Good Food Institute

Funding the build

A review of the financing landscape for growing the alternative protein sector

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Purpose

Conventional meat production contributes to some of the world's most pressing challenges. As global demand for meat continues to rise, achieving our climate, biodiversity, public health, and food security goals requires reimagining how meat is made.

Alternative proteins—meat made from plants, cultivated from animal cells, or fermentation-derived—are agricultural innovations that use far less land and water, reduce emissions, mitigate risks associated with antibiotic resistance and pandemic-causing zoonotic diseases, and could open up more sustainable livelihoods around the world. Increased investments in and the acceleration of alternative protein innovation, infrastructure, and industry growth are critical to transitioning toward these new foods at a scale and pace needed to deliver planetary and public benefits—cleaner air and water, reduced public health risks, and a more resilient, diverse food supply chain.

As a nonprofit, science-driven think tank working to build a more sustainable, secure, and just food system by advancing alternative proteins, the Good Food Institute (GFI) educates and catalyzes the field via timely open-access research and ecosystem-wide solutions. Such solutions remove bottlenecks, tackle the biggest challenges, build capacity within and across the industry, and accelerate the path to mainstream adoption—all essential for meeting global climate, biodiversity, food security, and public health goals.

This guide covers a key bottleneck: financing challenges and constraints facing alternative protein companies. It reviews capital pools beyond venture capital and provides a realistic assessment of the funding landscape for alternative protein scale-up and commercial manufacturing that will help transform protein production in ways that benefit the public good.

Methodology

This report was prepared based on in-depth interviews with participants from across the alternative protein industry, including later-stage startup companies and capital providers, and supplemented with publicly available information. To ensure the information in this report represents a broad range of perspectives, we solicited input from a diverse group of industry stakeholders and formed an industry working group to guide the formation of this report as well as its content. Additionally, the report draws on GFI's research reports and team of experts.

About GFI

The Good Food Institute is a nonprofit think tank working to make the global food system better for the planet, people, and animals. Alongside scientists, businesses, and policymakers, GFI's teams focus on making plant-based, fermentation-derived, and cultivated meat delicious, affordable, and accessible. Powered by philanthropy, GFI is an international network of organizations advancing alternative proteins as an essential solution to meet the world's climate, global health, food security, and biodiversity goals. To learn more, please visit www.gfi.org.

The Good Food Institute is not a licensed investment or financial advisor, and nothing in this report is intended or should be construed as investment advice.

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Introduction

Alternative protein companies have flourished over the last decade, benefitting from ample capital availability, particularly between 2019 and 2022. Companies raised capital from the private sector, which was searching for yield amid a low-interest rate environment, and to a lesser extent from governments (primarily research and development funding), as leaders gained awareness of alternative proteins' role in tackling global challenges like climate change, food security, and public health.

These early-stage investments created a growing pipeline of alternative protein companies ready to scale up manufacturing. To continue raising funds, early-stage companies moving out of the research and development (R&D) phase will need to prove that their technology and processes can scale from lab- to pilot-stage manufacturing and demonstrate their scaled unit cost economics and a path to revenue. Later-stage startups who are manufacturing at pilot and demo scales and are ready to commercialize will need to prove their ability to manufacture products consistently at scale, establish a market sales track record, and present credible pathways to profitability. These factors have become paramount for companies to secure further investment for growth.

Companies wishing to scale by building self-owned manufacturing facilities will require significant capital. We estimate that 10 million tons of alternative protein production annually (equivalent to 2.5 percent of expected global meat consumption by 2030) would require capital expenditures of between $10 and $18 billion for plant-based meat alone. We expect it to approach an order of magnitude higher for the more nascent and infrastructure-deficient fermentation and cultivated industries.

This need for capital has coincided with a retracement in private-sector funding. The tightening of U.S. monetary policy that began in March 2022, combined with a tempering of exuberance for plant-based meat among U.S. consumers, led some equity investors to retreat from the industry. Notably, venture capital (VC) investors who poured money into alternative proteins to fund everything from early-stage R&D to capital-intensive manufacturing facilities, have significantly scaled back funding and realigned their focus on high-growth, rapidly scalable, asset-light business models with the potential to quickly deliver high returns.

In this new environment of scarce VC—expected to be a medium-term correction—alternative protein companies searching for other sources of growth funding are struggling to find it for several reasons. First, both alternative protein companies and their VC investors generally lack knowledge about the various types of capital pools that exist beyond VC and public markets, the former of which has been the primary source of funding to date. Second, most alternative protein companies are resource-constrained startups that cannot afford to hire teams of finance specialists to build this knowledge and hunt for capital. Third, many public capital pools have complex requirements or do not explicitly support alternative proteins, so navigating these government programs can be time-consuming and difficult. Finally, startups that approach private capital providers (both equity and debt) face high rejection rates.

Companies are struggling to understand the reasons for their fundraising challenges and whether the constraints are within their control or are more systemic. Some companies suspect their fundraising challenges relate either to internal human resource constraints (solvable with additional/specialized hires) or to business model choices such as focusing on consumer products (B2C) rather than business-to-business (B2B) ones (solvable by pivoting their business model). Some companies believe the constraint is the industry-wide issue of novel food market risk, which they believe is solvable with long-term offtake contracts. Finally, some companies attribute the challenges to the tighter funding environment resulting from tighter U.S. monetary policy. Is it all, some, or none of these factors? Without getting to the bottom of this, companies are impaired in making critically important strategic decisions.

Overview

The financing challenge facing alternative protein companies is a major industry bottleneck. This financing guide, created for alternative protein companies, reviews capital pools beyond venture capital and provides a realistic assessment of the funding landscape for alternative protein scale-up and commercial manufacturing. This initial phase of GFI's research is focused on U.S. companies or companies focused on the U.S. market opportunity.

Below is an overview of this guide's content.

Part 1: The co-manufacturing decision

In Part 1, we discuss contract manufacturing (co-manufacturing or co-man) as an asset-light alternative to constructing a self-owned facility. We summarize the general advantages and challenges, as well as technology-specific considerations, and provide tips for companies evaluating and pursuing this approach. We also summarize the advantages and challenges, both general and technology-specific, of constructing a self-owned facility.

Part 2: Capex requirements and the funding landscape

In Part 2, we discuss the funding requirements for alternative protein scale-up. This includes an overview of capital expenditure (capex) requirements for self-owned pilot and demo facilities and self-owned commercial-scale facilities. We show how the target funding mix should ideally change as a company grows to include affordable, long-term debt and government incentives to lower the average cost of capital.

We also address commonly discussed pools of capital for commercial manufacturing, and provide our assessment of different capital pools in terms of what they are designed to fund, good funding candidates, and access challenges.

Photo courtesy of Impossible Foods

Part 3: Key topics: project finance and long-term offtake

In Part 3, we delve into two commonly discussed topics related to funding alternative protein manufacturing. While these topics are often viewed as key solutions, we anticipate that their impact will likely remain limited in the short to medium term.

The first topic that many companies and equity investors talk about is the potential of project financing for funding self-owned alternative protein manufacturing facilities as this form of financing has been used to fund large infrastructure projects globally. Second, the industry often discusses the need for long-term offtake contracts as a de-risking solution to unlock project financing and other non-dilutive funding.

We provide overviews of both of these topics, discuss their applicability to alternative proteins, and explain why these avenues are likely not viable solutions for the industry in the short to medium term, at least not without innovative solutions that shift market risk to a more risk-tolerant capital pool.

Part 4: Potential paths forward

In the context of a newly constrained equity funding environment (which is expected to persist) and the highly constrained non-dilutive funding landscape, Part 4 covers pools of capital that currently fund alternative proteins as well as promising approaches that may unlock additional capital to accelerate the industry in the coming years.

We first highlight bright spots on the funding landscape, including equipment leasing, sovereign wealth funds (SWFs), and an innovative platform to facilitate strategic partnerships between large corporates and startups to scale manufacturing.

Then, to recognize the U.S. government's transformational support of strategically important industries like energy as well as its emerging interest in alternative proteins, we assess two U.S. government pools—the U.S. Department of Energy Loan Programs Office's Title 17 Program and the U.S. Department of Agriculture's Business and Industry Loan Guarantee Program—for their applicability to alternative protein funding.

Given the continued importance of equity funding, we also share insights on the shift in venture capital funding and discuss which business models are best positioned to secure venture funding in the current environment. Finally, we discuss innovative approaches that could help unlock larger pools of long-term debt financing, first by conceptualizing how blended finance could be used in the alternative protein industry to leverage philanthropic and public funding and then by highlighting a market-shaping initiative to accelerate the scale-up of alternative proteins by alleviating manufacturing and supply chain bottlenecks and structuring volume offtake guarantees with concessional capital.

Part 1: The co-manufacturing decision

In an environment of constrained access to capital and one in which equity investors are increasingly favoring asset-light expansion models, companies should thoroughly evaluate co-manufacturing and other asset-light approaches before deciding to build a self-owned facility.

In fact, major food companies (such as Kellogg, General Mills, and Frito-Lay) utilize co-manufacturing to produce some of their products, particularly those not core to their brands and businesses, demonstrating the potential advantages of such an approach.

In this section, we summarize high-level considerations for evaluating co-manufacturing vs. self-owned facilities. Many conclusions are based on our industry interviews for this report, as well as recent reports published by GFI, including:

Plant-based meat manufacturing capacity and pathways for expansion

Manufacturing capacity landscape and scaling strategies for fermentation-derived protein

Trends in cultivated meat scale-up and bioprocessing

CDMO *vs.* CMO

Contract development and manufacturing organizations (CDMOs) provide a broad range of services related to ingredient and product development, including process development, scale-up, and manufacturing.

Contract manufacturing organizations (CMOs) focus solely on manufacturing activities. They are not generally involved in the early-stage development work.

Considerations for the use of co-manufacturing across the alternative protein industry vary significantly depending on the technology employed and the production stage (i.e., lab vs. pilot/demo vs. commercial scale). However, generally, co-manufacturing offers companies several benefits and drawbacks compared to a self-owned facility.

There is an important distinction between contract manufacturing and toll manufacturing. Both are agreements between companies and manufacturers, but in toll manufacturing, the company is responsible for raw material sourcing and management. This protects sourcing information, control over ingredient quality, and intellectual property (IP). As a result, it is a commonly used route for the plant-based industry. However, this leads to steep tolling fees and supply chain management challenges. In contract manufacturing, the manufacturer sources and supplies the ingredients and is sometimes more involved in the development process.

General advantages of co-manufacturing

Lower initial capex. For plant-based protein companies, the cost and time required to locate and secure existing co-man capacity is often relatively small ($10,000—$100,000), especially if the process can utilize existing equipment from other industries. However, even if co-man equipment modifications are required, such as for precision fermentation downstream processing, capital expenditures can be lower ($5—$50 million) than constructing a demonstration or commercial facility.

Flexible production. Co-mans can enable companies to scale production up or down incrementally, in line with market demand. However, contract manufacturing organizations (CMOs) typically prefer locking in more consistent and larger-scale usage agreements, which can result in lower unit production costs for companies.

Ability to leverage production talent and expertise. Partnering with an experienced co-man for production, especially a contract development and manufacturing organization (CDMO), can enable companies to allocate human resources to other critical functions, such as product innovation and marketing, once the initial process set-up is complete.

