CAPITAL GROUP™

Investment Insights

Feast of opportunities: Six future food trends

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Marketing communication

Feast of opportunities: Six future food trends

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Key takeaways

- The global food system is in a multidecade period of upheaval.
- Feeding a growing global population will require new production methods to align with an intensifying focus on sustainability among regulators and consumers.
- For long-term investors, structural changes across the value chain will present both opportunities and risks as innovations disrupt varied food-related industries.
- Seed innovation, lower-impact fertilisers, precision agriculture, regenerative farming, alternative proteins and waste management and reduction are among the innovations we are keeping a close eye on.

Introduction: Mind the food gap

Conflict, economic shocks, climate extremes and soaring fertiliser prices are some of the main causes of food insecurity.

Looking ahead, population growth has the potential to put the global food system under even greater stress. The world's population is expected to reach nearly 10 billion by 2050, creating a 56% food gap in calories produced versus those required.[1]

In addition, more than a quarter of all workers globally are employed in agrifood systems, according to the International Labour Organization as of 2022. This percentage is even higher in lower income countries. The impacts of climate change, changes to production methods and food security will, therefore, likely have an outsized impact on those in developing countries.

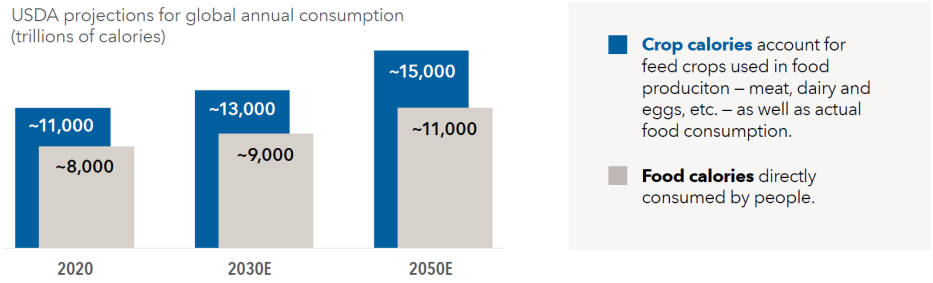
Our food systems also account for up to one-third of greenhouse gas emissions, 80% of biodiversity loss, and consumption of 70% of available freshwater, according to 2023 United Nations estimates. Increasingly, factory farming, deforestation, growing use of synthetic fertilisers and other past methods for maximising food production are becoming less viable. Decades of intensive farming practices and use of chemical fertilisers have resulted in soil and land degradation, impacting crop yields for farmers. An academic study published by IOP Science found that up to one-fifth of major crop producing regions saw a significant increase in crop yield variability, driven by climate change between 1981 and 2010.[2] Projections from NASA suggest average global crop yields for maize, a staple cereal crop and major component of many diets and feedstocks, could see a decrease of up to 24% by 2088 if current climate trends continue. Mounting environmental concerns, the effects of climate change on crop productivity, and the desertification of arable land are prompting many governments and regulators to explore new food- production methods.

In simple terms, the agricultural industry needs to increase its productivity amid tightening constraints on usage of land, agricultural chemicals, water and other resources. New farming technologies that protect and increase crop yields could help narrow the gap between food supply and food demand. Reducing food waste and expanding consumption of alternatives to farm-raised meat will also be crucial.

1. Tim Searchinger et al, "World Resources Report: Creating a Sustainable Food Future." World Resources Institute, July 2019.
2. Toshichika Iizumi and Navin Ramankutty 2016 Environ. Res. Lett. 11 034003. IOP Science. Study conducted to detect changes in yield variability for maize, soybean, rice and wheat and attribute them to climate change using spatially explicit global datasets of historical yields and daily weather.

The world needs to produce more food by 2050 to feed a growing population

Global food consumption: USDA high population growth, income-driven diet scenario*



*U.S. Department of Agriculture (USDA) projections based on model simulations, assuming United Nations population growth forecasts; published in "Scenarios of Global Food Consumption: Implications for Agriculture" (as at September 2023). Income-driven diet scenario assumes income growth results in greater meat consumption among other dietary shifts.

