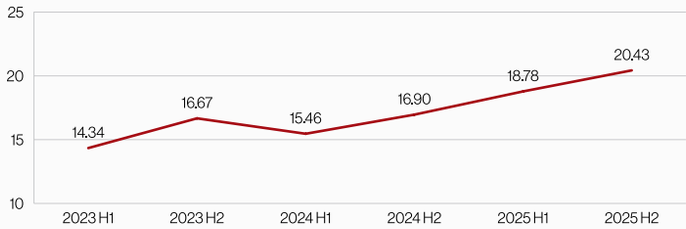
The first half (H1) of 2025 contributed 47.9% of the annual total, led by strong pharmaceutical production and early-stage industrial output, while the second half (H2) contributed 52.1%, reflecting scaling in biomanufacturing and service exports. BioPharma and BioIndustrial together accounted for over two-thirds of quarterly growth, reaffirming their leadership.

This even distribution of economic activity indicates Karnataka's evolution towards a mature, resilient BioEconomy — one capable of maintaining consistent output throughout the year, supported by domestic consumption, export demand, and policy stability.

Quarterly BioEconomy USD billion Trend 2023 - 2025



Half-Year BioEconomy USD billion Trend 2023 - 2025



Source: ABLE Research | Totals may not match because of rounding. The figures are final for the year ended, but they may be revisited during the preparation of the all-India dataset if newer information emerges.

05 Startup Ecosystem and Innovation Geography

Expanding Entrepreneurship and Innovation Density

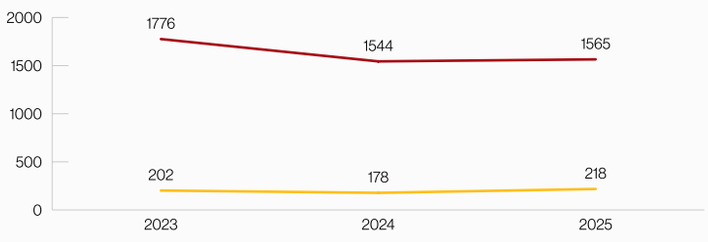
1,451 biotechnology startups by end-2025, up from 1,233 in 2024.

Karnataka's biotechnology startup ecosystem continues to expand, adding an estimated 218 new enterprises in 2025, bringing the cumulative count to 1,451 startups — up from 1,233 in 2024.

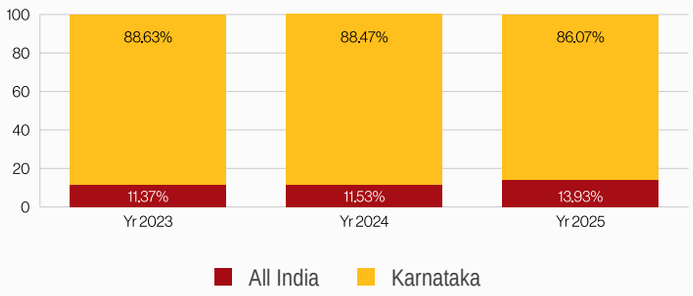
Quarterly registrations remained strong, with Q1 2025 emerging as the most active period, accounting for one-third of new incorporations. Bengaluru retains its position as the anchor hub, housing nearly three-fourths of biotechnology startups, while Mysuru, Belagavi, and Dakshina Kannada are gaining ground as regional innovation clusters under the "Beyond Bengaluru" initiative.

Over 75% of startups operate in life sciences, BioPharma, food biotechnology, and health-tech, underscoring the depth of scientific specialization. The steady rate of new registrations relative to India's total reflects Karnataka's ecosystem maturity and sustained innovation capacity, making it a national benchmark for biotechnology-led entrepreneurship.

New Startup Registrations 2023-2025



Share of Karnataka in India Startup Registrations 2023–2025



Source: ABLE Research | Totals may not match because of rounding. The figures are final for the year ended, but they may be revisited during the preparation of the all-India dataset if newer information emerges.

06 Regional Diversification, Beyond Bengaluru

Distributed Growth, Unified Vision

Regional clusters strengthen Karnataka's biotechnology geography.

Karnataka's biotechnology growth is becoming increasingly multi-regional. While Bengaluru Urban continues to anchor 54% of the State's BioEconomy, the rest is now distributed across key districts — Mysuru, Belagavi, Dakshina Kannada, and Raichur–Yadgir–Kalaburagi.

Mysuru contributes around 8.7%, driven by pharmaceuticals. Belagavi and Dakshina Kannada together represent over 9%, propelled by biofuels, feed industries, and Bioinformatics. The northern districts, led by Raichur, remain the AgriBiotechnology belt, accounting for nearly 40% of the State's Bt cotton-based BioAgri economy.

This diversified distribution indicates that Karnataka's BioEconomy is no longer city-centric and urban contribution which is corridor-driven, connecting research, industry, and agriculture into a statewide innovation network.

07 Strategic Outlook and Future Pathways

The BioEconomy as a Resilient Growth Model

Biotechnology-led diversification anchors Karnataka's sustainable industrial transformation.

Karnataka's 2025 BioEconomy demonstrates how science-led industry can serve as a resilient growth model. Its performance combines scale, diversity and inclusiveness — expanding in value while maintaining stability across regions and sectors.

The State's focus on biomanufacturing scale-up, sustainability and distributed innovation align with global shifts toward a green and knowledge-intensive economy. Karnataka's ecosystem — spanning academia, startups, and global enterprises — provides India with a blueprint for developing regionally rooted, globally competitive BioEconomies.

Going forward, the opportunity lies in deepening linkages between biotechnology, digital technologies, and green energy, ensuring that Karnataka's BioEconomy remains a catalyst for sustainable industrial transformation.

Indicator	2023	2024	2025	Growth (2023–25)
BioEconomy Value ($billion)	31.0	32.4	39.2	+26.5%
Share of India's BioEconomy	20.5%	19.5%	20.6%	Stable
BioEconomy Share of GSDP	9.96%	9.49%	10.51%	+0.55 p.p.
Sectoral Share: BioPharma	—	47.0%	41.9%	—
Sectoral Share: BioIndustrial	—	20.5%	29.2%	—
Cumulative Startups	1,055	1,233	1,451	+37.5%
Bengaluru Urban Share	51%	52%	54%	+3 p.p.

Source: ABLE Research | Totals may not match because of rounding. The figures are final for the year ended, but they may be revisited during the preparation of the all-India dataset if newer information emerges.

08 Investments and Funding Landscape

Fueling Growth Through Capital

Karnataka remains India's BioEconomy investment leader with $1.14 billion funds mobilized between 2024 and 2025.

Karnataka's BioEconomy has witnessed robust investment traction between January 2024 and October 2025, attracting a total of $1.14 billion across biotechnology, life sciences, AgriBio, health innovation and Biomanufacturing. This steady capital inflow underscores Karnataka's position as India's leading destination for life sciences investment, driven by strong policy continuity, deep research capabilities and a maturing innovation ecosystem.

In 2024 alone, investments reached $830 million across 22 deals, led by BioPharmaceuticals, MedTech and Biomanufacturing. During January–October 2025, an additional $310 million was raised through 18 transactions, focusing on cell therapy, precision fermentation, digital health and AgriBio ventures. The shift from venture-stage to growth-stage funding reflects the sector's evolution from R&D-heavy startups to commercial manufacturing and export-ready enterprises, signaling growing investor confidence in Karnataka's bio-led industrial base.

09 Policy Framework and Institutional Action

Building Karnataka's 'Futurise'

Through sustained policy continuity, institutional collaboration, and innovation-led governance, Karnataka continues to shape India's transition towards a knowledge-based, sustainable BioEconomy.

Karnataka's BioEconomy growth is anchored in a well-defined policy framework and an active execution-oriented innovation system. The Department of Electronics, IT, Biotechnology & Science & Technology (DEITBT) has implemented a continuum of initiatives that combine strategic policymaking with on-ground execution. These collective measures have positioned the State as a national leader and an emerging global destination for bio-based innovation, biomanufacturing, and sustainable technology development.

The State's policy direction emphasizes convergence and circularity—bringing together biotechnology, life sciences, engineering, and digital technologies to deliver measurable BioEconomy impact. Through this integrated approach, Karnataka has progressed from early-stage R&D promotion to ecosystem-wide innovation management, with strong linkages between government, academia, and industry.

Key Policy and Institutional Highlights

- **Strategic Governance:** The Karnataka Innovation Authority Act, 2020 introduced a regulatory 'sandbox' mechanism that enables biotech and life-science enterprises to undertake pilot production and validation in real-world conditions, accelerating the journey from concept to market.
- **Innovation Infrastructure Expansion:** New incubation centers and innovation clusters have been established in multiple districts under the Beyond Bengaluru initiative, supported by upgraded biotech instrumentation facilities and mentoring networks.
- **Biomanufacturing and Scale-up:** Construction of the State's first dedicated biomanufacturing hub has advanced, enabling precommercial scale production of biologics, biomaterials, and other bio-based products.
- **Funding and Startup Support:** Targeted financing through Elevate-Idea2PoC, and the Fund of Funds mechanism has significantly expanded access to early-stage capital for bio-entrepreneurs, encouraging deep-tech and life-science ventures across multiple sectors.
- **Human Capital Development:** Expansion of biotech finishing schools and specialized training programs is strengthening the skilled workforce for biomanufacturing, regulatory affairs, and research commercialization.
- **Global Partnerships:** Strategic collaborations and memoranda of understanding with international bio-innovation hubs are enhancing global exposure, joint research opportunities, and technology exchange for Karnataka-based enterprises.
- **Digital Governance:** A unified monitoring dashboard through the Startup Karnataka and K-Tech platforms ensures real-time tracking of innovation grants, incubator progress, and ecosystem performance—reinforcing transparency and accountability.
- **Implementation Outcomes:** Policy intent has been effectively translated into outcomes through institutional delivery and consistent monitoring. The State has witnessed a marked increase in the number of startups supported, the volume of innovation funding disbursed, and the geographical diversification of incubation capacity beyond Bengaluru. Tangible progress has been achieved in sectors such as AgriBio, health and diagnostics, Bioinformatics, and circular BioIndustrials. Collectively, these developments reflect a maturing ecosystem capable of converting innovation into scalable economic value.
- **Way Forward:** Karnataka's policy environment continues to evolve toward deep manufacturing, export competitiveness, and global integration. The next phase of implementation will focus on expanding biomanufacturing infrastructure, strengthening regional innovation clusters, fostering advanced skills in BioIndustrial operations, and embedding sustainability principles across all segments of the BioEconomy. Through coherent policies, effective governance, and sustained innovation support, Karnataka is not only driving India's BioEconomy but also shaping a model of bio-based industrial transformation that balances economic growth with environmental responsibility.

Policy and Action Milestones

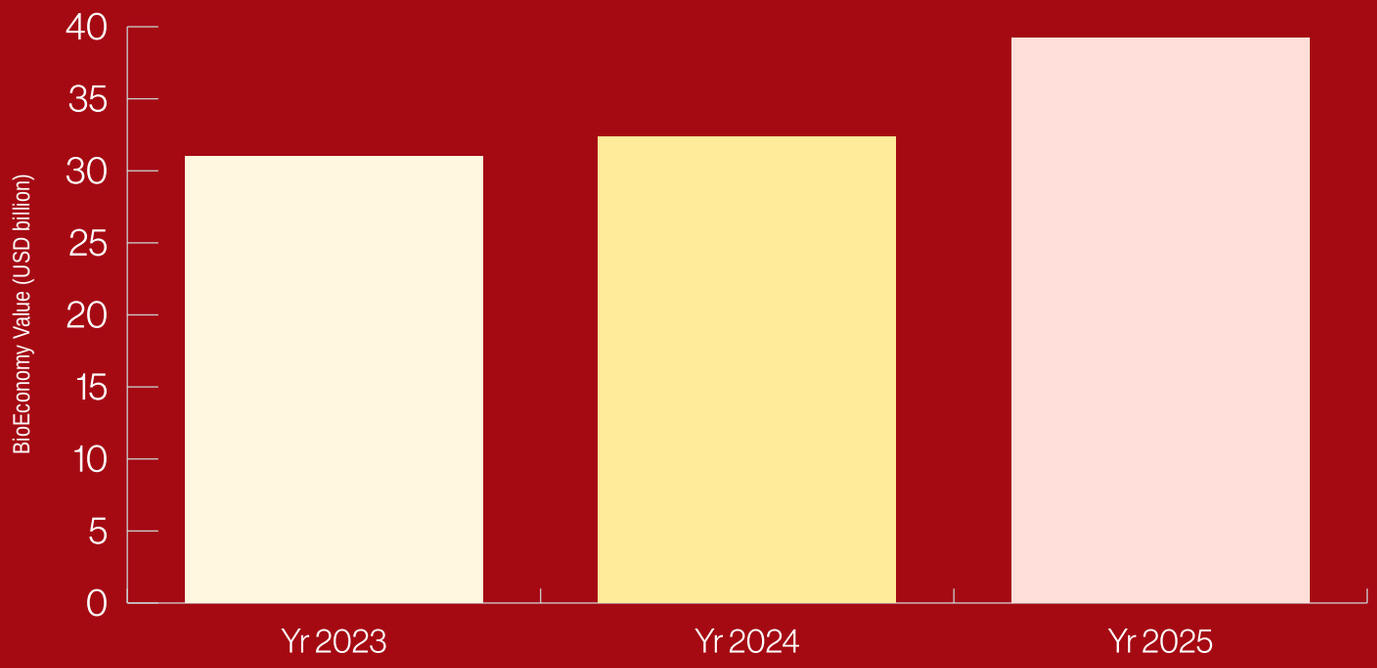
- Operationalization of the Karnataka Innovation Authority Act, 2020 enables regulatory flexibility for biotech enterprises.
- Biomanufacturing hub under development to support precommercial scale production.
- Over 100+ biotech and life-science startups supported through Elevate and Fund of Funds mechanisms.
- Regional innovation clusters launched under Beyond Bengaluru with incubation centers in Tier-2 and Tier-3 districts.
- Enhanced training capacity through biotech finishing schools and targeted workforce programs
- Active global partnerships for research, investment, and market access.
- Integrated monitoring dashboard ensuring transparency and performance tracking.

Focus Area	Key Actions and Achievements
Regulatory Enablers	Implementation of the Karnataka Innovation Authority Act, 2020 and regulatory sandbox mechanisms for biotech enterprises.
Infrastructure Expansion	Establishment of new incubation centers and district-level innovation clusters under Beyond Bengaluru.
Biomanufacturing Hub	Development of a state-of-the-art biomanufacturing facility to enable precommercial scale production of bio-based products.
Funding & Investment	Enhanced access to capital through Elevate, Idea2PoC, and Fund of Funds programs for bio-entrepreneurs.
Talent Development	Expansion of biotech finishing schools and specialized training for BioIndustrial operations and regulatory compliance.
Global Collaboration	Strategic agreements with international bio-innovation hubs enabling R&D partnerships and technology exchange.
Digital Governance	Launch of an integrated Startup Karnataka and K-Tech monitoring dashboard for performance tracking and accountability.
Outcome Orientation	Increased startup formation, funding disbursement, and measurable progress in AgriBio, health-tech, and Bioinformatics sectors.

Source: ABLE Research | Totals may not match because of rounding. The figures are final for the year ended, but they may be revisited during the preparation of the all-India dataset if newer information emerges.

BIOECONOMY OVERVIEW

Karnataka BioEconomy: Scale, Contribution and Economic Significance



Source: ABLE Research | Totals may not match because of rounding. The figures are final for the year ended, but they may be revisited during the preparation of the all-India dataset if newer information emerges.

Highlights (2023–2025)

- Karnataka's BioEconomy is estimated to expand from $31.01 billion in 2023 to $39.21 billion in 2025, recording a 26.5% cumulative growth in two years.
- The sector's share in the State GSDP is estimated to rise to 10.5% in 2025, reaffirming biotechnology as a major economic pillar alongside IT and manufacturing.
- Karnataka is expected to maintain around one-fifth share of India's total BioEconomy, contributing 20.6% of national BioEconomy output in 2025.
- India's BioEconomy is projected to reach $190 billion in 2025, with Karnataka contributing over one-fifth of the national incremental growth between 2023 and 2025.

Karnataka's BioEconomy in the National Context

Karnataka remains one of the most significant contributors to India's BioEconomy, accounting for roughly one-fifth of the nation's bio-based economic output. Valued at $31.01 billion in 2023, the State's BioEconomy has expanded steadily, reaffirming Karnataka's role as the biotechnology capital of India.

