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GFIdeas India THE SMART PROTEIN INNOVATION COMMUNITY

## Scaling the future:

Collaborative solutions for a thriving smart protein sector in India

August 2024

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## OVERVIEW

The smart protein sector in India focuses on developing alternatives to conventional animal products like eggs, meat, and dairy to diversify protein sources in Indian diets, decrease the negative externalities of the current food system, and simultaneously drive economic growth and jobs across the value chain. The industry in India has seen sustained growth over the last five years, and like any other novel technology with the potential to transform a well-established industry, it has seen both highs and lows. Today, with over 100 smart protein startups focused on creating alternatives to animal-sourced protein, there is a clear opportunity to build a climate-resilient food system in India. The early-stage ecosystem has matured, and now is the time for coordinated action to accelerate scale-up.

The GFIdeas X Terrarium Focus Group Discussions were convened to address the critical challenges of scaling up infrastructure and financing within India's alternative protein sector. The sessions aimed to create a collaborative environment where stakeholders could engage in open and constructive dialogue, with the ultimate goal of deconstructing existing bottlenecks and exploring innovative strategies to overcome them.

The desired impact of these discussions was multifaceted. By bringing together a diverse group of ecosystem partners, the sessions sought to decentralise problem-solving. The underlying belief was that when various stakeholders share their unique challenges and solutions, it fosters a richer, more comprehensive understanding of the sector's needs. Through this exchange, the focus group discussions also aimed to empower participants to identify many practical solutions already existing within the industry that could be applied across different use cases.

To achieve these objectives, the discussions were organised into two parallel focus groups, each focused on a specific area: finance and infrastructure. This division allowed for a concentrated examination of the challenges and opportunities within each domain. Experts were invited to dissect six predefined bottleneck themes identified by the organising team and the GFIdeas community as critical barriers to growth.



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#### Research methodology:

To conduct an in-person expert focus group discussion, we employed a structured research methodology designed to yield comprehensive and actionable insights. We began by identifying and recruiting a diverse group of experts from the smart proteins sector, ensuring a mix of perspectives and expertise to enrich the discussion. Each participant was carefully selected based on their professional background and relevance to the research topic.

The focus groups were conducted in a controlled environment to minimise distractions and foster open dialogue. We designed and implemented a semi-structured discussion guide, which included key questions and topics to steer the conversation while allowing for flexibility for participants to explore relevant issues in depth. This approach ensured that all critical areas were covered while providing, but also provided room for spontaneous insights and discussion and ideas.

We adhered to Chatham House rules, recording the session with consent to capture detailed responses, which were then transcribed and analysed to create this document.\*

#### **Profile of Participants:**

**Kundan Thakur:** Assistant General Manager, Koncepo Scientech International

Subramani Ramachandrappa: Founder, Fermbox Bio

Dr. Priyankana Mukherjee: Assistant Vice President, IKP Knowledge Park

Dr. Pavan Kumar: Project Manager, CSIR CFTRI

Dr. Pranesh Sridharan: Chief Innovation Officer & Co-Founder, Alternative Protein Innovation Center (APIC)

Dr. Ashish Paradkar: Independent Consultant

Dr. Sandeep Sharma: CEO & Co-Founder, Neat Meatt Biotech Private Limited

Sudhir Kumar Pasupuleti Co Founder and CEO, Algrow Biosciences

Suraj Nair: Assistant Vice President, Deep Science, Deep Tech: Ankur Capital

Pradeep Rao: Co-Founder and CEO, Evolved Foods

Anand Nagarajan: Co-Founder & CEO, Liberate Foods (Shaka Harry)

**Jinesh Shah:** Founder, Alt X Ventures

Shashidhar Subramanya: Head of Corporate Technology, South Asia, Buhler Group

Karthik Varada: Venture Capitalist, Beyond Next Ventures

Sourabh Sobhti: Co-Founder, Neat Meat Biotech Private Limited

\*Please note that the insights shared in this document are a synthesis of the personal views and perspectives shared by the different focus group participants. The deep dive sections utilise these insights and incorporate anecdotal evidence from GFI India's sector understanding to create critical takeaways.



## INTRODUCTION

In the rapidly evolving alternative protein sector in India, the focus on infrastructure and financing for scaling smart protein in India as the central themes for the focus group discussions was a deliberate and strategic choice. These were selected because they represent two of the most significant and interlinked challenges that the sector faces in its journey towards scaling up and achieving mainstream adoption.