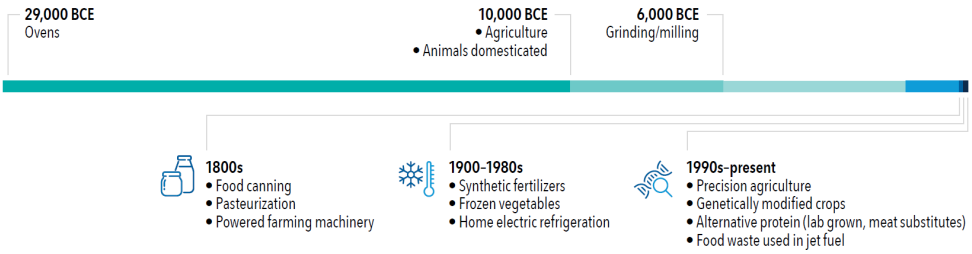
Source: USDA Economic Research Service

Shifting dietary preferences will further add to structural changes in food production. Health consciousness is part of it. We anticipate that, with greater discretionary income in many countries, consumers could increasingly weigh the health and potential climate impacts when choosing between various products and brands. For example, TD Cowen's 2023 research into the eating habits of Gen Z (the generation born between 1996 and 2010) highlighted, among other key trends, a preference for sustainable and ethical food choices and "flexitarian" diets that incorporate more plant-based foods.[3]

For long-term investors, these structural changes across the food value chain present both opportunities and risks as innovations disrupt a variety of industries. Here, we highlight six key food trends and some of the compelling investment opportunities they could create.

Breakthroughs of recent decades build on a 30,000-year history of food innovation

Timeline for some key innovations in the global food system



Source: Capital Group

1. Seed innovation

The United Nations (UN) estimates that nearly 40% of the world's land is degraded owing to deforestation, overuse of water and soil, and infrastructure build-up in rural areas. Without efforts to restore land, we could see an additional 16 million square kilometres degrade (an area equivalent to South

3. Source: Cowen & Company – Gen Z and Millennials, 19 October 2023

America) with serious implications for agricultural yields.[4] With the area of arable land unlikely to significantly expand in coming decades, we expect seed-related innovations to play a more prominent role in raising overall crop yields.

Seed innovation aims to improve crop resilience or enhance nutritional value, typically using these technologies, often in combination:

Germplasm (traditional breeding)	Traits/genetics (using biotech to introduce new characteristics)	
	Genetically modified (GM)	Genetically edited (GE)
Crossbreeding of plants	Adding genetic material, often to boost disease or herbicide resistance, or to increase size	Precision changes to genetic code designed to quickly achieve similar outcomes to conventional plant breeding

"Genetically engineered foods are, in my view, critical to achieving greater food security."

Julian Abdey
Equity Portfolio Manager

"Genetically engineered (GE) foods are, in my view, critical to achieving greater food security," says equity portfolio manager Julian Abdey. "If you're thinking about the UN sustainable development 'zero hunger' goal, for example, it's hard to see how that can happen without seed innovation. Unfortunately, this technology may become more important as the impact of climate change necessitates more drought-, flood- and pest-resistant strains."

If 10–15% of farms began using multi-trait gene-edited seeds by 2030, yields could climb as much as 400 million metric tons, according to analysis conducted by the World Economic Forum in 2018. This level of adoption could, in turn, help alleviate deficiencies in iron, vitamins and other micronutrients in up to 100 million people.

Regulation has, to an extent, moderated the growth potential of seed innovation in the past decade. There are signs around the world, however, that policymakers are reassessing potential health concerns within a broader context. The US Food and Drug Administration, the World Health Organisation, the Food & Agriculture Organisation and European Food Safety Authority have all determined genetically modified organisms (GMOs include plants, animals or microbes whose genetic material has been changed via genetic engineering) are safe for consumption.

Currently, the European Union (EU) has a strict authorisation process for the cultivation of genetically modified seeds or domestic sale of genetically modified products, due to consumer health concerns. However, concern about long-term food security and the growing scientific evidence that GMOs are not harmful to human health have prompted the European Commission to propose deregulation of certain genetically modified organisms – basically, plants developed with newer gene-editing seed technology.

Looser regulations and yield-boosting innovations could further increase sales of GM and GE seeds relative to conventional seeds in the next decade. One analysis from MarketResearch.Biz has estimated that revenues from GM seeds could exceed US$54 billion (~8% CAGR[5]) by 2032.