General challenges of co-manufacturing

Potential difficulty locating suitable capacity. Co-manufacturing works best when there are co-mans with production capacity that is optimized, fit-for-purpose, and suitably scaled. Most co-mans are designed to handle multiple products, which can mean they are less optimized for a particular product or process. Currently, suitable capacity is more readily available for plant-based product and ingredient companies than for fermentation-derived proteins with customized downstream processes or for cultivated meat companies in general.

Lower control over production. Companies with strict quality standards, specific equipment operating requirements, and/or customization at various stages of production may find co-manufacturing a suboptimal choice due to the model's inherent lower level of company control.

Iteration cycles. CDMOs can support bioprocess development and small-scale production, but by the time commercial-scale production is required, CMOs usually require a "lock in" for which processing operations will be used. Typically, contracts and costs are determined by equipment and process choices. For CMOs, however, the development of bioprocesses should be done before engagement, as CMOs are designed to consistently manufacture products with established processes and specifications. For companies who are still iterating on their bioprocesses and/or products, commercial manufacturing using a CMO may not be feasible given the limitations in rapidly modifying equipment and processes.

Higher unit production and staff travel costs. Using co-mans tends to result in higher unit production costs compared to a self-owned facility. Company staff time and travel costs can also be significant during the initial process set-up and deployment stages.

CMO preference for larger, creditworthy clients. CMOs typically prefer having fewer, larger clients with higher volume commitments over multiple smaller ones and they value the stability of long-term commitments. As with any business, the profitability of the partnership and the creditworthiness (i.e., ability to pay) of a client are important factors when selecting new clients.

Technology-specific co-manufacturing considerations

Plant-based products and ingredients

Co-manufacturing is more feasible if the plant-based protein production process can adapt to a modular production setup and supply chain, and if it can utilize existing equipment from industries such as pet food, pasta, and dry snacks. There may be delays between steps when using co-manufacturing, especially for plant-based companies that utilize multiple co-mans. While co-manufacturing for plant-based meats typically requires little to no capital expenditure, fees can be high.

Fermentation-derived products and ingredients

- CDMOs can offer a significant advantage for startups and early-stage companies focusing on fermentation at lab and pilot/demo scale. They provide flexibility and access to established facilities and expertise, which can be crucial for companies who are refining their bioprocesses and do not yet have the capital to invest in their own infrastructure. This setup allows companies to quickly scale operations to meet market demand without large initial capital expenditures.
- There are two key constraints for early-stage fermentation companies. According to GFI's interviews with companies and investors, the first is limited CDMO capacity for pilot/demo scale facilities. This constraint exists for both solid- and liquid-state fermentation. Second, the constraint in the availability of pilot capacity CDMO facilities limits the ability of companies to run a pilot, learn from it, and then attempt to improve on it in the next round (i.e., Design-Build-Test-Learn, DBTL, or iteration cycle). By the time companies complete a DBTL cycle, they often cannot find available co-man pilot capacity. To help alleviate this constraint, companies should consider booking pilot capacity in advance; however, doing so requires capital commitment.
- As companies mature and their production needs become more stable and predictable, the economics of continuing with a co-man can become less favorable compared to investing in a proprietary facility for larger commercial-scale manufacturing. The higher operational costs associated with co-man can drive companies to develop their own facilities to reduce unit production costs and increase control over the manufacturing process. This transition often occurs when a company reaches a scale where the savings from lower unit costs outweigh the initial capital expenditures of constructing a facility.

- Some companies at lab scale utilize equipment and staff expertise located at universities for early process development as an alternative to co-man.
- Further discussion of tradeoffs between co-manufacturing and self-owned facilities for fermentation companies can be found in GFI's Manufacturing capacity landscape and scaling strategies for fermentation-derived protein report.

Cultivated products and ingredients

- The main issue specific to cultivated products and ingredients is that the number of co-mans specializing in the technology remains limited globally, influencing the cost and availability of services. A GFI survey found that only a minority of cultivated meat companies currently collaborate with co-mans (based on 17 company respondents).
- The same survey showed that the top factors cultivated meat companies consider in selecting a co-man include production quality, expertise, and cost, although there are many other factors that companies consider nearly as important.
- The survey findings underscore the potential for growth in the co-man market to better meet the needs of cultivated meat companies, particularly in preferred regions like China, Southeast Asia, and the United States.

To determine the optimal path for scaling manufacturing, companies should compare the advantages and benefits of co-manufacturing to those of building their own manufacturing facilities.

General advantages of self-owned facilities

Long-term cost savings. Although building a manufacturing facility involves significant up-front capital expenditure, it can be more cost-effective in the long run. Owning a facility eliminates ongoing co-manufacturing fees, which can become substantial as production scales.

Control over production. Owning a facility provides complete control over the production process, from the quality of inputs to the final output. This is crucial for companies for whom strict quality standards can meaningfully impact the end product or those requiring customization at various stages of production.

Intellectual property protection. While co-mans have contractual provisions and operational controls for IP protection, operating a self-owned facility can minimize this risk by keeping proprietary processes and technologies in-house. This may be particularly important if IP is a key competitive advantage for a company.

General challenges of self-owned facilities

High capital expenditure. Building a self-owned, commercial-scale manufacturing facility involves significant upfront investments of $15–250 million+, depending on the technology and facility size. This includes investments in facility design and engineering, land acquisition, construction, and equipment, and potentially in supporting infrastructure such as utility and transport/logistics connectivity. Ensuring the facility meets sustainability standards—for example, in energy usage, waste handling, and wastewater management—can result in additional upfront expenses. For startups and smaller companies, the higher capex of self-owned facilities can be prohibitive, particularly in a constrained funding environment.

Technological risks. Companies should ensure that their processes are scalable and economically viable at a commercial scale before undertaking construction of a self-owned facility, especially if the production process is based on a less proven technology. Once a company invests in a specific technology and process, any failures in running the bioprocess at scale can lead to significant financial losses.

Operational and management expertise. Operating a commercial manufacturing facility requires a broad set of management and operational skills that are distinct from those required for the R&D and pilot stages. Companies must manage everything from the supply chain, equipment maintenance, and workforce to regulatory compliance and quality control. The complexity increases with the need for specialized knowledge in fermentation-derived or cultivated meat technologies. Moreover, at commercial scale, the primary objective is consistent, reliable, and cost-efficient production. It can be challenging to hire staff with the required expertise, particularly if there is a shortage of trained labor or if there is competition for the same talent pool from more profitable industries using related technology/equipment.

Regulatory compliance. Regulatory standards for food manufacturing can vary significantly by region of the world and type of alternative protein product. Navigating these regulations, obtaining the necessary approvals, and maintaining compliance can be time-consuming and costly. This is particularly true for cultivated meat, given the newness (or still the lack) of regulatory regimes.

Time to market. Building a commercial-scale facility can take two to three years when factoring in the time required for design, permitting, construction, regulatory approvals, and equipment delivery. This results in a longer timeline to market compared to co-manufacturing options.

Flexibility to adjust production level. Self-owned facilities may limit a company's ability to cost-effectively align production based on changes in market demand or shifts in consumer preferences. For example, if demand is less than forecasted, it can result in substantial facility underutilization, an inefficient use of capital.

Technology-specific self-owned facility considerations

Plant-based products and ingredients. Companies may decide to build their own facilities to ensure the customization and scale required for large-scale production. This will be particularly relevant when the plant-based product sales environment stabilizes and demand becomes more predictable.

Fermentation-derived products and ingredients. As companies transition from R&D to commercial-scale production, owning a facility becomes advantageous to accommodate the specific bioprocessing needs, ensure the consistency and purity of products, and lower unit operating costs.

Cultivated products and ingredients. Given the complexity of the production process and stringent regulatory compliance, owning a facility allows for tailored construction that meets specific production needs and regulatory standards.

Conclusion

Choosing between co-manufacturing and building a self-owned manufacturing facility depends significantly on the company's stage of development, specific technology requirements, strategic goals, and capital availability. While co-manufacturing offers speed, flexibility, and lower initial costs, owning a facility provides long-term benefits related to cost control, production control, and greater security of intellectual property.

Tips for co-manufacturing in alternative protein production

1. **Identifying the right co-man**

To identify co-mans that align with a company's production needs and goals, consult advisors and industry insiders. Companies should ensure their ability to collect the data needed for future scaling, partnerships, and product development.

2. **Commercial structures and negotiations**

Two types of commercial structures are most common between startups and co-mans: (i) fee-for-service and (ii) hybrid models that involve equity participation and/or capex co-investment. The latter is typically more complex to negotiate. When negotiating, companies should consider how cost savings from technological and process improvements will be distributed. Downstream processes are generally the main focus of negotiations.

3. **Technical and operational criteria**

Companies should evaluate if the co-man capacity is right-scaled and fit for purpose, or if it will require additional capex to accommodate production requirements. In addition, it is important to assess if the co-man has the appropriate equipment to achieve the target unit economics and the required ancillary infrastructure, such as logistics linkages and utilities. Finally, companies should ensure the co-man has the required factory certifications (e.g., pharma-grade or food-grade) and regulatory approvals for production

4. **Location considerations**

Companies should determine if it is more advantageous from a logistical/transport cost and environmental sustainability perspective for production to be closer to input suppliers or points of sale. For example, if a product requires temperature-controlled storage for transportation, then locating production closer to the market can reduce the time and complexity of cold chain logistics, thereby reducing costs and the risk of spoilage. Alternatively, co-locating with a key raw material supplier could potentially reduce costs, for example through negotiated bulk discounts.

Part 2: Capex requirements and the funding landscape

Capex requirements and target financing mix

In this section, we discuss the capex funding requirements for alternative protein manufacturing and how the target funding mix should evolve as a company grows from pilot to commercial manufacturing.

The capex required to build self-owned demo facilities is typically $1 million to $20 million, while the capex for commercial facilities ranges from $15 million to $250 million+. Factors influencing cost include the alternative protein technology, facility capacity, whether it is greenfield or brownfield, and the project location. Capex for biomass fermentation and plant-based manufacturing is typically on the lower end of the range, while capex for cultivated meat and precision fermentation is typically on the higher end. Where such opportunities exist—mainly for biomass fermentation and plant-based manufacturing—retrofitting used equipment and utilizing brownfield sites can result in significant cost savings.

Regarding the target financing mix, while the lab and pilot stages are often funded entirely with grant and early-stage equity capital, it is typically neither feasible nor capital-efficient to finance self-owned commercial-scale manufacturing facilities entirely with these sources of capital.[1] Rather, alternative protein companies who make strategically sound decisions to proceed with constructing their own commercial manufacturing facilities will need to access a combination of long-term debt and equity financing to bring down their average cost of capital.

Figure 1 illustrates how the financing mix should ideally shift to integrate more affordable, non-dilutive sources of capital as a company matures from pre-commercial stage production to early commercial-scale manufacturing. The precise types of non-dilutive funding and financing split percentages would differ between cases.