#### Financing: Fuelling innovation and growth

Financing is the lifeblood of innovation and growth, and in the alternative protein sector, it is a particularly critical enabler. The sector is capital-intensive, requiring significant investment not only in research and development but also in building out the necessary infrastructure, scaling up production, and navigating regulatory pathways.

In India, access to financing for smart protein ventures is still limited, with many startups facing challenges in securing the necessary funds to scale their operations. Traditional financing avenues, such as bank loans, are often not well-suited to the high-risk, highreward nature of the industry. Additionally, the sector is still relatively new, and many investors are unfamiliar with the unique challenges and opportunities it presents.

By focusing on financing during the FGD, the goal was to address these challenges headon. The discussions explored innovative financing models that could better support the needs of smart protein startups, such as access to venture capital and public financing, and outlined methods to streamline increased pools of capital into the sector. The aim was also to understand best practices from stakeholders who have managed to raise such funds.

The emphasis on financing was pivotal, as without adequate financial resources, even the most promising alternative protein innovations will struggle to reach their full potential.

#### Infrastructure: The backbone of scaling up

Infrastructure is the backbone of any industrial scale-up, and in the case of the alternative protein sector, it will play a critical role in the transition from niche markets to widespread consumer adoption. The infrastructure required for the industry is multifaceted, encompassing everything from specialised research and production facilities, supply chains to cold storage, transportation, and distribution networks.



In India, the challenges related to infrastructure are particularly pronounced. The country's existing infrastructure, designed primarily for traditional agricultural and animalbased industries, is not readily adaptable to the specific needs of alternative proteins. For instance, plant-based proteins often require dedicated processing facilities that can handle the complexities of different plant materials without the risks of cross-contamination with animal products. Similarly, precision fermentation and cultivated meat technologies demand highly specialised facilities that, albeit present to a degree with the growth of the biotech sector, are still in the nascent stages of development in India.

The decision to focus on infrastructure underscores that without significant advancements in this area, the sector will struggle to achieve the economies of scale needed to compete with traditional proteins on price, taste, and convenience—key factors that will determine consumer acceptance and, ultimately, the success of the sector.

#### Interconnected challenges

Infrastructure development requires substantial investment, and securing financing is often contingent on the existence of a well-established infrastructure. Conversely, the availability of financing can drive infrastructure development by enabling the construction of new facilities and the expansion of existing ones.

By addressing these themes together, the FGD aimed to create a comprehensive strategy for overcoming the bottlenecks that currently hinder the growth of the alternative protein sector in India. The insights gained from these discussions are intended to inform the development of targeted interventions that can accelerate the sector's progress and ensure that it is well-positioned to meet the growing demand for sustainable, alternative protein sources.



## EXECUTIVE SUMMARY

#### Key highlights from the Financing Focus Group Discussion:

International financing: Navigating international financing is challenging for Indian alternative protein startups due to restrictive regulations in place. Simplifying investment rules and improving the ease of doing business in India are crucial, and collaboration between startups, ecosystem builders, and government bodies can drive necessary policy reforms. Streamlining cross-border financing and fostering relationships with international firms will boost sector attractiveness and investment.

Infrastructure and Capital Expenditure (CapEx): High costs and inadequate infrastructure are financing issues that hinder scaling in the alternative protein sector. Government grants and incentives for infrastructure development can alleviate CapEx burdens. Shared facilities and leveraging existing infrastructure can optimise resources and reduce costs, and focussing on scale-up strategies and effective use of grants will enhance the sector's capacity for growth and innovation.

Innovative financial models and market validation: Traditional financial models often fall short for alternative protein startups seeking investment. Building robust trial facilities to prove scalability and efficiency is essential. Leveraging angel investors and forming strategic marketing partnerships can provide necessary capital and exposure, and using equity for marketing validates market potential, secures initial funding, and strengthens brand presence.

Investor trust: Investor trust in the alternative protein sector relies on improved transparency and accurate market assessments. Enhancing data reporting and showcasing successful case studies can boost confidence. Third-party validations and clear communication about growth prospects are crucial for addressing concerns and supporting informed investment decisions.