Between 2023 and 2025, Karnataka's BioEconomy grew from $31.01 billion to $39.21 billion, reflecting 26% cumulative growth. This expansion mirrors India's national BioEconomy, which is projected to increase from $151.1 billion to $190 billion in the same period. However, Karnataka's performance stands out for its consistently high share and rapid recovery from global and domestic slowdowns.

Growth Pattern: Resilience and Resurgence

The growth trajectory of Karnataka's BioEconomy over the 2023–2025 period presents a clear picture of resilience followed by resurgence.

- In 2023, the State's BioEconomy stood at $31.01 billion, representing 20.52% of India's total BioEconomy, consolidating its leadership in biotechnology-driven industries.
- In 2024, growth moderated to 4.35%, reaching $32.36 billion, as the sector recalibrated amid global funding adjustments and shifting R&D priorities.
- By 2025, Karnataka rebounded sharply with 21.17% growth, taking the BioEconomy to $39.21 billion, driven by renewed momentum in biomanufacturing, BioPharma, and digital Bioinformatics.

This recovery aligns closely with national trends, as India's BioEconomy is projected to grow from $165.7 billion in 2024 to $190 billion in 2025, illustrating synchronized acceleration between the State and the Centre.

Karnataka's Share in India's BioEconomy

Year	Karnataka BioEconomy ($billion)	India BioEconomy ($billion)	Karnataka's Share (%)
2023	31.01	151.1	20.52
2024	32.36	165.7	19.53
2025	39.21	190.0	20.64

Source: ABLE Research | Totals may not match because of rounding. The figures are final for the year ended, but they may be revisited during the preparation of the all-India dataset if newer information emerges.

Karnataka's share temporarily moderated to 19.53% in 2024, reflecting broad-based growth across other states. However, by 2025, the State regained its footing, reclaiming over one-fifth of India's BioEconomy.

This pattern underscores two defining characteristics of Karnataka's biotechnology ecosystem:

- Structural Stability – sustaining growth even during periods of subdued global R&D investment through diversified subsectors such as BioPharma, BioIndustrial, BioServices, and contract research.
- Adaptive Momentum – rapidly translating new opportunities into industrial scale, ensuring that temporary fluctuations are followed by renewed expansion.

Drivers of Karnataka's Contribution

Karnataka's enduring leadership in India's BioEconomy is underpinned by long-term structural strengths:

1. **Concentration of Knowledge and Innovation Assets**
   The State houses India's most integrated biotechnology ecosystem, comprising premier institutions, incubators, and biomanufacturing facilities. The Bengaluru Life Sciences Cluster, along with C-CAMP, BBC, NCBS, IBAB, IISc and BIRAC-supported hubs, forms the foundation for a continuous pipeline of bio-based innovation.

2. **Deep Industrial Linkages**
   Karnataka hosts nearly 60% of India's biotech enterprises, serving as a hub for both domestic firms and global R&D centres. This industrial density enables faster commercialization and measurable economic impact.

3. **Steady Policy Commitment**
   Through the Karnataka Innovation and Technology Society (KITS) and initiatives like Beyond Bengaluru, the State has extended biotechnology development beyond the capital, nurturing emerging BioIndustrial clusters in Mysuru, Dharwad, and Mangaluru.

4. **Skilled Workforce and Academic Ecosystem**
   A significant share of India's bio-skilled workforce originates from Karnataka's universities and research institutions, sustaining innovation and industrial competitiveness at both state and national levels.

Comparative Economic Context

While India's BioEconomy grew 4.35% in 2024 and 21.17% in 2025, Karnataka's growth pattern followed a parallel but deeper trajectory.

In 2025, for every $5 generated nationally, roughly $1 originated in Karnataka, demonstrating the State's structural strength and maturity.

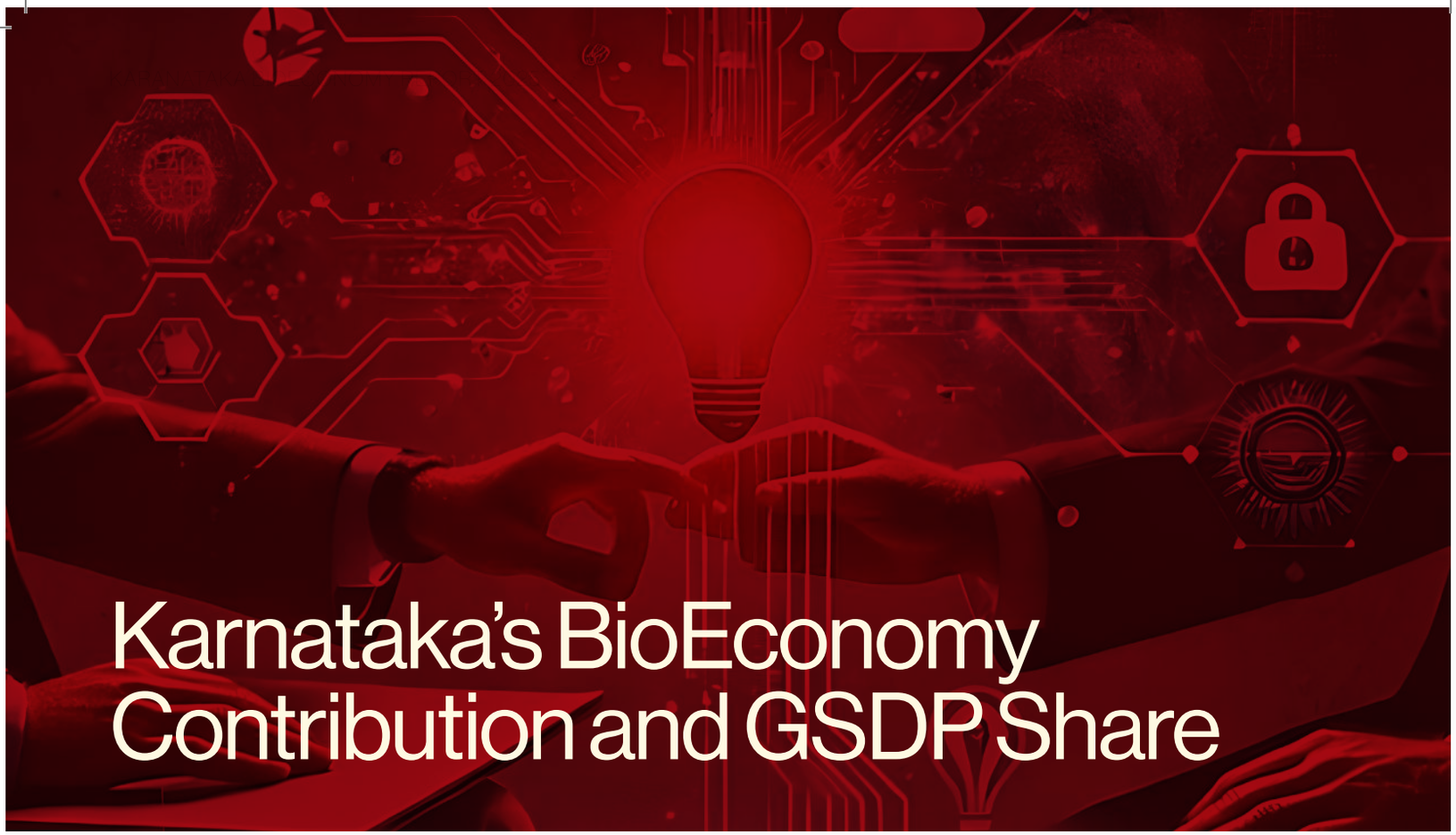
Between 2023 and 2025, Karnataka's BioEconomy expanded by $8.2 billion, while India's increased by $38.9 billion. Karnataka thus contributed about 21% of India's incremental BioEconomy growth, maintaining parity with its overall national share.

Economic Significance and Impact

Karnataka's BioEconomy contributes substantially to the State GSDP, reinforcing its role as a high-value, innovation-led sector complementing IT and manufacturing.

Its expansion generates:

- Employment across R&D, biomanufacturing, and Bioinformatics services;
- Export revenue, driven by biologics, BioServices, and digital biotech solutions; and
- Regional development, as biotechnology clusters expand to new industrial estates and academic ecosystems beyond Bengaluru.



Karnataka's BioEconomy Contribution and GSDP Share

Karnataka continues to demonstrate the strongest BioEconomy intensity in India, with biotechnology emerging as a core component of the State's industrial and innovation-led growth model.

In 2025, Karnataka's BioEconomy is estimated to contribute 10.51% of the Gross State Domestic Product (GSDP), reaffirming its status as a high-value, innovation-driven pillar of the State economy.

Expanding Economic Weight

Over the past three years, Karnataka's BioEconomy has grown in both scale and relative contribution.

- In 2023, it was valued at $31.01 billion, representing 9.96% of the State's GSDP.
- In 2024, the value rose to $32.36 billion, though its share of GSDP slightly moderated to 9.49%, reflecting faster expansion in services and technology exports.
- By 2025, the BioEconomy rebounded strongly to $39.21 billion, lifting its GSDP share to 10.51% and once again crossing the symbolic 10% threshold.

This sustained performance highlights the structural resilience and diversification of Karnataka's economy, where biotechnology has moved beyond a niche scientific pursuit to become a mainstream economic engine.

Karnataka in the National BioEconomy Context

At the national level, India's BioEconomy accounts for 4.57% of GDP in 2025, up from 4.24% in 2024 and 4.47% in 2023. Karnataka's contribution—10.51% of its GSDP—is therefore more than double the national average, underscoring the State's advanced level of biotechnology integration and industrial maturity.

This comparative advantage stems from Karnataka's deeper penetration of bio-based manufacturing, R&D, and service capabilities across multiple domains. While several other states are expanding their biotechnology ecosystems, none yet match Karnataka's density of research institutions, innovation networks, and export-oriented enterprises.

The State's dominance also reflects its ability to continuously attract high-value investments and talent, strengthening its role as the national benchmark for BioEconomy development.

Linkages and Economic Multipliers

The BioEconomy exerts wide-ranging multiplier effects across Karnataka's economy. Its interconnections with healthcare, agriculture, information technology, environmental engineering, and renewable energy amplify both output and employment.

The BioPharmaceutical segment, which anchors the largest share of the State's BioEconomy, contributes through direct manufacturing output as well as indirect linkages in logistics, analytics, and regulatory services. Meanwhile, BioIndustrial and Bioinformatics activities stimulate growth in materials science, automation, and computing—driving technology spillovers across sectors.

The expansion of biotechnology parks, incubators, and R&D facilities has also enhanced capital formation, while contract research and development organizations (CRDOs) continue to strengthen Karnataka's export profile in life sciences services. Together, these interlinked activities reinforce the BioEconomy's role as a multi-dimensional growth driver, promoting both value creation and value addition.

Karnataka and India BioEconomy Growth and Economic Contribution (2023–2025)

Year	Karnataka BioEconomy ($billion)	Growth%	Karnataka GSDP ($billion)	Share of GSDP%	India BioEconomy ($billion)	India GDP ($billion)	Share of GDP%	Karnataka's Share of India BioEconomy%
2023	31.01	—	311.3	9.96	151.1	3,380	4.47	20.52
2024	32.36	4.35	341.0	9.49	165.7	3,912	4.24	19.53
2025	39.21	21.17	373.0	10.51	190.0	4,159	4.57	20.64

Note / Disclaimer: The above figures are compiled and interpreted from multiple sources and datasets. Values have been converted from INR crore to $billion using prevailing average exchange rates for each respective year. As such, minor variations may occur due to rounding, exchange rate fluctuations, and data harmonization across different reporting sources.

Source: ABLE Research | Totals may not match because of rounding. The figures are final for the year ended, but they may be revisited during the preparation of the all-India dataset if newer information emerges.

Outlook: From Growth to Integration

Looking ahead, the BioEconomy's contribution to Karnataka's GSDP is expected to sustain above the 10% mark, driven by expanding biomanufacturing capacities, greater private-sector participation, and the mainstreaming of biotechnology in agriculture, healthcare, and industrial applications.

If the current pace of growth continues, Karnataka's BioEconomy could cross $45 billion by 2026, potentially contributing 11–12% of GSDP within the next two years. Continued policy attention to skill development, infrastructure, and R&D investment will be key to maintaining this upward trajectory.

Nationally, as India moves toward its long-term BioEconomy target of $300 billion by 2030, Karnataka's high GSDP share ensures that the State will remain a principal contributor to national BioEconomy value creation, accounting for an estimated one-fifth of India's total output throughout the decade.

The next phase of growth will be shaped by greater integration of biotechnology with data sciences, AI, and clean technology initiatives.

As India's BioEconomy moves toward its national goal of $300 billion by 2030, Karnataka's sustained leadership will be central to achieving this milestone. The State's innovation ecosystem, institutional depth, and policy continuity ensure that Karnataka remains both the core and catalyst of India's BioEconomy transformation.

SECTORAL DYNAMICS

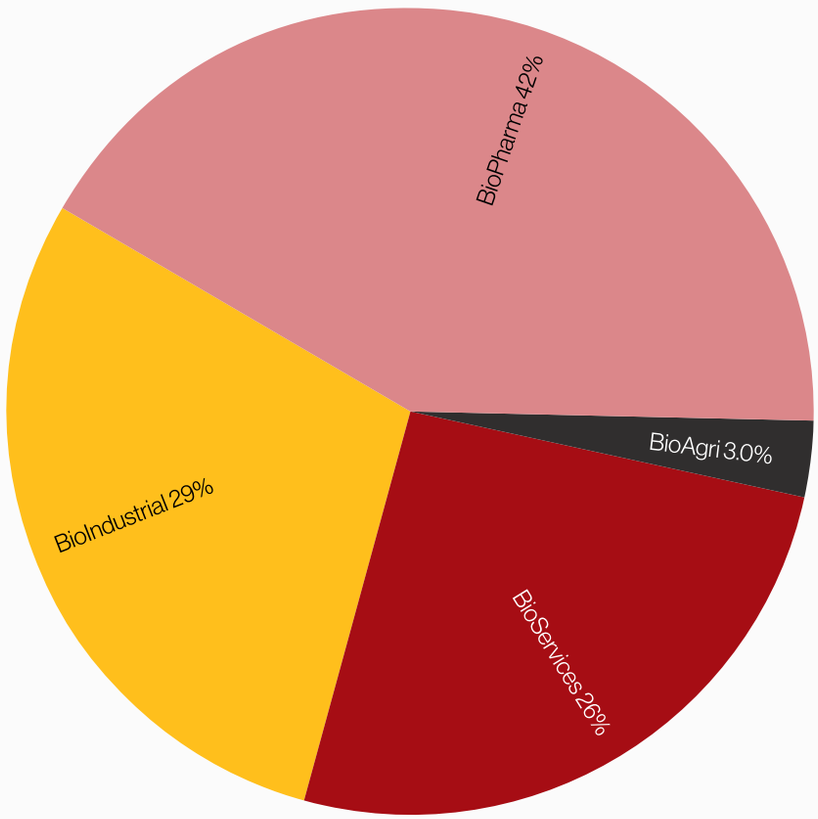
Karnataka BioEconomy: Sector Distribution, Scale and Growth

Karnataka's BioEconomy demonstrates a balanced and rapidly evolving sectoral structure built on science-led innovation, industrial maturity, and sustainability.

In 2025, the State's BioEconomy is estimated at $39.21 billion, up from $32.36 billion in 2024, registering a 21.17% annual growth. This growth, led by strong performance across industrial and health biotechnology, reaffirms Karnataka's leadership as India's biotechnology hub.

The State's BioEconomy is composed of four primary sectors — BioPharma, BioIndustrial, BioServices, and BioAgri — each contributing uniquely to economic output, employment, and exports.

Sector Percent Share 2025



Source: ABLE Research | Totals may not match because of rounding. The figures are final for the year ended, but they may be revisited during the preparation of the all-India dataset if newer information emerges.