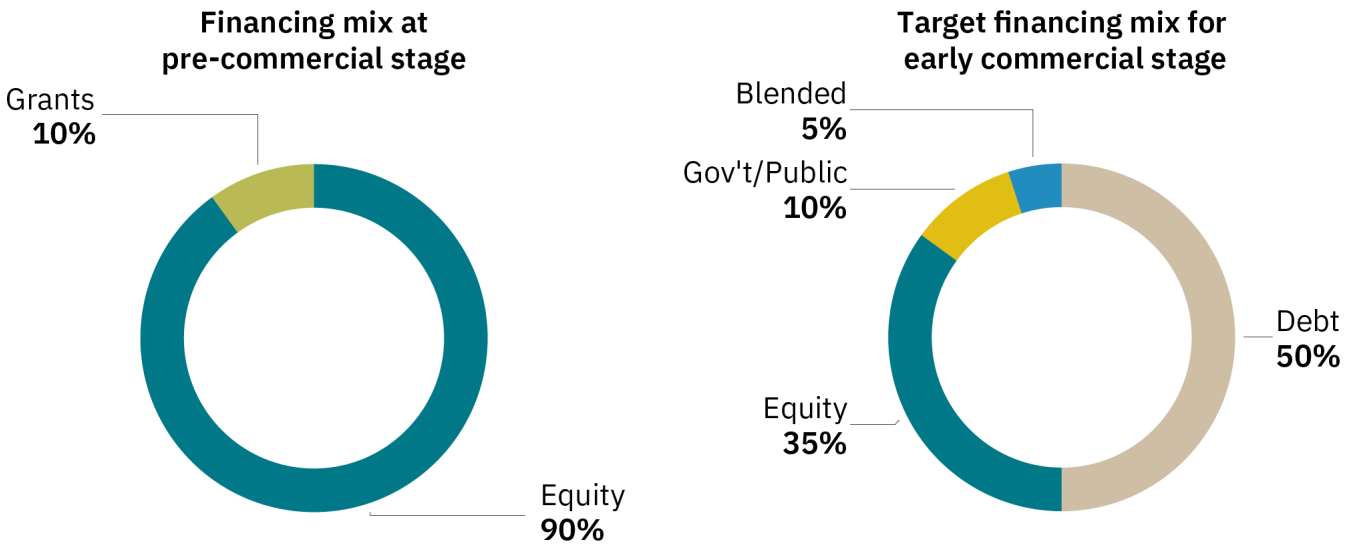


Figure 1. Illustrative financing mixes.
Source: Example by GFI.

[1] This is because equity is scarce and expensive, while grants are typically much smaller (often <$5 million) than capex needs. The exception may be if the equity comes from a manufacturing joint venture (JV) with a large strategic corporate partner, but these partners typically prefer to invest in alternative protein companies' equity through their venture capital investment arms (which are better suited to take early-stage alternative protein risk) than under a manufacturing JV arrangement.

In an optimal situation, in which a company's risk profile aligns well with the credit underwriting criteria of senior lenders such as commercial banks, lenders would fund 60 percent or more of a commercial facility's cost with affordable, long-term debt. However, such debt levels are typically only available to companies who are largely de-risked, have a consistent and predictable stream of future cash flows, and either have strong balance sheets or are backed by a financially strong shareholder.

Compared to mature companies in more established industries, alternative protein companies have relatively high risk profiles, as further discussed in the project finance primer later in this guide. Ideally, with a reasonable level of de-risking of the key factors evaluated by senior lenders (for example, through partial loan guarantees or other comparable forms of credit enhancement), alternative protein companies would be able to raise 40 to 50 percent of a commercial facility's capex as long-term debt. The rest would be a combination of shareholder equity (ranging from 30 to 50 percent, as required by senior lenders to help ensure alignment of interests with shareholders, or "skin in the game"), tax credits and other state incentives (potentially five to 10 percent of commercial facility capex), and concessional capital/blended finance (approximately five to 10 percent). Such a financing mix for commercial facilities that integrates substantial portions of affordable, non-dilutive capital would bring down the average cost of capital and help companies progress toward price parity with conventional animal proteins.

While a mix of senior debt, equity, and potentially government incentives is ideal to finance commercial-scale manufacturing capex, due to their nascency most alternative protein companies currently lack the track record of predictable, positive cash flows required to raise any amount of senior debt, even from lenders who have alternative protein funding mandates (e.g., from a sustainability perspective). As the following sections of this guide explain, access to affordable long-term debt is currently highly constrained.

Guide to capital pools

Overview of commonly discussed capital pools

This section provides an overview of the availability and suitability of various capital pools that are commonly discussed as potential sources for funding for alternative protein commercial manufacturing:

Venture capital and growth equity: Currently scarce and relatively expensive. While many alternative protein companies successfully raised large volumes of capital from these sources in the VC boom years of 2019 to 2022 (the average raise by an alternative protein company was $14 million and some companies were able to raise equity rounds in the hundreds of millions),[2] VC has become much more scarce. In addition, it is ill-suited to be the sole source of commercial-scale capex as it is expensive (typically targets a minimum return of 25 percent) and most VC investors are no longer willing to fund commercial-stage capex. Therefore, while companies can utilize VC equity as part of the financing plan for commercial manufacturing to the extent it is available, it is neither possible nor financially efficient to rely solely on VC funding. Please refer to the section on venture capital for more discussion on this topic.

Private equity: Not suitable. Private equity (PE) typically invests in mature, established companies who have a track record of steady cash flows. PE capital is also relatively expensive and generally less patient than some other pools of capital, with investors expecting profitable exits in about five years. Moreover, PE investors often take a controlling interest in companies and implement decisions that maximize profit within their investment time horizon. These factors make PE largely unsuitable for the initial commercial scale-up of alternative protein companies.

[2] Source: GFI analysis of data from Net Zero Insights. Note: Data has not been reviewed by Net Zero Insights analysts.

Equipment leasing: A viable short-to-medium-term debt option. Under this financing type, an equipment leasing company purchases the required commercial equipment and leases it to the alternative protein company. The appetite of these capital providers tends to be more resilient to company risk profiles, making equipment leases a viable option for funding up to 30 percent of a company's commercial facility capex (depending on the share of equipment capex compared to the total facility capex). Please refer to the section on equipment leasing for more discussion on this topic.

U.S. Department of Agriculture Business and Industry (B&I) Loan Guarantee. This program provides loan guarantees of up to $25 million per project if the project is located in a rural area. Because the loans are guaranteed by the federal government, interest rates charged by the commercial lender tend to be below market rates. Please refer to the B&I section for more discussion on this topic.

U.S. Department of Energy's Loan Programs Office. The Loan Programs Office (LPO) provides large loans and loan guarantees (typically $100 million or more) to support emerging clean energy and decarbonization technologies that are ready to scale commercially but cannot yet access commercial bank financing. While alternative protein companies are eligible to apply, only a handful are currently in a position to do so and many face challenges. Please refer to the LPO section for more discussion on this topic.

Commercial bank debt: ideal but largely out of reach. Commercial banks are among the most conservative capital providers as they are largely funded by depositors. Banks not only need full collateralization of their loans (i.e., security over assets that can be sold in case of default to fully recover the loan value), but also strong company balance sheets, a proven track record of facility construction and operations, and demonstrated, predictable cash flows. Thus this capital pool is not yet available to most alternative protein companies.

Capital pool characteristics

This section describes the characteristics of various pools of capital, including a brief description, guidance on which types of companies may be good candidates for funding, and the strengths and challenges of each pool. The information presented here is based on GFI's research and industry outreach. Please note this list is not comprehensive but is intended to provide high-level guidance on capital pools that industry participants frequently discuss and inquire about for funding self-owned commercial manufacturing facilities.

Table A summarizes government sources and Table B summarizes private sources. The pools are listed in approximate order of relevance for financing alternative protein commercial manufacturing as follows.

A. Government pools of capital:

1. State programs (as a general pool; does not catalog specific state programs).
2. USDA Business and Industry Loan Guarantee Program.
3. Department of Energy's Loan Programs Office Title 17 Program.
4. Sovereign wealth funds.
5. Development finance institutions.

B. Private pools of capital:

6. Equipment leasing.
7. Manufacturing joint ventures (JVs) with strategic investors.
8. Venture capital.
9. Equity crowdfunding.
10. Debt funds (subordinated debt).
11. Commercial bank loans (including farm loans).
12. Working capital financing.
13. Venture debt.
14. Receivables factoring.

As companies approach these different capital providers, they should tailor their investor pitches to the financial/operational criteria, strategic priorities, investment mandates, and other key characteristics of a given capital pool or provider. For example, debt providers focus on how their loans and interest will be repaid from company cash flows, so it is important to provide assurance on the predictability of future cash flows, explain how various risks will be mitigated, and discuss the collateral package available as loan security. Equity providers are generally more risk tolerant than debt providers and tend to focus on growth prospects, competitive advantages, and profitability metrics, among other factors. In addition to tailoring presentations based on financial mandates, companies should also discuss how their business addresses the strategic priorities of a given capital provider, when relevant. For example, a government provider may have strategic priorities related to climate change, food/water security, and/or local economic development that an investment in a company can help meet.

A. Government pools of capital					
	Source/Type	**Description**	**Good candidates**	**Advantages**	**Challenges**
1	**State programs**	Tax breaks, grants, and other incentives to encourage local manufacturing	Companies building commercial facilities that can create jobs and support local economic activity	These are effectively grants linked to certain outcomes (e.g., employment, investment in the state)	○ May not fund a large portion of project cost (only five to 10%) ○ Fragmented programs, making it time-consuming to identify state-level programs suitable for alternative proteins
2	**USDA B&I Loan Guarantee Program**	○ Loan guarantees to commercial lenders for financing rural projects/businesses (in areas with populations under 50,000) ○ Guarantee levels are published annually in a Federal Register notice. 2024 and 2025 guarantee levels are up to 80%	○ Projects with good cash flow to repay debt ○ Companies with substantial equity funding secured for ~50% of capex	USDA has some experience financing alternative proteins	○ Average guarantee size of $3MM and the max guarantee level are too small for most alternative protein commercial facility capex requirements ○ Companies should be aware of the rural location requirement
3	**Department of Energy's Loan Programs Office (Title 17)**	○ Long-term project finance loans and loan guarantees ○ Alternative protein companies fit under Title 17 – industrial decarbonization projects	○ Proven technology ○ Very large capex needs (>$100MM loan for >$200MM capex) ○ Revenue track record ○ Established market demand ○ Evidence of carbon displacement	○ Available capital is $70B under the Title 17 Clean Energy Program ○ DOE is keen to support industrial decarbonization ○ DOE has identified alternative proteins as a good fit conceptually	○ Alternative protein manufacturing projects do not fit a traditional project finance mold; market risk and ability to secure offtake are major hurdles ○ Transaction costs ($2 to $5MM in fees and expenses) ○ Lead time of 12 to 18 months or possibly longer depending on company readiness ○ Require turnkey/fixed price Engineering, Procurement, and Construction (EPC) contract