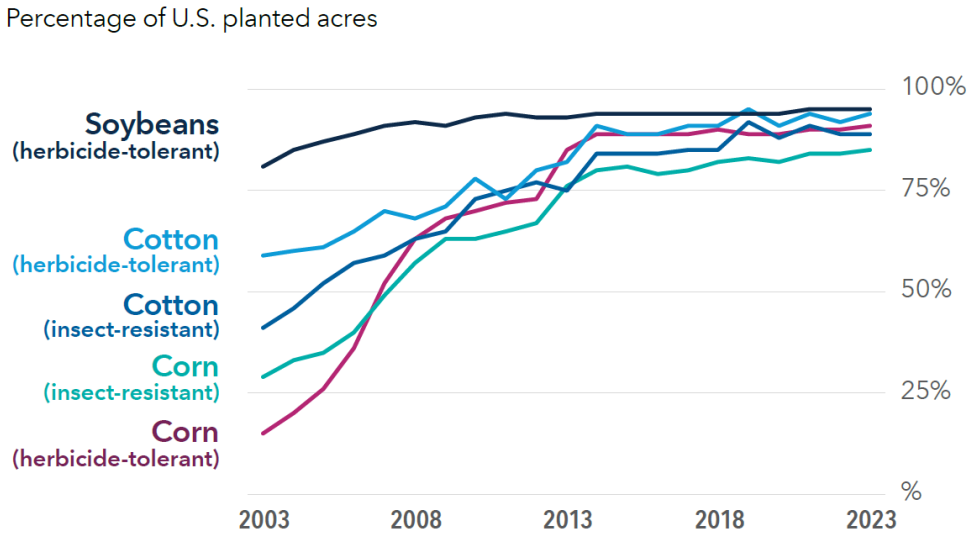
That said, there are some health- and biodiversity-related concerns that continue to be debated. In particular, there are some academic studies supporting concerns that GMOs can result in reduced genetic diversity of plants, which can

4. United Nations Convention to Combat Desertification. The Global Land Outlook, second edition. UNCCD, Bonn., 2022.
5. Compound annual growth rate (CAGR) is the mean annual growth rate over a specified period of time.

have long-term implications for biodiversity and adaptability to changing environments. For example, the genetic diversity of plants can provide the necessary resources for new drug discovery and development of pharmaceutical products.

Looking ahead, we think some seed innovators will be in a sweet spot for growth: operating in a high-margin business with long-term growth drivers and potential for significant expansion of the total addressable market. It could all add up to fertile ground for selective investors who can take a long-term view.

The US has ploughed ahead with adoption of genetically engineered crops



Corn and cotton categories are not mutually exclusive due to overlapping traits.

Source: USDA, Economic Research Service using data from the 2002 ERS report, Adoption of Bioengineered Crops (AER-810) for 1996–99 and National Agricultural Statistics Service, (annual) June Agricultural Survey for 2000–23.

2. Lower impact fertilisers

Chemical fertilisers and pesticides have been the enabling technology for agriculture's sharply higher productivity in the last century. Prior to this 20th century innovation, farmers had predominantly used manure during the preceding 8,000 years or so.

Development in the early 1900s of the so-called Haber-Bosch process for converting nitrogen and hydrogen into ammonia fertilizer was a game changer. It ushered in a new era of industrialised crop farming. Nearly one-third of the world's population over the last century has been supported directly with nitrogen fertiliser, and it is estimated that nearly half of the today's global population is fed with food produced with fertilisers.[6] Unfortunately, this "success story" has had a major downside: damage to the environment and, in some cases, human health.

Production of nitrogen-based fertilisers is incredibly energy-intensive. And, throughout its lifecycle, this type of fertiliser leaks nitrous oxide, a greenhouse gas (GHG). Nitrous oxide has a global warming potential (GWP) of more than 250 times that of CO2 – and stays in the atmosphere for more than 100 years on

6. Erisman, J., Sutton, M., Galloway, J. et al. How a century of ammonia synthesis changed the world. Nature Geosci 1, 636–639 (2008).

average. Overuse of nitrogen fertiliser can also have negative local impacts, such as polluted water.

