2024 STATE OF GLOBAL POLICY:

Public investment

in alternative proteins to feed a growing world

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About GFI's State of Alternative Proteins series

GFI's State of Alternative Proteins series serves as our annual alternative protein sector deep dive. The series compiles business developments, key technologies, policy updates, and scientific breakthroughs from around the world that are advancing the entire field. To read other reports, visit the series homepage.

This report covers government support and regulation of alternative proteins in regions where the Good Food Institute (GFI) has a focus. It is comprehensive through the end of 2024. GFI's teams collaborate extensively on every report, and some material appears in multiple reports. For detailed information on government policy and regulatory actions before 2024, please see GFI's 2023, 2022, and 2021 State of Global Policy reports. All dollar amounts in this report are U.S. dollars unless indicated otherwise. All figures/charts featured in this report present data sourced from GFI's Public Investment Database as of March 31, 2025.

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The cover image is courtesy of Tender Food.

Executive summary

Taken as a whole, public investment in alternative proteins remained steady in 2024, largely matching the level set in 2023.

GFI estimates that governments around the world announced about $510 million in new committed funding for alternative proteins, including increases in funding for R&D, bringing the all-time cumulative commitment from governments to around $2.1 billion.

Altogether, new public funding announcements for alternative protein and food technology added to the important work being done by existing projects, programs, and funding opportunities. Estimating the amount of funding spent annually through these and previous programs yields about $560 million in disbursements in 2024, exceeding the $348 million estimated to have been invested in 2023.

As governments began to put the weight of public investments behind their national bioeconomy plans, enhanced by a new sense of urgency in developing biotechnology capabilities and supply chain security and resiliency, they invested in projects to develop the science and industrial capacity of meat, dairy, and seafood made from plants, cultivated from animal cells, or produced via fermentation.

Taken in pieces, the global landscape of public investment in alternative proteins is quite varied. The bulk of the support in 2024 came from the world's three most populous countries. China, India, and the United States all began funding national bioeconomy plans that included alternative proteins in the scope. Meanwhile, new announcements from Canada and some EU countries were fewer in 2024 than they were in 2023, reflecting either a focus on existing programs (e.g., Canada's successful Protein Industries Canada program) or a shift to other policy priorities due to changes in government.

Figure 1. Yearly public investment in alternative proteins by type

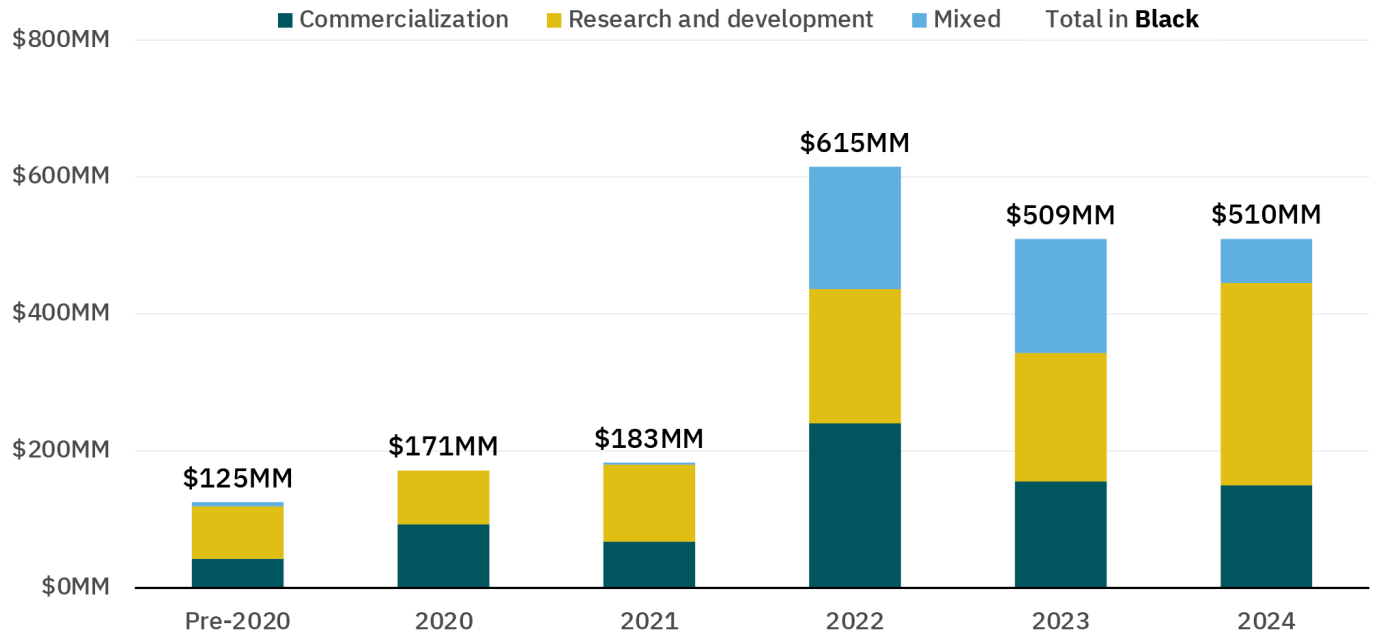
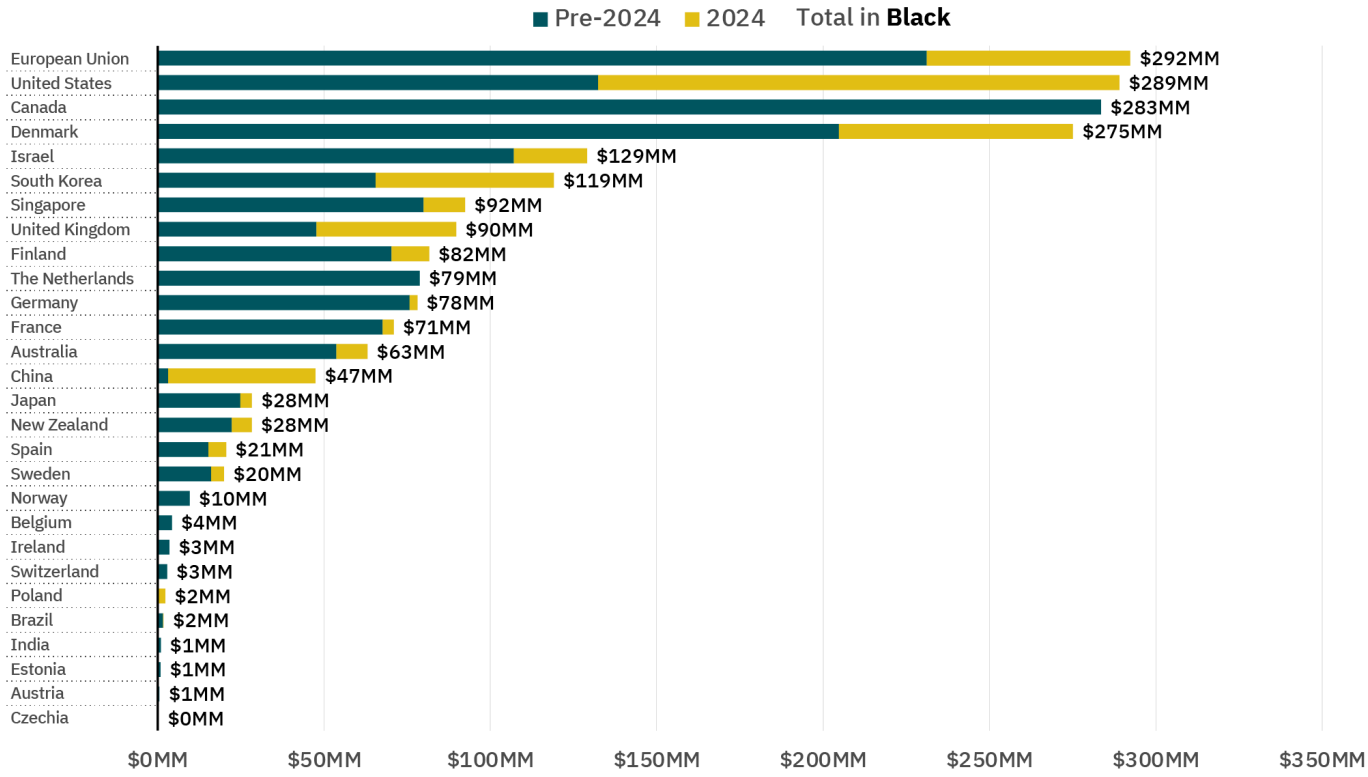


Figure 2. Public investment in alternative proteins by governments

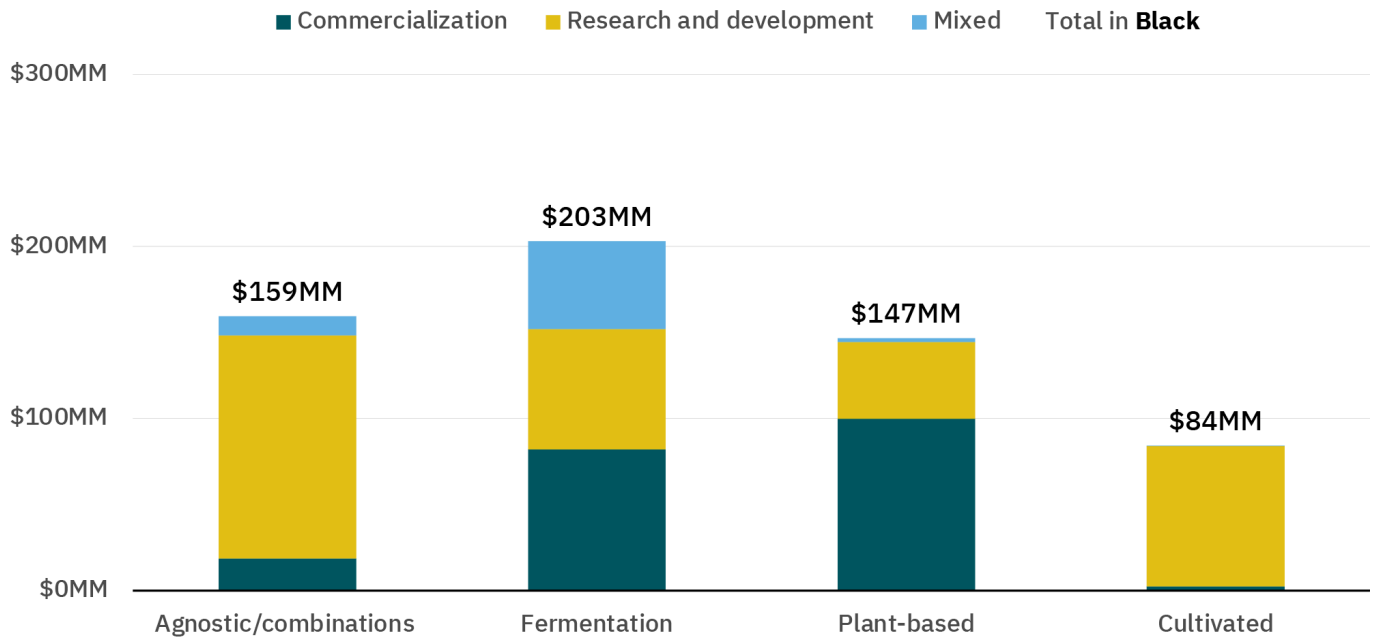
Investments announced before 2024 in green, new funding announced in 2024 in yellow



In addition to variances across countries, the state of global policy for alternative proteins looks distinct across different methods of production. For the first time, public investments in fermentation technologies ($203 million), which include precision fermentation, biomass fermentation, and gas fermentation, have exceeded public investments in plant-based protein. This mirrors the trend in private investment generally as more attention turns toward the promise of fermentation technologies. These various technologies sit squarely in the center of the emergent bioeconomy, as the field's science, equipment, and infrastructure overlap significantly with those needed for pharmaceuticals, biofuels, bio-based materials, and more.