A. Government pools of capital					
	Source/Type	**Description**	**Good candidates**	**Advantages**	**Challenges**
4	**Sovereign wealth funds (SWFs)**	○ A government-owned investment fund or entity that is commonly established from a country's reserves ○ Typically created to manage national savings to diversify and grow wealth through investment and supporting strategic priorities (e.g., economic growth and diversification)	For investments related to strategic priorities: ○ Companies willing to build commercial facilities in the host-government country ○ Projects that address strategic national issues of the host government (e.g., water/land scarcity, food security) ○ Companies utilizing proven, scalable technologies	○ Ability to invest in large, capital-intensive projects ○ Flexible investment terms, including affordable long-term debt and grants ○ Typically no requirement for intellectual property rights ○ Longer-term investment perspective given focus on addressing strategic national issues	○ Projects must be located in the sovereign wealth fund's home country ○ Preference for projects with lower risk and proven technologies ○ Typically initiated through mutual connections
5	**Development finance institutions (DFIs)**	○ Many types of debt, equity, and mezzanine, as well as technical assistance products ○ Several DFIs also have blended finance products that they invest alongside their own financing	○ Facilities in emerging markets ○ Companies backed by a deep-pocketed parent company/sponsor	○ Large pools of capital available ○ Many types of financing products and support ○ Can provide blended and/or concessional financing alongside their own financing	○ Do not fund U.S. projects/facilities ○ Will not bear technology risk ○ Require backing by strong company shareholders (i.e., equity investors) with deep pockets and expertise ○ Resource and time-intensive process ○ High transaction costs ○ Extensive ESG requirements and loan reporting criteria

B. Private pools of capital					
	Source/Type	**Description**	**Good candidates**	**Advantages**	**Challenges**
6	**Equipment leasing**	○ Finance provider purchases and owns the equipment and leases it to the company ○ Typically one- to three-year lease with a two-year extension. Purchase option by company at end of lease term	○ Companies who have already raised some equity, have at least 16 to 18 months of funding runway in cash, and have equipment purchase needs ○ Companies with credible institutional investors as shareholders who are committed to the company's success	○ Can fund up to ~30% of facility capex (i.e., equipment portion of capex) ○ Some specialized leasing companies are open to funding startups because of the high resale value of leased equipment, confidence in the business model, and/or the quality of the company's investor	○ Short- to medium-term financing source (one to five years) ○ Financiers typically do not take technology risk, but some do ○ Could complicate raising other debt because leased equipment is not part of the security package for other potential lenders
7	**Manufacturing JVs with strategic investors**	Strategic investor (e.g., large food or agriculture company) enters a facility-level partnership with an alternative protein company, providing funding, expertise, use of existing facilities, inputs, offtake, etc.	○ Alternative protein companies who can accelerate a large corporate's entry into alternative proteins (via their advanced R&D) ○ Alternative protein companies who can be a large customer or key supplier to the strategic partner ○ Alternative protein companies who have raised funding and can co-invest in facilities ○ Alternative protein companies who have a demonstrated track record of selling commercially	○ Strategic investors can provide large amounts of equity funding and expertise for commercial scale-up ○ Such equity backing and expertise can give comfort to debt providers ○ May facilitate purchase agreement by strategic or third party buyer	○ In general, U.S. strategic investors strongly prefer to invest in alternative protein companies via their venture arms unless there is a very strong commercial case for a manufacturing JV ○ Long timeline to structure and negotiate (two to three years)

B. Private pools of capital					
	Source/Type	**Description**	**Good candidates**	**Advantages**	**Challenges**

8	**Venture capital (VC)**	○ Equity funds investing in early-stage companies with high-growth potential
		○ Some "climate funds" consider non-financial factors such as ESG and/or impact in their investment decisions
			○ Companies with high-growth potential and potential to deliver 25% or more annual rate of return within the VC's time horizon (average of five to seven years)
			○ As of mid-2024, alternative protein companies with the following characteristics are of most interest:
			  ○ Platform technologies launching multiple products across categories or to support a product ecosystem.
			  ○ Companies solving key pain points along the value chain
			  ○ Companies with combined hardware and software solutions
			  ○ Multi-industry solutions (e.g., food, pharma, cosmetics)
				○ Some are actively investing in alternative proteins
				○ Significant capital for scaling and expansion
				○ Provide access to strategic guidance and industry connections
				○ Potential for follow-on funding in subsequent rounds
					○ Tighter VC funding environment as of 2023 with VCs exercising much greater scrutiny of business models
					○ Reluctance to fund facility capex
					○ High-cost source of capital (VCs expect investment returns of at least 25%)

B. Private pools of capital					
	Source/Type	**Description**	**Good candidates**	**Advantages**	**Challenges**
9	**Equity crowdfunding**	Online fundraising from accredited and non-accredited investors on platforms like StartEngine or Republic	Mostly early-stage startups looking for relatively small investments or to expand existing funding rounds with other pools of capital	○ Relatively easy to set up ○ Can raise general-purpose funds for an idea/project ○ Depending on local regulations, can involve accredited or non-accredited investors ○ More favorable terms for the startup ○ Increased visibility and marketing ○ Can offer more favorable terms for the startup ○ Increased publicity	○ Typically a small source of funding. Most AP raises have been <$100K (though a few have raised several million) ○ Not suitable for large capex projects ○ Funds should only be used for their stated/advertised purpose ○ Fundraising platforms take a small cut of proceeds (though crowdfunding can remain cost-effective option compared to other methods)
10	**Debt funds (subordinated debt)**	○ Provide subordinated debt and other mezzanine financing (i.e., non-dilutive capital that can tolerate more risk than senior debt) ○ Priced between the cost of senior debt and equity	Companies already generating positive cash flows who seek to increase leverage	Can help complete the financing plan without diluting shareholders	○ Not suitable for alternative protein companies with high uncertainty in cash flow ○ Typically priced at approximately ~20 to 25% cost of capital, made up of a low interest rate loan plus participation in profit/EBITDA

B. Private pools of capital					
	Source/Type	**Description**	**Good candidates**	**Advantages**	**Challenges**
11	**Commercial bank loans (including farm loans)**	Longer term (7+ years) senior secured debt	Companies generating substantial positive net cash flow and can demonstrate demand	Large, long-term source of debt financing for established businesses	○ Very conservative from a risk perspective; nearly no alternative protein companies are deemed bankable yet ○ Need to demonstrate ability to generate operating cash flows to service debt ○ Loans need to be fully/over-collateralized to ensure ability to recover in case of default/liquidation
12	**Venture debt**	One- to three-year term loan from a bank or non-bank lender with repayments from existing cash reserves	○ Companies who have already raised venture equity and have available cash ○ Companies who seek to extend their runways by one to two years beyond what existing cash will allow	Lenders do not necessarily require specific collateral (as senior lenders do)	○ Many lenders require warrants (i.e., rights to purchase company shares) ○ Financial covenants from bank lenders may significantly restrict the company's activities ○ Debt is limited to a percentage, typically up to 30%, of the last venture equity round raised ○ Not a good solution for companies who need large amounts of longer-term capital to scale manufacturing
13	**Working capital financing**	Short-term loans, credit lines, or invoice-linked borrowings to manage day-to-day expenses	○ Companies with short-term mismatches between receiving revenues and paying expenses ○ Companies with good credit and a clear ability to repay	○ Good potential source of short-term liquidity for companies already earning a steady stream of revenues	○ For short-term liquidity needs; not appropriate for long-term investments or asset purchases and, therefore, not suitable for commercial capex funding ○ Potential for receiving a low advance rate (i.e., financing as a share of asset value) on inventory and/or accounts receivables, depending on the counterparty risk of the customer and the liquidation value of the inventory

B. Private pools of capital					
	Source/Type	**Description**	**Good candidates**	**Advantages**	**Challenges**
14	**Receivables factoring**	○ Sale of invoices (receivables) at a discount to generate immediate cash ○ Invoice collection transferred to buyer	Companies with B2B or B2G (business-to-government) revenues who have immediate cash needs and cannot qualify for traditional forms of debt financing	Generates immediate cash flow without creating indebtedness	○ For managing working capital/short-term liquidity ○ Not suitable for pre-revenue or B2C companies ○ Not suitable for funding commercial-scale capex ○ Company loses linkage to customer; can jeopardize relationships

The following U.S. pools either do not currently appear to be relevant or do not appear to be significant sources of funding for alternative protein commercial manufacturing:

Transferable tax credits

These are federal credits for clean energy and component manufacturing investments that can be sold through bilateral private contracts to raise financing. They are a large source of concessional U.S. government support for clean-energy-related projects (they can account for 30 percent of project capex) and their transferability feature greatly facilitates the monetization of the credit. The production of alternative proteins does not currently qualify for such credits; however, clean-energy installations that are part of a facility (e.g., solar power installation for electricity production) may qualify and be able to fund a small portion of facility capex (estimated ~1 percent).

Green banks

These are state-level independent organizations or agencies who accelerate the commercial deployment of clean energy technologies. GFI's preliminary discussions indicate that alternative proteins are likely not currently within the investment mandates of most green banks.

Private equity

Private equity investors typically invest in mature, established companies who have a track record of steady cash flows. PE investors often take a controlling interest in companies, requiring founders to give up decision-making control to investors who implement decisions that maximize profit within their investment time horizon. These factors make PE largely unsuitable for the initial commercial scale-up of alternative protein companies.

Part 3: Key topics – project finance and long-term offtake

In this section, we take a closer look at two topics that are commonly discussed in the context of funding alternative protein manufacturing: project finance and long-term offtake contracts.

Many companies and investors talk about the potential of project finance to fund alternative protein manufacturing facilities, as this form of financing has been used successfully to fund large infrastructure projects globally. Below, we describe this financing structure and assess its applicability to alternative protein commercial manufacturing. Similarly, there is frequent discussion in the industry about long-term offtake contracts as a solution to market risk. We discuss the current reality of the food sector and the likelihood of alternative protein companies being able to enter into long-term offtake contracts.

Is project finance suitable for alternative proteins?

The basics of project finance

In debt financing, lenders typically look at a borrower's financial condition and projected cash flows to assess the level of risk, whether to make the loan, and on what terms (e.g., repayment profile, interest rate). Lenders often require companies to pledge collateral as a secondary form of assurance in case cash flows are insufficient to repay debt and interest. In "corporate finance," lenders have recourse to the assets and future cash flows of the entire company for loan repayments. In general, companies who do not have strong financial positions or predictable future cash flows will either be unable to raise corporate financing or will end up paying a higher interest rate for it, commensurate with the risk.

Project finance is a special form of debt financing where a specific project (e.g., a manufacturing plant) is legally separated into a subsidiary of the company that is undertaking the project—into what is often called a special purpose company (SPC)—and lenders only have recourse to the SPC's cash flow and assets for loan repayments. They do not have recourse to the assets or cash flows of the "parent company," or to other equity investors who may be investing in the SPC, to recover their loans. This is called non-recourse project finance. In project finance, the parent company is typically a financially strong corporate who owns a majority, controlling stake in the SPC. If the parent company (and other equity investors in the SPC) contractually commit to providing a prespecified amount of funding support to complete the construction and commissioning of the project beyond the amount required in the SPC's financial plan, it is called limited-recourse project finance.

Project finance has been used extensively to fund the construction of large infrastructure and energy projects globally. It is particularly effective in encouraging investment by companies in capital-intensive industries because the structure is designed to limit the liability of the parent company and other equity investors. Project finance lenders typically finance 60 to 80 percent of the SPC's capex with long-term debt, with the remaining amount funded primarily with equity from the parent company and potentially from other (minority) equity investors.

Since project finance lenders have limited to no recourse to the parent company or to other equity investors for loan repayment, they scrutinize a project's stand-alone ability to complete construction within the original budget and to generate sufficient cash flows from operations to repay debt and interest. They also thoroughly assess risks that could jeopardize the project's ability to repay debt over the life of the loan and ensure those risks are contractually allocated up front to various parties involved in the project.