Market education: Effective and continued consumer communication about the benefits of alternative proteins is vital. Emphasising environmental advantages, like reduced carbon footprint and lower water usage, as well as nutritional and health benefits, are necessary for the growth of this sector. Educational and marketing campaigns highlighting these benefits that align with global sustainability goals can shift consumer perceptions.



**Government relations and policy advocacy:** Engaging proactively with government bodies is key to aligning policies with the needs of the alternative protein sector. Demonstrating how alternative proteins support national goals and priorities and integrating them into dietary guidelines can garner support. Leveraging public funding and existing agricultural frameworks will foster a supportive environment for sector growth.

**Strategic pricing and market accessibility:** For mainstream acceptance, alternative proteins must be competitively priced and accessible. Reducing production costs through technological advancements and economies of scale is crucial. Implementing tiered pricing strategies and using locally sourced ingredients can make products more affordable. Adapting products to local tastes and ensuring wide retail availability will drive consumer trial, adoption, and market growth.

#### Key highlights from the Infrastructure Focus Group Discussion:

**Plant protein is a game of scale:** To encourage major food processing companies to expand into protein extraction, a structured project plan that they can address with scale needs to be developed. This plan should address their reluctance to adopt new technology by offering detailed market demand forecasts and showcasing successful case studies. Showcasing the possible incentives they can benefit from and detailing the clear technological benefits that they can provide will help them transition smoothly and scale effectively.

**Role of mentors in scaling up:** A group of mentors can significantly impact a startup's success by guiding them to focus on the right product, address scale-up challenges during the R&D phase, and navigate various obstacles. To maximise this benefit, industry experts need to be engaged early on in the process. For instance, GFIdeas or Smart Protein Forum events can be leveraged by ecosystem players on an ongoing basis to meet the right mentors.

**Silver bullet facilities:** The diverse challenges and capital requirements across different modalities in the alternative protein sector highlight the need for tailored solutions and specialised infrastructure. Each modality involves distinct equipment and processes, underscoring the importance of creating dedicated centres of excellence with sufficient industry experience and research mentorship. Allocating funding, potentially through public or alternative investments, to develop world-class facilities specifically for smart proteins or upgrading existing common instrumentation facilities can address these unique needs. By consolidating resources and expertise into these state-of-the-art centres, startups can access high-quality support and advanced technology. This approach not only enhances the scalability of individual startups but also drives overall sector advancements, fostering innovation and optimising the benefits across the industry.



**Government and policy support:** To secure greater government support, it is advisable to align with existing priorities, focussing on indigenous ingredients like millets as well as other agricultural and farmer initiatives. Further, the mainstream alternative protein narrative must adapt to resonate with national interests like addressing protein deficiency and expanding exports.

**Determinants of scale and competitiveness:** Given that the technology and market for plant-based proteins are quite well-established, addressing the gap in large-scale investment to achieve high commercial volumes is crucial. To position India as a global leader in this sector, a robust supply chain utilising scalable and indigenous raw materials must be developed, and this can be a potential whitespace for entrepreneurs entering this sector to explore in the future.

**Founder collaborations and community:** Non-IP-related insights and solutions to common challenges are highly valuable for founders. Enabling structured discussions across various modalities can facilitate this exchange of knowledge. Additionally, startups often need immediate solutions, and fostering strategic communication and partnerships—such as one startup renting equipment to another at a nominal cost—can provide practical interim solutions to infrastructure challenges.



## SECURING FINANCING FOR SMART PROTEIN: A DEEP DIVE

The following were identified as key reasons for smart protein startups' and ventures' inability to secure financing for scale-up:

- **Investor confidence:** Startups struggle to effectively demonstrate market potential to attract investors.
- **Government grants and subsidies:** Government grants and subsidies are either insufficient, delayed, or released in tranches, impacting venture growth.
- **Collaboration:** Startups find it challenging to establish successful financial partnerships and alliances with established food and agriculture companies or conglomerates.
- **Infrastructure CapEx:** Startups face bottlenecks due to an inadequate capital stack (equity, debt, and grants) necessary for R&D and scaling beyond the lab.
- **Growth stage capital:** There is a lack of scale-up capital (Series A/B funding) for alt protein ventures.