In 2024, this synergy positioned fermentation to benefit from new initiatives to boost biotechnology and biomanufacturing, elevating the many benefits of fermentation-derived proteins to policymakers and incentivizing R&D efforts. Highlighting this dynamic is the fact that the United States, in by far the country's most active year yet, invested over $135 million in alternative protein projects that include fermentation in scope.

Figure 3. 2024 public investment by platform and type



In 2024, plant-based proteins received less new public investment ($147 million) than in prior years. This trend can be attributed to several factors: first, that plant-based meat sales have experienced a highly publicized plateau in the past few years, prompting hesitation in policymakers; and second, that the early surge in investment announcements for long-running programs has resulted in leading countries sustaining, rather than increasing, investments in plant-based proteins. Yet, research and commercialization funding for plant-based products is essential to increasing market share as consumers look for products that meet their taste, price, and nutritional preferences. Ahead of the curve as a long-time supporter of alternative proteins, Singapore has begun to buck this trend with a late 2024 commitment of research funding to "increase the consumer acceptance of [plant-based and fermentation-derived] foods by improving their flavour, texture and nutritional properties," directly addressing a societal challenge with targeted investment.

Cultivated meat ($84 million) experienced a surge in public investment in 2024, doubling from the previous high of $42 million in 2023. While the amount of support for cultivated meat technology development declined in the Americas and Europe, the Asia Pacific region drove the uptick in support in 2024. China, India, Japan, New Zealand, Singapore, and South Korea all dedicated funding specifically to cultivated meat R&D or scale up, positioning the region to pick up the bulk of the sector's momentum from the United States. In particular, several of the new announcements in 2024 focused on cultivated seafood, a highly promising but comparatively under-researched area of study. As seafood supply experienced new volatility, governments in China, India, New Zealand, South Korea, and the United States all allocated public funding toward developing resilient alternatives.

Other government actions not incorporated in GFI's estimate include stand-out announcements made by China and India to develop food biomanufacturing through government-supported research hubs and national bioeconomy plans. While these broad biotechnology plans encompass technologies and priorities beyond the scope of alternative proteins, they include these new food technologies prominently. India committed INR 9197 Crore ($1.1 billion) through the Biotechnology for Economy, Environment, and Employment Policy (BioE3) policy, of which one of the six pillars is "functional foods and smart proteins." China, meanwhile, announced the construction of an RMB 6.8 billion ($960 million) National Agricultural Science and Technology Innovation Hub, which will support 10,000 students studying and conducting research in four major innovation bases, comprising the Life Sciences and Nutritional Health Base, Intelligent Technology and Smart Agriculture Base, Cutting-Edge Technology and Future Industries Base, and International Agriculture and Global Development Base, to build a major national agricultural science and technology innovation platform cluster. While the exact proportion of these programs that will benefit alternative proteins specifically is unclear as of publication, they are the first to approximate the scale and commitment needed to lead the world in food technology.

These initiatives hint at the changing reasons that governments are investing in alternative proteins and new food technologies. The years 2023 and 2024 were marked by geopolitical upheaval, food supply chain stresses, new technologies like artificial intelligence, concerns about international trade, threatening zoonotic diseases, and many other issues of global concern. Alternative proteins can help address these challenges by providing domestic food sources from new and existing resources, creating jobs and benefiting local economies, and enhancing resilience to disease and other disruptors. In light of these events, policymakers are investing more heavily in developing the technologies that will allow them to address these challenges.

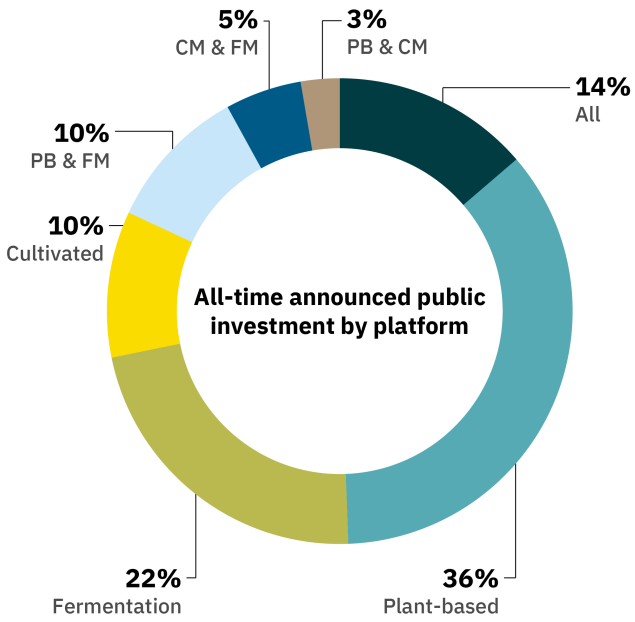
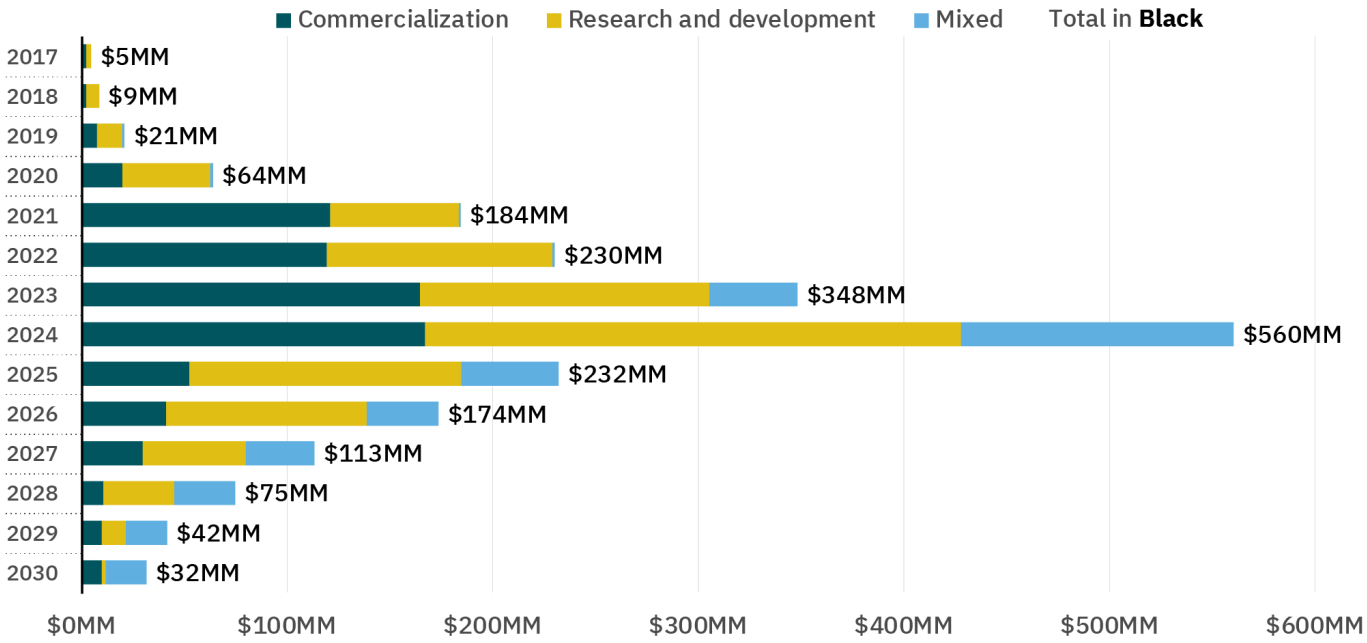


Figure 4. Public investment by platform

To best attract talent, spur and sustain economic activity, diversify supply chains, strengthen food resilience, and bolster national security in defense, health, and trade, governments are beginning to build scientific and industrial strengths in new food technologies. The United States, for example, continued important R&D investments from the Department of Agriculture and the National Science Foundation in 2024 while adding support from the Departments of Defense, Energy, and Commerce. This reflects the growing importance of biotechnology and food science to address a range of issues affecting national security, technological leadership, and economic growth.

Figure 5. Estimated and projected disbursements of pre-2025 multiyear commitments by year

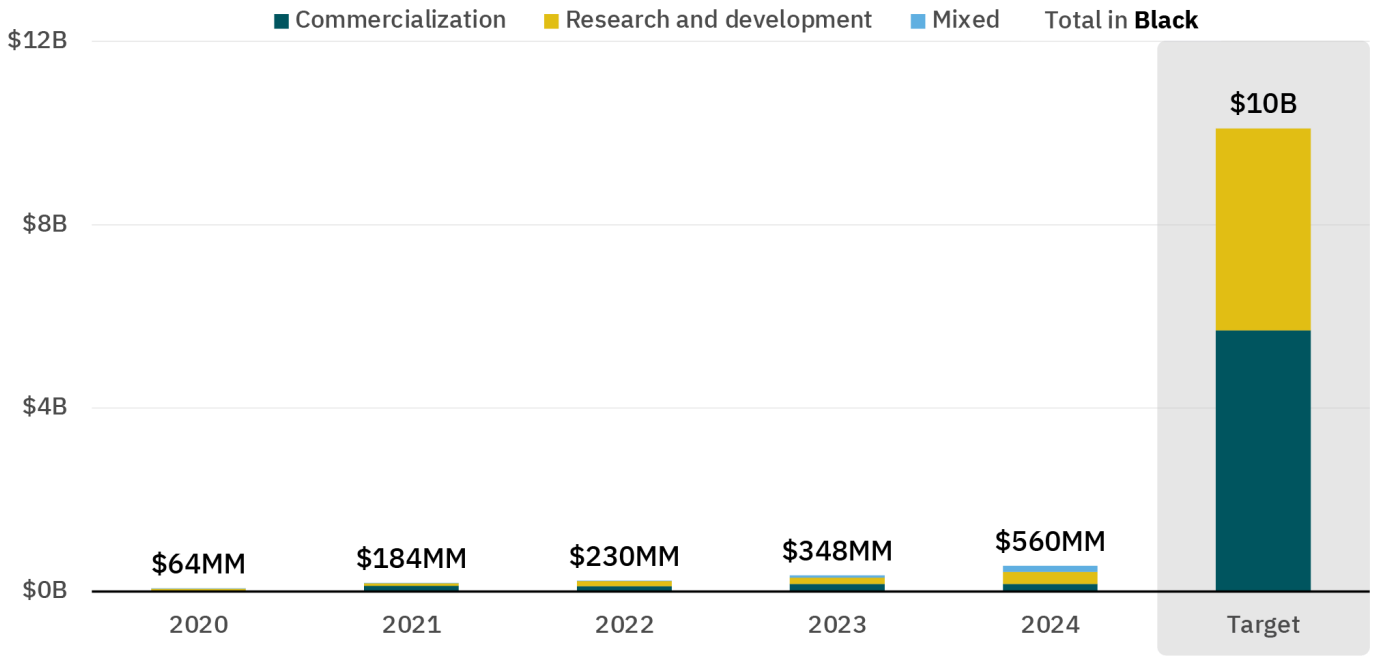


Note: Projections are based on programs established before 2025 and do not consider new programs established in future years.