Sectoral Distribution and Growth Patterns

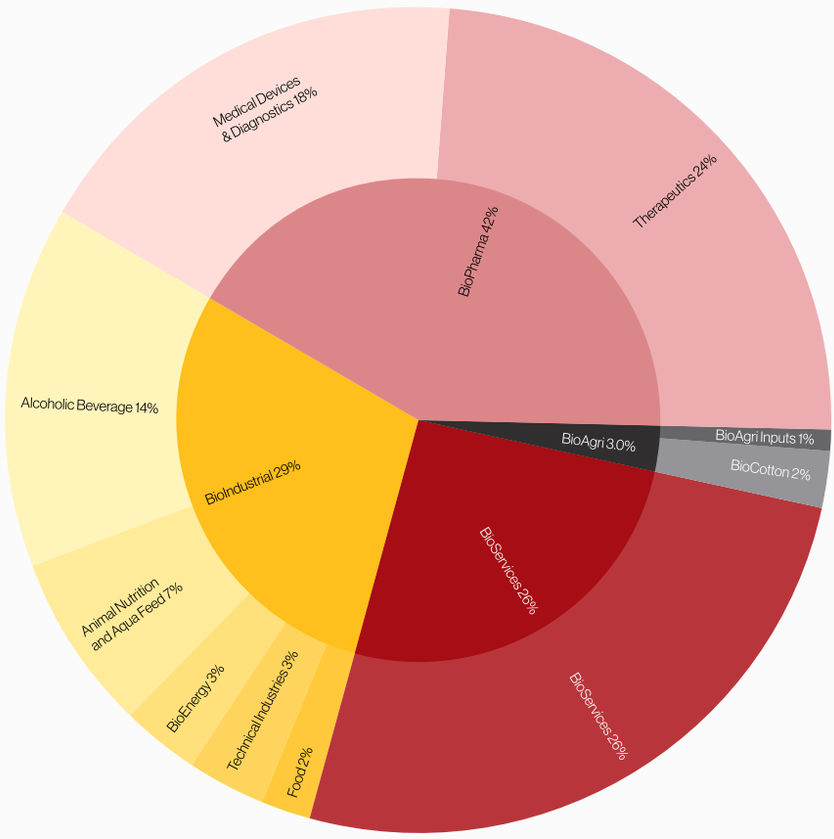
The data reflects a structural broadening of Karnataka's BioEconomy.

While BioPharma remains the largest contributor (41.93%), BioIndustrial has emerged as the fastest-growing sector, nearly doubling its output between 2024 and 2025. BioServices continues its steady upward trajectory, supported by global research contracts and digital Bioinformatics, while BioAgri sustains incremental but vital growth aligned with sustainable agriculture goals.

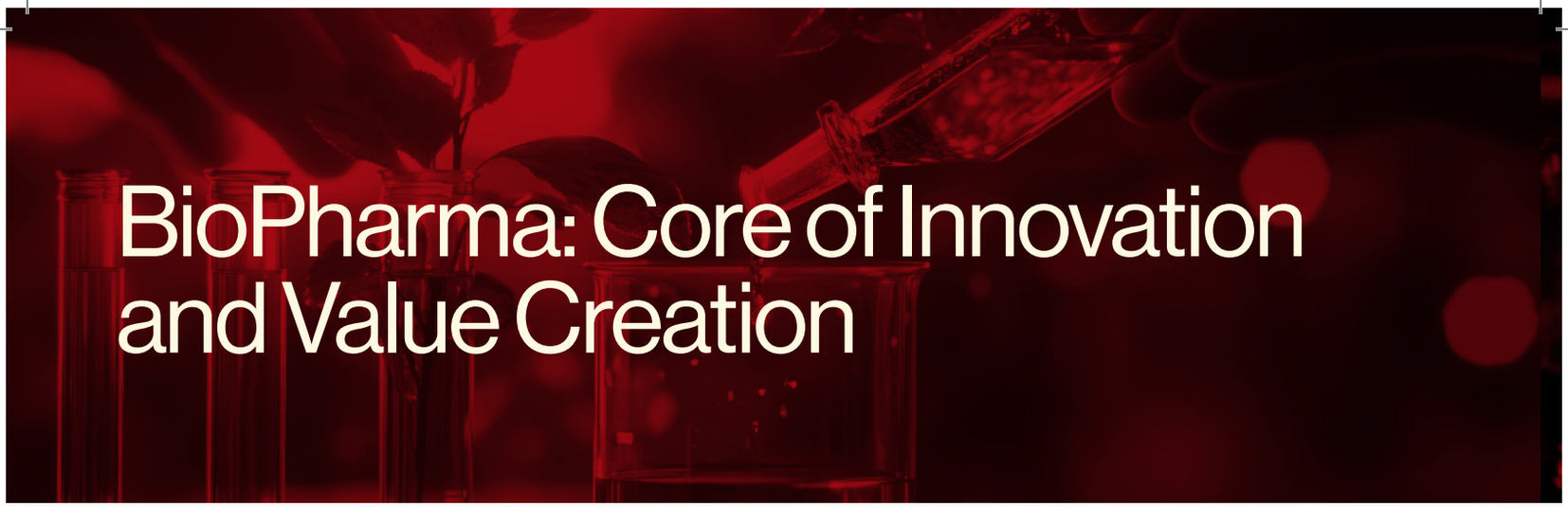
Key Trends (2024–2025)

- BioIndustrial recorded an exceptional 72.59% growth, driven by fermentation-based manufacturing, bioenergy, and industrial biotechnology expansion.
- BioPharma grew 8.02%, maintaining Karnataka's dominance in biologics, mediical devices, and diagnostics.
- BioServices expanded 8.12%, reflecting the continued strength of the State's IT-enabled life sciences ecosystem, Lifesciences Global Capability Centers (GCCs), clinical research services, contract manufacturing and development services.
- BioAgri, though smaller in value, grew 4.39%, supporting bio-based inputs and sustainable farming practices.
- This composition signals Karnataka's transformation from a research-led biotechnology base into a multi-dimensional BioIndustrial economy that integrates laboratory innovation with industrial production and sustainability.

Segment Percent Share (2025)



Source: ABLE Research | Totals may not match because of rounding. The figures are final for the year ended, but they may be revisited during the preparation of the all-India dataset if newer information emerges.



BioPharma: Core of Innovation and Value Creation

The BioPharma sector continues to anchor Karnataka's BioEconomy.

Valued at $16.44 billion in 2025, it accounts for 41.93% of the total and grew by 8.02% year-on-year. Despite a slight proportional dip due to BioIndustrial's surge, BioPharma remains the State's largest and most mature biotechnology domain.

Subsector Composition (2025)

Subsegment	Value ($billion)	Share (%)
Therapeutics (biologics, biosimilars, vaccines)	9.41	57.24%
Medical Devices & Diagnostics	7.03	42.76%

Source: ABLE Research | Totals may not match because of rounding. The figures are final for the year ended, but they may be revisited during the preparation of the all-India dataset if newer information emerges.

Performance Overview

Karnataka continues to lead India's BioPharmaceutical production and innovation, with Bengaluru serving as the country's epicentre for vaccines, biosimilars, and molecular diagnostics. The expansion of medical device manufacturing and precision diagnostics has reinforced this leadership.

The therapeutics subsegment remains Karnataka's strongest export category, supported by global partnerships and large-scale manufacturing. Meanwhile, medical devices and diagnostics are growing at double-digit rates, supported by AI integration and India's MedTech initiatives.

Growth Enablers

- **Institutional depth:** The Bengaluru Life Sciences Clusters provide a robust ecosystem for translational research.
- **Global connectivity:** Presence of international R&D centres and joint ventures has bolstered innovation pipelines.
- **Government support:** The Karnataka Biotechnology Policy continues to enable scale-up through incentives and infrastructure.

Outlook

The sector's trajectory remains strong, with continued export potential and innovation capacity. By 2026, BioPharma is projected to exceed $18 billion, maintaining Karnataka's reputation as India's BioPharmaceutical powerhouse.

BioIndustrial: The Emerging Growth Engine

The BioIndustrial sector represents Karnataka's most dramatic shift in 2025.

The sector touched $11.46 billion in 2025, and taking its share of the State BioEconomy to 29.23%.

Subsector Composition (2025)

Subsegment	Value ($billion)	Share (%)
Alcoholic Beverage (fermentation-based)	5.30	46.25%
Animal Nutrition & Aqua Feed	2.88	25.13%
BioEnergy (bioethanol, biogas, biomaterials)	1.24	10.82%
Technical Industries (enzymes, biochemicals, and polymers)	1.21	7.24%
Food and Bio-based Processing	0.83	10.56%

Source: ABLE Research | Totals may not match because of rounding. The figures are final for the year ended, but they may be revisited during the preparation of the all-India dataset if newer information emerges.

Performance Overview

BioIndustrial biotechnology in Karnataka is fast becoming a pillar of the green economy. Growth was led by enzyme-based industries, animal feed biotechnology, and the rapid expansion of bioenergy ventures aligned with India's National Biofuel Policy.

The sector's scale-up was supported by rising domestic demand for sustainable inputs and increased investment in fermentation capacity. The synergy between biotechnology and industrial manufacturing has helped Karnataka become a frontrunner in bio-based production systems.

Growth Enablers

- **Policy alignment:** BioE3 (Biotechnology for Economy, Environment, and Employment) and Karnataka Renewable Energy initiatives.
- **Infrastructure expansion:** New industrial clusters enabling biomanufacturing and processing of biofuels and materials.
- **Private investment:** Entry of new players in bioethanol, enzymes, and circular material processing.

Outlook

BioIndustrial biotechnology will remain the State's strong domain in 2025–26. With synergy across industrial policy, energy transition, and biotechnology innovation, this segment is expected to cross $13 billion by 2026, reinforcing Karnataka's leadership in bio-based manufacturing and green industrial transformation.

BioServices: Stable Growth and Global Linkages

BioServices will remain the State's strong domain in 2025–26. With synergy across industrial policy, energy transition, and biotechnology innovation, this segment is expected to cross $13 billion by 2026, reinforcing Karnataka's leadership in bio-based manufacturing and green industrial transformation.

Sector Profile

The sector reflects Karnataka's convergence of biotechnology and information technology, leveraging the State's globally recognized IT ecosystem. Bengaluru continues to host India's largest concentration of Contract Research Organizations (CROs), Contract Development & Manufacturing Organizations (CDMOs), GCCs, BioSuppliers, and Bioinformatics firms.

Performance Overview

Growth was steady, supported by the expansion of genomics services, R&D outsourcing, and computational biology applications. The adoption of AI, data analytics, and machine learning in research and clinical diagnostics further enhanced productivity and efficiency.

Growth Enablers

- **Digital Infrastructure:** Integration of cloud computing, genomic databases, and AI-enabled analytics.
- **Export Competitiveness:** BioServices continue to be one of Karnataka's most export-intensive biotechnology sub-sectors.
- **Innovation Ecosystem:** Collaboration between IT majors and Bioinformatics startups under K-Tech and Start-up Karnataka programs.

Outlook

BioServices will continue to be a key enabler of global biotechnology innovation. The sector's integration with digital technologies ensures sustained growth, with strong potential in precision diagnostics and virtual clinical trials.

BioAgri: Sustainability and Resilience in Focus

The BioAgri segment, while smaller in value, plays a crucial role in driving sustainability within Karnataka's agricultural landscape.

It is estimated at $1.19 billion in 2025 and accounts for 3.03% of the State's BioEconomy.

Subsector Composition (2025)

Subsegment	Value ($billion)	Share (%)
Bt Cotton	0.91	76.47%
BioAg Inputs (fertilizers, stimulants, biopesticides)	0.28	23.53%

Source: ABLE Research | Totals may not match because of rounding. The figures are final for the year ended, but they may be revisited during the preparation of the all-India dataset if newer information emerges.

Performance Overview

Karnataka continues to lead in the adoption of bio-based agricultural inputs, such as biofertilizers and microbial formulations, aimed at improving soil health and reducing chemical dependency. The cultivation of Bt cotton remains a significant component, supported by widespread farmer participation and extension programs.

Growth Enablers

- **Sustainability initiatives:** Integration of biotechnology in agriculture under BioE3 and AgriTech missions.
- **MSME participation:** Growth of local manufacturing in microbial bioinputs and crop protection solutions.
- **Start-up innovation:** Emerging AgriBiotech startups under Beyond Bengaluru clusters.

Outlook

Although small in scale, BioAgri's contribution to sustainable farming and circular economy goals is strategically important. With growing awareness of climate-smart agriculture, its role within the broader BioEconomy is expected to expand gradually through 2026.

Bio-IT: The Digital Backbone of Biotechnology

Bio-IT has emerged as one of Karnataka's most dynamic frontiers, blending biotechnology with advanced information technologies to transform healthcare, research, and industrial applications. In 2025, this segment strengthened the State BioEconomy by enabling breakthroughs in diagnostics, drug discovery, and digital health solutions.

The Government of Karnataka has played a pivotal role in nurturing this sector, most notably through the **Centre of Excellence in Bio-IT at IBAB,** supported with INR 945 Lakhs in funding. This initiative has accelerated computational biology research, fostered talent, and provided incubation support for startups working at the intersection of life sciences and data science.

A vibrant ecosystem of Bio-AI companies is driving innovation across diverse domains. **Niramai Health Analytix** is advancing non-invasive breast cancer screening using thermal analytics; **Janitri** develops maternal and neonatal health monitoring solutions; **Dozee** offers AI-enabled patient monitoring platforms; **Peptris** and **Immunito AI** are reimagining drug discovery with machine learning; while **ADIS** and **Aikenist Technologies** contribute to predictive analytics and digital health applications. Together, these enterprises showcase Karnataka's unique strength in combining IT excellence with biotech innovation.

Growth Enablers

- Strong policy backing through the Department of Electronics, IT & Bt and flagship startup programs.
- Infrastructure support via the Centre of Excellence in Bio-IT, enabling advanced computational research.
- A thriving startup ecosystem leveraging Karnataka's dual advantage in IT and biotechnology.

Outlook

Bio-IT is poised to expand rapidly in 2025–26, with applications extending from precision medicine and healthcare delivery to agribiotech analytics and industrial optimization. As AI, machine learning, and IoT converge with life sciences, Karnataka is set to reinforce its leadership in digital biotechnology, positioning Bio-IT as a cornerstone of its BioEconomy.

Sectoral Balance and Forward Outlook

The composition of Karnataka's BioEconomy reflects a mature and well-distributed structure where innovation, sustainability, and scale coexist.

- BioPharma anchors scientific innovation and export leadership.
- BioIndustrial drives industrial expansion and low-carbon growth.
- BioServices sustains digital and global integration.
- BioAgri ensures ecological and rural linkages.

Sector (2025)	Growth Trend	Economic Role
BioPharma	Stable	Innovation and exports
BioIndustrial	Steady	Green manufacturing
BioServices	High	R&D and IT convergence
BioAgri	Gradual	Sustainability in agriculture

Source: ABLE Research | Totals may not match because of rounding. The figures are final for the year ended, but they may be revisited during the preparation of the all-India dataset if newer information emerges.

Together, these sectors reinforce Karnataka's transition toward a BioIndustrial economy — one that merges biotechnology, information technology, and industrial innovation to deliver both economic and environmental dividends.

Karnataka's BioEconomy in 2025 reflects sectoral diversification, accelerated industrial growth, and consistent innovation output.

With BioPharma anchoring value, BioIndustrial accelerating transformation, BioServices bridging digital and biological sciences, and BioAgri strengthening sustainability, the State has built a comprehensive BioEconomy framework unmatched in India.

This sectoral alignment positions Karnataka as the core of India's $190 billion BioEconomy, accounting for over one-fifth of the national output and setting the direction for the country's transition to a sustainable, innovation-led bio-based economy.