### **KEY TAKEAWAYS**

**Disclaimer:** The focus group discussion on scaling up financing in the alternative protein sector examined the sector as a whole, identifying key challenges and long-term solutions that require systemic changes. While the solutions provided are informed by our expertise, they are designed based on the detailed insights and contributions of the FGD participants. Keeping the key reasons identified above as a guide, several sub-challenges were identified, prioritised, and discussed, all of which have been outlined below.

#### International financing

One of the most significant challenges facing the sector is the restrictive regulatory environment that complicates international financing. The complications and environment of raising capital from investors domiciled across borders create a daunting landscape for startups. To mitigate these issues, there is an urgent need for policy reforms aimed at simplifying investment regulations and enhancing the ease of doing business in India.

Indian startups and companies need to work in tandem with ecosystem builders to incrementally inform key government bodies whose mandate falls under increasing startup funding and other interests, such as sustainable food systems.



Streamlining the process for international investors and introducing more flexibility in cross-border financing are crucial steps towards attracting substantial foreign investments. Moreover, fostering relationships with already interested international firms through strategic investment dialogues can further draw capital into the sector, bolstering the overall ecosystem. Understanding their intent and pitching for what their intent is, as well as their overall investment thesis, is crucial for accessing funds from cross-border sources. Ecosystem initiatives and startups should focus on creating transparent, predictable, and efficient investment frameworks that align with global standards or even region-specific standards, thereby reducing the perceived risk and enhancing the attractiveness of the Indian alternative protein sector to foreign investors.

#### Infrastructure and Capital Expenditure (CapEx)

Infrastructure remains a significant bottleneck, with high costs associated with setting up specialised facilities, such as fermentors for cultivated meat. The current infrastructure is inadequate for scale-up needs, with government support not keeping pace with the industry's growth. Addressing this challenge requires a multi-pronged approach involving the government, private investors, and public-private partnerships.

Government grants targeted specifically at building infrastructure for the alternative protein sector, coupled with incentives for private investors, could significantly reduce the CapEx burden. Additionally, developing shared facilities and leveraging existing infrastructure can optimise resources and lower costs for individual startups, making entry and scale-up more feasible. This strategy not only reduces the initial financial outlay required by new entrants but also enhances the sector's overall capacity to innovate and grow. For startups, focussing on the scale-up strategy and building on current ecosystem enablers (such as grants that focus on infrastructure scale-up in general) should be a priority.

#### Innovative financial models and market validation

The nascent state of the alternative protein sector means that traditional financial models often fall short. Investors require proof of concept and market validation before committing funds, especially in light of past losses in similar ventures.

Startups need to focus on building robust trial facilities that can serve as proof of concept for potential investors. These facilities should be designed to demonstrate scalability and efficiency, thereby assuring investors of the viability of their investments.



Leveraging angel investors and strategic marketing partnerships can provide both capital and market exposure. Equity in return for marketing, as practiced by some companies, can be a cost-effective way to gain visibility and validate market potential, ensuring a smoother path to financial viability. This approach not only helps in securing initial funding but also in building a brand presence that can attract further investment and customer interest.

#### Investor trust

Transparent reporting and realistic market assessments are crucial for gaining investor trust. The sector must improve its data reporting and market analysis to present a clearer picture of the total addressable market (TAM) and realistic growth projections. Startups should focus on third-party validations and case studies that highlight successful market penetration and consumer acceptance, thereby enhancing investor confidence and paving the way for more informed investment decisions.

#### Market education

# The alternative protein sector must better communicate the environmental, ethical, and health impacts of traditional food systems to both consumers and investors.

This gap in understanding the short- and long-term benefits of smart protein represents a pivotal area for education and awareness. Similar successful strategies have been employed in the promotion of electric vehicles (EVs). The alternative protein sector needs to amplify its efforts to communicate the substantial environmental benefits of diversifying from traditional animal-based proteins to sustainable alternatives. These communications should highlight the reduced carbon footprint, lower water usage, and decreased land requirements, thereby aligning with global sustainability goals.

Moreover, health benefits, such as the absence of antibiotics and hormones, lower fat content, and absence of contaminants like those found in conventional meat or vegetarian protein products (e.g., issues highlighted with paneer in India), should be emphasised. Educational campaigns can leverage these points to shift consumer perception, illustrating that alternative proteins are not just ethical choices but also healthier and more sustainable.