To reap the full benefits of a mature alternative protein sector, including up to 9.8 million jobs, $1 trillion in economic value, and benefits for food resilience, global health, and environmental security, a Global Innovation Needs Assessment (GINA) found that governments must invest $10.1 billion in alternative proteins on an annual basis.

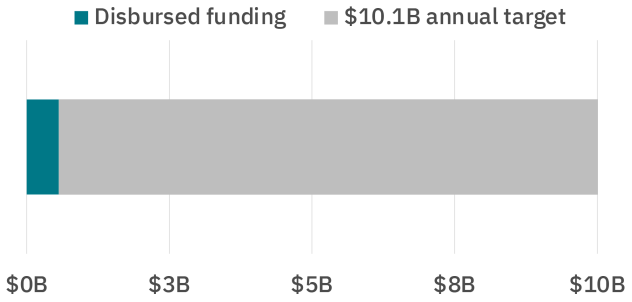
Though new announcements boosted prospects for future investment, the estimated $560 million spent in 2024 satisfies less than six percent of this need.

Figure 6. Annual disbursements compared to GINA target



The fair regulation of alternative proteins has also experienced uneven progress across the globe. Headwinds for alternative proteins' fair access to markets continued in 2024. Several countries and U.S. states took action to ban or restrict alternative proteins, with various degrees of success. However, as in 2023, there were more successes than setbacks. Cultivated meat was approved for the first time in Israel and briefly debuted in Hong Kong (a Special Administrative Region in China); new fermentation-derived foods were approved for the first time in Canada; new regulatory processes were set up or tested for the first time in Australia/New Zealand, China, the EU, and South Korea; and applications for cultivated meat approvals were submitted for the first time in the EU, South Korea, and Thailand. These updates reflect a growing understanding, global in scope, that new foods present an opportunity for governments, economies, and consumers that regulatory agencies should be ready to meet.

Figure 7. 2024 disbursed funding compared to the annual GINA target



The state of global policy concerning alternative proteins and new food technologies continues to evolve. In 2024, that evolution reflected both momentum in some quarters and headwinds in others. While 2025 will present new and unpredictable developments, alternative proteins will continue to offer policymakers viable opportunities to navigate global challenges, build scientific and economic strength, and provide citizens and global markets with new sources of food.

Americas

Brazil

Public investment

In 2024, alternative proteins achieved significant progress in the Brazilian public sector. The Brazilian government appears to be making progress toward regulatory clarity in the country, which is being jointly shaped by the Ministry of Agriculture and Livestock (MAPA) and the National Health Regulatory Agency (ANVISA), the latter of which is linked to the Ministry of Health.

At the state level, the Foundation for Research Support of the State of Paraná finalized a cooperation agreement with GFI Brazil, agreeing to match $150,000 in funding for research projects on alternative proteins. The cooperation agreement was signed in November 2024. The State of Paraná holds a significant economic position in Brazil as a major producer of soybeans, corn, wheat, and meat, contributing substantially to Brazil's agricultural exports.

This initial action has already yielded positive developments. In 2025, the National Confederation of Research Support Foundations, a collegiate forum that brings together all 27 state-level Research Support Foundations, will be advancing a similar cooperation agreement with GFI Brazil.

Regulatory updates

In 2024, MAPA held a public hearing to discuss the regulation of alternative proteins. The public hearing led to the first draft of a legal approach to plant- and fungi-based alternative proteins. The regulation is expected to result from the joint work of ANVISA and MAPA.

The draft regulation lays out specific requirements for the labeling of plant- and fungi-based alternative proteins, including phrasing, font size, color, and positioning. Labels may use animal product-related names as long as they carry the information that it is a food that mimics that of animal origin. The proposed regulation is the result of a long process with the conventional animal protein sectors and represents a step forward in terms of settling the issue of the use of nomenclatures associated with animal products in the country.

Two bills were presented at the state level seeking to ban the use of nomenclatures associated with animal products by plant-based products. One was rejected (in the state of Mato Grosso) and the other was vetoed by the governor after approval by the Assembly (in the state of São Paulo).

Canada

Public investment

Canadian investments in developing the plant-based protein industry continued to set the tone for advancing the field, bringing in international partners while supporting the domestic industry. While few new commitments were made in addition to 2023's five-year CAD 150 million ($110 million) investment in Protein Industries Canada (PIC), the projects announced within that program showed the breadth and depth of Canada's engagement with the domestic plant-based protein industry. The bulk of the 21 projects funded in 2024 were second-phase iterations of existing projects, building on the relationships and expertise forged in early projects and orienting them toward new and related challenges. As with the vast majority of PIC projects, these initiatives rallied significant private investment to match the public investment, incentivizing industry to work closely with public researchers and orienting private efforts toward the public good.

In 2024, PIC also announced a collaboration with the United Kingdom, partnering with Innovate UK to build out relationships between the plant-based protein science community across the Atlantic. In addition, several university research programs independent of PIC continued to fund research projects on plant-based proteins and other food technologies.

As with the United States (see below), in 2024, Canada levied punitive tariffs on imports of high protein content pea protein (HPC pea protein) from China, finding that the government of China had improperly subsidized exports of the key plant protein to undercut domestic producers. The tariffs raised the price of pea protein, a key ingredient of many plant-based alternative proteins, revealing that despite Canada's ample pea crop, the country lacks cost-effective industrial capacity in fractionation, the process by which peas become pea protein. China has developed this infrastructure in response to longstanding domestic demand for pea starch, another product of fractionation used as an ingredient in vermicelli, which is not in high demand in the Americas. More public investment is necessary to increase the volume and cost efficiency of production in North America through incentives to build infrastructure and programs to boost demand for pea protein and pea starch.

Regulation

Canada approved animal-free milk made by precision fermentation for the first time in January 2024. Health Canada, the nation's food regulator, issued a "Letter of No Objection" in response to startup Remilk's application to sell animal-free milk protein, indicating that the agency does not have food safety concerns about the product. For Remilk to obtain this approval, Health Canada conducted a comprehensive assessment of the animal-free protein under the Guidelines for the Safety Assessment of Novel Foods, which are based on internationally accepted principles for establishing the safety of foods with novel traits.

In the "Letter of No Objection," Health Canada suggested that Remilk's product labels include the name of the source material and clearly communicate the allergenic risk of these products to consumers with dairy allergies. The labeling requirements for this protein are governed by the Safe Food for Canadians Regulations and the Canadian Food and Drug Regulations. The Canadian Food Inspection Agency will ultimately be tasked with enforcing labeling requirements. Remilk intends to sell animal-free protein directly to food manufacturers as a non-animal source ingredient for use in nutrition bars and beverages, cheese, ice cream, yogurt, and plant-based drinks, at which point the products may be subject to additional product-specific regulatory requirements.

United States

Public investment

The federal and state governments in the United States invested over $150 million in alternative proteins in 2024, a nearly two-fold increase compared to 2023. Major investments were announced by the U.S. Departments of Commerce, Defense, and Energy, as well as the National Science Foundation and multiple state governments. These investments focused on building infrastructure for precision fermentation manufacturing capacity, supporting startups developing food technology that enhances national security and competitiveness, and attracting talent to groundbreaking university programs.

Chief among U.S. investments in 2024 was the iFAB Tech Hub in Central Illinois, which in July 2024 received a $51 million grant from the U.S. Department of Commerce's Economic Development Administration. The country's first publicly founded contract development manufacturing organization for precision fermentation, iFAB will significantly increase the United States' pilot manufacturing capacity to develop and commercialize new fermentation products and provide a boost to Central Illinois's agricultural and manufacturing sectors.

Meaningful investments from the National Science Foundation, the Department of Defense, and the Department of Energy also propelled the United States into a leadership position in 2024. In all, at least 24 projects advanced alternative proteins to secure American leadership in biomanufacturing, defense logistics, and future industries. Notably, nearly all of these research projects focused on fermentation, whether for battlefield food production, infant nutrition, space travel, athletic performance, or, of course, delicious protein-rich food.

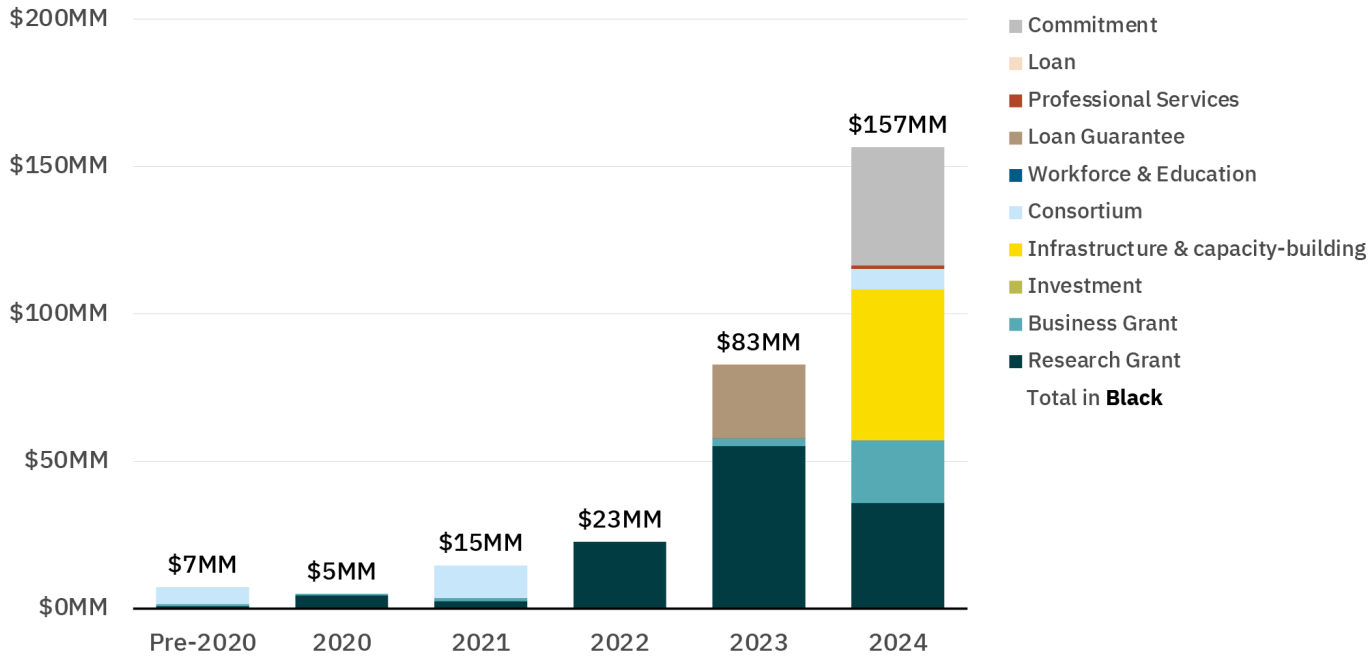
The state governments of Illinois and Massachusetts emerged as the nation's leading supporters of alternative protein innovation, both investing in programs to boost the states' industrial and academic advantages in the sector. In the wake of the iFAB announcement at the University of Illinois at Urbana-Champaign, the state of Illinois announced significant public and private follow-on investment to further boost Illinois as a leader in biotechnology. Similarly, the state legislature of Massachusetts committed $10 million of the state budget to alternative protein research and capital needs and $30 million to construct a new plant-based meat and dairy food science building at the University of Massachusetts Amherst, building on the success of the state's existing Tufts University Center for Cellular Agriculture, which focuses on cultivated meat and fermentation.