REGIONAL SPREAD

Regional Powerhouses: Beyond Bengaluru

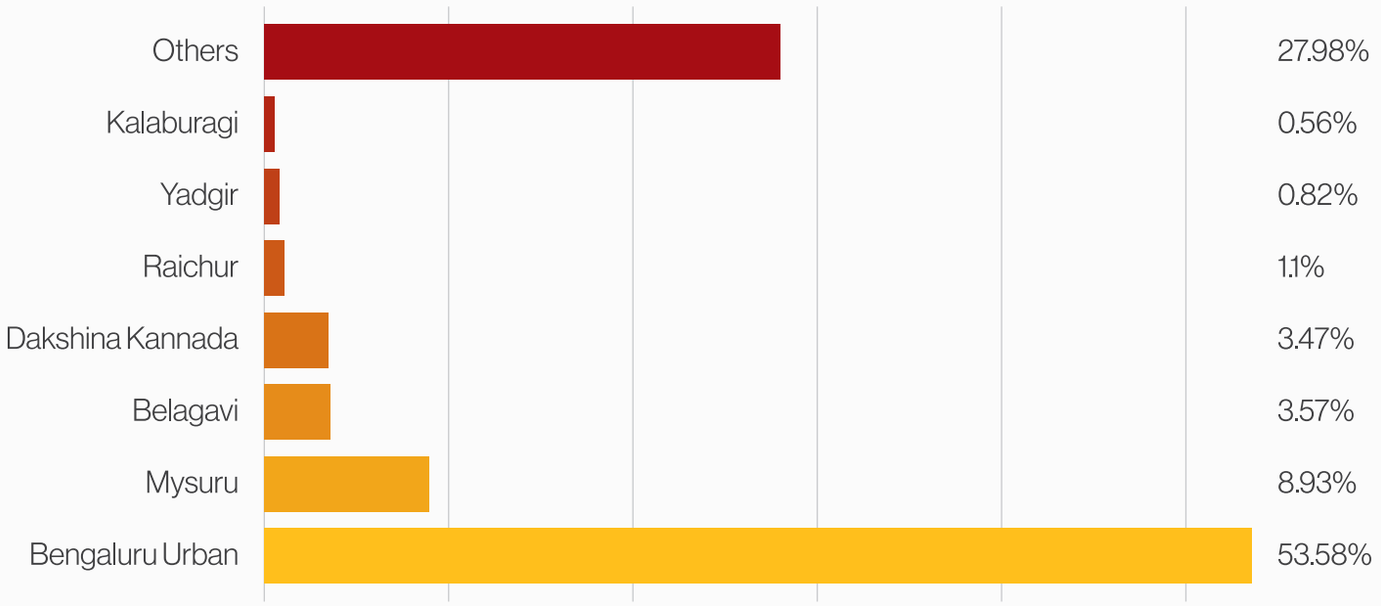
Karnataka's BioEconomy has evolved into a multi-regional ecosystem that extends well beyond the capital. While Bengaluru Urban continues to serve as the nucleus of biotechnology innovation, several districts across the State are emerging as regional BioEconomy powerhouses, each developing distinct strengths in BioPharmaceuticals, BioIndustrial production, agricultural biotechnology, and BioServices.

In 2025, the estimated size of Karnataka's BioEconomy stands at $39.21 billion, marking a robust 21.17% growth over 2024. Of this, Bengaluru Urban accounts for approximately 53.58% of total output. This reflects the continued global leadership of the capital in BioPharma and BioServices, even as other districts expand their BioIndustrial and BioAgri footprints.

Districts such as Mysuru, Belagavi, Dakshina Kannada, Raichur, and Ballari are now key nodes in the State's biotechnology landscape — each contributing through specialized industrial clusters, agricultural innovation, or contract research capabilities.

This regional diversification underscores an important transition: Karnataka's BioEconomy is no longer confined to a metropolitan concentration of innovation, but increasingly distributed across agro-industrial, biomanufacturing, and knowledge corridors.

Top Districts in 2025



Source: ABLE Research | Totals may not match because of rounding. The figures are final for the year ended, but they may be revisited during the preparation of the all-India dataset if newer information emerges.

Bengaluru Urban: The Biotechnology Capital

Bengaluru Urban remains the undisputed epicentre of Karnataka's BioEconomy, contributing an estimated $21.01 billion in 2025, representing around 53.58% of the State's total. This marks a substantial increase from $15.9 billion in 2023, underpinned by expansion in BioPharmaceuticals, medical devices, contract research, and Bioinformatics services.

The district's biotechnology ecosystem is characterized by its unmatched convergence of research, enterprise, and digital infrastructure. It hosts India's largest life sciences institutions — including the Bengaluru Life Sciences Cluster, Biocon Biologics, Syngene International, and a growing cohort of startups in immunotherapy, diagnostics, and AI-integrated biology.

Bengaluru Urban's BioPharma sector contributes over 70.62% to the State's total BioPharma BioEconomy, while also leading in BioServices with a 72.63% share. Its sustained dominance reflects ecosystem maturity, R&D capital intensity, and a highly skilled scientific workforce unmatched elsewhere in India.

Today, Bengaluru's role extends beyond its own economic scale — it functions as a catalytic engine for the State's broader BioEconomy network. Startups and manufacturing units in Mysuru, Mangaluru, and Belagavi draw heavily on Bengaluru's research collaborations, contract manufacturing, and specialized service ecosystems, reinforcing its role as the anchor of Karnataka's biotechnology architecture.

Mysuru: The Industrial and R&D Integrator

Mysuru has consolidated its position as Karnataka's second biotechnology hub, with an estimated $3.5 billion BioEconomy in 2025, up from $2.81 billion in 2023 — a cumulative rise of about 24.6%, in line with the State's overall growth. The district contributes around 8–9% of Karnataka's BioEconomy, balancing strengths across BioPharma, BioIndustrial manufacturing, and BioServices.

Mysuru's strength lies in its industrial base combined with strong research linkages. The city hosts several pharmaceutical, enzyme, and food biotechnology facilities, supported by university-led R&D. Biotechnology parks and incubation centres are fostering new BioIndustrial ventures, including those in fermentation, biopolymers, and food processing.

Notably, Mysuru contributes nearly 9.12% of the State's BioPharma output and about 13.53% of its BioIndustrial production, confirming its evolution into Karnataka's second-tier innovation and manufacturing centre. Its balanced ecosystem — combining academia, entrepreneurship, and industrial capability — serves as a model for regional BioEconomy growth.

Dakshina Kannada: Coastal Catalyst for BioIndustry and BioIT

The Dakshina Kannada district, led by Mangaluru, continues to advance as the coastal driver of biotechnology-led industrial development. Contributing $1.36 billion in 2025, the district's focus spans bioenergy, biofuels, marine biotechnology, and Bioinformatics services.

With its robust academic ecosystem and strategic port infrastructure, Mangaluru bridges biotechnology and applied engineering — making it a natural hub for BioIndustrial–BioIT convergence. Several enzyme, food biotech, and bioenergy companies operate in this region, leveraging logistics advantages for export-oriented production.

Dakshina Kannada also plays an expanding role in Bioinformatics and contract research, contributing roughly 4.45% of Karnataka'sBioServices BioEconomy. Its coastal and educational advantages continue to strengthen its position as southern Karnataka's BioIndustrial and digital biosciences hub.

Belagavi: BioIndustrial and Agricultural Convergence Zone

Belagavi, in northern Karnataka, has established itself as a BioIndustrial and BioAgri convergence hub, with an estimated $1.4 billion BioEconomy in 2025. The district contributes around 3.57% of the State's total, anchored in biofuels, fermentation-based manufacturing, and agricultural biotechnology.

Belagavi's biofuel and enzyme industries are among the first large-scale facilities set up outside Bengaluru, supported by a strong agro-industrial base and inter-state connectivity to Maharashtra and Goa. The region has also recorded growing adoption of Bt cotton and biofertilizers, linking primary agriculture with biotechnology-driven productivity.

With new investments planned in bioenergy, feed, and green manufacturing, Belagavi is fast emerging as Karnataka's northern BioIndustrial corridor, aligning agricultural innovation with sustainable industry.

Raichur and Yadgir: Agricultural Biotechnology Anchors

The Raichur–Yadgir–Kalaburagi belt remains the core of Karnataka's BioAgriculture segment, collectively contributing over 81.51% of the State's Bt cotton-based BioAgri economy.

Raichur alone accounts for 36.13%, while Yadgir and Kalaburagi together represent another 45.38% of this sub-sector's output.

These districts exemplify the rural innovation dimension of Karnataka's BioEconomy, where biotechnology directly impacts farm productivity, soil health, and livelihoods. Through the adoption of biofertilizers, microbial inoculants, and Bt cotton, the region has made biotechnology a mainstream component of agriculture.

Under the State's BioE3 (Economy, Environment, Employment) framework, this belt is expected to expand further through bio-feed, sustainable agri-inputs, and seed technology integration, linking rural production with BioIndustrial value chains.

Ballari, Bagalkote, and Kalaburagi: Emerging BioIndustrial Corridors

Ballari, Bagalkote, and Kalaburagi are emerging as the next generation of BioIndustrial districts, collectively contributing around $3 billion (7–8% of the State's BioEconomy) in 2025.

- Ballari has attracted investment in enzyme production and industrial fermentation, complementing its metal and manufacturing base with cleaner, bio-based processes.
- Bagalkote has become a hub for biofuel and ethanol plants, leveraging its strong sugarcane and molasses feedstock.
- Kalaburagi, beyond its BioAgri strengths, is showing early growth in animal nutrition and food biotechnology.

These emerging clusters illustrate the northward spread of Karnataka's BioEconomy — evolving from a Bengaluru-centric model into a corridor-based framework integrating industry, agriculture, and sustainability.

Urban: Rural Balance and Regional Synergies

Karnataka's BioEconomy now exhibits a more balanced urban–rural dynamic.

While Bengaluru Urban continues to dominate R&D and global exports, Tier-II and Tier-III districts are increasingly powering BioIndustrial production and BioAgri, generating wider employment and investment opportunities.

In 2025, urban districts (Bengaluru Urban, Bengaluru Rural, Mysuru, and Dakshina Kannada) account for over 70% of the State's BioEconomy, indicating gradual decentralization.

The remaining 30% now originates from rural and agro-industrial districts such as Belagavi, Ballari, Bagalkote, Raichur, and Yadgir — reflecting an inclusive pattern of biotechnology-led growth across Karnataka.

Regional Sectoral Leadership (2025)

Sector	Top Districts (2025)	Share of Sector Output (% of sector)	USD Value (billion)
BioPharma	Bengaluru Urban / Mysuru / Dakshina Kannada / Others	71 / 9 / 6 / 15	11.61 / 1.50 / 0.91 / 2.42
BioIndustrial	Bengaluru Urban / Mysuru / Belagavi / Others	18 / 14 / 12 / 56	2.05 / 1.55 / 1.40 / 6.46
BioServices	Bengaluru Urban / Dakshina Kannada / Mysuru / Others	73 / 4 / 4 / 19	7.35 / 0.45 / 0.45 / 1.87
BioAgri (Bt Cotton)	Raichur / Yadgir / Kalaburagi / Others	36 / 27 / 18 / 19	0.43 / 0.32 / 0.22 / 0.22

Note: 2025 data are estimates. Sector totals (USD) are derived from State-level calculations; shares represent percentage of sectoral output within Karnataka. Minor variations may arise due to rounding and currency conversion.

Source: ABLE Research | Totals may not match because of rounding. The figures are final for the year ended, but they may be revisited during the preparation of the all-India dataset if newer information emerges.

Pioneering Companies and Regional Champions

Karnataka's biotechnology leadership is anchored by enterprises that combine scientific excellence, global competitiveness, and social impact. Established players continue to define the State's strengths:

- **Immuneel Therapeutics:** Pioneering affordable CAR T cell therapy for cancer, advancing India's access to next generation immunotherapies.
- **Stempeutics Research:** Global leader in stem cell therapies addressing unmet needs in orthopedic and vascular diseases.
- **Eyestem Research:** Initiated human trials for therapies targeting age related macular degeneration (AMD).
- **Biocon Biologics** and **Syngene International:** Defining biomanufacturing excellence through global partnerships in diabetes care, oncology, and contract research.
- **Biofuel and biofertilizer ventures:** TruAlt Bioenergy, Godavari Biorefineries, Shree Renuka Sugars Ltd, MRPL, HPCL, and IOCL Bioenergy units driving industrial and rural transformation for sustainability.

At the **Bengaluru Tech Summit (BTS) 2025,** Karnataka reaffirmed its position as India's premier health innovation hub by showcasing over **15 breakthrough products** across AgriBiotech, Biotechnology, MedTech, and Healthcare. Highlights include:

- **Agropak (Circular Packaging):** Patent pending biodegradable biocomposite made from coconut shell and bamboo fiber, offering plastic like durability without PLA or industrial composting.
- **Artitech Innovations (FibreSENSE):** Portable photonics device for instant fibre composition detection, supporting authentication, recycling, and quality control in textiles.
- **BehaveNeu (Cognitive Enhancement System):** Neurofeedback based device for children, combining real time brain monitoring with gamified exercises to improve focus and self regulation.
- **BIOSOUK Life Sciences (Milk O Mak):** A paper based device for rapid detection of 12 adulterants in milk within minutes, using colorimetric microfluidic technology.
- **Blackfrog Technologies (EMON 25):** Equipment monitoring solution for temperature sensitive assets in healthcare, pharma, and logistics.
- **Cosmos Bio (Vegan Hyaluronic Acid):** A cruelty free, eco conscious skincare ingredient produced through synthetic biology, delivering deep hydration while meeting global cosmetic standards.
- **Doctorspectra (AI Egg Inspection):** Real time hardware software solution for batch egg quality analysis, sorting into five categories with customizable thresholds.

- **GeoPhage Biotech (SalmoRid):** Bacteriophage based solution targeting Salmonella in seafood and poultry, ensuring clean label pathogen control.
- **Kamireddy Agro Foods (Jeedi Beverages):** Functional cashew apple juice blends such as Cajuice, Cazberry, and Kokaju, delivering antioxidant, antibacterial, and anti obesity benefits.
- **LifeCircuit (Emergency Care Ecosystem):** A hyperconnected platform integrating AR/VR CPR training and geo located responder activation to bridge critical care gaps in cardiac arrest and emergencies.
- **Microleer Biopolymers (Sustainable Bio Leather):** Next generation leather alternative made from agricultural waste, offering durability and style without plastics or animal harm.
- **MozziQuit Solutions (Mosquito Trap Device):** A patented, chemical free device that traps and kills female mosquitoes daily at ultra low operating cost.
- **OUI Medical (P Scope):** A single use, minimally invasive endoscope offering high resolution visualization for abdominal diagnostics in ICU, cancer, and rural settings. Its portable design eliminates sterilization costs, making advanced care accessible in low resource environments.
- **Plant Essentials (OATEY Kesar Badam Millet Milk):** A non dairy beverage crafted from sprouted millets, saffron, and almond, enriched with curcumin and Himalayan pink salt.
- **Stoicheiodis Scientia (Therapeuty):** A portable rehab tool designed for hand rehabilitation and stress relief.
- **TrueAssist Technology (DriverPlus):** Joystick operated driving aids enabling independent mobility for persons with disabilities.

Distributed Growth, Unified Vision

Karnataka's BioEconomy in 2025 represents distributed growth under a unified vision.

Bengaluru remains the scientific and industrial heart, while Mysuru, Mangaluru, Belagavi, and the northern agro-industrial districts provide the pulse of diversification.

The emerging balance between urban innovation and regional production shows that biotechnology is no longer confined to the capital, but is evolving into a statewide engine of employment, sustainability, and inclusive development.

As Karnataka advances, the Beyond Bengaluru vision is no longer aspirational — it is a measurable economic reality, shaping a resilient and future-ready BioEconomy.

QUARTERLY AND HALF-YEARLY PERFORMANCE: SUSTAINED MOMENTUM AND SECTORAL BALANCE

Strong Sequential Expansion

Karnataka's estimated BioEconomy in 2025 reflects consistent quarterly expansion and stable half-yearly performance, underscoring both the sector's structural depth and its responsiveness to industrial and R&D cycles.

From an estimated $32.36 billion in 2024, the State's BioEconomy has touched $39.21 billion in 2025, marking an annual growth of 21.17%.

This growth trajectory has been evenly distributed across quarters, with every three-month period showing gains above 20% over the corresponding quarter of 2024.

Notably, Q1 2025 opened with a robust output of $9.43 billion, setting the tone for a year of steady acceleration. The quarter-wise distribution — Q1: 24.05%, Q2: 23.85%, Q3: 25.4%, and Q4: 26.7% of the annual total — highlights a mild upward trend in the second half, consistent with post-monsoon agricultural activity, manufacturing ramp-ups, and end-year export cycles in pharmaceuticals and BioServices.

Quarterly Trajectory: Broad-Based Expansion

Karnataka's quarterly BioEconomy pattern during 2025 demonstrates a steady and broad-based rise, without volatility.

01 Q1 2025 ($9.43 billion; +21.52%)

The first quarter marked a strong start to the fiscal year, supported by continuing demand in therapeutics, biosimilars, and diagnostics. BioPharma accounted for over 42% of quarterly value, while BioIndustrial output benefited from the completion of capacity expansions in fermentation and bioenergy projects initiated in the previous year.

02 Q2 2025 ($9.35 billion; +21.43%)

The second quarter maintained momentum, reflecting operational stability in biomanufacturing and the normalization of supply chains.

BioAgri maintained near-steady output ($0.29 billion), underscoring the resilience of agricultural biotechnology inputs such as biofertilizers and microbial formulations.