Some researchers estimate that the full lifecycle of fertilisers is responsible for nearly 5% of global GHG emissions.[7] Growing recognition of the detrimental environmental and health impacts of chemical fertilizers are acting as a headwind on usage. Regulators in some regions are paying closer attention to this and focusing on guidelines designed to limit or halt usage.

Development of fertilisers (and agricultural practices) that lower greenhouse gas emissions is still nascent, but we think it will be one of agriculture's key innovations in the next decade. Engineered microbes, slow-release nitrogen and targeted application technologies are among the early breakthroughs. Technologies that help mitigate the overuse of fertilisers – through precision application or the use of carbon capture in fertiliser production, for example – are also gaining in popularity.

3. Precision agriculture

When it comes to innovating on the farm, seeds garner much of the attention. In contrast, precision agriculture has grabbed few headlines during its three-decade history.

The basic idea of precision agriculture is that farmers can optimise their operations with geolocation, sensors, robotics, drones and software, among other technologies. John Deere predicted that "information is your new crop" in a 1996 marketing brochure for its first product in this area, GreenStar Precision Farming.

Fast-forward to the present, and Verified Market Research, published in November 2023[8], estimates that 11% annualised growth in coming years will see the global market for precision agriculture technology triple by 2030, generating revenues of nearly US$24 billion.

To seek greater crop yields and mitigate the effects of unfavourable climatic conditions, farmers need information. Through the analysis of field data and weather patterns, farmers are empowered to make better-informed real-time decisions. In this way, excess usage of fertilisers, pesticides and herbicides can be curtailed – meaning greater efficiency, lower costs and less adverse environmental impacts.

Another benefit of adopting precision agriculture technologies is a potentially safer working environment for farmers through reduced exposure to chemical fertilisers and pesticides, as well as use of automation to help reduce manual field work.

7. Gao, Y., Cabrera Serrenho, A. Greenhouse gas emissions from nitrogen fertilizers could be reduced by up to one-fifth of current levels by 2050 with combined interventions. Nat Food 4, 170–178 (2023). https://doi.org/10.1038/s43016-023-00698-w
8. Source: Verified Market Research report 'Global precision farming market size by offering, by technology, by application, by geographic scope and forecast', 15 November 2023

"Real-time analysis of data from the field is proving to be a game changer, with farmers getting hooked on the visualisations used to explore process optimisation."

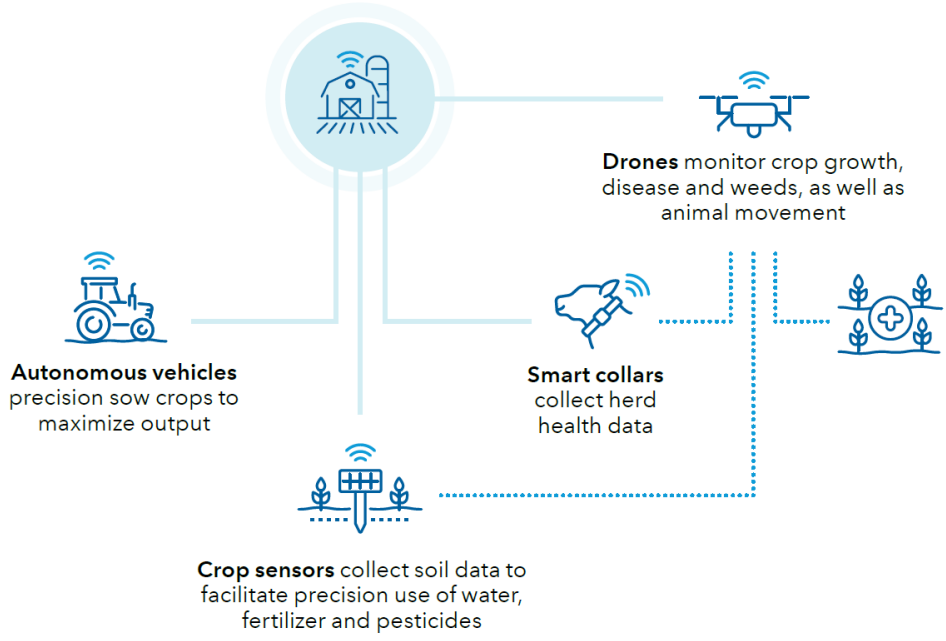
Gigi Pardasani
Equity Investment Analyst

Equity investment analyst, Gigi Pardasani recently met with senior management at one of the many firms currently directing significant capital expenditure toward their precision agriculture businesses. "Farmers using their precision ag products had seen up to 30%[9] greater productivity through a reduction in the number of passes on the field and minimised soil compaction. Crop yields improved by 6%, thanks in part to the underlying machine learning," Gigi explains. "Real-time analysis of data from the field is proving to be a game changer, with farmers getting hooked on the visualisations used to explore process optimisation."

