

A comprehensive analysis of India's talent landscape for the smart protein sector

Recommendations brief





Building India's smart protein workforce

Strategic recommendations for stakeholders across industry, academia, and policy

GFI India's report is a comprehensive analysis of India's smart protein talent landscape. By mapping technical skill gaps across the industry, the study examines actionable changes necessary in the current curriculum and training ecosystem. This brief highlights key findings from the analysis and distils them into strategic next steps for academia, industry, and skilling bodies to help strengthen India's smart protein talent pipeline.

Key findings

India's smart protein sector is poised for success, underpinned by strong policy initiatives such as the BioE3 framework. As the research and startup ecosystem matures, its ability to scale may be limited by gaps in talent readiness. While India produces nearly 250,000 graduates in relevant disciplines annually, the industry consistently reports a lack of hands-on, sector-specific skills across plant-based, cultivated meat, and fermentation technology value chains, particularly in bioprocessing, cell culture, extrusion, analytical methods, and novel food safety and regulatory pathways. Academic curricula offer strong foundations in core sciences but remain largely theoretical, with limited hands-on exposure in science streams. While faculty show increasing awareness and willingness to integrate emerging topics, smart protein-specific training modules are yet to be widely adopted. The report finds that targeted curriculum integration and stronger industry-academia collaboration are critical to translating India's existing educational strengths into a future-ready workforce to accelerate smart proteins.



Key recommendations



Leverage the National Education Policy 2020 provisions for fast-track inclusion in curricula

In July 2020, the National Education Policy (NEP) was introduced by the Government of India to ease the process of course revision and implementation to cater to evolving talent needs. Educational institutions could refer to the NEP 2020 curriculum reform protocols and take a learner-centric approach to gather feedback from students and the industry for designing new courses. Through a fast-track approval process, teaching institutions could proactively embed smart protein elective modules or value-added courses into relevant food technology or biotechnology degree programmes. In addition to traditional learning methods, creating theoretical courses for external learning platforms (such as SWAYAM) for government-certified national certificate programmes in smart proteins would also expand access to a wide range of learning audiences.



Encourage academia-industry partnerships to co-develop hands-on training programmes

A vast majority of students prefer real-world training and exposure through externally partnered programmes during the course of their education. Academic institutes—through formalised industry partnerships—could conduct hands-on training activities, such as industry-academia workshops, certificate courses, internships, and co-supervised capstone projects. Collaborating with industry experts and leveraging available resources for the best possible learning experiences would help prepare students for the real-world application of their knowledge in jobs.

As the sector gains maturity, the skillset requirements will evolve for even experienced instructors. Delivering hands-on training on specialised equipment will demand dedicated capacity-building for trainers themselves. By leveraging government-sponsored grants and partnering with the Ministry of Skill Development and Entrepreneurship-enabled skilling bodies (such as the Food Industry Capacity & Skill Initiative (FICSI) and Life Sciences Sector Skill Development Council (LSSDC)), developing targeted training-of-trainers programmes can help build a pipeline of qualified instructors and equipment handlers.



Establish a national consortium for coordinated upskilling initiatives

Representatives from government sector skill-building councils, startups, industries, and research institutes (such as IITs, NIFTETs, CSIR laboratories, and ICAR institutes) can come together to function as a multi-stakeholder training consortium. This established expert committee could collectively identify complementary industry and student needs, leading to the ideation of new upskilling programmes, including the design of electives and core modules for degree programmes and certificate courses. Such a government-backed consortium model for course design and implementation could ensure faster dissemination of new skilling initiatives.

Furthermore, the consortium could institute structured and regularised feedback loops for monitoring skill gaps identified post-recruitment and take into account syllabus improvements. This would ensure new teaching materials are created and updated regularly, keeping degree programmes tailored to evolving industry needs. To enable scale and coherence in this model, multiple training centres can be developed, where larger institutes with advanced lab facilities (such as IITs or CSIR laboratories) would function as Regional Training Hubs that support learners from regional universities, colleges, and vocational training centres. This network-led approach would support capacity building across states while ensuring nationwide alignment on training quality standards and priority skills for the smart protein sector.

Access the full report [here](#).