#### Government relations and policy advocacy

There is little alignment between government policies and the needs of the alternative protein sector. Bridging this gap requires greater engagement with government bodies,



demonstrating how alternative proteins can align with and support national agricultural and nutritional goals. Proposing the integration of smart proteins into national dietary guidelines and showcasing how they can address protein deficiencies can help garner governmental support. Furthermore, aligning product development with governmentsupported initiatives, such as the promotion of millets, offers an opportunity to tap into existing agricultural frameworks and subsidies, reducing costs and enhancing market alignment. It is advisable to set up ventures or specific focus areas that target access to larger public pools of capital, allowing for a stronger use case for public funding.

#### Strategic pricing and market accessibility

Strategic pricing emerged as a fundamental theme in the discussions, emphasising the need for alternative proteins to be competitively priced to achieve mainstream acceptance. The sector must look towards reducing production costs through technological advancements and achieving economies of scale, much like the solar industry's trajectory from premium pricing to affordability.

Implementing tiered pricing strategies that reflect the diverse spending power of the Indian consumer base is essential. Such strategies could include premium products for higher-income segments and more affordably priced products for lower-income consumers, which could help in rapidly scaling market penetration.

Additionally, local sourcing and manufacturing can reduce costs and enhance production sustainability. Utilising indigenous crops and local manufacturing facilities not only supports the local economy but also reduces logistical expenses, making these products more accessible and affordable. Aligning product development with local tastes and dietary habits and ensuring that these products are available through widely accessible retail channels can further drive consumer acceptance and market growth.



## SCALING INFRASTRUCTURE FOR SMART PROTEIN: A DEEP DIVE

The following were identified as key reasons for smart protein startups and ventures finding it challenging to scale up their infrastructure:

- **Technology incubators and accelerators:** Technology incubators and accelerators are not yet actively developing infrastructure and expertise in alternative proteins.
- **Industry-academia connections:** The collaboration between universities, research institutions, and industry is considerably low.
- **Infrastructure-linked policies:** State governments are yet to identify the benefits of incentivising the creation of manufacturing hubs.
- **Talent:** Shortage of vocational talent and technical talent.
- Infrastructure capital: Insufficient investment in equipment.
- **Robust supply chain:** Challenges in creating and scaling a reliable, cost-effective supply chain for raw materials and ingredients.

### **KEY TAKEAWAYS**

**Disclaimer:** The focus group discussion on the lack of infrastructure in the alternative protein sector was examined by modality, namely, plant-based, fermentation-derived, and cultivated. Since each of the modalities has a different set of challenges and requires tailored solutions, the discussion has been broken down to reflect this. While the solutions provided are informed by our expertise, they are designed based on the detailed insights and contributions of the FGD participants. The following analysis outlines the main challenges and highlights some solutions that emerged from this collaborative dialogue.

#### PLANT-BASED PROTEINS

#### Infrastructure and investment needs:

Setting up commercial-scale production facilities for making plant protein extracts and concentrates requires substantial capital investments to become viable and competitive in India and globally. Today's startups are playing in the \$1 million (INR 3-5 crore) range and are unable to move on to the next stage due to the high capital expenditure cost required. Given the nascency of the sector, it is unfair to expect young startups to raise further capital, and hence the role of large food processing companies becomes crucial. Startups can focus on building partnerships with these companies, although with the risk of losing equity,



but with the benefit of proving their products at scale, which can be achieved through the large infrastructure capabilities provided by these food processing companies. This is very relevant for plant-based proteins, given that there is an established customer base and a strong global demand. Further, the technology is simpler and more mature compared to other modalities, i.e., microbial fermentation or cultivated meat proteins.

#### Ecosystem players must look to collaborate with current pulse and grain processing facilities that can adapt to manufacturing plantbased protein, reducing initial capital expenditure.

Additionally, advocating together with central and state governments to increase the share of alt-protein-specific facilities can be critical to addressing high infrastructure needs.

#### Role of mentorship and critical feedback:

A rising trend shows that startups often become mired in extended lab trials, depleting their funding before achieving significant progress. To address this, startups should actively seek critical feedback and mentorship early in their development process. Embracing constructive criticism and consulting with industry experts can provide valuable insights for scaling up and refining their approach. Engaging with experienced technicians and mentors before launching a pilot can help identify potential challenges and avoid costly mistakes. Strong mentorship from industry leaders and investors is crucial, as it provides guidance on best practices and strategies for overcoming obstacles. By leveraging these resources, startups can improve their chances of making significant advancements and achieving successful outcomes, ultimately accelerating their path to market and ensuring more efficient use of their resources.