03 Q3 2025 ($9.96 billion; +20.87%)

The third quarter emerged as a turning point for industrial and export-driven growth.

BioIndustrial output reached $2.91 billion, benefiting from seasonal upticks in ethanol production and feed-based industries, while BioPharma climbed to $4.18 billion, driven by biosimilar exports and medical devices and diagnostics businesses.

The cumulative momentum in Q3 accounted for over one-fourth (25.4%) of the annual BioEconomy, positioning it as the most productive quarter of the year up to that point.

04 Q4 2025 ($10.47 billion; +20.9%)

The final quarter is expected to close the year on a high note, with a quarterly share of 26.7% of annual value.

Therapeutics, biomanufacturing, and service exports are anticipated to contribute to the surge.

BioPharma ($4.4 billion) continues to anchor the quarter, while BioIndustrial ($3.05 billion) reflected expanded capacity utilization in biofuels and enzyme production.

The BioServices segment ($2.71 billion) is also expected to register its strongest performance of the year, aligned with the global R&D outsourcing cycle.

Overall, the quarterly pattern reveals a stable growth rhythm — a hallmark of a mature, innovation-led economy. The near-even spread of growth across quarters (Q1–Q4 range: $9.43–10.47 billion) indicates that Karnataka's biotechnology output is no longer susceptible to short-term demand shocks or project-linked volatility.

Quarterly Contribution Structure (2025)

Quarter	BioAgri (billion)	BioIndustrial (billion)	BioPharma (billion)	BioServices (billion)	Total (Billin)	% of Annual
Q1	0.29	2.76	3.95	2.43	9.43	24.05%
Q2	0.29	2.74	3.91	2.41	9.35	23.85%
Q3	0.30	2.91	4.18	2.57	9.96	25.40%
Q4	0.31	3.05	4.40	2.71	10.47	26.70%
Total 2025	**1.19**	**11.46**	**16.44**	**10.12**	**39.21**	**100.00%**

Source: ABLE Research | Totals may not match because of rounding. The figures are final for the year ended, but they may be revisited during the preparation of the all-India dataset if newer information emerges.

This table highlights that all sectors — particularly BioIndustrial and BioPharma — experience measured quarterly growth without sharp spikes.

The final quarter's 26.7% share, only slightly above average, reflects sustained output rather than seasonal distortion — a sign of mature production cycles.

Half-Yearly Performance: Sustained Consistency

At the half-yearly scale, Karnataka's BioEconomy maintained symmetrical strength across both halves of 2025.

01 H1 2025 ($18.78 billion)

H1 contributed 47.9% of the annual total, marking a 21.47% increase over H1 2024.

This period consolidated gains from continuing production cycles in BioPharma and BioServices and BioIndustrial output from ethanol, alcoholic beverages and textile enzyme application units.

02 H2 2025 ($20.43 billion)

H2 accounted for 52.1% share, reflecting a 20.89% increase over H2 2024.

The higher contribution from the second half underscores the advantage of Karnataka's BioIndustrial, BioServices, and agricultural components.

The near-equal split signals structural stability. Unlike early-stage sectors where output is concentrated in the latter half of the fiscal year, Karnataka's BioEconomy now exhibits operational continuity throughout the year, reinforcing its role as a steady contributor to the State's GSDP.

Sectoral Momentum Within Quarters

Each of the four core segments — BioPharma, BioIndustrial, BioServices, and BioAgri — contributed meaningfully across quarters, with subtle shifts in momentum that reflect their production and market cycles.

BioPharma: The Core Growth Driver

- BioPharma remained the largest contributor every quarter, averaging $4.1 billion per quarter (≈41% of total output).
- Quarterly performance rose steadily from $3.95 billion in Q1 to $4.4 billion in Q4, mirroring export cycles and increased manufacturing at key hubs in Bengaluru and Mysuru.
- Therapeutics were particularly strong in the second half, propelling BioPharma's half-yearly totals from $7.86 billion (H1) to $8.58 billion (H2).
- This sequential rise illustrates the sector's ability to scale predictably with global demand, maintaining both growth and resilience.

BioServices: Consistent Export-led Performance

- BioServices maintained an impressive stability, contributing between 6.1–6.9% of quarterly output and registering a total annual value of $10.12 billion.
- Quarterly growth was gradual but steady — from $2.43 billion in Q1 to $2.71 billion in Q4, aligning with the typical global contract research and analytics calendar.
- Half-yearly comparison shows H1: $4.84 billion, rising to H2: $5.28 billion, confirming Karnataka's continued strength in R&D services, Bioinformatics, bio-it, and precision diagnostics.

BioAgri:
Stable and Incremental Growth

- The BioAgri segment remained stable and seasonally consistent, contributing about $0.3 billion per quarter and $1.19 billion annually.
- The balance between H1 ($0.58 billion) and H2 ($0.61 billion) indicates healthy post-monsoon agricultural biotechnology activity, including biofertilizer distribution and Bt cotton output from the Raichur–Yadgir–Kalaburagi belt.
- Though smaller in absolute value, BioAgri plays a critical role in reinforcing the sustainability dimension of Karnataka's BioEconomy.

BioIndustrial:
Rapidly Expanding Production Base

- BioIndustrial recorded the highest growth momentum among all segments, with quarterly values climbing from $2.76 billion in Q1 to $3.05 billion in Q4.
- The segment's year-long output reached $11.46 billion, representing nearly 29% of Karnataka's BioEconomy.
- Half-yearly figures reveal a distinct upward bias — H1: $5.50 billion vs. H2: $5.96 billion — reflecting both increased capacity utilization and new commissioning of biomanufacturing units in Belagavi, Ballari, and Mysuru.
- Ethanol blending, enzyme applications, and fermentation-based food biotechnology remained key contributors to this sustained expansion.

Interpretation: Signals of a Stable, Scalable Economy

The quarterly and half-yearly trends offer clear indicators of Karnataka's economic maturity and sectoral stability:

- **Predictable growth rhythm:** Quarter-on-quarter variations are minimal, suggesting that biotechnology has evolved into a steady-value industry rather than a cyclical one.
- **Balanced contribution across halves:** The near-equal H1–H2 split confirms the structural strength of production and export systems, not dependent on specific quarters.
- **Sectoral synchronization:** BioPharma, BioIndustrial, and BioServices now exhibit aligned growth patterns, pointing to integrated value chains between R&D, manufacturing, and global services.
- **Limited volatility from agriculture:** Despite its dependence on seasonal factors, BioAgri maintained output stability, reinforcing biotechnology's role in agricultural resilience.
- **Evidence of operational depth:** With over $18 billion generated in H1 itself, the BioEconomy now contributes a consistent stream to Karnataka's GSDP across all months, making it a key stabilizing sector for the State's economy.

STARTUP DYNAMICS (2022–2025)

Steady Growth and Ecosystem Continuity

Karnataka's biotechnology startup ecosystem continues to show steady expansion and structural consistency, supported by a well-distributed flow of new registrations and cumulative growth over time.

The State's startup base has expanded from 853 enterprises at the end of 2022 to an estimated 1,451 by the close of 2025, marking a net increase of nearly 600 biotechnology startups in three years.

This growth represents a rise of almost 70% since 2022 and underlines Karnataka's continued role as one of India's largest biotechnology innovation clusters.

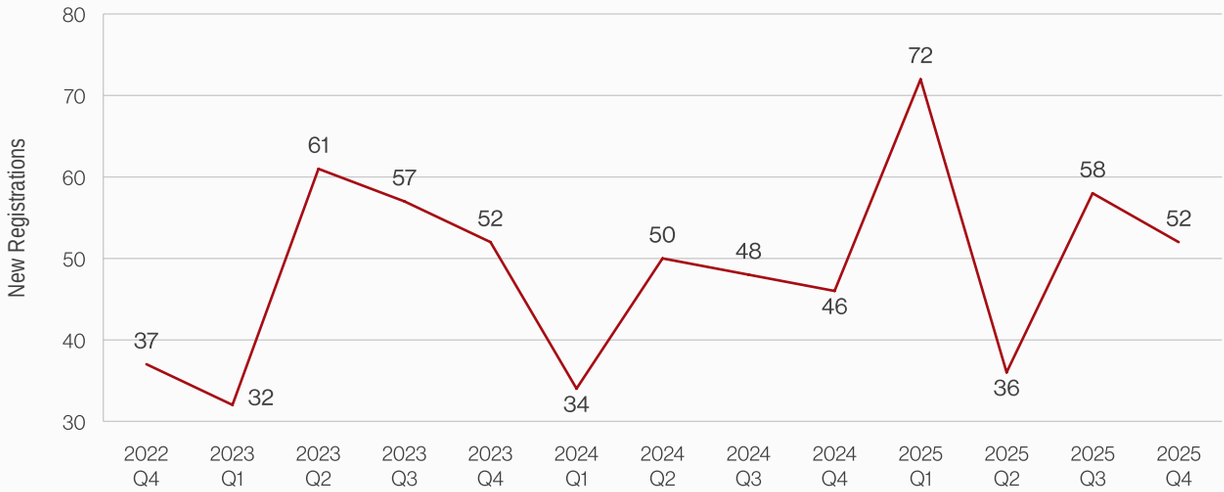
Year	New Registrations (No.)	Growth vs. Prev. Year (%)	Cumulative at Year-End	Net Annual Addition
2022	37	—	853	—
2023	202	—	1,055	+202
2024	178	–11.9%	1,233	+178
2025	218	+22.5%	1,451	+218

Source: ABLE Research | Totals may not match because of rounding. The figures are final for the year ended, but they may be revisited during the preparation of the all-India dataset if newer information emerges.

Quarterly Startup Activity: Incremental but Stable Growth

The startup activity is a pattern of moderate but uninterrupted growth across all three years, with quarterly additions remaining broadly consistent.

Karnataka Quaterly



Source: ABLE Research | Totals may not match because of rounding. The figures are final for the year ended, but they may be revisited during the preparation of the all-India dataset if newer information emerges.

Quarterly New Registrations in Karnataka (2022–2025)

2024: Transitional Stability and Consolidation

- New registrations stood to 178.
- The quarterly trend remained balanced, with no abrupt surges or troughs — a sign of ecosystem normalization.
- The steady quarterly range (34–50 startups) reflects an ecosystem in consolidation, focusing on scaling existing ventures rather than purely adding numbers.
- The cumulative base rose to 1,233 by year-end (2024), an increase of 178 startups.

In 2023, Karnataka demonstrated solid mid-year strength and steady momentum with an average of around 50 registrations per quarter. The robust activity in Q2, with 61 registrations, aligned well with seasonal academic and funding cycles, while the slight moderation in Q3 and Q4 reflected a stable and sustainable pace rather than volatility. By the end of the year, the cumulative total reached an impressive 1,055 startups, establishing a strong foundation for continued growth. Moving into 2024, the ecosystem transitioned into a phase of stability and consolidation, with new registrations modestly adjusting to 178. The quarterly numbers remained balanced within a consistent range, signaling a healthy normalization process. This steady pattern reflects a maturing biotech landscape focused on scaling and strengthening existing ventures. The cumulative base further expanded to 1,233 startups by year-end, reinforcing Karnataka's position as a burgeoning hub with solid potential for sustained expansion.

2025: Renewed Momentum

- The state recorded around 218 new registrations in 2025, a 22% increase over 2024.
- Q1 2025 (72 startups) marked the highest single-quarter addition in recent years - signaling early-year acceleration and stronger entrepreneurial confidence.
- The following quarters remained steady, with Q3 (58) and Q4 (52) reinforcing year-round activity.

In 2025, Karnataka's biotech sector demonstrated renewed momentum and early-year acceleration, with 218 new registrations - a notable 22% increase over 2024. The strong start, highlighted by 72 startups in Q1, reflected growing entrepreneurial confidence and a vibrant ecosystem. Subsequent quarters sustained a consistent pace, reinforcing year-round activity. By year-end, the cumulative total base of registered startups in the state reached 1,451 startups, underscoring Karnataka's robust and sustained growth as a leading biotech hub. This positive trend showcased the state's ability to build on its strong foundation while continuing to foster innovation and expansion in the biotechnology sector.

Quarterly Distribution Patterns: A Sign of Maturity

The quarterly startup distribution over three years displays consistency and narrowing variability — a clear signal of ecosystem maturity.

- Average quarterly new registrations (2023–2025): ~50 startups
- Highest single-quarter addition: Q1 2025 (72 startups)
- Lowest quarterly addition: Q1 2023 (32 startups)
- Range of variation: Only 40 startups between peak and trough

Quarterly Growth Ratios: Variability Narrowing Over Time

Year	Highest Quarter (No.)	Lowest Quarter (No.)	Variation Range
2023	61 (Q2)	32 (Q1)	29
2024	50 (Q2)	34 (Q1)	16
2025	72 (Q1)	36 (Q2)	36
2025	218	+22.5%	1,451

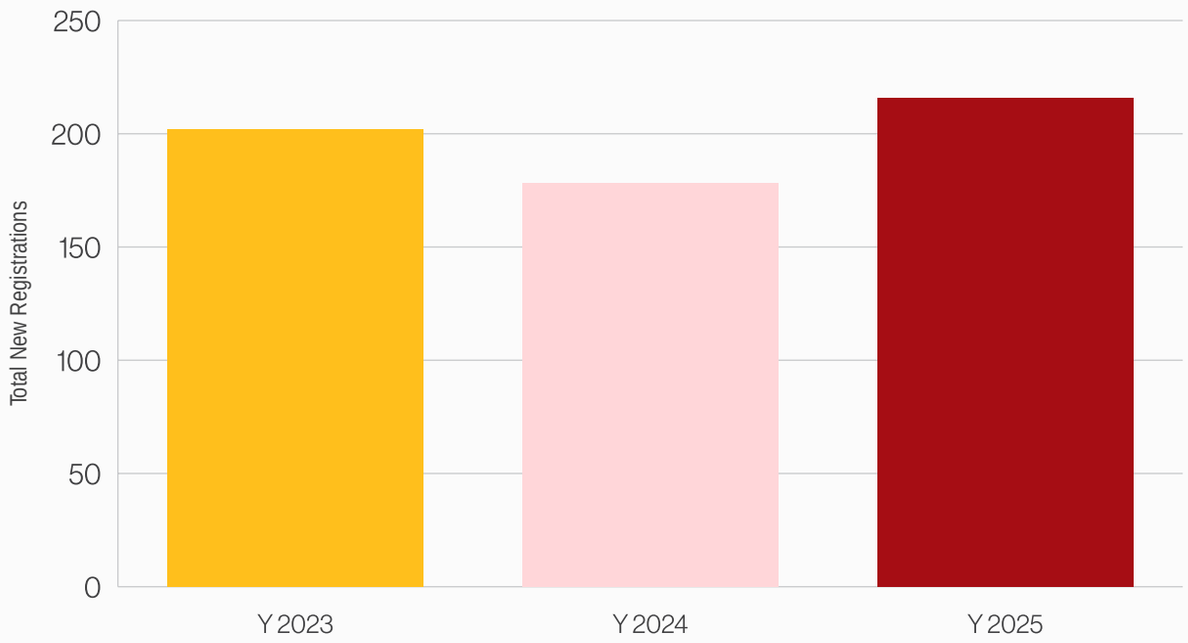
Source: ABLE Research | Totals may not match because of rounding. The figures are final for the year ended, but they may be revisited during the preparation of the all-India dataset if newer information emerges.

A comparison of quarterly growth rates shows narrowing variability and higher predictability:

The quarterly fluctuations are minor, highlighting that startup formation in Karnataka has evolved into a steady and well-structured process rather than one driven by sporadic events such as funding cycles or policy launches. Examining the quarterly growth rates reveals that variability has narrowed and predictability improved over time. For instance, in 2023, the highest quarter registered 61 startups while the lowest had 32, a variation of 29. This variation reduced significantly in 2024, with the highest quarter at 50 and the lowest at 34, narrowing the range to 16. Although Q1 of 2025 saw a strong increase with 72 startups, the year maintains a balanced rhythm due to consistent performances in Q3 and Q4. This progressive stabilization reflects a maturing ecosystem where startup formation is increasingly driven by organic business readiness rather than external triggers. The consistent quarterly distribution across 2025 — with each quarter contributing roughly 24–26% of the total — confirms that the State's bioentrepreneurial ecosystem is now self-sustaining, less influenced by episodic interventions or global funding cycles.

Annual Trends and Year-on-Year Comparison

Yearly New Registrations



Source: ABLE Research | Totals may not match because of rounding. The figures are final for the year ended, but they may be revisited during the preparation of the all-India dataset if newer information emerges.