New advances in precision agriculture, such as ambitious use of artificial intelligence, could drive even more efficient resource allocation and yield improvements. One firm suggested such innovation could create tens of billions of dollars of additional value creation for customers and shareholders through cost cuts and crop-yield improvements in coming years.[10] While this new technology clearly benefits agricultural-machinery companies as well as crop yields, increased use of precision agriculture may diminish demand for fertiliser, pesticide and other agricultural chemical products. Recognising this new reality, some firms in this segment are beginning to offer new services, such as carbon credits for growers who utilise less fertiliser.

Sowing the seeds of optimisation: Smart farms use data from the field (literally)

Automation and data are poised to play an even more central role in farms of the future



Source: Capital Group

9. Compared to the firm's prior generation of machinery.
10. Hall, A. (2023) Deere bets the farm on $150bn 'Precision Agriculture' opportunity, Pro Buyer. Available at: https://citywire.com/pro-buyer/news deere-bets-the-farm-on-150bn-precision-agriculture-opportunity/a2408316 (Accessed: 11 March 2024).

"Although Nestlé's regenerative farming programme is still in its pilot phase, it has great potential. Get it right and the firm could secure its supply of key inputs for food production for decades to come while also kickstarting more widespread adoption in the food industry."

Georgios Damtsas
Equity Investment Analyst

4. Regenerative farming

As the name suggests, regenerative farming is an outcome-based approach which, through cover crops, multi-cropping and elimination of inorganic pesticides and fertilisers, improves the soil health, biodiversity and climate impact of agriculture. As such, it can involve aspects of the technologies already discussed: seed innovation, lower-impact fertilisers and precision agriculture.

The World Economic Forum, as at October 2022, has estimated that farmers miss out on nearly US$400 billion of profits each year due to degraded agricultural land. Soil degradation is a result of many years of heavy machinery usage, as well as overuse of chemical fertilisers and pesticides. Farmers switching from a conventional to a regenerative approach could (after several years of transition and potentially reduced output) reap a 15–25% return on investment, based on an analysis conducted by Boston Consulting Group.[11] These potential gains would result from both higher crop yields and lower input fertiliser and pesticide costs.

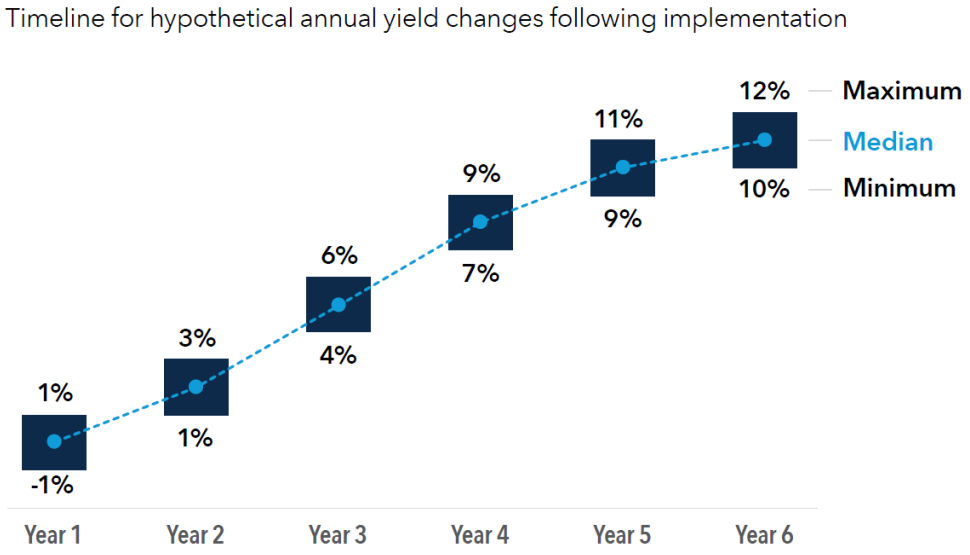
Minimising the tilling of land is another important technique, as it helps keep carbon dioxide (a GHG) trapped in the soil. Collectively, practices like these also have the potential to make more efficient use of scarce water and support biodiversity.