#### Enhancing participation of food processing companies:

Limited involvement of large food (pulses, grains) processing companies in the plantbased protein sector remains a challenge. Although organisations that currently produce pulses are showing interest in protein extraction, it often does not translate into tangible outcomes for the plant-based alternatives industry. This hesitancy primarily stems from the perceived complexity of adopting new technologies and concerns about market acceptance. To address this, startups should develop and present a clear business case and comprehensive project plan that validates both the technology and market potential. This approach can effectively demonstrate the viability of plant-based alternatives and alleviate concerns about technology adoption and market risks. Additionally, partnering with established marketing and sales firms can facilitate successful commercialisation and market entry, making it easier for large food processing companies to engage and invest in the plant-based protein sector.



#### Supply chain dependency and insufficient optimisation:

Supply chain dependency and insufficient optimisation pose significant challenges to scaling plant-based protein production in India. One major issue is the country's limited production of high volumes of pulses, which necessitates the question: Which pulse protein should India focus on to establish itself as a global leader, and how can we optimise its utilisation? To address this, India should concentrate on leveraging indigenous and abundant raw materials.

#### By leveraging locally available pulses with high protein content, India can significantly reduce its reliance on imports and lower production costs. Innovators who focus on unlocking this solution will play a pivotal role in advancing the sector and driving its growth.

Developing efficient processing methods for these raw materials will be crucial in converting them into high-quality protein isolates, thus enhancing cost-effectiveness and market competitiveness. Building robust local supply chains for sourcing and processing these pulses will further support scalable production and minimise supply chain disruptions. By focusing on these strategies, India can enhance its plant-based protein capabilities, reduce dependency on imported ingredients, contribute positively to domestic agriculture, and position itself strongly in the global market.

#### MICROBIAL FERMENTATION

#### Growth environment:

Several startups in the microbial fermentation sector face significant hurdles when scaling from R&D to pilot production, struggling to advance from 20L to 100L and then to 1000L capacities. This challenge is often compounded by a lack of specialised infrastructure necessary for microbial fermentation, such as advanced reactors and optimised processing facilities. Combined with intense investor pressure, these issues can lead to burnout and force startups to relocate or shut down. To address these challenges, it is crucial to establish more accessible infrastructure solutions and provide targeted mentorship. Industry experts who have successfully scaled microbial fermentation processes can offer invaluable guidance, helping startups select the right microbial hosts, design scalable systems, and optimise production workflows. Additionally, adequate government (public) investments in shared facilities or incubators that are equipped with the necessary infrastructure can alleviate some of the CapEx burdens and resource constraints. By building and growing in an environment where startups can have access to both advanced infrastructure and experienced mentors,



they have an improved chance of scaling up quicker by reducing their reliance on trial and error. Such support mechanisms not only enhance the efficiency of scaling efforts but also ensure that startups are better equipped to navigate the complexities of microbial fermentation.

#### Startups work in silos:

Translation from R&D to commercialisation is often nonlinear and complex. Corporations benefit from the ability to work closely with R&D teams, allowing them to develop products with a clear commercialisation strategy and efficiently scale from 10L to 100L capacities. In contrast, startups frequently operate in isolation with maximum time, energy, and focus on R&D stages, lacking the foresight and comprehensive planning needed to navigate the entire journey from concept to market.

#### Startups should adopt a more integrated approach, focusing on both R&D and commercialisation from the outset. This could look like incorporating market analysis, customer feedback, and pitching scalable production strategies.

The option of engaging in pilot programs or joint ventures with larger firms can also facilitate smoother scaling and market entry.

#### Lack of reliable tools to assess feasibility:

To assess the feasibility of a product or process is not a simple task. Existing tools in the market often present overly optimistic projections and are primarily geared towards investors, which can skew the true potential of a technology. A more practical and impactful solution is to establish a non-incentivised consortium (example: The Precision Fermentation Alliance) of industry experts dedicated to **collectively** solving tech-related innovation challenges and assessing the viability, cost-effectiveness, and overall potential of technologies and processes. Such consortia can provide valuable, unbiased insights and create proven models and standardised benchmarks by aligning with established and successful companies. This collaboration not only aids in refining technologies but also opens avenues for infrastructure sharing and accelerates the scaling process for startups. Startups can benefit from accelerated development cycles, access to infrastructure and shared resources, and strategic guidance that propels the sector forward.