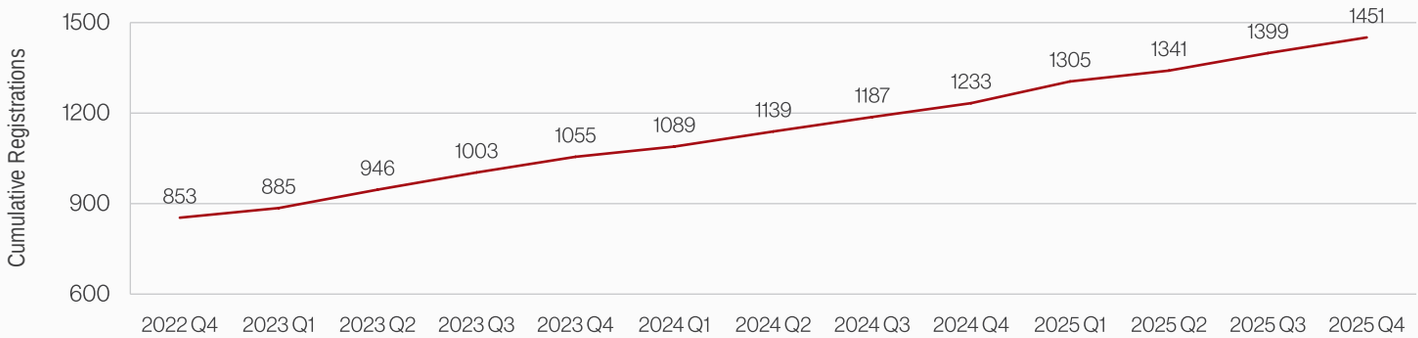
Year 2024 reflects a natural phase of ecosystem refinement following the vibrant growth experienced in 2023. This period allowed for a healthy stabilization as the biotech community focused on strengthening its foundations. Encouragingly, the upward trend anticipated in 2025 signals revitalized activity, supported both by emerging startups and the advancement of existing ventures into later stages. With an annual increase of approximately 218 new enterprises, Karnataka's biotechnology sector continues its resilient and consistent expansion, successfully adapting to evolving policies and funding landscapes. This ongoing progress highlights the sector's maturity and solid footing for future innovation and growth.

- The dip in 2024 indicates a temporary period of ecosystem consolidation after a strong 2023.
- The rebound in 2025, based on current-year estimates, suggests renewed startup formation, driven by both new entrants and secondary registrations (scale-stage conversions).
- The average monthly addition of nearly 18 startups confirms that Karnataka's biotech entrepreneurship base continues to expand steadily, even during years of policy or funding transition.
- Karnataka consistently contributes close to one-fifth of all new biotech startups registered nationally.

Cumulative Growth: Long-Term Expansion

The cumulative trajectory of startup registrations captures Karnataka's sustained and incremental progress between 2022 and 2025.

Karnataka Cumulative



Source: ABLE Research | Totals may not match because of rounding. The figures are final for the year ended, but they may be revisited during the preparation of the all-India dataset if newer information emerges.

Ecosystem Maturity

- **Linear growth:** The cumulative curve shows a linear upward trend with no stagnation phase, confirming structural strength.
- **Average quarterly addition:** Around 47 new startups per quarter, maintained consistently over three years.
- **Acceleration in 2025:** The strong Q1 2025 performance (+72 startups) represents the most significant quarterly gain since tracking began.
- **End-of-year consistency:** Additions of +46 (Q4 2024) and +52 (Q4 2025) suggest stable year-end momentum.
- **By the close of 2025**, Karnataka's cumulative total of ~1,451 biotechnology startups would represent a 69.9% increase from its 2022 base, highlighting sustained organic growth across consecutive years.

Karnataka continues to maintain its position as India's leading biotechnology startup hub, accounting for one of the highest densities of registered biotech enterprises in the country.

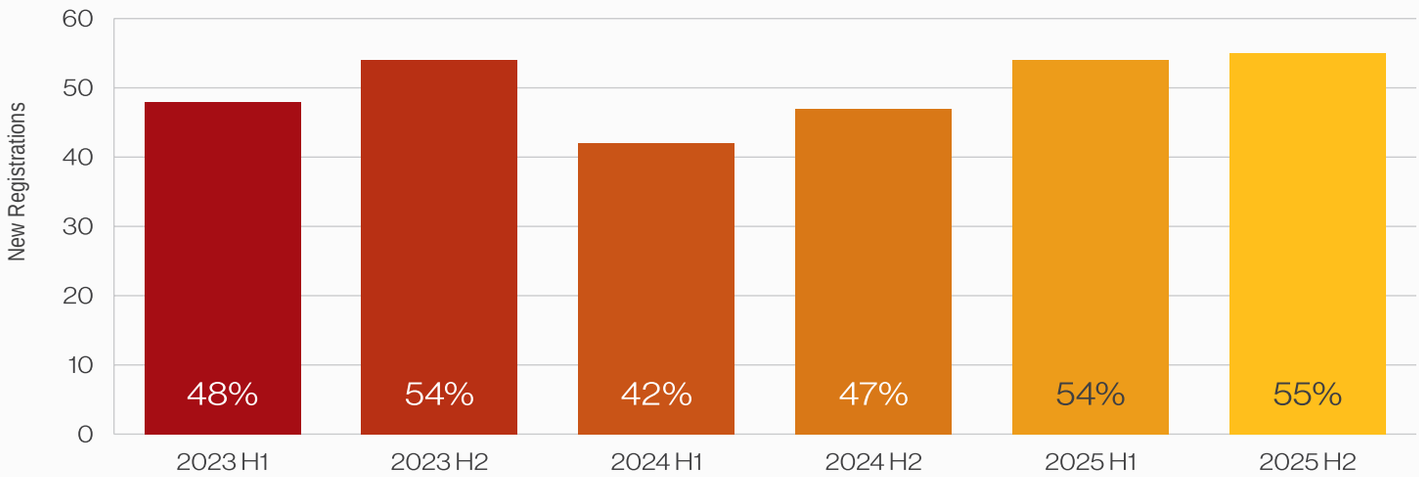
Between 2023 and 2025, the State's biotechnology startup ecosystem has expanded at a steady pace, reflecting both policy-driven facilitation and an innovation-oriented culture anchored in academia, research institutions, and incubator networks.

The cumulative number of registered biotechnology startups in Karnataka rose from 1,055 in 2023 to 1,451 by the end of 2025, reflecting a net addition of nearly 400 ventures over two years — a 38% increase in cumulative registrations. This sustained expansion underscored the continued vitality of Karnataka's innovation ecosystem, with new enterprises contributing to its robust growth trajectory.

This sustained expansion underscores the continued vitality of Karnataka's innovation ecosystem, with new enterprises emerging not only in Bengaluru but also across Mysuru, Mangaluru, Dharwad, and Belagavi under the State's Beyond Bengaluru strategy.

Half-Yearly Pattern: Early-Year Activity and Balanced Output

Karnataka Cumulative



Source: ABLE Research | Totals may not match because of rounding. The figures are final for the year ended, but they may be revisited during the preparation of the all-India dataset if newer information emerges.

When viewed across half-year periods, the data show early-year acceleration followed by steady consolidation in later quarters.

- H1 (Q1 + Q2): Startups typically account for 45–48% of annual registrations, showing early-year energy linked to incubation cycles and project launches.
- H2 (Q3 + Q4): The remaining 52–55% of annual activity reflects mid- and late-stage incorporations, often from scaling ventures or spin-offs.

In 2025, the front-loaded growth (Q1–Q2 totaling 108 startups) indicates stronger readiness and pipeline maturity at the start of the fiscal year.

This balance between halves demonstrates that Karnataka's startup ecosystem now functions as a steady-state innovation system, rather than one dependent on discrete policy or funding windows.

Karnataka's Share of National Startup Base

Karnataka consistently accounts for approximately one in every eight biotechnology startups in India.

Despite national-level expansion across multiple states, Karnataka's proportional share remains stable — reflecting both the depth and sustainability of its entrepreneurial ecosystem.

Continuous Linear Growth: Startup formation follows a linear trend with consistent quarterly increments, confirming Karnataka's structural stability.

2025 Uptick: 2025 recorded the highest annual startup additions in three years.

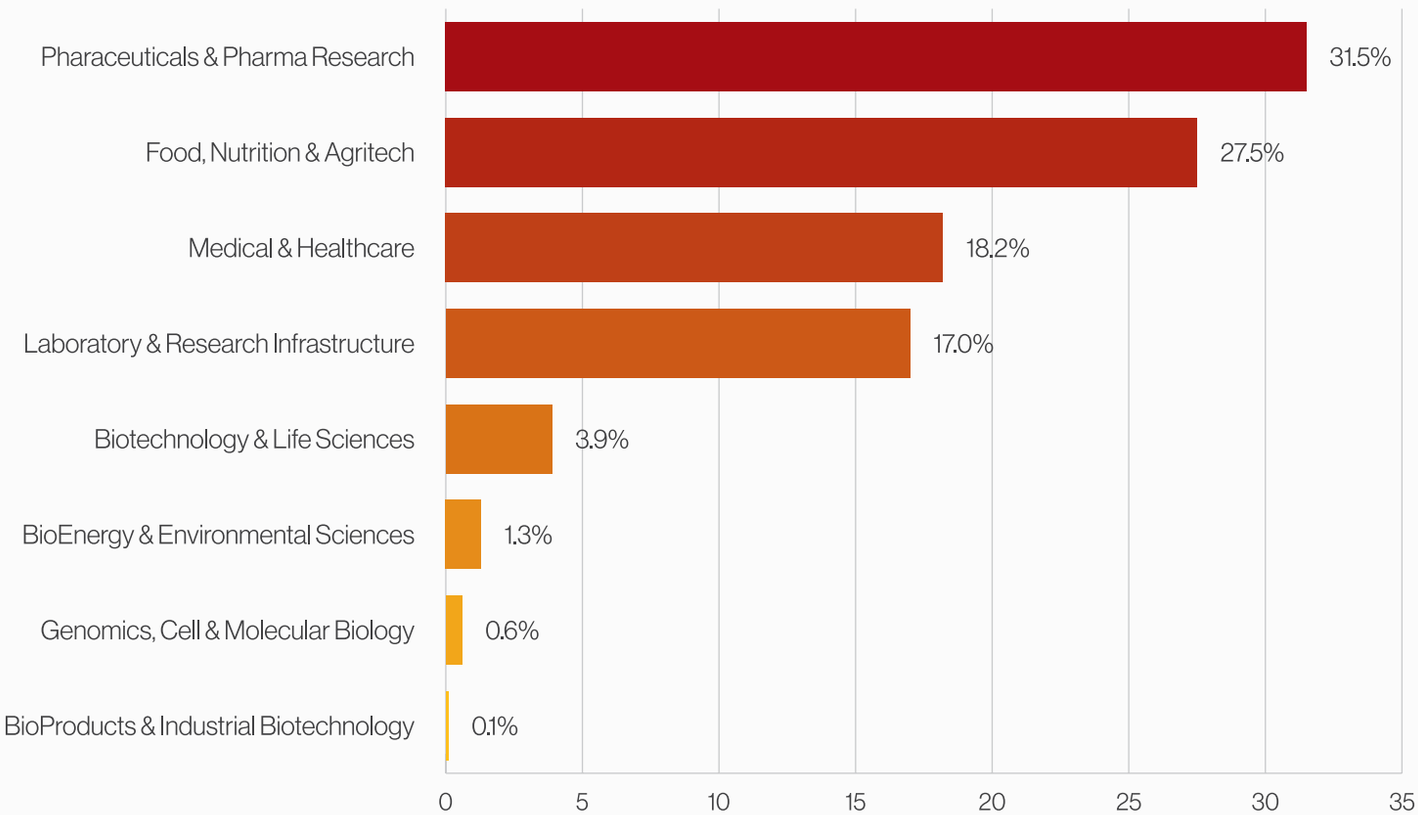
Stable National Share: Karnataka's ~12–13% share of the national biotechnology startup pool underscores its enduring leadership position.

Geographical, Segmental, and Industrial Spread of Biotechnology Startups

A Diverse and Distributed Innovation Landscape

Karnataka's biotechnology startup landscape has evolved into one of India's most diverse and regionally spread innovation ecosystems. While Bengaluru remains the nucleus of activity, the State's startup profile now reflects sectoral depth, industrial diversity, and growing regional participation — indicators of a mature BioInnovation economy.

Segment Classification Counts



Source: ABLE Research | Totals may not match because of rounding. The figures are final for the year ended, but they may be revisited during the preparation of the all-India dataset if newer information emerges.

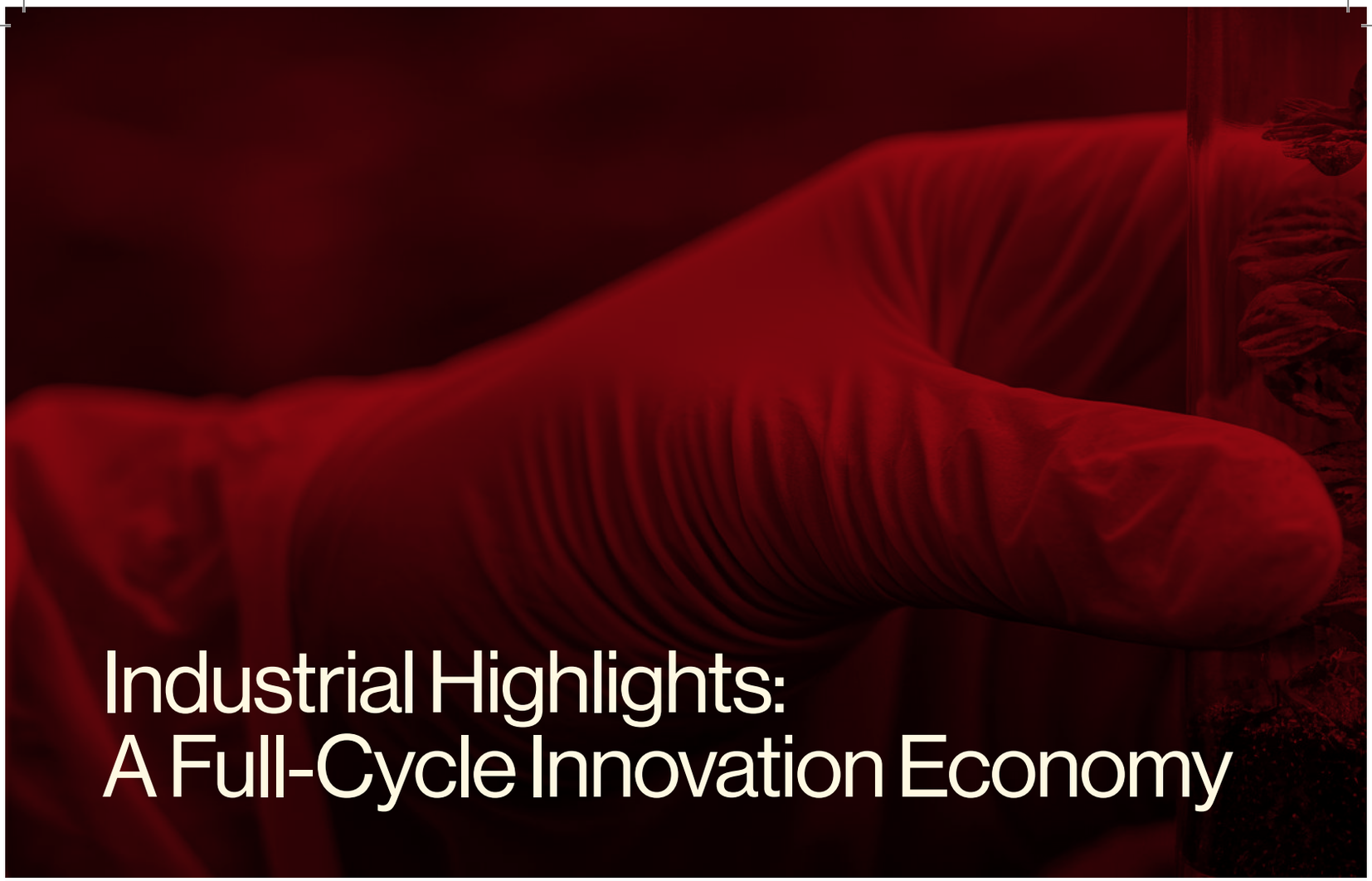
Segmental Highlights: Life Sciences at the Core

Biotechnology startups in Karnataka are overwhelmingly life sciences–driven, with pharmaceuticals, healthcare, and food biotechnology dominating the ecosystem.