These are some of the risks and how they are typically allocated under a project finance structure (please note this list is not comprehensive):

Construction risk	The risk of construction delays and construction cost overruns is typically allocated to the engineering, procurement, and construction (EPC) contractor in the form of a turnkey, fixed-price EPC contract. In the absence of this type of contract, lenders expect the project shareholders to cover the cost of time delays and expense overruns.
Operating risks	Lenders expect the SPC to have an experienced operations team to run the facility and keep production levels and costs within the forecast. Funded cash reserve accounts are also typically required to ensure there is sufficient cash available to pay at least six months of operating expenses and cover periodic maintenance expenses (both of which rank senior to debt repayments).
Market risk	Lenders require high visibility on the SPC's future revenues over the life of the loan as this is the primary source of cash flow for loan repayments. Traditionally, for example in the power sector, this is achieved through long-term offtake contracts by a creditworthy buyer such as a government-owned utility. In the absence of this, project finance lenders may be willing to lend based on an SPC's historical track record of generating stable, predictable cash flows and they may size the loan amount based on downside revenue scenarios. However, in such cases, project finance lenders are likely to require loan guarantees (or similar forms of credit enhancement) from shareholders or a third party to mitigate market risk.
Financial plan risk	Lenders will not bear the risk that there is insufficient capital to complete the project and will expect a complete financial plan. This means that shareholders must commit and inject all required equity per the financial plan into the SPC before loans are disbursed (i.e., paid out).
Legal and regulatory risk	Having all the required approvals, licenses, and permits in place for construction and operations is typically a condition of loan disbursement. In the case of legal and regulatory approvals that are fundamental to generating cash flows, lenders may require these to be in place before committing to the loans.
Natural disasters	The risk of fire, floods, earthquakes, and other natural disasters is typically mitigated through appropriate insurance coverage. To the extent that risks are uninsurable or not covered by another party (e.g., government), lenders allocate this risk to shareholders.
Environmental and social (E&S) risks	If an SPC's operations adversely impact the environment (e.g., air, water, soil, local biodiversity), groups of people (e.g., employees, residents), or historic/cultural sites, the SPC may suffer significant negative consequences. Lenders assess an SPC's ability to systematically manage these E&S risks through the due diligence process. If gaps are identified up-front, closing these gaps is likely to be a loan disbursement condition.

Loan default and repayment risk

After key risks are allocated to various parties, an SPC still faces the residual risk of having insufficient cash to repay the debt on time. To mitigate this risk, lenders require six to 12 months of cash to be held in a funded reserve account and will tightly control SPC expenditures. They also seek a first-ranking lien (i.e., the right to seize collateral if a borrower defaults) on all project assets and a pledge of shares in the SPC as a secondary avenue to recover their loans in the event of a default.

Due to these and many other potential risks that an SPC faces, the process of due diligence, risk assessment, and contractual risk allocation under project financing is complex, time intensive, and expensive. Project finance lenders typically hire external experts and advisors to assist them in this process and pass those costs on to the SPC.

Is project finance suitable for alternative protein commercial manufacturing?

Since project financing has successfully supported the widespread deployment of energy and infrastructure projects, it is understandable that alternative protein companies would seek this form of financing as they grow past their lab and pilot stages to commercial-scale manufacturing involving large capital expenditures. However, inherent characteristics of the food industry and additional factors specific to alternative proteins make traditional project financing very difficult to access:

Market risk and long-term offtake contracts. Offtake is discussed later in this section but, in brief, alternative protein manufacturing projects are currently unlikely to be able to access long-term offtake (without transferring the market risk to a third party such as a government or concessional capital provider) and therefore cannot adequately mitigate market risk for project finance providers.

Construction risk. A turnkey, fixed-price EPC contract can be costly, and alternative protein companies are already under great pressure to reduce costs and demonstrate profitability. These additional up-front costs not only increase the amount of funds alternative protein companies need to raise for a project but can also reduce shareholder returns due to higher loan interest expense and/or a higher initial investment of equity.

Project preparation. Project finance lenders expect projects to be "shovel-ready" before they lend to a project. This means site selection, feasibility studies, design and engineering, environmental assessments, regulatory approvals, and construction contracts all need to be completed before loans are provided (and typically even earlier in the process during the lender due diligence stage). It can take one to two years for such project preparation to be completed and most alternative protein companies who approach project finance lenders have not completed these prerequisites.

Conclusion

Project finance is a specific method of financing large infrastructure projects that have high visibility into long-term future cash flows. Project finance lenders undertake an extensive process of due diligence and contractual risk allocation to ensure their loans can be repaid from the asset/facility itself, as they typically have little to no recourse to the parent company. Many of the risk-mitigation strategies typically sought by project finance lenders—such as long-term offtake contracts for market risk and fixed-price EPC contracts for construction risk—are either not currently available or not feasible for alternative protein companies. Such factors suggest that project finance structures are not well-suited for the commercial manufacturing of alternative proteins, and alternative protein companies are therefore likely to encounter significant obstacles in accessing this type of funding.

Long-term offtake contracts: ideal but realistic?

Fixed-price, long-term offtake agreements, in which buyers commit to purchasing a certain volume of product at a predetermined price for multiple years (e.g., 10 years or more), are often necessary to obtain project finance loans for infrastructure projects, especially in the power sector.

Such mechanisms have been used in the pharmaceutical and renewable energy sectors to support the development of products and facilities with high up-front development costs. Based on the success of long-term offtake contracts in other industries, these agreements are frequently discussed as a high-impact form of market commitment that is well-suited for the alternative protein industry. The true potential of securing long-term offtake agreements in the food sector, however, is debatable.

Before moving into food, let's take a look at how offtakes work in the power industry.

Offtake contracts in the renewable energy industry. Often structured as 20-year power purchase agreements by a government-owned power utility, long-term offtake contracts successfully enable long-term debt and equity funding for the large-scale deployment of renewable energy projects globally. Much of this funding is provided as project finance lending in which, as described previously, lenders rely only on the legally ring-fenced assets and cash flows of the specific power project they are funding to recover their loan. They have no or very limited recourse to the balance sheet of the project owners. The financing structure is fundamentally enabled by long-term government purchase contracts that provide a high degree of certainty on revenues and, therefore, cashflows (operating and maintenance cost structures of power producers are largely stable and predictable over the long term).

Offtake contracts in the food industry. In the food sector, and specifically in the alternative protein industry, the scenario is quite different. Long-term purchase commitments by a creditworthy buyer are not the norm. Rather, an investment-grade buyer (corporate or government institution) would signal an intent to purchase, or make a short-term purchase commitment (typically for one year, but in rare cases for two to three years).

The challenge is that traditional senior lenders, like commercial banks, credit unions, and farm credit lenders, derive comfort from a company's predictable stream of positive cash flows over the life of the loan, or from a large corporate balance sheet, to provide long-term debt financing. Depending on the predictability of the future cash flow stream, as well as other credit factors, long-term senior-loan tenors from banks could range from five to 20 years. This security is difficult for alternative protein companies to provide because long-term offtake contracts are not customary in the food sector.

Moreover, most alternative protein companies do not have a large balance sheet or an established track record of sales and positive cash flows from operations. Therefore, market risk remains a key barrier to the ability of alternative protein companies to access affordable, long-term debt. This is a challenge as alternative protein companies who decide to build a self-owned facility need to raise capex funding long before their products achieve a significant revenue stream.

Strategies to mitigate market risk

Given this current reality, alternative protein companies must find more effective strategies to mitigate market risk. Some alternative protein companies have successfully entered into city- or district-level public procurement arrangements to supply public institutions such as schools and hospitals.

Plant-based food menu mandates, such as those in New York City and Los Angeles, create opportunities for alternative protein companies to compete at scale. Market feedback indicates that competitive pricing of alternative proteins and including whole plant-based foods (e.g., legumes, vegetables) are

key factors in these public procurement decisions. While these institutional purchase arrangements tend to be short-term, they also tend to be large-volume and can help alternative protein companies build a track record of sales that demonstrates market acceptance.

Another strategy would be to strategically integrate philanthropic capital into a financial plan to absorb market risk (and other key risks) that long-term lenders are not willing to bear. Such blended finance structures have successfully enabled the flow of capital into high-impact projects across many industries. These solutions could be adapted for the alternative protein sector and implemented through multi-stakeholder collaboration between alternative protein companies, philanthropic capital providers, and lenders. Please refer to the features on Blended finance and Market shaping for additional information.

Finally, alternative protein companies could explore funding from specialized, smaller funds that provide subordinated debt (i.e., debt that ranks after other debts if a company falls into liquidation or bankruptcy) and other mezzanine financing (i.e., a hybrid of debt and equity financing), often with an impact investment lens. These financing products are designed to tolerate risk in exchange for a higher investment return and are priced between the cost of senior debt and equity. Investment ticket sizes are likely to be smaller, but they could form part of a larger financing package, or potentially fund the retrofitting of a co-manufacturing facility.

Conclusion

Long-term offtake agreements are not off the table for alternative protein manufacturers, but they are rare in the food sector and are unlikely to be a viable strategy for most companies to mitigate alternative protein market risk in the near to medium term.

However, there may be strategies that alternative protein companies can pursue to address market risk such as public institutional purchasing to establish a sales track record, or structuring catalytic capital to absorb market risk under a blended finance or market shaping approach. Market risk is one of several risk factors that alternative protein companies will need to address to unlock larger pools of debt funding.

Part 4: Potential paths forward

This section details potential paths forward in light of the newly constrained equity funding environment (which is expected to persist in the medium term) and the highly constrained non-dilutive funding landscape. First, we explore pools of capital currently funding or set up to fund alternative proteins, including equipment leasing, an innovative model for accelerating strategic partnerships, sovereign wealth funds, and two U.S. government programs. We then take a closer look at the new venture capital (VC) funding environment before moving on to promising approaches that may unlock additional capital in the coming years such as blended finance and market shaping.

Equipment leasing

Overview

Equipment leasing is a form of medium-term, non-dilutive financing that alternative protein companies are currently including, or should consider including in their financing plans for commercial manufacturing. It entails a finance or leasing company purchasing and owning equipment (e.g., bioreactor, spray dryer) and leasing it to a company for a specified period of time. At the end of the lease period, the company typically has the option to return the equipment, extend the lease, or purchase the equipment from the leasing company.

Asset ownership. One key feature of an equipment lease is that the leasing company owns the asset during the lease period. Retaining asset ownership simplifies the leasing company's ability to recover its investment in the event of bankruptcy or liquidation of the company, as the leasing company can sell the asset without entering a court process or negotiating with other creditors. This can strengthen the lease credit profile and potentially enable the leasing company to support more innovative, earlier-stage companies and technologies.

Terms. Alternative protein companies have successfully financed up to 30 percent of project cost (the equipment portion of a manufacturing project's total construction cost) with equipment leases. Lease terms are typically two to three years and can often be extended for an additional two years. While the cost of this financing can vary significantly depending on the lease terms, an all-in cost of 18 to 22 percent is available in the market today.