#### Finding the right mentor/industry expert:

Startups working on similar technologies often face identical challenges but tend to work in silos, which can lead to inefficiencies and a higher risk of failure across the sector.



To overcome this, forming an alliance where startups mentor each other—without direct competition—can be crucial. By pooling their collective brainpower and sharing knowledge, these startups can collaboratively solve technical challenges, significantly increasing their chances of success and contributing to the overall vitality of the sector. Moreover, industry experts often find themselves in a challenging position when investors seek their opinions during due diligence. While they are committed to providing honest assessments, highlighting a startup's shortcomings can inadvertently hinder funding opportunities across the sector. Therefore, it is strongly recommended that startups engage with industry experts and mentors before initiating fundraising. This early feedback allows startups to address potential issues in advance, ensuring they are better prepared and more likely to secure the necessary funding.

#### Lack of standards, patterns, and alignment:

The lack of proven models, standardised benchmarks, and alignment presents major obstacles for startups, as it restricts their ability to otherwise align their goals and milestones with those of more established, successful companies. This alignment not only enhances investor confidence but also provides a clearer pathway for growth. Additionally, advisory support from self-directed consortiums of industry experts into categories of startups (e.g., alternative dairy protein) makes guidance more effective. This grouping helps identify successful patterns and best practices for each category of startups and, hence, tackle challenges more efficiently.

#### CULTIVATED MEAT

#### The high costs associated with production:

High production costs present a significant challenge, with cultured media often accounting for 50% of total process costs, affecting investments required for scaling infrastructure. To mitigate these issues, a practical solution is for the government to increase capital allocation through its incubators specifically targeted at this technology. By funding shared facilities within these incubators, startups can collectively access advanced infrastructure and reduce individual capital outlays. This approach not only alleviates the financial burden on startups but also fosters collaborative environments where resources and expertise are shared, leading to more efficient scaling and reduced overall costs.



Startups must leverage incubators or institutions where these facilities lie in order to enable economies of scale and accelerate their growth while minimising the financial barriers associated with high production costs.

#### Communication and collaboration to help scale up infrastructure:

Despite a growing openness to resource sharing, cultivated meat startups face challenges in scaling up due to inadequate collaboration in this emerging field. While valuable non-IP-related knowledge on strategic scaling processes and access to specific resources can significantly aid startups in streamlining decision-making and avoiding common pitfalls, many startups are not benefiting owing to the insufficient platforms for sharing experiences and lessons learnt from each other's successes, failures, and experiments. To overcome this, startups should proactively seek out and participate in dedicated industry forums or consortia where they can engage with peers and experts. This can provide startups with crucial insights, best practices, and shared experiences where they can access collective knowledge essential to scaling up. Additionally, startups should explore partnerships with established companies or research institutions that can offer access to advanced infrastructure and technical resources. By actively engaging in these collaborative efforts and leveraging external expertise, startups can overcome core technical and infrastructurelevel challenges in the sector.

#### Mismatch in speed:

The challenge with government incubators is that startups require immediate solutions, but the process to engage with incubators and receive a price quote often takes months. Startups don't have this luxury of time and often view this route as inefficient and tend to discard it. This is common to both kinds of startups, i.e., microbial fermentation and cultivated meat. This highlights an opportunity for incubators to explore more autonomous and flexible channels to onboard startups efficiently.



#### A common challenge among the three modalities is:

#### Enabling ease of access to government-aided infrastructure:

Startups in the early stages should have streamlined access to government-aided bio-incubators. Currently, the lack of a robust mechanism makes it difficult for startups to utilise these resources. Government initiatives should prioritise creating smoother pathways for startups to access equipment and facilities, ensuring a more seamless integration into the ecosystem. Additionally, when large companies receive government funding to build infrastructure, a system should be implemented to allow startups to access these facilities at a subsidised cost. This approach, commonly seen in other sectors, should be adopted within the alternative protein sector as well. By establishing these systems, startups will have greater access to government-funded infrastructure, significantly enhancing their chances of success in this ecosystem.