- Pharmaceuticals & Pharma Research (31.5%) form the backbone — spanning biosimilars, drug discovery, and contract research.
- Food, Nutrition & Agritech (27.5%) underline the rapid fusion of biotechnology with sustainable food systems, agri-inputs, and nutrition innovation.
- Medical & Healthcare startups (18.2%) bridge biotechnology and digital health, reflecting Bengaluru's convergence of biotech and IT capabilities.
- Supporting this foundation, Laboratory & Research Infrastructure startups (17%) strengthen Karnataka's internal R&D backbone.

Smaller but emerging niches like Bioenergy, Environmental Sciences, and Genomics mark early diversification into sustainability, waste valorization, and precision health — key frontiers for the decade ahead.

Together, these trends confirm that Karnataka's startup ecosystem is shifting from being research-led to application-oriented, with biotechnology now extending into industry, agriculture, and sustainability domains.



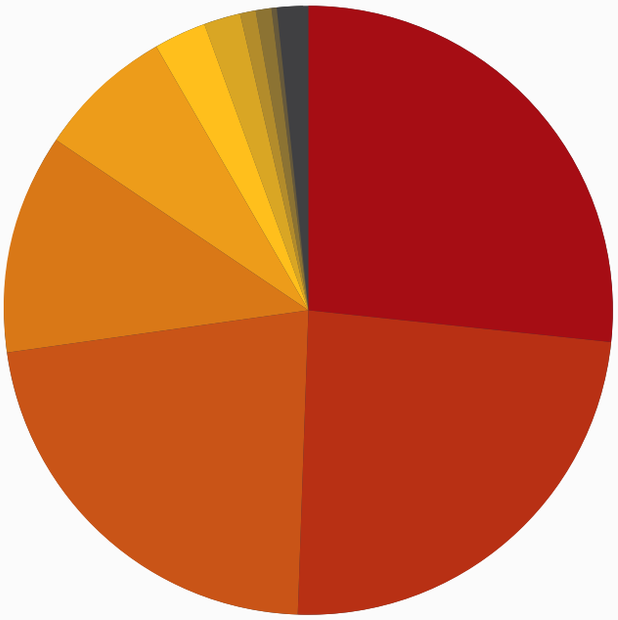
Industrial Highlights: A Full-Cycle Innovation Economy

The industrial classification shows a healthy balance between services, manufacturing, and trading, reflecting how biotechnology is maturing from concept to commercialization.

- Services-driven enterprises — covering community, business, and R&D consulting — form the largest share (around half the ecosystem), mirroring the State's strong institutional and research infrastructure.
- Manufacturing-led startups, especially in food biotechnology and BioIndustrial production, now account for over a third of enterprises, showing increasing capacity for scale-up and commercialization.
- A smaller but strategic segment of startups focuses on bioenergy, AgriBiotech, and green chemistry, aligning directly with Karnataka's BioE3 priorities on Economy, Environment, and Employment.

Karnataka is transitioning from a services-based biosciences cluster to a full-cycle biotechnology economy — one capable of research, production, and market deployment within the same innovation ecosystem.

Industrial Classification Percentage Share

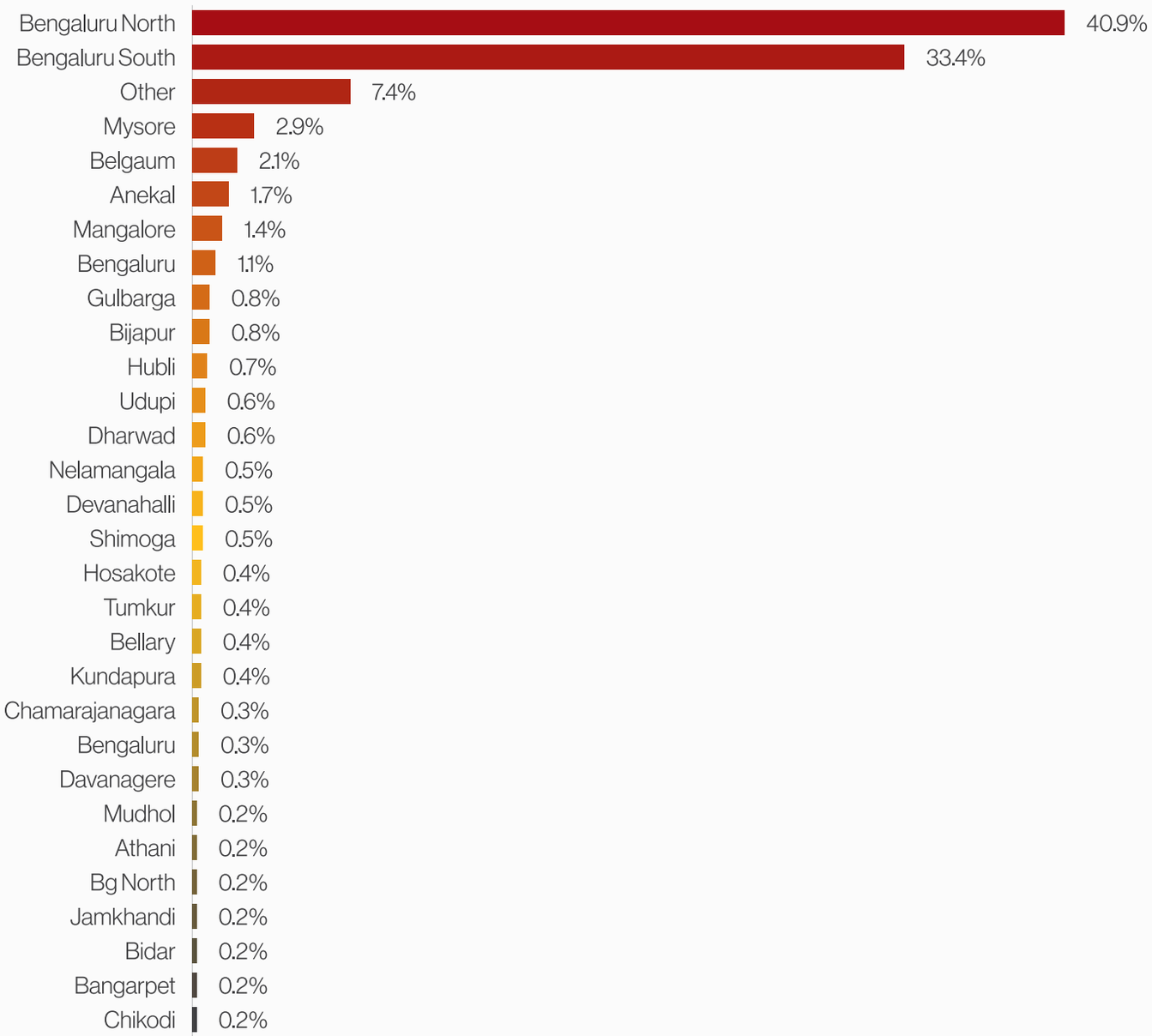


Community, personal and Social Services	26.8%
Business Services	23.9%
Manufacturing (Foods stuffs)	22.1%
Trading	11.7%
Manufacturing (Metals and Chemicals and Products thereof)	7.4%
Manufacturing (Machinery and Equipments)	2.8%
Manufacturing (Others)	1.9%
Agriculture and Allied Activities	0.8%
Electricity, Gas and Water companies	0.7%
Finance	0.5%
Other	1.4%

Source: ABLE Research | Totals may not match because of rounding. The figures are final for the year ended, but they may be revisited during the preparation of the all-India dataset if newer information emerges.

Geographical Spread: Bengaluru Anchors, Regions Rise

Top 30 Hubs by Company Count



Source: ABLE Research | Totals may not match because of rounding. The figures are final for the year ended, but they may be revisited during the preparation of the all-India dataset if newer information emerges.

Spatially, Karnataka's biotechnology startups remain concentrated yet progressively distributed.

- Bengaluru North and Bengaluru South together account for nearly three-fourths of all startups, underscoring Bengaluru's enduring dominance as the research and manufacturing hub.
- The north zone leads in R&D, Bioinformatics, and institutional activity.
- The south zone hosts manufacturing, CROs, and biotech estates — forming an integrated innovation corridor.
- Mysuru has emerged as the State's second biotechnology center, focusing on industrial biotechnology and food tech.
- Belagavi and Dakshina Kannada (Mangaluru) show growing BioIndustrial clusters, leveraging agro-industrial and coastal advantages.
- A smaller but expanding set of startups in Raichur, Kalaburagi, and Mandya marks the early stages of biotech diffusion beyond Bengaluru — a key goal under the State's "Beyond Bengaluru" policy.

This distribution pattern reflects both concentration and reach — Bengaluru remains the core, but regional ecosystems are becoming active contributors to the State's overall BioEconomy.

Karnataka's biotechnology startup ecosystem in 2025 illustrates a balanced, multi-dimensional innovation map — deeply rooted in life sciences but steadily branching into manufacturing, agritech, and environmental biotechnology.

While Bengaluru continues to anchor over 70% of the ecosystem through its research and industrial clusters, Tier-II cities like Mysuru and Belagavi are now translating biotechnology into regional economic opportunity.

With its mix of scientific excellence, manufacturing strength, and distributed growth, Karnataka stands as a model of a statewide BioInnovation economy — one that is both globally competitive and regionally inclusive.

Belagavi: BioIndustrial and Agricultural Convergence Zone

- Life Sciences Dominance: Over three-fourths of startups operate in pharmaceuticals, healthcare, or food biotechnology — reaffirming Karnataka's global leadership in applied biosciences.
- Expanding BioIndustrial Base: A growing one-third of enterprises now focus on manufacturing — from nutraceuticals and enzymes to bioprocessed foods and biofuels.
- Bengaluru's Dual-Core Strength: Bengaluru North and South together account for ~74% of biotechnology startups, anchoring both R&D and biomanufacturing ecosystems.
- Regional Clusters Emerging: Mysuru, Belagavi, and Dakshina Kannada are fast-growing nodes, linking biotechnology with industrial and agri-based economies.
- Next-Gen Sectors Rising: Early growth visible in bioenergy, genomics, and environmental biotechnology, aligning with the State's BioE3 (Economy–Environment–Employment) agenda.
- From Services to Scale: The ecosystem is shifting from research services to full-cycle biomanufacturing and commercialization, marking Karnataka's transition into a mature BioInnovation economy.

INVESTMENTS AND FUNDING LANDSCAPE

Karnataka's BioEconomy attracted a strong wave of investment between January 2024 and October 2025, with total inflows of approximately $1.14 billion concentrated across biotechnology, life sciences, agribiotech, health innovation, and biomanufacturing.

This sustained capital momentum underscores Karnataka's emergence as the national nucleus for life sciences innovation and scale-up, supported by policy continuity and research excellence.

Funding Overview

Across the two years, the State mobilized $830 million in 2024 and $310 million between January and October 2025 — a combined $1.14 billion in BioEconomy-linked funding.

The shift from venture to growth-stage investment demonstrates ecosystem maturity, as enterprises moved from research and pilot phases to commercial manufacturing, clinical progression, and export readiness.

Year	Total Investments ($million)	No. of Deals	Key Drivers
2024 (Jan–Dec)	830 million	~22	BioPharma, MedTech, and BioIndustrial manufacturing
2025 (Jan–Oct)	310 million	~18	Cell therapy, digital health, precision fermentation, and agribiotech
Cumulative (2024–Oct 2025)	1,140 M (~$1.14 billion)	~40	Karnataka remains India's BioEconomy investment leader

Source: ABLE Research | Totals may not match because of rounding. The figures are final for the year ended, but they may be revisited during the preparation of the all-India dataset if newer information emerges.

Major Transactions (Jan 2024 – Oct 2025)

The period was marked by substantial growth and private equity participation in biotech, MedTech, cell therapy, and BioIndustrial ventures:

- $840 million — Healthium Medtech: KKR's buyout of a 99.8% stake marked one of India's largest life sciences transactions.
- $95 million — OneSource Specialty Pharma: Major biologics CDMO investment by HBM, Volrado, Motilal Oswal, and others.
- $60 million — Kapiva Ayurveda: Series D round led by 360 ONE and Vertex, reflecting growth in Ayur-biotech and functional wellness.
- $14 million — Laurus Bio: Expansion capital for precision fermentation and biomanufacturing scale-up.
- $12 million — Avammune Therapeutics: Oncology drug development and preclinical expansion.
- $10 million — Eyestem: Cell therapy platform scaling towards clinical translation.
- ~$12 million — Immuneel Therapeutics: Ongoing expansion in CAR-T and gene therapy pipelines.
- ~$20 million (aggregate): AI-biotech and digital health platforms (Ultrahuman, Dozee, ImmunitoAI, AiSteth, Biopeak) advancing precision health.
- ~$15 million (aggregate): Sustainable agribiotech and circular bio solutions (Loopworm, Akshayakalpa, Devigere Biosolutions).

These transactions demonstrate the breadth and maturity of Karnataka's BioEconomy, covering therapeutics, diagnostics, digital health, and sustainable biological manufacturing.

Sectoral Distribution

Sector	Share of Total Funding	Approx. Value ($million)	Key Drivers
MedTech & Health Devices	68%	~775	Healthium Medtech, Dozee, Forus Health
BioPharma & CDMO	17%	~195	OneSource, Eyestem, Immuneel, Laurus Bio
Ayur-Biotech & Functional Health	8%	~90	Kapiva, Biopeak
Agribiotech & BioIndustrial	5%	~55	Loopworm, Akshayakalpa, Devigere Biosolutions
AI-Biology & Digital Health	2%	~25	Ultrahuman, ImmunitoAI, AiSteth

Source: ABLE Research | Totals may not match because of rounding. The figures are final for the year ended, but they may be revisited during the preparation of the all-India dataset if newer information emerges.

The dominance of MedTech and manufacturing-led biotech reflects Karnataka's evolution from a startup-driven base to an industrialized bioeconomy platform.

Investment Trends

- Scale over Seed: 2024's wave of late-stage transactions signified a shift toward capital-intensive scaling.
- Manufacturing Expansion: Laurus Bio and OneSource underscored investor confidence in domestic biomanufacturing capacity.
- Therapeutic Innovation: Eyestem, Immuneel, and Avammune demonstrated global competitiveness in next-generation biologics.
- Convergence of Biology and AI: Ultrahuman and ImmunitoAI showcased digital integration in life sciences.
- Sustainable Bio Pathways: Agribiotech investments marked the beginning of circular economy applications in bio-based industries.
- Exit Maturity: The Healthium acquisition and Anthem Biosciences IPO reflected deepening liquidity pathways for investors.

Strategic Implications

Karnataka's BioEconomy funding pattern signifies structural maturity, scientific credibility, and policy stability.

The inflow of over $1.14 billion across 40 deals demonstrates investor conviction in deep science, scalable manufacturing, and sustainability-driven innovation.

The State contributes roughly 30–35% of India's total BioEconomy investments, solidifying its leadership in the national and global life sciences landscape.

Investment Highlights (At a Glance)

- $1.14 billion — Total BioEconomy investments (Jan 2024–Oct 2025)
- $830 million (2024) — Highest annual inflow in Karnataka's biotech history
- $310 million (Jan–Oct 2025) — Continued investor confidence
- $840 million — Healthium Medtech Buyout
- $95 million — OneSource Specialty Pharma (Biologics CDMO)
- $60 million — Kapiva Ayurveda (Ayur-biotech scale-up)
- ~$195 million — BioPharma and biologics manufacturing
- ~$25 million — AI-biotech and digital health platforms
- 40 Transactions — Spanning PE, growth, and early-stage rounds
- 30–35% — Karnataka's share of India's BioEconomy funding

Data Integrity and Sources: All data compiled by ABLE's Research team, based on information from Venture Intelligence (Jan 2024 – Oct 2025), and cross-checked with public investor disclosures and BIRAC-linked company filings.

POLICIES AND GOVERNMENT INITIATIVES

Innovation as the Driving Force of Karnataka's BioEconomy

Karnataka's innovation ecosystem plays a pivotal role in advancing the State's thriving BioEconomy. With national leadership in biotechnology, life sciences, and biomanufacturing, Karnataka continues to strengthen its position as a global innovation destination. A strategic focus on convergence—linking biology with technology, engineering, and data science—is accelerating the transition from research to applied BioEconomy outcomes. This integrated innovation environment reflects the State's vision of a sustainable, inclusive, and globally connected BioEconomy.