Credit criteria. Equipment leasing companies will typically review a company holistically—including its business prospects, investor base profile, and cash runway—before structuring and offering lease terms. Equipment leasing companies who provide three-year (plus two-year extension) leases often require companies to have at least 16 to 18 months of funding runway as cash and strongly prefer to partner with companies who have equity investment from institutional investors, including VC funds, committed to the company's success. Investments from individuals, angel investors, or family offices tend to provide less assurance to equipment leasing companies, resulting in shorter lease terms and higher all-in costs. Depending on a company's credit profile, there can be substantial variability in lease terms, and meeting certain criteria (e.g., 18-month cash runway) does not necessarily mean a company will qualify for certain terms (e.g., a three-year lease term).

Pitfalls to avoid. Companies who are considering equipment leases should be aware of two terms that can significantly impact lease costs.

First, it is important to have clarity and transparency on end-of-lease options (buyout and extension terms) up-front. For example, under the equipment buyout option, contractually agreeing on the purchase price and how it will be determined, rather than leaving this open to future negotiation, can prevent surprise cost escalations at the end of the lease term.

Second, companies should be aware of interim or accumulating rental charges, which are costs that accrue before the lease payments begin. For example, if a leasing company has put a deposit on equipment, it may charge a company interim rent until the equipment is delivered. These accumulating charges can become significant if equipment delivery timelines are long or if there is uncertainty around when the lease term will commence.

This being said, some boutique equipment leasing companies take a more relationship-based, venture approach to supporting startups. For example, they aim to extend funding runways and have more appetite for early-stage technology risk while leaving end-of-lease terms open for future negotiation based on the company's performance in two to three years and with the intent to negotiate future terms that are mutually beneficial. This approach may appeal to some alternative protein companies whose relationship with an equipment leasing company is built on trust and aligned incentives.

Conclusion

Although equipment leasing is not an effective long-term funding strategy, it can help alternative protein companies raise short- to medium-term non-dilutive funding for manufacturing at a time when other forms of funding are highly constrained. Companies should seek clarity and transparency on key lease terms to avoid unexpected and unviable cost increases down the line. While it may not always be necessary or feasible to fix end-of-lease terms up-front, it can be helpful to clarify the basis on which future terms will be determined.

Strategic partnerships

Strategic partnerships between large, established corporates and alternative protein startups have been an effective way for alternative protein companies with limited capital, manufacturing capacity, and/or distribution networks to more rapidly scale manufacturing and commercialize as compared to operating independently.

For large corporates, such partnerships can be a more efficient and effective way to innovate and expand their product offerings compared to developing those capabilities in-house, or they can complement such efforts. They can also help corporates meet corporate social responsibility (CSR) goals.

For startups, these partnerships can be difficult to initiate for a number of reasons, including limited business networks, lack of information about corporate priorities and decision-making, and competition from other startups. Similarly, for large corporates, it can be difficult to search for and screen hundreds of potential partners to identify the strongest candidates.

Accelerating partnerships: the MISTA approach

One group that has created an effective model to accelerate the formation of strategic partnerships is MISTA. This San Francisco-based nodal network facilitates collaborations between established players in the CPG, ingredients, food tech, and agriculture sectors and the most innovative food startups globally. It is a platform for innovation to resolve key bottlenecks, accelerate growth, and transform the food system. One way MISTA does this is through the MISTA Innovation Center, its innovation hub in San Francisco that connects startups with food industry experts, state-of-the-art development labs, and commercial kitchens to facilitate rapid product development. In addition to this, MISTA activities include Growth Hacks and co-creation to integrate existing and emerging technologies. As a limited membership network, MISTA has a highly selective application process that screens for the most innovative business models in the food tech space.

Sovereign wealth funds

To date, most alternative protein companies targeting the U.S. market have focused on scaling manufacturing capacity within the United States to effectively manage supply chains and minimize logistics costs. However, in light of the major constraints for funding U.S. commercial production facilities, some alternative protein companies are seizing opportunities to expand commercial production in East Asia and the Middle East, driven by appetite from sovereign wealth funds (SWFs) to fund facilities in their home countries.

Supporting the domestic production of alternative proteins can enable governments to increase food security and protein supply to nourish citizens in a sustainable manner. This is especially salient in countries lacking the large amounts of land and water required for traditional animal agriculture or where the majority of food is imported. SWFs—with their mandates to address strategic government priorities like food security, population health, employment, and economic growth—present an unconventional pathway for alternative protein companies to commercialize.

Alternative protein companies who have made strategic decisions to build commercial facilities outside of the United States with capital from SWFs have cited numerous advantages. First, some funds are willing and able to invest in large, capital-intensive commercial manufacturing facilities as well as in enabling ecosystems in their home country. They are also flexible investors who can fund the entire project cost if necessary (although having additional investors is preferred) and provide affordable, long-term debt financing as well as grants and other in-kind support to make projects viable. SWFs typically require an equity stake under a JV approach, but they do not necessarily expect a controlling stake even if they provide the majority of funding. Alternative protein companies who have explored these partnerships also note that SWFs do not typically seek IP rights, an important consideration for some companies.

Finally, they tend to take long-term views on investments as their goals extend beyond investment returns to enhancing food security through domestic production, creating well-paying jobs through local economic development that diversifies industry, increasing economic growth through exports, and managing healthcare costs through healthier diet and lifestyle choices.

Other considerations include the typical requirement that projects be located in the fund's home country. However, SWFs can support companies with the regulatory approval processes and can work closely with their governments to drive broader ecosystem development and supportive policies. They are also more likely to fund projects that use proven, scalable technologies rather than early-stage R&D projects with substantial risk. Even so, depending on how well a particular project or technology solves a critically important national issue, SWFs may be willing to invest in pre-revenue companies.

Dialogues with SWFs are almost always initiated through mutual connections—typically an investor, consultant, or one of the SWF's portfolio companies.

For U.S.-based alternative protein companies, developing overseas projects is not typically their first priority. However, given the limited funding opportunities for alternative protein commercial-scale manufacturing in the United States, some have changed their initial expansion strategy to focus on foreign markets first.

U.S. government programs

The U.S. government has a successful track record of accelerating the growth of strategically important industries but is only beginning to invest in alternative proteins with support totaling $129 million through 2023. However, the vast majority of that funding has occurred in the last year alone, as the U.S. government, along with multiple states, has embraced a whole-of-government approach to addressing climate change and supporting the bioeconomy.

This section provides an orientation to two U.S. government pools that have garnered interest from alternative protein companies seeking to fund commercial manufacturing.

Besides those covered in this section, there are hundreds of other U.S. government assistance programs across agencies. GFI is currently researching these programs to help alternative protein companies navigate them and determine their eligibility.

Sign up for our email list to get notified of new U.S. government opportunities.

U.S. Department of Energy's Loan Programs Office, Title 17 Program

Overview

The U.S. Department of Energy's (DOE) Loan Programs Office (LPO) provides large-ticket project financing and loan guarantees. It currently has over $400 billion of lending authority to accelerate America's clean energy transition to deploy across four programs. LPO has issued more than $42 billion in loans and loan guarantees across a variety of energy sectors since its inception in 2005, making it the largest pool of U.S. government loan support for clean energy and decarbonization adoption. LPO's support helps companies bridge the bankability gap between research, development, and demonstration (RD&D) stages and full commercialization.

Alternative protein companies are eligible to apply for LPO financing and guarantees under the updated Title 17 Program Guidance released in May 2023. This funding can be used to support the development, construction, and operation of commercial-scale facilities. Companies should be aware of several factors when evaluating the decision to pursue LPO funding:

Project readiness. To proceed with their loan due diligence process, LPO needs proposed projects to be developed and ready for construction. This means having completed site selection, feasibility and environmental studies, EPC contracting, and other key project development activities. Equally important are sufficient shareholder and institutional equity funding commitments, and having a revenue and free cash flow plan showing the ability to cover debt service with reasonable assumptions. Readiness to construct a facility and having a financial plan in place will help ensure the loan application processing timeline is within the typical LPO timeframe.

Loan process and timeline. LPO's process takes approximately 12 to 18 months, on average, and requires significant time and effort by the applicant company. Companies should plan to allocate one to two employees part-time for the duration of the financing process. Some specialized consultants can assist with the process.

Transaction costs. LPO's extensive due diligence, loan processing, and contracting process—typical for project finance transactions—costs $2 to $5 million regardless of the loan amount. LPO does not have an official minimum loan amount, but for projects smaller than $100 million, these transaction costs may render the loan too expensive.

Market risk. Senior lenders in general, and in particular project finance lenders like LPO, rely on the predictability and quality of long-term, future cash flows to determine a company's ability to repay its loans. LPO ideally wants its borrowers to have long-term purchase contracts from creditworthy buyers that assure a predictable stream of revenues. In the absence of such long-term offtake contracts, which are not customary in the food industry, LPO-type lenders will seek comfort from a company's track record in selling its products in the market and, if production is only at pilot or demo scale, comfort that there will be demand at higher production levels under repetitive purchase agreements. Market risk is a key factor that drives loan tenors and, if inadequately addressed, may preclude companies from accessing any LPO financing or loan guarantee.

Strong project partners. A manufacturing JV with a large corporate can significantly improve a project's credit profile if it involves a commitment to purchase output and/or provide equity funding for the project. The participation of large corporates with strong balance sheets, especially when they are strategic investors who have aligned incentives to ensure the project's success, can also provide soft comfort to lenders. Such partners tend to support projects financially in difficult times even in the absence of a contractual commitment to do so. These opportunities tend to be highly competitive, but they can meaningfully de-risk a project's financing plan and risk profile.

Other credit underwriting criteria. Alternative protein companies have risk profiles that are different from most industries that LPO has supported (e.g., energy, infrastructure). For example, as a project finance lender, LPO typically requires turnkey, fixed-price EPC contracts to mitigate the potential for construction cost overruns. Companies should be aware that such contracts that transfer risk to the construction contractor can cost significantly more than those where the applicant companies (or its owner's engineer) manage each contractor separately. In addition, it is important that the company already has a track record of operating at least a pilot and demonstration facility (with a minimum of 1,000 hours of data and continuous operation) if not a commercial-scale facility. Companies will also need to have plans for an experienced operations team to run the facility. From a technology risk perspective, the technology should be at a Technology Readiness Level of 8 or higher.

Conclusion

LPO is one of the largest non-dilutive and attractively priced capital pools open to supporting the commercial manufacturing of alternative proteins. As of August 2024, it does not appear to be a strong fit for the majority of specialized alternative protein companies operating today given the gaps between its typical project finance requirements and the business and technical profile of most alternative protein companies in the industry.

Nevertheless, LPO's inclusion of alternative proteins within its funding mandate is a positive signal for the industry. And LPO may become a significant source of non-dilutive capital for alternative protein commercial manufacturing in the future as companies develop a record of sales and positive cash flows, leverage the strong balance sheet of a larger corporate JV partner in raising funding, or if they are able to secure long-term offtake.

U.S. Department of Agriculture's B&I Loan Guarantee Program

The Business and Industry Loan Guarantee Program (B&I) is designed to support rural businesses by improving access to debt from lenders such as commercial banks, credit unions, and local community development organizations.

The program, initiated in 2008 and reauthorized under the 2018 Farm Bill, is funded through an annual appropriation by Congress ranging from about $800 million to $1 billion. Projects must be located in areas of the United States with a population of less than 50,000. Loan guarantee levels are published annually in a Federal Register notice. 2024 and 2025 guarantee levels are up to 80 percent. B&I loan guarantees cost approximately 3.5 percent, which is in addition to the underlying loan interest rate and fees, and loan tenors can be up to 15 years.