## CONCLUSION

In conclusion, the discussions highlighted the immense potential and the unique challenges faced by the alternative protein sector in India. By fostering collaboration among startups, mentors, and industry experts and streamlining access to critical infrastructure and financing, the sector can overcome significant barriers to growth. The importance of government support, innovative financial models, and strategic partnerships cannot be overstated in driving this industry forward. Together, these efforts will not only strengthen the foundation for startups but also position the alternative protein sector as a key player in India's sustainable future. Through continued collaboration and proactive engagement, we can create a thriving ecosystem that supports innovation, scalability, and long-term success.

Overcoming the financial and infrastructural challenges in India's alternative protein sector demands a concerted and unified approach. The takeaways highlighted above represent a collaborative effort by the ecosystem, for the ecosystem, offering practical and actionable solutions. These insights are designed to be deeply solution-oriented, providing entrepreneurs and startups with real-world examples and proven strategies that can be directly applied to navigate challenges and capitalise on growth opportunities. By leveraging this collective wisdom, stakeholders can drive meaningful progress and ensure the sector's robust and scalable development.

#### Agenda for future discussions

Our aim is to continue these focus group discussions and continue to build on this document with more challenges and subsequent solutions found with funding and infrastructure, while also exploring other crucial levers such as talent, regulation, and communication, among others. Our aim is to continue to convene the ecosystem to address such levers and ultimately grow the sector to create a more sustainable food system.





#### Additional resources for ecosystem stakeholders:

- **GFI India's Smart Protein Company Database** showcases the landscape of plant-based, cultivated, and fermentation companies, including consumer brands, manufacturers, and ingredient companies in India. To be featured, fill out this **intake form** and if you are actively fundraising, sign up **here** to get access to GFI India's investor directory, pitch deck reviews, and/or practice pitch sessions.
- Get access to GFI India's <u>Talent Database</u> which includes professionals, scientists, and students wanting to get involved in building the future of food to build your all-star teams.
- Our <u>**GFI Global Mentor Program</u>** enables entrepreneurs and startups to have 1:1 mentoring sessions with subject-matter experts across the alternative protein ecosystem.</u>
- Our <u>Ecosystem Database</u> lists supporting stakeholders of all kinds from comanufacturers, ingredient suppliers, equipment suppliers, and R&D consultants to regulatory advisors, branding & design partners, business development specialists, and other experts suited for your specific needs.
- Joining our **Investor Database** allows investors access to an active deal flow of alternative protein companies currently fundraising in India. To get listed on our database, investors are invited to share key information about their mandates and areas of interest.





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## ACKNOWLEDGEMENTS

#### The Good Food Institute India

The Good Food Institute India (GFI India) is the central expert organisation, thought leader, and convening body in the Indian alternative protein or smart protein sector. As part of an international network of organisations with partners in the U.S., Brazil, Europe, Israel, and Asia Pacific, GFI India is on a mission to build a secure, sustainable, and just global food future. With unique insight across science, business, and policy, we are using the power of food innovation and markets to accelerate the transition of our food system towards smart proteins. In building the sector from the ground up in India, we're aiming to establish a model for its growth all across the developing world.

One of our flagship initiatives is the **<u>GFIdeas India Community</u>**, which over the last four years has evolved to become the go-to group for collaboration, knowledge sharing, and networking for the smart protein ecosystem, with more than 1,200 members. The community, formed and convened by the Good Food Institute India (GFI India), consists of scientists, academics, entrepreneurs, investors, industry professionals, and students at the forefront of smart protein innovation and research, working collectively to accelerate this sunrise sector in India.

Join the GFIdeas India community: Please complete the two-step process to join:

- **Step 1:** Complete the **Intake form** (takes 5-7 minutes) •
- Step 2: Once you've filled out the form, please put in a request to join our LinkedIn group

#### Terrarium

Terrarium is India's sustainable materials startup platform, supporting ventures launch and scale. It is leading the transition towards mainstream adoption of sustainable materials by building the ecosystem to support startups commercialising their innovations. Initiatives and services include direct engagements with startups through a suite of venture-building services, building the ecosystem through community events, and thought-leadership with original research. At Terrarium, current areas of interest within materials include textile, smart proteins, packaging and built environment. To know more, please visit the website.

Sign up to get or stay involved in the following:

- 1) Research (Focus Group Discussions)
- 2) Community events
- 3) Startup services