Despite these achievements, the United States trails in public investment in plant-based and cultivated meat. This represents two opposite dynamics. While plant-based protein products are common on the market and may be perceived as not requiring government support for commercialization, the United States relies heavily on protein processing capacity in China and Canada to turn its high supply of protein-rich crops into much scarcer plant protein isolates and ingredients. Punitive tariffs on Chinese pea protein, levied by both the United States and Canada in July of 2024, have reduced the supply of pea protein available. Swift government action is needed to boost the United States' capacity to process its own plant protein ingredients, especially enabling a rapid increase in fractionation capacity and technological development.

On the other end of the spectrum, cultivated meat has not yet secured significant investment from the United States, likely due to the early nature of the technology's development. This comes as China, India, Japan, New Zealand, South Korea, the United Kingdom, and many more countries are scaling up their investments in cultivated meat research, especially through bilateral and multilateral research calls that are deepening research ties across borders. While the United States' private sector leads the world in cultivated meat science and manufacturing capacity, opportunities are likely to move elsewhere without research and public investment parity.

Overall, increased public investment across the United States reflected a growing urgency to develop an internationally competitive biotechnology and biomanufacturing sector in light of new global challenges, and in 2024, the United States made unprecedented strides in meeting the moment with targeted investments in key technologies. Nevertheless, more investment is needed to ensure continued leadership.

Figure 8. U.S. federal and state public investment by type of investment



Regulatory updates

Plant-based

In January 2025, the U.S. Food and Drug Administration (FDA) released draft guidance on the Labeling of Plant-Based Alternatives to Animal-Derived Foods. The guidance applies to plant-based meat, seafood, eggs, and dairy (other than milk, which was addressed separately by FDA in 2023). The draft guidance states that plant-based food labels can include the names of animal-derived foods, so long as the labels are not misleading. The draft guidance also urges companies to change their naming conventions to include the primary plant source or sources in product names, instead of only using broad qualifiers such as "meatless." FDA's action follows a 2017 petition by GFI requesting that the agency clarify "that new foods may be named by reference to other 'traditional' foods in a manner that makes clear to consumers their distinct origins or properties."

Although the draft guidance does not have the force of law, it reflects FDA's thinking on the laws and regulations it implements. FDA is accepting public comments on the draft guidance through May 2025, and has yet to issue any final rules on plant-based product labeling.

Fermentation

There are two regulatory pathways that companies can follow to sell novel foods and ingredients in the United States. The first pathway requires companies to submit a food additive petition (or color additive petition for ingredients that impart color to the food purchased by the consumer) to FDA. This lengthy process involves a consultation with FDA and a petition requesting that FDA issue a regulation to allow specific uses of the food or ingredient in question. The second pathway is to achieve Generally Recognized As Safe (GRAS) status, which can include submitting a GRAS notice to FDA when an ingredient is already "generally recognized as safe" among qualified experts under its conditions of intended use.

Companies are allowed to bring their products to market as soon as they have affirmed GRAS status, but it is common practice to wait until FDA has issued a "no questions" letter in response to the GRAS notification, indicating the agency does not question the safety conclusion for the product in question.

Companies typically elect to take the GRAS pathway, as demonstrated by the numerous "no questions" letters sought from or issued by FDA for fermentation-derived proteins in 2024:

- In January 2024, FDA issued a "no questions" letter to the Israeli alternative dairy company ImaginDairy for its animal-free milk proteins.
- In February 2024, U.S.-based fermentation-enabled dairy startup New Culture announced that its animal-free, precision fermentation-derived casein is GRAS. New Culture is now seeking a "no questions" letter from FDA.
- Also in February 2024, Dutch fermentation-enabled dairy company, Vivici announced that its animal-free precision fermentation-derived whey protein is GRAS. Vivici is now seeking a "no questions" letter from FDA.
- In March 2024, FDA issued a "no questions" letter to Oobli, a U.S.-based protein ingredient company, regarding the GRAS status of their sweet-tasting protein made with precision fermentation.
- Also in March 2024, Dutch ingredients company The Protein Brewery announced GRAS status to import, manufacture, and sell their fermentation-enabled protein ingredient, Fermotein, in the United States. That same month, the Protein Brewery received approval from the Singapore Food Agency to import, manufacture, and sell their novel ingredient in Singapore. The Protein Brewery has not yet received a "no questions" letter from FDA.
- In July 2024, FDA issued a "no questions" letter to U.S.-based biomass fermentation-derived meat and seafood company The Better Meat Co. regarding the GRAS status of their Rhiza mycoprotein.

Cultivated meat

Cultivated meat companies in the United States are continuing to operate under the joint regulatory process set forth by FDA and the Department of Agriculture in 2019. Both federal agencies have solicited public comments on labeling and nomenclature requirements for cultivated meat and are expected to issue rules and guidance on nomenclature in the near future.

State regulation and legislation

In recent years, several U.S. state governments have introduced or passed laws to censor or prohibit the use of conventional meat and dairy terms on plant-based product labels. GFI monitors these bills and fights unfair label censorship laws. In 2024, there were litigation updates in three states:

- **Missouri:** GFI worked with the ACLU and Animal Legal Defense Fund (ALDF) on behalf of Tofurky to sue Missouri in federal court in 2018, alleging that their restrictions on plant-based labels violated the company's right to free speech. In March 2024, the case concluded when the federal district court held that the law only prohibited inherently misleading speech, and that consumers are not confused by plant-based labels when such labels contain appropriate qualifiers such as "plant-based" or "veggie."
- **Oklahoma:** ALDF and the Plant Based Foods Association (PBFA) challenged a label censorship law in Oklahoma in 2023, alleging that the law was vague, overly burdensome, unconstitutional, and preempted by federal law. In June 2024, the district court dismissed the case without prejudice due to lack of standing, since PBFA had not suffered a concrete injury caused by the state's actions. This ruling followed the Supreme Court case opinion in *FDA v. Alliance for Hippocratic Medicine*, which held that expending organizational resources does not necessarily constitute an injury sufficient to give that organization standing.
- **Texas:** GFI and ALDF challenged a Texas label censorship law in 2023. In September 2024, the U.S. District Court of the Western District of Texas rejected the state's attempt to dismiss this lawsuit, and litigation remains ongoing.

The cultivated meat industry also faced challenges in 2024. In March 2024, the Florida state legislature approved a bill banning cultivated meat. The bill was signed into law by the governor on May 1, making Florida the first state in the country to do so. Also in May, Alabama enacted its own bill banning the production and sale of cultivated meat. The Florida ban is currently being challenged by UPSIDE Foods and the Institute for Justice, and litigation is ongoing.

Asia Pacific

Australia/New Zealand

Public investment

Australia

In 2024, public entities in Australia supported alternative proteins through initiatives ranging from foundational research to financing production facilities. The government of Australia and three states (Queensland, Victoria, and South Australia) focused on plant-based and fermentation-derived proteins, propelling their commercialization into regional firsts. Plant-based proteins enjoyed support from state-level governments, with investments focused on processing protein-rich crops into high-quality, functional foods. Governments also supported the development of the precision fermentation industry, with both the federal government and the State of Queensland supporting Australian startup Cauldron Ferm in constructing the first large-scale end-to-end contract manufacturer for precision fermentation-derived products in the Asia Pacific region.

The Climate Change Authority of Australia included alternative protein technologies in its review of net-zero transition pathways, which guide the federal government's climate change policies, and called for more research and development on new sources of protein.

New Zealand

New Zealand focused public investment on cultivated seafood, a high-impact and comparatively under-researched field of study in a region with an unstable ocean climate and high environmental impacts from over-fishing. The NZ Endeavour Fund's NZD 9.6 million ($5.9 million) research program will develop stable, sustainable, and high-quality seafood cell lines and ingredients for use in alternative protein products. New Zealand also partnered with China on a joint research program that included alternative proteins in its call for proposals. Funding decisions will be announced in May or June 2025.

Regulatory updates

Food production and sales in Australia and New Zealand are jointly regulated by Food Standards Australia New Zealand (FSANZ), which moved forward in their regulation of alternative proteins in 2024. Sydney-based company Vow, which received the regulatory green light to sell their cultivated meat products made from Japanese quail in Singapore in 2024, is advancing in securing regulatory approval through FSANZ's novel foods process. As the second phase of public consultation nears completion, Vow aims to launch its cultivated meat products in the Australian market in 2025.

In October 2024, Australian think tank Food Frontier hosted a novel foods tasting in Melbourne of five innovative alternative protein products, including cultivated lamb meat and precision fermentation-derived dairy not yet approved for sale in Australia/New Zealand.

China

Public investment

China's central and local governments made significant investments in alternative proteins in 2024. Though the full breadth of government investment is not made public, several announcements indicate high levels of public investment in alternative proteins in the country. Leading these is the RMB 6.8 billion (nearly $1 billion) National Agricultural Science and Technology Innovation Hub in Beijing, which will support 10,000 students conducting research in four major innovation bases, one of which will include alternative proteins, as an element of the goal to advance food technology and industry.

> "The National Agricultural Hub will focus on four major functions: scientific and technological innovation to lead future development, attracting and cultivating outstanding talents, integrating industry and education to drive industrial upgrading, and connecting global wisdom, to create a complete innovation chain from original technology to industrial application."
>
> **China Agricultural University**
>
> *(machine translated from Chinese by Google)*

Further, the State Administration for Market Regulation approved the construction of a new Animal Alternative Protein Technology Innovation Center, jointly established by the China Meat Food Comprehensive Research Center and Beijing Technology and Business University, which will be the first national-level technology innovation center focusing on alternative proteins.

Later in the year, the National Center of Meat Quality and Control announced a call for research proposals that includes cultivated meat innovation in its scope.

At the municipal level, the city of Nanjing launched a project called "Research and Demonstration of Key Technologies for Large-Scale Production of Cell Cultured Meat" (machine translated from Chinese by Google) at the Nanjing National Agricultural High-Tech Zone. The project aims to develop a thousand-liter production line for cultivated meat in the next two to three years while innovating new methods of scaling production, increasing efficiency, and identifying high-impact ingredients. In Jiangxi Province, Jiangxi Fushine Biotechnology announced that the company had received RMB 35.4 million ($4,870,000) in enterprise development support funds to pursue their commercialization of microbial proteins. In late 2023, the company announced plans to construct a facility capable of producing 200,000 tons of microbial protein annually.

Regulation and legislation

In February 2024, the Communist Party of China Central Committee and State Council released the 2024 No. 1 Central Document, which is the first national policy statement released at the start of each year, unveiling a roadmap for the national rural vitalization strategy. The "Greater Food Approach" is a holistic concept of food that emphasizes the importance of expanding food resources from multiple sources and methods of production, such as plants, animals, and microorganisms, to meet human calorie and protein needs. This concept aims to develop a diversified and well-rounded food supply.

Following on the No.1 Central Document's focus on the "Greater Food Approach," the General Office of the State Council issued guidelines to speed up the establishment of a diversified food supply system, guaranteeing food security and building up strength in agriculture. These guidelines called for developing synthetic biotechnology and promoting the industrialization of novel foods as key elements.