There are certain characteristics of the program to be aware of:

- The program's primary focus is on promoting rural development projects. The loan guarantee amounts may be small compared to the capex requirements of alternative protein commercial manufacturing facilities, which can range from $15 million to $250 million or more.
- B&I requires borrowers to maintain operating and interest reserve accounts to ensure sufficient cash is available to cover key expenses (typical requirements of senior debt financing). Such funded reserve account requirements can significantly reduce the amount of loan proceeds available to fund capital expenditures.
- The program's guarantee caps may be insufficient credit enhancements for many banks to fund alternative protein companies, many of whom have startup risk profiles.
- Companies are expected to be in the advanced stages of project development with activities such as site selection, basic engineering, firm equipment and materials quotes, and EPC contracting completed.

That being said, it does not appear that the B&I program has specific requirements for companies to have long-term offtake contracts to mitigate market risk, and it does support commercial-scale manufacturing projects. Companies report financing timelines of approximately six months. Therefore, alternative protein companies may consider this program as part of a financial plan for constructing commercial-scale facilities.

USDA's B&I Program and Liberation Labs

In 2023, the USDA's B&I Program awarded a $25 million loan guarantee to Ameris Bank for the development of Liberation Labs' biomanufacturing facility in Richmond, Indiana. This facility is set to be a commercial-scale, purpose-built precision fermentation co-manufacturing plant with a capacity of 600,000 liters, focusing on the production of bio-based proteins and other building-block ingredients across industries, including alternative proteins, pharmaceuticals, and cosmetics. With a project cost of $115 million, Liberation Labs is seeking to raise a mix of debt and equity financing to fund this commercial-scale precision fermentation manufacturing plant.

Venture capital

In a tight funding environment, one critical question is: What is venture capital still funding in 2024? In this section, we address this question, with a focus on VC funds (versus corporate VC, although some of the considerations may apply to both).

The VC model involves providing equity financing to early-stage, high-growth potential companies that can deliver high returns within the VC fund's time horizon, typically five to seven years. The expectation is that a few successful investments will yield outsized returns, compensating for the majority that may fail or achieve only modest success. Stemming from this high-risk, high-reward investment approach, VCs often seek innovative, rapidly scalable, high-margin businesses.

While many alternative protein companies have been funded by VCs historically, there is some friction with VCs' expectations of rapid scalability and profitability. As alternative protein companies create novel foods, often utilizing innovative technologies and processes, some VCs thought of their growth potential as akin to technology companies.

But alternative protein companies are food businesses, not software companies, and are generally low-margin, slower-growth businesses compared to technology startups. Unlike many tech companies, alternative protein companies must often navigate complex regulatory environments, build extensive supply chains, and manage production facilities. Companies must often invest substantial time and resources to overcome these operational challenges to scale and achieve profitability.

This misalignment of expectations can have negative consequences. For example, it can put pressure on alternative protein companies to prioritize short-term growth over more strategic, sustainable expansion. Expectations of rapid growth and value creation can also lead to unrealistic expectations for financial performance and high-valuation multiples, and—if alternative protein companies fail to meet these expectations—it can damage investor confidence and investment appetite in the sector overall. This situation materialized in the exuberant investment environment that led to peak VC funding in 2021 and the subsequent market correction.

In the current environment, VCs are increasingly focused on ensuring that companies use the proceeds of their raise on near-term operational milestones and that they have a clear path to attractive unit economics as well as proof of commercial validity. As VC funds assess opportunities in the alternative protein industry, some overall trends are worth noting (even if there is variability across stages, technologies, business models, and geographies).

Challenges

Venture capital investors active in the alternative protein industry acknowledge that many companies across all alternative protein pillars are facing difficulty in accessing VC investment, partly due to the overall funding environment. A few verticals are facing especially acute challenges.

Plant-based CPG/B2C. U.S. retail sales data from the past few years has challenged the hypothesis that demand for plant-based alternatives would drive continuous double-digit annual growth and that companies simply needed to scale as fast as possible to meet that demand. Investors generally now take the view that without this unprecedented demand, these companies will grow—and be valued on the market—more (slowly) like traditional food/CPG companies, which does not typically fit well within a VC model. Nevertheless, a smaller pool of CPG specialist investors are supporting later-stage plant-based CPG companies who can demonstrate product-market fit and immense demand growth potential.

Cultivated. Most VC investors focused on food or climate have either already invested in this sector and are in "wait and see" mode, or they lack conviction around cell-cultivated products in general. It is now rare for a small, vertically integrated cell-cultivated company (i.e., working

in-house from cell line to product development) to get VC funding. The ones who are being funded are typically B2B enablers of the space whose products may have applicability beyond food (e.g., in pharma or cosmetics), with many investors urging an early focus on higher-value non-food applications. Larger players in the cultivated meat sector continue to raise funding rounds but are increasingly focusing on both growing production and demonstrating viable economics. For larger players to scale commercial manufacturing profitably, the search for non-dilutive financing or less capex-intensive ways to scale becomes critical.

Appealing business models

Venture capital has increasingly focused on investing in companies who incorporate one or more of these key features into their business models:

Platform technologies. Investors are increasingly interested in novel platform approaches that allow a company to bring many new ingredients or products to market over time. They are less compelled by single-product/ingredient companies. Platforms include those that enable the commercialization of multiple product categories within one company as well as those that help many companies across the ecosystem—for example, across fermentation and cultivated technologies—to develop and commercialize products efficiently.

Cost reduction drivers (i.e., B2B enablers). Various companies are focusing on innovation around critical pain points in the different verticals of sustainable foods and alternative proteins. For instance, precision fermentation is still seen as having high potential in the short to medium term, but there are significant cost drivers in both upstream and downstream processing that need to be addressed to make this technology financially viable for food applications. Companies addressing such cost bottlenecks are currently garnering more VC attention than companies creating the food products themselves.

Solutions that combine hardware and software. VC investors note the difficulty of innovating within the food industry with software alone, as food manufacturing has a large, physical, "real-world" component. Companies who combine hardware innovations with innovative software components are attracting investors, as this addresses the physical needs for innovation while improving the scalability and unit economics through software applications.

Multi-industry and impact solutions. Solving a problem within the food space is important, but companies attracting VC investment are increasingly coming to market with solutions applicable to food and other industries. Companies coupling solutions for food with needs in industries such as water, waste, manufacturing, pharma, and cosmetics are not only increasing their addressable markets but also increasing their chances of finding product-market fit in the near term. For instance, if a company has a novel technology that decreases costs for fermentation, then—while the long-term goal may be to advance food-related biomass or precision fermentation—the company may be able to generate early revenues at commercially viable price points in pharma or cosmetics, drastically reducing risk and improving the chances of long-term success.

Focused on core competency. VCs are increasingly moving away from vertically integrated companies. Instead, they are interested in companies who focus on specific aspects of the value chain in which they have core expertise, while strategically partnering with other companies and providers to solve other pieces of the chain.

Climate funds

Historically, VC funds focused solely on expected financial returns when making investment decisions. However, in the past couple of decades, a range of funds have sprung up that integrate non-financial considerations, such as environmental, social, and governance (ESG) factors or impact, in their investment decisions. Funds may use these non-financial factors to mitigate risks and thereby protect company value, to limit harm (usually via exclusionary screenings), or to have a positive impact in an area of interest (such as a "double-bottom line" approach).

According to Pitchbook, private impact funds (spanning across venture capital, private equity, real assets, real estate, and private debt) that target climate solutions have been taking ever-larger shares of impact fund commitments. Funds at least partially targeting climate solutions raised nearly $100 billion from 2021 to 2023. This is a favorable development for alternative protein companies as they produce nature-positive proteins that address the twin crises of climate and biodiversity loss.

GFI's engagement with climate venture capital funds has shown that climate funds with a broad climate mandate have increasingly included food & agriculture among their sectors of coverage. And, when food & agriculture is included as a sector, fund managers are typically evaluating alternative protein companies. This is a major change from several years ago, when such funds were largely unaware of the industry.

Earlier-stage VC climate funds tend to more easily find alternative protein companies to invest in, while later-stage growth equity funds can struggle to identify funds that meet their revenue, profitability, and other financial targets given the relative nascency of the alternative proteins industry.

While generalist climate funds' interest in alternative proteins was increasing a couple of years ago, the current overall slowdown in funding has impacted this interest as well. That being said, climate funds continue to consider investments in alternative proteins and tend to be most comfortable with an investment if they can co-lead a round with a VC fund specializing in alternative proteins or join a round as a follower.

Across the board, alternative protein companies that can accurately measure and effectively communicate their environmental benefits to prospective investors will be best positioned to approach these funds.

Typical VC funding terms

Financing terms vary widely but, in general:

Target returns. Venture capital investors expect returns that meaningfully exceed public stock market returns and compensate for investments being illiquid (i.e., they cannot be sold easily, as can publicly traded equity). This typically means that VCs seek to invest in companies that can deliver an average annual internal rate of return (IRR) of at least 25 percent.

Investment horizon. Investment horizons of five to seven years are normal for VCs, as most funds are structured as a 10-year fund with a two-year extension option (a three- to five-year "investment period" followed by a five- to seven-year "portfolio management" period). In practice, this means that if a VC invests in a company in year five of its fund's life, it will seek to exit with a 25 percent or more average annual IRR within five to seven years. If a company is unlikely to achieve an exit within that time frame or hit those return targets, it is not likely to be a strong fit for the VC funding model.

Company ownership. Not all VCs have ownership targets, but for those that do, five to 10 percent ownership targets are normal and 20 percent is required at times. These targets can be met through one investment or over the course of multiple funding rounds.

Funding amounts and use of proceeds. The amount of funding entirely depends on the individual VC fund and the company stage at which it invests. How investment proceeds are used is driven by the company, not the investors, although investors need to be aligned with the anticipated use of funds. The most effective "use of funds" strategies include milestones that will act as value inflection points for investors. Investors also want to see a use of funds that is in line with at least one to two years of cash runway at the expected burn rate.

Conclusion

The current VC landscape reflects what is likely a strategic, long-term realignment toward high-growth, high-margin companies with multipronged approaches to achieving rapid growth and profitability. The focus has shifted toward platform technologies, cost-reduction enablers, and solutions that bridge hardware with software, highlighting a preference for versatility, scalability, and cross-industry applicability.

As companies navigate through this period of recalibration, it remains vitally important to ensure that business models align with market needs and investor expectations. Having said that, the fact that not all companies are strong candidates for VC funding has more to do with the fundamental realignment of VC to its original intended purpose rather than a comment on the worthiness or long-term success of an alternative protein company's mission. The scarcity of this capital pool underscores the urgent need to problem solve and create suitable capital pools that are well aligned with the time horizons and business models of alternative protein companies as they grow.

"If something doesn't fit the VC model, that simply means it doesn't fit the VC model. It doesn't inherently mean the company, idea, solution, etc., is a bad one. It could be great, but it just might not meet the very specific parameters for VC funding. Being backed by VCs is a business model choice, it's not a sign of a company being "better."

– Steve Molino, Clear Current Capital

Blended finance

Overview

Blended finance is a financing structure that efficiently blends catalytic capital (i.e., risk-tolerant, concessionary capital from philanthropic and/or government sources) with private, commercial capital. It aims to attract private investment in high-impact companies by absorbing risks which lowers the average cost of capital for companies.