From Policy Vision to Bio-Innovation Infrastructure

At the policy level, Karnataka continues to stand apart as the only State with a dedicated Department of Biotechnology since 2001, which later evolved into the broader Department of Electronics, IT, Biotechnology & Science & Technology (DEITBT) framework integrating electronics, IT, and S&T. The Department's focus today is on convergence — the integration of biology with technology, engineering, and data science — to unlock new value in healthcare, agriculture, environment, and industry.

The integration of policy design and innovation delivery in Karnataka is visible across several initiatives that contribute to the growth and diversification of the bio-based economy. These include:

- The evolution of the Karnataka Biotechnology Policy, now oriented towards next-generation domains like synthetic biology, gene therapy, Bioinformatics, bioengineering, and circular bioeconomy applications.
- The creation of dedicated innovation infrastructure, such as biotechnology parks, Centers of Excellence, and incubation networks that connect startups with academic and industrial ecosystems.
- The deepening of funding mechanisms, enabling startups and researchers to move from proof-of-concept to commercial scale.
- Karnataka's bio-innovation framework thus rests on three interconnected pillars — policy continuity, ecosystem depth, and innovation financing — each of which is elaborated through flagship programs.

Flagship Programs Powering Bio-Innovation

Biomanufacturing Hub (Bio-foundry) at C-CAMP

Among the most significant new initiatives announced is the establishment of a Biomanufacturing Hub (Bio-foundry) at the Centre for Cellular and Molecular Platforms (C-CAMP) in Bengaluru. Supported by the Biotechnology Industry Research Assistance Council (BIRAC) and the Department of Biotechnology (DBT), Government of India, the Hub represents a decisive step from lab-scale R&D to industrial-scale production.

It will enable precommercial biomanufacturing of biologics, biomaterials, and other bio-based products, providing access to infrastructure, scale-up processes, and quality testing — facilities often out of reach for early-stage companies. This initiative is vital for translating Karnataka's deep scientific base into marketable bio-products and advancing the State's circular bioeconomy vision.

Fund of Funds and Venture Support for Startups

Karnataka announced the launch of a Fund of Funds, an innovative financing mechanism aimed at catalyzing a self-sustaining venture capital ecosystem across emerging startup clusters in the State.

By pooling State support with private investment, the Fund of Funds ensures risk-sharing and liquidity for innovation-driven enterprises — especially in deep-tech and biotech, where gestation cycles are long and capital needs are intensive. This measure complements other financial instruments such as the Idea2PoC (Proof-of-Concept) and Elevate grant schemes that have already supported hundreds of startups in life sciences, medical devices, and BioAgri innovation.

This is the foundational pillar of Karnataka's next-generation innovation economy — one that aligns financing with scientific capability.

Deeptech Elevate NXT

The Deeptech Elevate NXT program, part of the State's LEAP (Launch, Empower, Accelerate, Prosper) framework. While its scope spans multiple frontier technologies — including AI, robotics, and quantum — has direct implications for biotechnology and life sciences, where data science and automation are transforming research and manufacturing.

Through this initiative, startups working on Bioinformatics, health-tech analytics, synthetic biology platforms, or robotics for lab automation receive both funding and mentorship. By promoting such convergence between biology and computation, Karnataka is aligning its BioEconomy with the emerging global "bio-digital" paradigm.

Elevate Beyond Bengaluru

Recognizing that innovation thrives when it extends beyond metros, the State is preparing to launch Elevate Beyond Bengaluru, a flagship initiative slated for the next financial year. The program will extend startup support, funding, and mentoring to tier-2 and tier-3 innovation clusters across Karnataka — including Mysuru, Mangaluru, Hubballi-Dharwad, Belagavi, and Shivamogga. This decentralized approach is particularly important for BioIndustrials and agribiotech enterprises that rely on proximity to biological resources and field ecosystems. By encouraging district-level incubation, the program aims to strengthen inclusive participation in the State's BioEconomy and support employment creation beyond Bengaluru.

Centers of Excellence (CoEs) for Frontier Technology

A vital component strengthening Karnataka's innovation ecosystem is its extensive network of Centers of Excellence (CoEs). These include the Centre for Machine Intelligence and Robotics (MINRO), AI & Robotics Technology Park (ARTPARK), and the Centre for Internet of Ethical Things, among others.

While primarily technology-oriented, these Centers have growing collaborations with life sciences and bioengineering domains — particularly in digital health, precision medicine, Bioinformatics, and agricultural automation. By embedding cross-sectoral capabilities, Karnataka is creating a fertile environment for multidisciplinary innovation in the BioEconomy.

The Expanding Horizon of Bio-Innovation

A major focus is the qualitative shift within Karnataka's innovation ecosystem, emphasizing the transition from ideation to real-world impact. The approach prioritizes moving beyond research papers to developing bio-products and solutions that successfully reach the market. The State now emphasis translation.

This shift is visible in three dimensions:

- Integration of Digital and Biological Sciences – Startups in genomics, diagnostics, and Bioinformatics are leveraging AI, quantum computing, and machine learning to accelerate discovery and personalization in healthcare.
- Circular BioEconomy Orientation – Increasingly, innovation is addressing sustainability: valorizing agricultural waste, advancing microbial fermentation, producing bio-based materials, and generating renewable bioenergy.
- Globalization of the Bio-Innovation Brand – Karnataka is marketing itself as a global biotech destination, positioning Bengaluru as the "Biotech Capital of Asia" and participating in global forums to attract partnerships and investments.

Each of these reinforces the State's strategic vision of a bio-based economy that is sustainable, inclusive, and globally integrated.

Innovation as Policy — Not Program

What distinguishes Karnataka's model is that innovation is not treated as a single program but as a governance philosophy. The DEITBT functions as an innovation enabler rather than a regulator — bridging multiple ministries, universities, research labs, and entrepreneurs through an open-innovation framework.

Through consistent policy continuity — from the Millennium Biotech Policy (2001) to the Biotech Policy 3.0, and now through innovation-driven flagship schemes — Karnataka has institutionalized an environment where scientific creativity can translate into commercial and social value.

In practice, this means predictable regulation, transparent incentives, and active State partnership with the private sector — conditions that are essential for long-term growth in biotechnology and allied industries.

Aligning Innovation with the BioEconomy Vision

The BioEconomy is central to Karnataka's sustainable growth agenda. Defined by the sustainable and circular use of biological resources and processes for food, feed, fuel, and health, the BioEconomy has become a cornerstone of both environmental and industrial policy.

Innovation is the operational instrument through which this vision is implemented. Whether through biomanufacturing hubs, venture support, or digital-bio convergence, each initiative strengthens the State's capability to generate economic, environmental, and employment outcomes from biology.

These programs collectively reflect Karnataka's strategic approach to becoming the first State in India with a fully integrated bio-innovation ecosystem — connecting research, entrepreneurship, and manufacturing within a single policy framework.

Karnataka's journey from biotech research to biomanufacturing and circular BioIndustrials is well underway. The State's flagship programs — from the Biomanufacturing Hub and Fund of Funds to Elevate Beyond Bengaluru and Deeptech Elevate NXT — show that the government's role is evolving from policy-maker to ecosystem-builder.

As the BioEconomy becomes central to India's green growth ambitions, Karnataka stands at the frontier — demonstrating how innovation, when embedded in governance, can produce not just new products or companies, but a new kind of economy: one that is bio-based, inclusive, and sustainable.

Source: Department of Electronics, IT, Biotechnology & Science & Technology ((DEITBT)), Government of Karnataka, Innovation Chronicle – 13th Edition, 2025)

Translating Policy into Action: Karnataka's Bio-Innovation Execution

Karnataka is making significant progress in transforming innovation aspirations into tangible outcomes, particularly in the BioEconomy domain. Infrastructure developments include operational incubation hubs in Tier-2 districts and the advancement of a biomanufacturing hub to the execution stage. Funding support has been substantial, with grants allocated to biotechnology and life-sciences startups and a Fund of Funds model that encourages venture capital investment in deep-tech bio-enterprises. Institutional support mechanisms, such as regulatory sandboxes, have been expanded to ease compliance for life-sciences innovators.

Measurable results include a growing number of bio/life-sciences startups receiving support, significant disbursement of innovation grants, fully functional incubation centers outside the main urban hubs, and increased participation of Karnataka-based biotech firms in exports and global collaborations. Challenges remain in scaling pilot projects to manufacturing, broadening the regional startup ecosystem, developing skilled talent for biomanufacturing, and integrating more deeply into global bio-value chains.

These outcomes indicate a maturing bio-based ecosystem, signaling progress from policy formulation to implementation and laying a strong foundation for future sustainable growth across the food, feed, fuel, and health sectors.

Infrastructure Deployment & Capacity-Building

Significant progress has been made on infrastructure essential for the bio-based economy:

- The biomanufacturing facility at the Centre for Cellular & Molecular Platforms (C-CAMP) in Bengaluru has advanced into the implementation phase, with equipment procurement, space allocation, and regulatory approvals actively underway. This marks a transition from planning to execution for the bio-manufacturing hub.
- The New Age Innovation Network (NAIN) 2.0 initiative has expanded across higher education institutions, with numerous institutes receiving funding for establishing Technology Business Incubators (TBIs), acquiring instrumentation, and conducting faculty training. This development is crucial for supporting the talent pipeline in life sciences and biotechnology.
- Innovation and incubation centers have been established beyond Bengaluru in districts such as Mysuru, Hubballi-Dharwad, and Belagavi, promoting decentralized infrastructure. These centers focus particularly on AgriBio, microbial biotechnology, and bio-based programs linked to food, feed, and health, leveraging geographic advantages close to biological resources.

This infrastructure growth supports the broadening and strengthening of Karnataka's bioeconomy ecosystem.

Startup/Entrepreneurial Ecosystem: Funding & Support

Significant efforts are underway to provide startups, especially in biotech and life sciences, with capital and mentorship.

- The Idea2PoC/Grant-in-Aid scheme under the ELEVATE program has allocated substantial funding to numerous startups across MedTech, Bioinformatics, AgriBio inputs, and health devices during the past year.
- A Fund of Funds model has also been established, with the state committing seed capital and onboarding multiple private venture funds, many of which focus on life sciences and biotech sectors.
- Additionally, the "Beyond Bengaluru" initiative supports startups in Tier-2 and Tier-3 clusters by providing funding and incubation facilities, channeling resources to AgriBio, animal-bio, and microbial biotech innovations emerging from non-metro regions of Karnataka.

Regulatory and Institutional Mechanisms

Karnataka has advanced a series of regulatory and institutional measures to strengthen the bio-based economy. The operationalization of the Karnataka Innovation Authority Act, 2020 and the introduction of regulatory sandbox provisions have enabled greater flexibility for enterprises engaged in biotechnology and life sciences. These frameworks now allow pilot-scale production, experimental prototyping, and validation of biologics, diagnostics, and microbial bio-inputs under controlled regulatory oversight. The sandbox model has emerged as a key enabler for accelerating market entry of emerging bio-based technologies.

The State has also prioritized the expansion of mentoring and global collaboration initiatives. Strategic partnerships and memoranda of understanding with international bio-innovation hubs are facilitating joint research, technology exchange, and market-access programs. These linkages are enhancing access to global networks, investment channels, and advanced biomanufacturing partnerships for Karnataka-based enterprises.

To promote transparency and accountability, a dedicated innovation monitoring and governance dashboard has been established through the Startup Karnataka and K-Tech digital platforms. The system tracks innovation funding, infrastructure milestones, and startup performance across biotechnology and life sciences clusters, ensuring that policy interventions translate effectively into measurable outcomes.

Thematic Focus: Bio-based Economy Domains

Implementation efforts are intentionally segmented across key domains of the bio-based economy, reflecting the diversity and depth of Karnataka's innovation ecosystem.

AgriBio and microbial inputs: Multiple projects related to biofertilizers, biopesticides, and soil microbiome management have received innovation funding. These initiatives strengthen sustainable agriculture practices and align with Karnataka's integrated food–feed–fuel–health BioEconomy framework.

Health and diagnostics: MedTech and life-science startups across diagnostics, genomics, and rare-disease management have progressed from prototype development to pilot-scale production. Support mechanisms have facilitated their scale-up, regulatory readiness, and early market validation.

Circular BioIndustrial processes: Sustainability remains central to the State's BioEconomy agenda. Several initiatives are converting agricultural residues and food waste into biomaterials, biopolymers, and bioenergy through microbial and biochemical processes. These projects are being incubated and scaled under targeted bio-innovation challenges, reinforcing the circular economy approach.

Bioinformatics and digital-bio convergence: The growing convergence between biological research and digital technologies has led to a rise in cross-domain projects. Artificial intelligence, data analytics, and automation tools are increasingly being integrated into genomics, molecular modeling, and bioprocess optimization. This fusion of biotechnology and digital science is shaping the next phase of precision innovation and biomanufacturing efficiency.

Measurable Outcomes and Performance Indicators

Recent years have witnessed significant progress in translating policy frameworks into measurable outcomes.

- The number of biotech and life-sciences startups supported under State innovation programs has grown steadily, reflecting Karnataka's position as India's leading bio-innovation hub.
- Innovation grant disbursements to biotechnology and life sciences ventures account for a substantial share of total startup funding, indicating policy focus on high-impact research commercialization.
- Infrastructure expansion has continued with the operationalization of new district-level incubation Centers, upgradation of biotech-specific facilities with instrumentation, and continued strengthening of biotech finishing schools for industry-aligned training.
- Market linkages and export readiness have improved, with several Karnataka-based bioenterprises establishing international collaborations, technology licensing agreements, and early export partnerships in bio-inputs, diagnostics, and bioproducts.

Collectively, these achievements highlight a maturing innovation environment that is translating from policy formulation to on-ground outcomes across the bioeconomy value chain.

Forward Imperatives

Despite steady progress, a few structural and operational priorities remain critical for achieving the next level of growth in Karnataka's bio-based economy.

Scale-up to manufacturing: While biomanufacturing infrastructure is expanding, the transition from pilot-scale operations to large-scale production facilities for biologics, biosimilars, and biomaterials remains a priority. Additional investment and industry partnerships will be essential to close this capacity gap.

Regional depth: Innovation clusters beyond Bengaluru continue to grow, but the concentration of bio-startups within the capital remains significant. Expanding targeted interventions—funding, infrastructure, and mentorship—across tier-2 and tier-3 districts will strengthen regional inclusivity and resource-based innovation.

Talent pipeline and industry-readiness: The biotechnology finishing schools and skill development initiatives have created a foundation for workforce readiness. However, industry demand for trained professionals in biomanufacturing, good manufacturing practices (GMP), and regulatory compliance continues to exceed supply. Enhanced collaboration between academia and industry is needed to bridge this gap.

Integration into global value chains: Karnataka's biotechnology enterprises are increasingly engaged in international collaboration, but greater focus is required to embed local BioIndustrials within global supply chains for biologics, biosimilars, and sustainable bio-products. Strengthened export facilitation, regulatory alignment, and foreign investment outreach will be key to achieving this integration.

Outcome tracking and long-term impact assessment: While funding and incubation outputs are strong, continuous tracking of startups from early innovation to commercial maturity remains essential. Systematic evaluation of revenue growth, employment generation, and export realization will provide a clearer measure of economic and societal impact.

Implications for the BioEconomy

The collective set of actions undertaken demonstrates that Karnataka's BioEconomy vision is firmly moving from policy intent to tangible delivery. The State's innovation ecosystem now reflects an integrated model—linking regulatory facilitation, infrastructure deployment, startup funding, and human capital development.

This alignment reinforces Karnataka's status as a leader in biotechnology, life sciences, and circular bio-industries, while positioning it as a global reference point for sustainable and innovation-driven economic growth. Going forward, the strategic emphasis will be on consolidating biomanufacturing capacity, expanding regional innovation depth, and accelerating international partnerships that advance both the State's and the nation's BioEconomy objectives.

Source: Department of Electronics, IT, Biotechnology & Science & Technology, Government of Karnataka, Action Taken Report, 2025). Information and highlights in this section have been drawn from the above official publications of the Department.

For further information, please contact:

Managing Director
Karnataka Innovation and Technology Society,
Dept. of Electronics, IT & Bt,
Government of Karnataka,
BKG sapphire # 59, Railway Parallel Road,
Kumara Park West, Bengaluru – 560020.

md.ktech@Karnataka.gov.in

kitsgok@Karnataka.gov.in

GOVERNMENT OF KARNATAKA

K-tech

INNOVATE KARNATAKA