Photo credit: Chunk Foods

Also in February 2024, the China National Center for Food Safety Risk Assessment (CFSA) Working Group completed and submitted to CFSA the "Investigation Report on the Production Processes and Safety of Cultivated Meat." The report was announced during the national conference of the Boao Food and Health Exhibition and provided a reference for developing regulatory mechanisms for cultivated foods. CFSA established the special Working Group in 2023 to focus on the regulatory framework for cultivated meat in China.

In September 2024, CFSA released new safety assessment application materials for genetically modified microorganisms used in food processing trials, which opens the door for precision fermentation-derived proteins to declare safety evaluation from CFSA.

On the municipal level, the General Office of the Beijing Municipal Committee of the Communist Party of China and the Beijing Municipal Government co-released an implementation guideline document on "Accelerating the Construction of Beijing as the International Green Economy Benchmark City." This document emphasizes the benefits of accelerating the alternative protein sector, with a focus on sustainable, high-efficiency, and high-quality production to support national food security.

India

Public investment

The Indian government's support for smart proteins (as alternative proteins are called in India) experienced positive momentum in 2024. World Food India 2024, the Ministry of Food Processing Industries' flagship event, included a special focus on plant-based proteins, including highlighting them in the Ministry's pavilion. This signals a positive shift in how the government views the role that plant-based proteins can play in the Indian food ecosystem.

In August 2024, the Ministry of Science and Technology's Department of Biotechnology launched the "Biotechnology for Economy, Environment, and Employment" (BioE3) Policy for Fostering High-Performance Biomanufacturing. The policy aims to fast-track innovation by weaving together fragmented activities under one biomanufacturing umbrella. The BioE3 policy includes smart proteins and functional foods in one of the six key thematic sectors, recognizing it as one of the pillars for India's bid to emerge as a global leader in bio-innovation.

A major component of the BioE3 policy is the Biotechnology Research Innovation and Entrepreneurship Development (Bio-RIDE) funding scheme, to which the government has proposed funding of INR 9197 Crore ($1.1 billion) through 2026 that would be spread across the six key thematic sectors, one of which is "functional foods and smart proteins." By focusing on research, infrastructure, regulatory support, skill development, and public-private partnerships, the policy and funding scheme creates an enabling environment for the growth of biotechnology for food production. While specific funding allocations are evolving, a grant call published in February 2025 on alternative protein discovery research and scale up signals growing interest and investment in this area from the government.

Additionally, the Indian Council of Agricultural Research's Central Marine Fisheries Research Institute signed a Memorandum of Understanding with Indian cultivated meat company Neat Meatt to jointly develop fish cell lines to be used in cultivated seafood products. India is the world's third-largest producer of fish, but domestic demand in the world's most populous country is expected to double by 2048, jeopardizing the seafood supply. Cultivated seafood can help supplement the country's seafood supply, prevent over-fishing, insure against environmental shocks, and boost biomanufacturing and economic strength.

On the state level, the Karnataka Biotechnology Policy 2024–2029 was launched in November 2024 and features bio-agriculture, which includes smart proteins, as an "emerging area." Through the policy, the government of Karnataka aims to support and incentivize the construction of bio-manufacturing units, which also include bioprocessing related to smart proteins.

The Government of Maharashtra, supported by the World Bank, instituted the Commodity Stewardship Council on Pulses, a not-for-profit organization with a mandate to build the lentils and legumes value chain in the state of Maharashtra. The Council has recognized plant protein extraction as one of the most promising areas for development, and in early 2025, they signed a Memorandum of Understanding with GFI India, which will serve as a knowledge partner in developing initiatives to support capacity-building in the alternative protein ecosystem.

Regulatory updates

American company Nature's Fynd's Fy Protein, a nutritional fungi protein derived from biomass fermentation, received regulatory approval under the Food Safety and Standards Authority of India's (FSSAI) novel foods regulatory framework in August 2024. Additional fermentation-derived companies are in the process of applying for regulatory approvals.

The FSSAI exhibited interest in clarifying the regulatory path to market for cultivated meat, which would encourage companies to apply for approval. Under the current regulatory framework, cultivated meat would fall within the safety assessment procedure as provided in the FSSAI's "Approval for Non-Specified Food and Food Ingredients Regulations, 2017." In the meantime, two cultivated meat companies, Biokraft and Clear Meat, held invitation-only tastings in the last quarter of 2024.

Taking a lead in charting smooth regulatory pathways for smart protein in India, the Department of Biotechnology (DBT), along with the Biotechnology Industry Research Assistance Council (BIRAC), organized a closed-door Regulatory Conclave on Smart Protein on April 30, 2024.

The DBT-BIRAC Conclave was a pioneering dialogue on the regulatory path to market for smart protein products by a government department in India. The Conclave brought together key stakeholders across government (including FSSAI, the authority on food regulation in India, and the Ministry of Food Processing Industries), experts from science and academia (including GFI India), Indian and international companies, industry associations, and the international food standards body Codex Alimentarius. Their collective expertise provided a comprehensive overview of the challenges and opportunities ahead of the sector, emphasizing that with the right regulatory interventions, India could emerge as a global smart protein leader.

Japan

After former Prime Minister Fumio Kishida announced his support for cultivated meat and fermentation-derived proteins in February 2023, the government took steps to direct Japan's R&D infrastructure and strong business environment toward building an alternative protein industry in 2024.

> "Food tech, including cellular foods, is an important technology from the perspective of realizing a sustainable food supply. We have to support efforts that contribute to solving the world's food problems."
>
> **Former Prime Minister Fumio Kishida, as reported by Nikkei**
>
> *(machine translated from Japanese by Google)*

Through nearly 20 research projects and business grants in 2024, including a collaboration with Finland, South Korea, the United Kingdom, and the United States, the Japanese government has supported efforts to improve the state of the technology behind cultivated meat, fermentation, and plant protein. Research projects addressed industry concerns such as the scalability and consumer acceptance of new products, but also explored blue-sky initiatives that private-sector researchers are typically unable to explore, such as innovative new ways to scaffold cells or incorporate fat in plant-based meat. This focus on Japan's competitive advantage as a premier research hub and on the government's unique ability to explore brand-new areas of science indicates a strong understanding of what is needed to advance the alternative protein industry in Japan and the region.

Regulatory updates

In November 2024, the Food Sanitation Standards Council's Novel Food Development Subcommittee held deliberations focused on ensuring the safety of cultivated foods and clarifying the necessary risk assessment protocols. The subcommittee discussed developing protocols for monitoring manufacturing processes, evaluating potential hazards, defining safety guidelines for companies seeking market approval, and setting labeling regulations to ensure consumer transparency.

Japan's efforts throughout the year to develop a process for regulating cultivated meat emphasize collaboration with industry leaders, academia, and global best practices. As the regulatory landscape evolves, Japan is expected to provide further clarity on the approval process and market entry requirements for cultivated food products.

Malaysia

In July 2024, the Malaysian government launched a commission exploring the potential of cultivated meat and alternative proteins for addressing food security and environmental concerns. Taking place at universities throughout the country, the commission comes as Malaysian cultivated meat company Cell AgriTech and Singaporean cultivated seafood producer Umami Bioworks make plans to begin operations at their joint production facility in Malaysia in 2025.

> "The government is committed to the development of the plant industry ecosystem, the adaptation of technology, and exploring the potential of future foods such as cultivated meat, cultivated meat products, and cell-based food."
>
> **Prime Minister Anwar Ibrahim**
>
> *(machine translated from Malay by Meta; nomenclature provided by GFI)*

Singapore

Public investment

Singapore, a global leader in alternative protein research, industry, and regulation, advanced even further in this leadership role in 2024. The Singapore Food Agency (SFA) bolstered the Singapore Food Story 2.0 research program by funding 12 additional projects, five of which focused on cultivated meat scaffolding, media, and bioprocess. If allocated equal shares of the S$40 million ($29.7 million) funding, these five projects will receive S$16.7 million ($12.4 million).

Shortly after announcing these grants, SFA opened a second Future Foods call for proposals, this time focusing on plant-based and fermentation-derived alternative proteins and research to "increase the consumer acceptance of future foods by improving their flavour, texture and nutritional properties." This attention to the desirability of alternative proteins reflects the Singaporean government's understanding of these technologies as a consumer-driven solution to food security and environmental security concerns.

Regulatory updates

Australia's Vow Food became the second company to receive regulatory approval for cultivated meat in Singapore in April 2024. Their first-of-its-kind product, Quailia, is made with cultivated Japanese quail cells and is served as a "parfait" in high-end dishes.

In March 2024, SFA and the Ministry of Sustainability and the Environment released a draft of the Food Safety and Security Bill (FSSB) for public consultation. During the FSSB drafting process, SFA consulted with external stakeholders, including GFI APAC's Policy experts, who provided feedback on the novel foods portion of the bill.

The FSSB, which Parliament passed in January 2025, further defines novel food application procedures, including specific submission requirements, providing more clarity and predictability for alternative protein companies. The bill classifies alternative proteins under the category of "Defined Food," which covers novel foods and genetically modified foods, and requires premarket approval by SFA.

The Fatwa Committee of the Majlis Ugama Islam Singapura (MUIS)—the sole entity with legal authorization to issue halal certificates in Singapore—announced that under certain conditions, cultivated meat consumption can be permissible as halal. The guidance maintains that cultivated meat can be halal only if it comes from a halal animal (most importantly, pork is excluded). While MUIS's ruling only applies within Singapore, it sets a significant precedent that could influence halal certification standards globally, including in majority-Muslim countries. (About 16 percent of Singapore's population identifies as Muslim.) This proactive approach by MUIS not only addresses the dietary needs of Singapore's Muslim population but also offers a framework for other nations to consider when evaluating the permissibility of cultivated meat under Islamic law.

Photo credit: Finless Foods

South Korea

Public investment

Government support for alternative proteins in South Korea grew significantly in 2024, with many ministries within the central government supporting alternative proteins with their own initiatives. Altogether, the South Korean government allocated 74 billion won ($53.7 million) to alternative protein research and industrial development in 2024. Chief among public funders was the Ministry of SMEs and Startups, which awarded several individual research and commercialization grants and designated a special zone for developing cultivated foods. The Ministry of Agriculture, Food, and Rural Affairs (MAFRA) also awarded funding to several projects, including six alternative protein research topics (three in plant-based, two in cultivated meat, and one in fermentation) in their multiyear high-added-value food technology development program.

In December 2024, the Food Tech Industry Promotion Act was enacted to establish the foundation for the convergence of the food industry with cutting-edge, innovative technologies, and to contribute to improving the quality of people's lives, creating jobs, and developing the national economy. It will go into effect one year after the enactment, with MAFRA as the responsible agency. Although no specific technologies are mentioned in the Act, an explanatory video by the National Assembly mentions cultivated meat as an example of the kind of food technology that the Act will support.

Under the Act, MAFRA is empowered to support individual eligible food tech industry businesses, as well as provide startup support, promote technology development, support research facilities and equipment, and promote international cooperation and overseas market entry. The Act incentivizes the development of food tech innovation clusters by empowering MAFRA to perform projects such as establishing and operating food tech innovation cluster support facilities, conducting joint research and development, and supporting technology verification.

It also provides grounds for food tech business operators, universities, and research institutes conducting food tech-related research to apply for regulatory improvements when necessary for the development of the food tech industry.