It has been used successfully by development finance institutions (DFIs), governments, impact investors, and philanthropists in emerging markets to enable private sector financing in industries such as renewable energy, healthcare, and agriculture supply chains, as well as small- and medium-sized enterprises and micro-financing. Blended finance could be used to catalyze financing for alternative protein companies who need funding for commercial manufacturing facilities.

Mechanism and structures

DFIs or other private investors will often structure and co-invest catalytic capital alongside their own investment in a particular project/company. Blended finance aims to provide the minimum level of subsidy/concessional support needed for a project to be financially viable and catalyze investment from other capital providers by absorbing risks that are barriers to investment. While there are many potential ways to structure blended finance, three structures are typical:

Risk-sharing structures. These structures involve allocating some of a company's credit risk to a catalytic capital provider. Examples include loan guarantees (i.e., a payout to a lender by a catalytic capital provider if a company defaults), or first-loss structures/subordinated loans (i.e., catalytic capital takes a subordinated position to other lenders in a company's capital stack and absorbs company underperformance risk by being repaid after other lenders).

Subsidized capital. Typically offering low-interest-rate loans to make projects financially viable, or offering grants/low-cost equity alongside other financing to help defray early-mover costs in a nascent industry or market.

Technical assistance. Funding the cost of expert consultants, studies, and other service providers to lay the groundwork and prepare projects for financing.

Blended finance for alternative protein companies

Blended finance could play a catalytic role in supporting the scale-up and widespread adoption of alternative proteins. Given the large funding needs of the industry, philanthropic capital could be blended with commercial capital to efficiently alleviate financing bottlenecks and have maximum impact compared to direct grant-making.

The amount and duration of blended donor support needed to enable alternative protein companies to achieve economies of scale and operate profitably at price parity will vary significantly depending on the technology, product, and company stage. This section presents some ideas on how blended finance could be structured to unlock other pools of capital.

Mitigating market risk to unlock debt funding

Companies manufacturing novel foods often have limited visibility on market demand. This is one of the largest hurdles alternative protein companies face in accessing affordable, long-term debt financing. Blended finance is one potential solution to provide comfort to commercial lenders by absorbing market risk, as follows:

Loan guarantees (risk-sharing structure). Philanthropic capital could be structured as a payout directly to lenders in case of shortfalls in debt service (principal repayments and interest) caused by weak sales volume and/or pricing; this would cover specific risks, rather than being a full debt guarantee. This would transfer market risk from lenders to the blended finance provider in an efficient way by using philanthropic funds to absorb the risks that create investment barriers for lenders.

First-loss positions (risk-sharing structure). For lenders interested in financing a portfolio of alternative protein companies, philanthropic capital can be structured as a first-loss fund that covers shortfalls in debt service across a portfolio of alternative protein loans. The lender would be assured repayment up to a certain proportion of the loans made (i.e., the first-loss fund amount), thereby enhancing the credit profile of the alternative protein loan portfolio.

Subordinated debt (subsidized capital). Philanthropic capital can be structured as a subordinated loan (possibly at a low interest rate if needed by the company) that would be repaid after senior lenders are repaid each period. Subordinating a portion of total debt gives senior lenders priority access to cash flows each period while also providing the company with non-dilutive, affordable, long-term financing.

Co-funding technical assistance for project development

Lenders expect projects to be largely developed and ready for construction. This means companies should have completed site selection, feasibility studies, design and basic engineering, construction costing, partner selection, and other project development activities. This is time-consuming, complex work that alternative protein companies may struggle to complete ahead of securing financing. Blended finance in the form of grants or low-cost equity could be used to fund the cost of experts, service providers, and other consultants to help companies with project development work and preparing loan/guarantee applications.

Subsidizing loan transaction costs

Funding application processes can be time and resource intensive. For example, alternative protein companies flag the challenge of balancing cash burn rate with the 12- to 18-month average timeline to meet requirements and undergo due diligence and processing by U.S. government loan programs. In addition, some lenders require companies to pay for the due diligence process involving external consultants (e.g., independent engineers, lawyers, and other specialists) to help lenders screen and vet applicants. Using philanthropic capital to defray these expenses could enable companies to approach lenders for smaller loan sizes.

Lowering the cost of equity

As discussed in the Capex requirements section, equity remains a critical component of the financial plan as companies grow to the commercial manufacturing stage. Blended finance can be structured as low-cost equity to support a range of capex needs, from retrofitting co-man facilities ($10,000 to $50 million), to co-funding demo facilities alongside other early-stage equity investors (<$20 million capex), to closing equity funding gaps for self-owned facilities that are financed with a mix of equity and debt ($15 million to $250 million+ capex).

Conclusion

Blended finance is an efficient way to leverage concessional funding to mobilize larger volumes of investment. It can alleviate key barriers faced by alternative protein companies in accessing the large pools of capital they need to grow. Implementing these solutions will require close collaboration among key stakeholders, including alternative protein companies, potential lenders, and catalytic capital providers. Fortunately, there are success stories from other industries and countries that can help guide this effort.

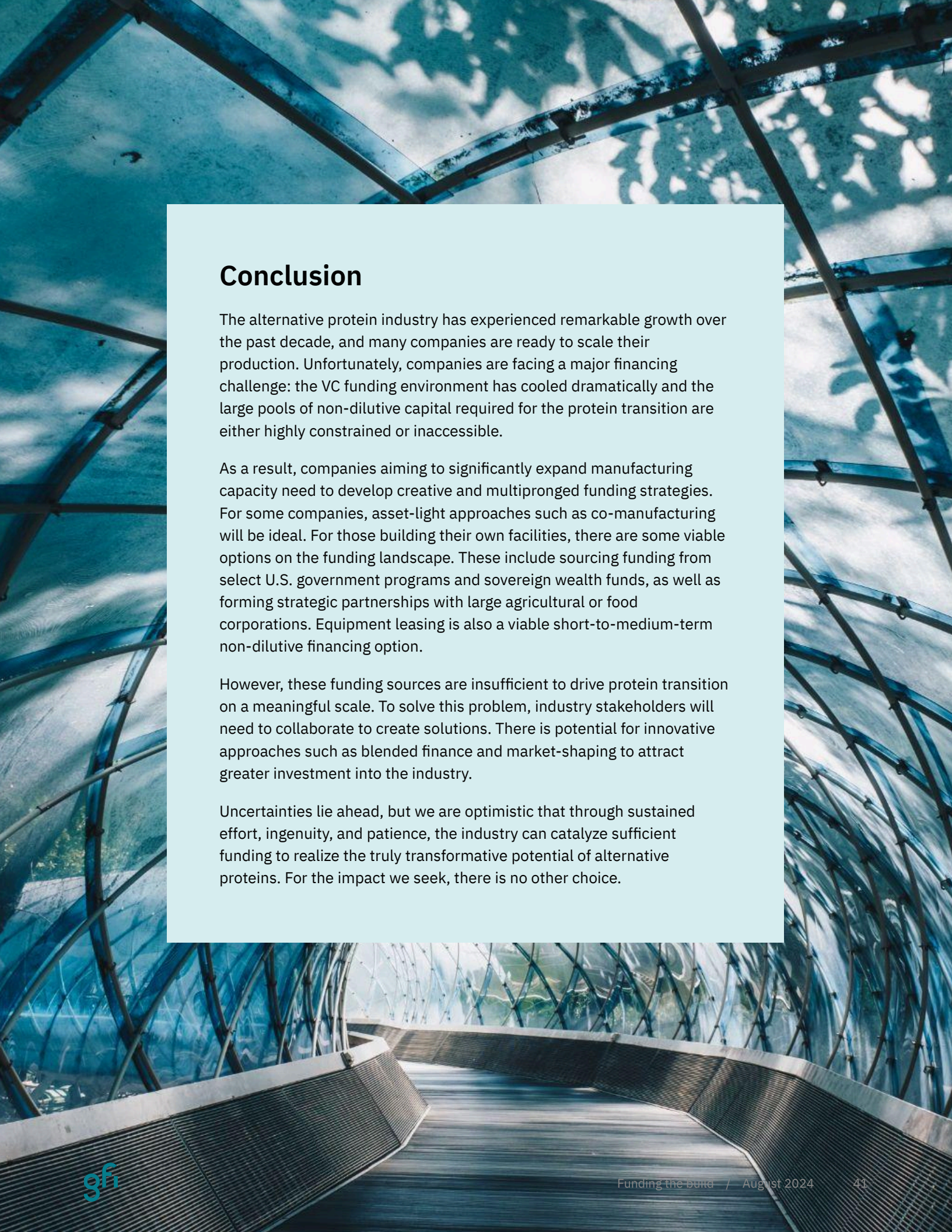
Market shaping

It may be possible to address certain structural dynamics within the alternative protein industry that hinder companies from securing long-term debt financing for commercial manufacturing through market shaping. Market shaping uses economic tools to solve market failures where commercial incentives for innovation trail behind societal needs.

One market-shaping initiative currently underway aims to accelerate the scale-up of alternative proteins by addressing critical supply chain bottlenecks and structuring volume guarantees with concessional capital. The initiative draws on the proven model of the Clinton Health Access Initiative (CHAI website and CHAI primer), which has significantly enhanced access to healthcare in low- and middle-income countries.

The CHAI model focuses on analyzing market failures and implementing strategic interventions to improve the supply and affordability of healthcare products like pharmaceuticals, diagnostics, and healthcare technologies. By negotiating volume guarantees and facilitating technology transfers, CHAI has successfully lowered costs and increased the availability of health products. This approach has led to more than 150 agreements that have dramatically reduced the prices—often by 50 to 90 percent—of drugs, vaccines, and diagnostics and rapidly scaled production, thus expanding global access to crucial treatments.

A team is now working to replicate several of these strategies to scale up alternative protein production. They include collaborating with manufacturers to boost production capacity and reduce costs through technology transfer, negotiating volume purchase guarantees from governments and the private sector to secure stable demand, and integrating concessional capital in the form of loan guarantees and/or subsidized financing. This effort aims to address critical industry bottlenecks and establish a sustainable market for alternative proteins.



Conclusion

The alternative protein industry has experienced remarkable growth over the past decade, and many companies are ready to scale their production. Unfortunately, companies are facing a major financing challenge: the VC funding environment has cooled dramatically and the large pools of non-dilutive capital required for the protein transition are either highly constrained or inaccessible.

As a result, companies aiming to significantly expand manufacturing capacity need to develop creative and multipronged funding strategies. For some companies, asset-light approaches such as co-manufacturing will be ideal. For those building their own facilities, there are some viable options on the funding landscape. These include sourcing funding from select U.S. government programs and sovereign wealth funds, as well as forming strategic partnerships with large agricultural or food corporations. Equipment leasing is also a viable short-to-medium-term non-dilutive financing option.

However, these funding sources are insufficient to drive protein transition on a meaningful scale. To solve this problem, industry stakeholders will need to collaborate to create solutions. There is potential for innovative approaches such as blended finance and market-shaping to attract greater investment into the industry.

Uncertainties lie ahead, but we are optimistic that through sustained effort, ingenuity, and patience, the industry can catalyze sufficient funding to realize the truly transformative potential of alternative proteins. For the impact we seek, there is no other choice.

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