Nestlé is one of the companies helping move regenerative farming into the mainstream. Through to 2025, the Switzerland-based food and drink multinational has earmarked US$1 billion to scale regenerative farming across its supply chain. This effort is designed to support 20% of its key ingredients being sourced in this way by 2025 – about triple the percentage sourced from regenerative farming in 2022.

Investment support, lending programmes and price premiums are all being deployed by the firm to help incentivise farmers. It's also using its team of 1,000 agronomists to offer technical advice to farmers. "Although Nestlé's regenerative farming programme is still in its pilot phase, it has great potential," says equity investment analyst, Georgios Damtsas. "Get it right and the firm could secure its supply of key inputs for food production for decades to come while also kickstarting more widespread adoption in the food industry."

11. Doug Petry et al., rep., Cultivating Farmer Prosperity: Investing in Regenerative Agriculture (Boston Consulting Group, OP2B, May 2023).

How does your yield curve? Sizing up the potential boost from regenerative farming



As at June 2023. Analysis by Bernstein Research. Sources: Bain & Company, Bernstein Research. For illustrative purposes only.

5. Alternative proteins

The notion that tens of millions of nonvegetarians may enthusiastically consume meatless burgers or use milk made from oats in their morning coffee might have seemed fanciful not so long ago. The rising popularity of plant-based diets and growing recognition of the potentially negative impacts of meat consumption on the well-being of humans, animals and the environment have begun to shift this mindset.

Today, you can find alternative protein burgers at many of the largest fast-food restaurants and grocery chains around the globe. Alternative meat and dairy products can be produced from plants (sometimes via a fermentation process) or even – in the case of lab-grown "cultivated meat" – from animal cells.

Demand for meat substitutes has grown at six times the rate of conventional animal meat since 2014.[12] Over the same period, dairy substitutes have grown at double the rate of conventional dairy. That said, production and consumption of conventional meat products also continues to grow – particularly in China and certain emerging markets. As average GDP per capita rises in these countries, meat consumption is also expected to increase with a growing middle class, according to forecasts by the Food and Agriculture Organisation.

In the US, research based on a survey conducted by HealthFocus International suggests health concerns, followed closely by environmental concerns, are the top drivers of growing demand for alternative proteins. Some (but by no means all) of these alternatives are less caloric than traditional products; however, concerns around the sodium content and processed nature of meat substitute products have also been raised. Still, these innovative foods may appeal to consumers who are wary of exposure to the growth hormones and antibiotics found in some animal meat, as well as those who worry about climate change.

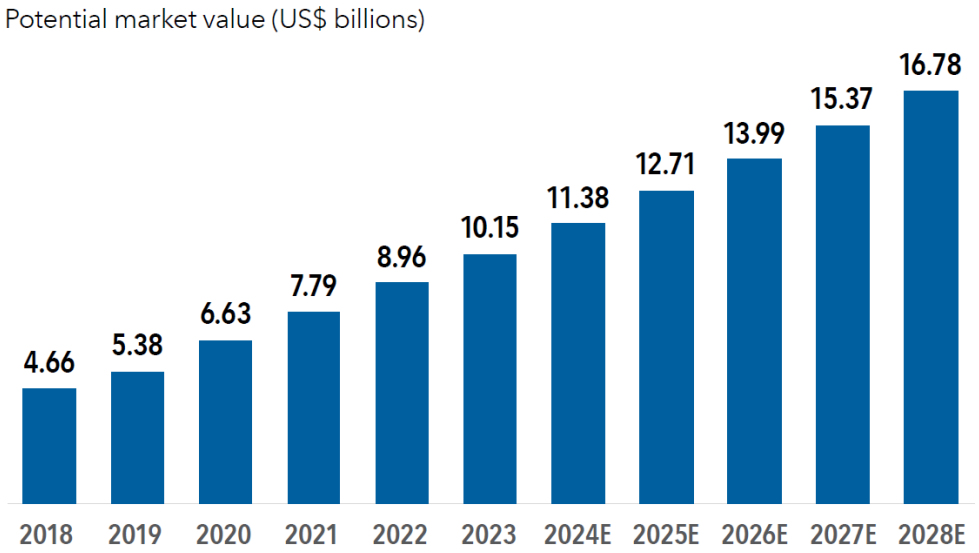
12. As at January 2021. Sources: Bureau of Labor Statistics, Euromonitor, FAO, USDA and Capital Group estimates