Finally, the Ministry of Oceans and Fisheries launched a five-year R&D funding program for plant-based and cultivated meat and seafood, marking their first investment in alternative proteins. The Korean peninsula has experienced a nearly three-degree-Celsius surge in sea surface temperatures, leading to losses in wild animal populations, declining yields, and bankruptcy for some aquaculture farms. Alternative seafoods from plant-based, cultivated, and fermentation-derived sources can help make up for lost food, jobs, and business.

> "The technology development of algae-based and cultivated meat and seafood is absolutely necessary for the sustainable development of the seafood industry and the development of next-generation seafood. Through this project, we expect to foster a new industry that combines the traditional aquatic industry with the latest biotechnology and lay the foundation to secure a leading position in the global alternative and cultivated aquatic foods market."
>
> **Minister of Oceans and Fisheries Kang Do-hyung** *(manually translated from Korean by GFI APAC)*

Regulatory updates

In a major development, the Ministry of Food and Drug Safety (MFDS) laid a legal foundation for cultivated meat regulatory approval, thus allowing companies to submit applications for individual product approval. In February 2024, MFDS updated the public notice of the Standards for Recognition of Temporary Standards and Specifications for Foods to include detailed standards for the approval process of novel food ingredients, including defining the scope of data to be submitted. Through these amendments, MFDS legally specified regulatory requirements for cultivated meat and established a legal basis for product approval. Further, the MFDS published detailed guidelines for the submission of dossiers, providing entrepreneurs with a clearer picture of which data and information to prepare and how long applications will require for review. These changes allow companies to be better prepared for business planning and communicating with current and future investors. South Korean cultivated meat company CellMeat has already submitted an application for a cultivated shrimp product and remains in the process of securing approval.

Developments regarding the alternative protein industry in other countries seemed to influence the Korean government. The MFDS closely monitored the regulatory developments of cultivated meat in the United States and other countries, including regulatory processes and labeling guidelines.

In April 2024, the South Korean government designated the Gyeongbuk Regulatory-Free Special Zone for Cultivated Food, exempting participating companies from certain regulatory restrictions and helping them commercialize their products in a centralized innovation hub. Notably, the zone does not confer the ability to sell cultivated meat, but allows some product demonstrations and provides companies and researchers with exemptions from other laws restricting the acquisition of high-quality cell lines.

Located in Uiseong County, Andong City, and Yeongju City in the North Gyeongsang Province, the special zone will be funded with 19.9 billion won ($14.4 million) from June 2024 to December 2028, includes 10 participating companies, and will conduct two major projects: establishing cell banks and proof-of-concept of cultivated food products.

Thailand

In May 2024, the Thai Food and Drug Administration (Thai FDA) published a draft "Proposal for Developing Regulations and Regulatory Measures Governing the Supervision of Alternative Protein Products" for public comment. The proposal would set technical and labeling requirements for plant-based food, including categorizations of plant-based proteins and specific label text.

In particular, the proposal specifies that plant-based products would be allowed to use terms such as "nuggets," "tenders," "mince," "fillets," "patties," "sausage," and "bacon," but would not be allowed to use terms that imply an animal source, such as "meat," "beef," "pork," or "chicken." While these regulations are less restrictive than others proposed around the world, limiting these latter terms deprives consumers of essential information concerning how these plant-based products are intended to be prepared and consumed.

In December 2024, Israel-based cultivated meat company Aleph Farms submitted Thailand's first application for cultivated meat regulatory approval, seeking the ability to sell their whole-cut cultivated beef steak in Thailand in addition to Israel. The application will be reviewed by the National Center for Genetic Engineering and Biotechnology as designated by the Thai FDA. Earlier in the year, Aleph Farms announced a partnership to develop the country's first cultivated meat production facility.

Europe

In 2024, European governments collectively announced less funding for alternative proteins than in the previous year, though they continue to move at different speeds. The year was marked by political change, including parliamentary elections in Austria, Belgium, France, Portugal, the United Kingdom, and the European Parliament. Some frontrunners, including the UK, doubled down on public investments. Though some countries pursued efforts to restrict access to cultivated meat, several other countries in Central and Eastern Europe made their first moves supporting cultivated meat innovation, including Czechia, Lithuania, and Poland.

European Union

Public investment

A new European Parliament was elected in June 2024 and the new European Commission took office in December 2024, making the year one of significant political change in the European Union (EU). The new focus on global competitiveness, economic security, and boosting innovation offers opportunities for alternative proteins. Several policy initiatives announced for 2025 and 2026 are potentially relevant for alternative proteins and food technologies, including the European Biotech Act and a revision of the Bioeconomy Strategy.

The EU continues to fund research projects and increasingly prioritizes support for scaling production. In late 2023, the European Innovation Council (EIC) announced €50 million ($54.9 million) through the EIC Work Programme 2024 to assist startups in scaling up the production of food from fermentation and algae. This funding went to work in 2024, supporting business scale ups like Enifer's mycoprotein facility in Finland, Millow's oat-and-mycelium pilot expansion in Sweden, and Onego Bio's precision fermentation egg white commercialization.

These initiatives are helping to build an internationally competitive biomanufacturing industry in Europe. The EIC's 2025 Work Programme is following on this success with funding for "Biotechnology driven low emission food and feed production systems," one pillar of which is precision fermentation.

The EU also continued to fund supportive scientific initiatives for alternative proteins, including new projects to establish databases to standardize research on fermentation-derived proteins and to stimulate workforce development efforts in food science and technology. Eurostars, the EU's cross-border research and commercialization funding arm, awarded a grant to Austria's Revo Foods and Belgium's Paleo to jointly develop plant-based salmon enhanced with precision fermentation-derived myoglobin.

Finally, the European Investment Bank loaned Denmark's Matr Foods €20 million ($22.2 million) to construct a large-scale mycelium meat facility, in what the company claims is the Bank's first loan to an alternative protein producer. Public banks and loan agencies play an irreplaceable role in developing new industries, helping to establish a commercial and credit history for companies in groundbreaking industries.

Regulation

In 2023, the European Commission tasked the European Food Safety Authority (EFSA) with updating the guidance on preparing and submitting applications to market novel foods in the EU. The revised guidance was published in September 2024, and the updates apply to all novel food applications submitted in February 2025 and after. EFSA has stated that the guidance was updated to reflect advances in food research and innovation, and to consider what the agency learned from assessing novel food applications since the 2018 Novel Food Regulation came into effect. In response to these findings, EFSA clarified various definitions and data requirements, including specific requirements for cultivated meat production, so that applicants can submit higher-quality applications, which should lead to a more efficient assessment process.

Cultivated meat

In July 2024, the first regulatory submission in the EU for cultivated meat was made by French company Gourmey for their cultivated foie gras. In January 2025, the second application for a cultivated product in the EU was filed by Mosa Meat for cultivated beef fat, which can be used as an ingredient in otherwise plant-based beef products to enhance taste and texture. The applications will undergo evaluation by EFSA, the European Commission, and the EU member states as required by the novel foods framework. Should these products be approved, that approval will apply across all 27 EU member states.

Also in July 2024, EU member state Hungary proposed a ban on cultivated meat (see "Hungary,") but following criticism from six other countries—and the European Commission, which argued that the ban was "unjustified" and potentially harmful to the European Single Market—through the Technical Regulation Information System (TRIS) procedure, the proposal remains on hold. The TRIS procedure prevents national governments of EU member states from passing bills that might affect the rest of the EU market without consulting other member states or the Commission. This holding indicates that the existing cultivated meat ban in Italy may be unenforceable, since it passed without undergoing the TRIS procedure. The Italian ban remains at the time of publication, but if the EU approves cultivated meat products in the future, it may be vulnerable to challenges by the European Commission.

Plant-based

While EU consumers largely embrace plant-based products, the EU prohibits companies from labeling plant-based dairy products with terms such as "milk," "cheese," and "butter" unless the products also contain animal-derived dairy. Plant-based dairy manufacturers are allowed to label their products as "alternative to [milk, butter, yogurt, etc.]." Some EU countries sought to further restrict plant-based labeling in 2024:

- The French government issued a decree in February 2024 seeking to ban certain words in plant-based product marketing, including "steak," "cutlet," and "butcher," among others. However, in October 2024, the European Court of Justice (ECJ) ruled against the ban, setting the precedent that according to EU regulations these terms cannot be banned unless they have national-level legal definitions that prevent the use of the terms on plant-based products. Following this ruling, the decree was annulled in January 2025.
- Also in February 2024, the Austrian administrative court dismissed a case brought against alternative seafood company Revo Foods, an Austrian food-tech startup that makes plant-based seafood using 3D printing technology. The lawsuit claimed that the name of the product "Revo™ Salmon – 100% Plant-Based with Pea Protein" could mislead consumers into thinking the product was conventional salmon. The court sided with Revo Foods, agreeing that the labeling of their salmon was not misleading to consumers.

"The revised EFSA Novel Food guidance is a welcome development that increases the depth and specificity of the available advice to support alternative protein producers in coming to market in the EU. We welcome EFSA's efforts to keep pace with the cutting edge of innovation in food tech, but this guidance alone will not resolve all of the concerns that producers have. The lack of avenues for presubmission consultations with the regulator compound the risks that this guidance will become out of date as scientific advancements accelerate in the years to come. At the same time, the risks of politicisation of the EU approvals process remain, and threaten to undermine consumer and producer confidence in the evidence-based nature of the EU approvals process."

Statement from GFI Europe

Fermentation

In November 2024, the EFSA Panel on Genetically Modified Organisms affirmed that Impossible Foods' soy leghemoglobin is safe for consumption. The ingredient is made from modified yeast using precision fermentation and lends the signature "bleeding" quality to Impossible's alternative protein products. The soy leghemoglobin is now pending final approval by the European Commission and EU member states.

EFSA received an application for regulatory approval for a mycoprotein ingredient from Enifer, a Finnish biotech startup, in late 2024. As with the majority of alternative protein products in the EU, the ingredient will be evaluated under the EU's Novel Food Regulations, which state that any food not widely consumed before May 1997 requires a thorough safety assessment before it can be approved in the EU market. EFSA's safety assessment is rigorous and may take years. Once approved, the mycoprotein ingredient can be incorporated into alternative protein and dairy products as an environmentally responsible food source that aligns with the EU's goals for a more sustainable food system.

In November 2024, EFSA released for public consultation new draft guidance on the characterization and risk assessment of microorganisms used in the food chain. This guidance will be highly relevant for producers of fermentation-derived foods in the EU. The consultation period ended in February 2025.

Austria

A new federal parliament was elected in Austria in September 2024. After months of negotiations in various constellations, a new coalition has been formed between the conservative ÖVP party, the social democratic SPÖ party, and the liberal NEOS party. The new governing coalition has announced that it will campaign against the authorization of cultivated meat at the European level.

This was preceded by a campaign based on inaccurate claims about cultivated meat. In early 2024, the Austrian Chambers of Agriculture developed and circulated a misleading petition calling for a ban on cultivated meat in Austria and a movement against it in the EU. The Chambers provided citizens with incorrect claims about animal welfare, human nutrition, and climate change. Nevertheless, the petition received more than 40,000 signatures and was presented to the Federal Chancellor and the coalition negotiators in November 2024.

The Minister of Food and Agriculture of the outgoing Austrian government had already taken a critical stance on cultivated meat and, together with agriculture ministers from Italy and France, launched a hostile initiative in the Council of the EU in January 2024. Several Austrian federal states have also passed motions for resolutions calling on the federal government to advocate for an EU-wide ban on cultivated meat. However, this position was not shared by the entire government, as the Ministry of Health and Social Affairs took a different stance.

Despite the outgoing government's negative position on novel foods, Austria's own Revo Foods received a grant from the EU's Eurostars program to incorporate precision fermentation-derived ingredients in their plant-based salmon products, demonstrating the power of supportive government actions in driving innovation in the food sector.

Czechia

Public investment

In January 2024, Czech cultivated meat producer Mewery announced the award of a nearly €200,000 ($217,000) grant from the Czech government via the CzechInvest Technological Incubator. This marks the first public investment in alternative proteins from the Czech government.

Regulation

In December 2024, the Czech government introduced for consideration proposed restrictions on the names and phrases that plant-based meat companies can use on their product labels. Under the draft restrictions, terms including "sausage," "burger," and "schnitzel" would be banned from use on plant-based products. However, in early 2025, these proposals were abandoned, with Minister Marek Výborný stating, "We don't want to meddle in people's lives. I trust producers to label their products fairly so that every customer knows exactly what they're buying. Conversely, customers are competent and know what they're purchasing."

Denmark

Public funding

In February 2024, the Danish Government published its Strategy for Green Jobs in Agriculture and Related Industries. Plant-based foods and biosolutions represent two of the five "areas of special potential for Denmark." The Strategy reiterated new funds available for plant-based foods under the Plant-Based Food Grant, and also announced the goal of opening five new facilities for biosolutions, of which alternative proteins are a part, in 2025.

In April, the Danish Government and Parliament added another DKK 60 million ($8.5 million) in funding to the Plant-Based Food Grant, bringing the all-time investment in the fund to approximately DKK 1.29 billion ($181 million). The additional funding is for research and development, professional training, nudging interventions, and more.

In addition to this, the government announced a tripartite agreement that, alongside an agreement to introduce the world's first tax on livestock emissions, includes several initiatives to strengthen and make permanent the Plant-Based Food Grant. The agreement commits an additional DKK 420 million ($60 million) for the Plant Based Food Grant between 2025 and 2030, makes the fund permanent beyond the previous 2030 end date, and allocates DKK 15 million ($2.1 million) for other plant-based initiatives, with specific details to be determined. Finally, Denmark committed to advocating for a European action plan for plant-based foods.

The Danish government published a paper on "Accelerating Future Green Solutions – A Strengthened Effort for Green Research, Innovation, and Climate Solutions" (title translated from Danish by GFI Europe). The initiative calls for increasing universities' research and innovation funds and long-term research capacity, strengthening mission-oriented efforts with a new, holistic approach, and fast-tracking green solutions for the agricultural and food industries of the future. To achieve this, DKK 60 million ($8.3 million) will be allocated to the testing, scaling, and demonstration of new biosolutions, and DKK 54 million ($7.5 million) will be earmarked for biosolutions research. Meanwhile, DKK 50 million ($70 million) will be dedicated to green solutions for the agricultural and food industries, including the development and implementation of climate technologies and faster documentation of climate effects. The portion of these funding items that will support alternative protein technologies is not yet publicly known.

Estonia

The Estonian government's "Accelerate Estonia" innovation lab held one of the first premarket tastings for novel food products in the European Union in May 2024. Dignitaries tasted products including barbecue sauce, chocolate chip cookies, and eclairs made with fermentation-derived fats from Estonian company ÄIO, and also sampled a prototype scaffold for cultivated meat made with potato fiber from Gelatex. As a result of the tasting's success, Estonian public sector entities have decided to come together and create a clear pipeline and supporting resources for food innovators to guide them in the European regulatory framework.

Finland

Finland continued to set the pace for global investment in alternative proteins in 2024, with several major new investments from the country's research agency and economic development wing. Several Finnish institutions were chosen as project partners in a collaboration with the United States and several other countries through the U.S. National Science Foundation's Global Centers program for research advancing the bioeconomy, due in no small part to the strong leadership role that the Finnish government has taken in supporting research activity and business scale up. Following this collaboration, Business Finland—a world-leading supporting actor in advancing food technology—announced €10 million ($10.8 million) in additional funding to participating Finnish projects, with an additional €3 million ($3.2 million) from the Research Council of Finland.

The Finnish Innovation Fund (SITRA), an independent foundation that operates under the Finnish Parliament, published a report exploring the role of plant-based, fermentation-derived, and cultivated proteins in the future of food. The report finds potentially major benefits in adopting these new foods, with rewards for countries that take action to advance the technology and industrial capacity driving these innovations.

> "It's important for us to support the food production system's ability to innovate and adapt in order to keep pace with the change. The food transformation will also offer Finland opportunities for new business and exports."
>
> **Liisa Pietola, Leading Specialist, Sitra**

France

Public investment

The French government continued to provide public funding for food technology projects, creating jobs and boosting French manufacturing and food security. Precision fermentation startup Standing Ovation received a €2 million ($2.2 million) grant from the French Government and a €1 million ($1.1 million) loan from government bank Bpifrance to scale their precision fermentation production of casein, the main protein in dairy.

Regulation

In July 2024, French cultivated meat company Gourmey achieved a major milestone by submitting the first cultivated meat dossier for regulatory approval to EFSA, the EU's food safety regulator (see "European Union.")

The French government issued a decree in February 2024 seeking to ban certain words in plant-based product marketing, including "steak," "cutlet," and "butcher," among others. In April, this was struck down by the French court and subsequently annulled in January 2025.

In October 2024, the European Court of Justice ruled against France's 2022 decree prohibiting the use of meaty terms for plant-based meat, which was not enforced while under consideration by ECJ. The court ruled that EU countries are not legally allowed to introduce national plant-based labelling restrictions unless they have first defined clear legal names for meat products. This ruling will make it more difficult for EU countries to introduce national restrictions.

Germany

Public investment

Following 2023's announcement of €38 million ($41.5 million) to advance alternative proteins in the 2024 federal budget, the German government announced a series of measures at the beginning of 2024 to strengthen protein diversification. These include the development of a comprehensive protein strategy and the establishment of a competence center for proteins of the future, which will act as an advisory and knowledge network for protein diversification.

The protein strategy of the Federal Ministry of Food and Agriculture (BMEL) is intended to bundle all aspects of the topic in a departmental strategy. Work on the strategy began in the first half of 2024, including a stakeholder hearing and six thematic workshops. The strategy has not yet been completed at the time of publication; the strategy's release is scheduled for the summer of 2025.

In summer 2024, the Federal Agency for Food and Agriculture established the "Competence Centre Proteins of the Future" and provided it with dedicated staff. Included in the center is a new stakeholder forum, which met for the first time in November 2024 and established several working groups.

Regulations

The question of which labeling terms are permitted for plant-based meat and fish in Germany is determined by the German Food Codex Commission on behalf of BMEL. The Commission's guidelines are not legally binding but are considered important as guidance for companies producing these foods and for court proceedings.

In 2024, the German Codex Commission agreed on new guidelines that are much clearer, more navigable, and more consumer-oriented than previous guidelines, including new permission to use terms for whole cuts of meat such as "steak" and "schnitzel," which had not been previously addressed. This gives companies much more confidence in how they are allowed to label their products and helps consumers find products that more clearly meet their needs.

Hungary

In August 2024, the Hungarian government introduced draft legislation to ban the domestic production and marketing of cultivated meat. Learning from Italy's 2023 experience running afoul of EU procedure, the government simultaneously submitted the draft legislation through the EU's TRIS notification procedure (see "European Union.") After the three-month TRIS notification period, six EU countries, as well as the European Commission as a whole, submitted criticism on the draft law questioning its proportionality and its legality with regards to the EU single market. This caused an extension of the standstill period in which the Hungarian government continues to assess whether the legislation could be amended in response to feedback.

Iceland

At one of Europe's first official tastings of cultivated meat, held in Iceland in February 2024, then-Prime Minister Katrín Jakobsdóttir tried cultivated quail from Australia's Vow Food and commented:

> "Cultivated meat is one of the solutions to the climate challenge. The Icelandic authorities are determined to pave the way for the adoption of new solutions in Iceland..."
>
> **Prime Minister of Iceland Katrín Jakobsdóttir**

Italy

In 2023, Italy became the first country to ban cultivated meat. However, the law is potentially inapplicable due to a procedural violation of the European Union's TRIS procedure (see "European Union"). As highlighted in an official comment of the EU Commission, Italy's failure to comply with the procedure allows Italian national tribunals to declare the law inapplicable to individuals, following precedent set by the European Court of Justice in the "Unilever" case on September 26, 2000. Additionally, the European Commission, in a detailed opinion against the Hungarian cultivated meat ban draft (see "Hungary"), made the point that such prohibitions have the potential to be "unjustified" and risk undermining the European Union's single market.

While the law also prohibits the use of meat-related terms for plant-based products in Italy, the Ministry of Agriculture has yet to issue an implementing decree specifying the exact prohibited terms. In response to industry concerns, the Minister of Agriculture has stated that the law may be reconsidered. This reconsideration has become even more pressing following the European Court's decision against France's similar label censorship law (see "European Union,") which highlighted the incompatibility with EU law of national governments introducing bans in this way regarding the use of common terms for plant-based products.

Lithuania

The Lithuanian government signed a first-of-its-kind Memorandum of Understanding with EU trade association Cellular Agriculture Europe, committing to boosting collaboration and supporting the development of the country's cellular agriculture ecosystem, including by developing a framework for legal premarket product tastings.

The Netherlands

After the Netherlands became the first European country to implement a food safety framework for tastings of cultivated meat, reaffirming the country's leading position in cellular agriculture in Europe, Dutch startups Meatable and Mosa Meat gathered scientists, chefs, farmers, and dignitaries for tastings of their respective pork and beef products.

In addition to ongoing projects announced in past years, the Dutch government announced new funding for a project to improve plant-based products through new applications of fermentation, employing a fusion of promising technologies to improve the consumer acceptance of plant-based and fermentation-derived products.

Poland

In 2024, the Polish government made its first known investment in alternative proteins with a PLN 9 million ($2.3 million) grant to LabFarm, a cultivated chicken startup. Funded by the National Centre for Research and Development, the grant will allow the startup to add additional production capacity, expand its team, and develop new products.

Portugal

The Portuguese government committed to drafting a National Strategy to Promote Plant-based Proteins as part of the revised National Climate and Energy Plan 2030. Legume crops will play a prominent role in the plan, which is expected to include measures to ensure plant-based options in public canteens and campaigns to educate consumers about plant-based proteins.

Spain

Spain's Ministry of Industry allocated €100 million ($111 million) in funding for agrifood projects under their PERTE-AGRO2 program to support strategic sectors. The program is structured across three axes, one of which is research and innovation. Alternative protein companies are, in principle, eligible to submit projects for funding, though no funding announcements have yet been made.

In December 2024, the Regional Government of Navarre announced €5 million ($5.3 million) for the creation of IRIS, an innovation center that will have molecular and synthetic biology capabilities and 3D printing facilities open to fermentation and cultivated meat companies and researchers. Details on capacity are still unknown, but the center is expected to be operational in the first half of 2025.

Sweden

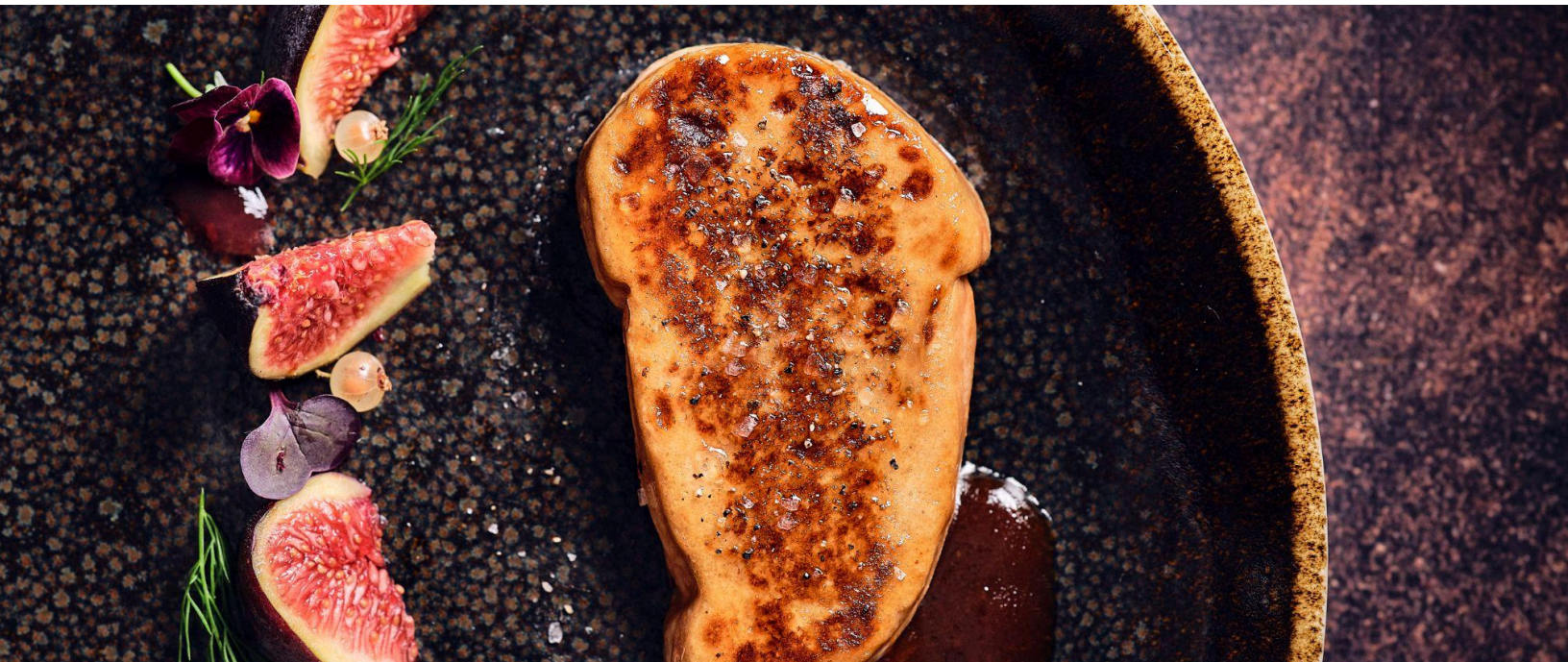
Research center PAN Sweden and agricultural institute Lantmännen received SEK 40 million ($3.9 million) in funding from the Swedish government research council Formas, allowing them to continue working on plant-based proteins. PAN Sweden is coordinated by Örebro University and studies how plant-based protein sources can be processed into tasty and nutritious products. The center aims to make Sweden a world leader in sustainably produced plant-based protein foods.

Switzerland

Switzerland is not a member of the European Union and maintains a largely separate process for regulating food products, including novel foods. While Switzerland accepts EU approvals of novel foods, and thus EU approval of cultivated meat products, multiple companies are applying to Switzerland individually as the process is expected to move more quickly. In July 2023, Israel-based company Aleph Farms submitted the first application to Swiss regulators to sell cultivated meat in Europe. In 2024, this application was followed by two more: Gourmey's cultivated foie gras and a cultivated salmon product. In early 2025, the Netherlands' Mosa Meat announced they had submitted an application for cultivated beef fat.

The Swiss regulatory process is similar to that of the EU in that it includes a robust process for determining novel food safety. Companies such as Aleph Farms must apply for authorization from the Federal Food Safety and Veterinary Office (FSVO) by submitting a safety dossier. The process includes a safety assessment and extensive toxicological studies, and is expected to take at least 12 months. The Swiss FSVO provides a template for applications to help companies navigate the process.

Gourmey's cultivated foie gras. Photo credit: Gourmey



United Kingdom

Public investment

The United Kingdom followed 2023's uptick in support for alternative proteins with the rapid execution of existing commitments and the announcement of several new projects. In addition to ongoing research through the country's diverse scientific ecosystem, UK Research and Innovation unveiled new food technology hubs to accelerate the pace of innovation. An island nation with a strong scientific and industrial history, the UK stands to benefit greatly from the enhancement of its food production and biomanufacturing capabilities as a result of these initiatives.

In August 2024, the Biotechnology and Biological Sciences Research Council (BBSRC) and Innovate UK launched the National Alternative Protein Innovation Centre, backed by 2023's £16 million ($20 million) in public investment and a further £23 million ($29 million) in private sector contributions. The University of Leeds, the University of Sheffield, Imperial College London, and the James Hutton Institute will lead the center's work, which ranges across all three alternative protein platforms and all stages of development from discovery science through to commercialization.

Additionally, in early 2024, Imperial College London received £12.6 million ($16 million) to establish the BBSRC-funded Microbial Food Hub. Focused on fermentation, the center will conduct critical research and development as part of the UK Government's continued commitment to engineering biology. The Microbial Food Hub is led by Dr. Rodrigo Ledesma Amaro, who is also the director of the new Bezos Centre for Sustainable Proteins at Imperial College London.

Following a commitment to invest £6.5 million ($8 million) in plant-based innovation in collaboration with Protein Industries Canada, Innovate UK funded the first set of collaborative projects in late 2024. These include research on plant-based nutrition and applications of precision fermentation to improve plant-based products.

Regulation

In October 2024, the Food Standards Agency (FSA) secured £1.6 million ($2.1 million) in funding from the Department for Science, Innovation, and Technology to create a regulatory sandbox for cultivated meat. The first of its kind in Europe, the sandbox will run for two years beginning in spring 2025 and bring together a small number of companies, academics, and nonprofit partners to address critical food safety considerations for authorizing cultivated meat products. The FSA will publish new information and resources from the sandbox to help companies submit the required data for the regulator to robustly and efficiently analyze the safety and nutritional composition of a cultivated meat product.

The UK also became the first country in Europe to authorize a cultivated meat product as a pet food ingredient under its animal byproduct regulations. Meatly's cultivated chicken went on sale in a limited release in early 2025 as an ingredient in otherwise plant-based dog food.

In December 2024, the FSA confirmed that it would make changes to the process of authorizing "regulated products," including their novel food scheme, under which most alternative proteins without a history of consumption will be regulated. In particular, it will no longer be necessary to present legislation to the UK Parliament before a product can be sold on the domestic market; this process is replaced by a digital register. The FSA has also been continuously expanding the use of risk assessment opinions from other regulators internationally in its consideration of novel foods, although this system has yet to be formalized.

Middle East & Africa

Israel

Public investment

The government of Israel continued to demonstrate leadership in supporting alternative proteins in 2024, sustaining high levels of public funding for innovation and commercialization and rallying international efforts to highlight the benefits of food technologies. Joint funding calls with both the United Kingdom and France specifically mentioned alternative proteins as "transformative" and "innovative" technologies, while the Israel Innovation Authority provided supportive grants for both research and industrial development.

The government of Israel has also demonstrated support for alternative proteins through climate diplomacy. The next update to Israel's Nationally Determined Contribution is expected in June 2025, with final coordination with the Ministry of Agriculture planned for early 2025. Other government ministries may refine or challenge the proposal during the process.

Regulatory updates

On November 11, 2024, Israeli startup ImaginDairy became the second company, after Israel's Remilk, to secure clearance from the Israeli Ministry of Health that its fermentation-derived whey protein can be safely used in the production of animal-free dairy products. The approval clears the path for the sale of dairy products such as cream cheese, ice cream, and yogurt made with ImaginDairy's whey protein in collaboration with food manufacturers.

The Department of Food Risk Management in the Israeli Ministry of Health published a detailed guide for submitting applications for alternative protein products. The guide includes clear requirements for safety dossiers and testing needed to prove product safety, providing entrepreneurs with much-needed insight into the process for securing regulatory approvals.

The Standards Institution of Israel, in collaboration with representatives of the alternative protein ecosystem led by Israeli company Biopuremax, submitted an official draft resolution to the International Standards Organization titled "Principles for production of cell cultured food products." The document proposes harmonized international standards for describing, regulating, and marketing cultivated meat, which would ensure that researchers, entrepreneurs, and regulators share a common understanding of the science and technology involved and apply the same metrics across borders and regulatory jurisdictions.

Notes on methodology

The State of Global Policy report primarily tracks funding announcements, calculating the dollar value of announced funding and supportive policies on an annual basis. While the report separately tracks the estimated disbursement of funds by year, dividing the total amount of the funding by the years it is active (if known), the country totals reported include both past, spent funding, and future, committed funding unless otherwise noted. All figures/charts featured in this report present data sourced from GFI's Public Investment Database as of March 31, 2025.

Currency conversions to USD are calculated by the average exchange rate on an indicated date, typically the date of the announcement or the project's start date, whichever is earlier (or whichever is known). If no dates are known, the conversion is calculated on the first day of the known month or year of the investment.

Loans, loan guarantees, dilutive investments, and other funding arrangements in which governments may expect complete, partial, or equity-derived reimbursement are nevertheless calculated as the full monetary value of the loan or loan guarantee. These types of funding arrangements provide both tangible and intangible value to the alternative protein ecosystem, even when eventually recouped by funders. Governments also often set aside the entire amount of a loan guarantee while the funding arrangement is active, representing a temporary government outlay even when no transaction ultimately takes place.

Web sources in Chinese were translated from Mandarin by GFIC, our alternative protein consultancy in China.

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-enabled, and cultivated meat delicious, affordable, and accessible. Powered by philanthropy, GFI is an international network of organizations advancing alternative proteins as an essential solution needed to meet the world's climate, global health, food security, and biodiversity goals.

All of GFI's work is made possible by gifts and grants from our global community of donors. If you are interested in learning more about giving to GFI, contact philanthropy@gfi.org. To learn more, please visit www.gfi.org.

We focus on three programmatic priorities:

Cultivating a strong scientific ecosystem

We map out the most neglected areas that will allow alternative proteins to compete on taste, price, and nutrition. We meet these challenges by developing open-access research and resources, educating and connecting the next generation of scientists and entrepreneurs, and funding open-access research across the sector.

Influencing policy and securing public investment

We ensure that alternative proteins are a part of the policy discussion around global health, future-resilient jobs and bioeconomies, and food security. In every region where we have a presence, we advocate for public investment for open-access research on alternative proteins, and increasingly, we work to advocate for government resources to support scale up and commercialization. We also advocate for level regulatory frameworks for assessing safety and labeling products.

Engaging with industry to advance alternative proteins

We conduct research and share insights to educate the public on alternative proteins and champion their adoption by the food industry, including manufacturers, retailers, restaurants, investors, and more.