Production of alternative proteins on average generates 74% less GHG emissions compared to conventional meats.[13]

Having doubled in the preceding five years to reach US$10 billion in 2023, Statista Market Insights estimates that the global market for meat substitutes could exceed US$16 billion by 2028. At present, plant-based is the main alternative to conventional meat. While meat substitutes are likely to see a faster pace growth over the next decade in comparison to conventional meat products, we acknowledge that conventional meat will also continue to see growth to support growing populations, especially in emerging markets.

We also seem to be at an inflection point for cultivated meat – this nascent segment may approach parity with conventional animal proteins in the 2030s.[14] For that to happen, consumer trust and comfort with lab-grown meat will need to grow. It is interesting to note that in their joint report (Food Safety Aspects of Cell-Based Food, published March 2023), the World Health Organisation and UN Food and Agriculture Organisation outlined risks that, overall, are fairly similar to those found in the processing of traditional foods.[15]

The global market for meat substitutes could hit US16 billion by 2028



As at November 2023. 2024 – 2028 are forecasted figures. Source: Statista Market Insights. Forecasts are for illustrative purposes only.

The Good Food Institute estimates that, at the end of 2022, more than 150 companies were focused on developing cultivated meat. In what may be looked back on as a key milestone for the industry, the US Department of Agriculture approved sales of lab-grown chicken in June 2023. Other countries with sales approvals include Singapore (cultured chicken in 2020) and Israel (cultured beef in 2024).

13. Good Food Institute, Environmental impacts of alternative proteins. Based on analysis of publicly available, externally commissioned industry Life Cycle Assessment (LCA) studies published to date, as well as relevant peer-reviewed academic LCAs published January 2021–August 2023, that compare alternative protein products with conventional meat products.
14. Food for Thought – The Protein Transformation. Boston Consulting Group, March 2021.
15. FAO & WHO. Food safety aspects of cell-based food. 2023.

"These types of ingredients are crucial inputs for firms looking to capitalise on the growing alternative protein market."

Harry Gunji
Equity Portfolio Manager

Often informed by cultural, demographic and historical differences, consumer perceptions are among the nuances and complexities to keep in mind when considering overall growth prospects for alternative proteins (see "Final thoughts" on page 13).

Unsurprisingly, many firms are vying to establish themselves in the alternative protein market. For selective long-term investors, some of the more interesting opportunities may arise outside of those firms producing alternative burgers and other finished products.

Givaudan is an example of a firm that is looking to innovate in both its products and business strategy. Among other business lines, the Switzerland-based multinational develops ingredients for alternative protein manufacturers. It directly partners with about half of its clients to develop new formulations and has increased its focus on biodegradable and plant-based ingredients." These types of ingredients are crucial inputs for firms looking to capitalize on the growing alternative protein market," says equity portfolio manager Harry Gunji.

6. Waste management and reduction

According to the World Wildlife Fund, 40% of food that is grown is never eaten – contributing toward an estimated 2.5 billion metric tons of wastage each year.[16]

Globally, food waste also accounts for 10% of consumer-related GHG emissions.[16] The reduction of food waste, alongside reuse and recycling, is a critical part of managing available natural resources and minimising future emissions. For example, not only can precision agriculture tools help farmers utilise less water in their growing practices, the tools also inform them of optimal harvest periods to prevent waste.

The reuse and recycling of waste from the food industry is garnering significant attention. Growing consumer and commercial demand for sustainable food production and packaging is encouraging a wave of new research and development. Food waste is poised to become a much more widely used input (feedstock) for alternative proteins, animal feed, fertilisers, biofuels, bioplastics and even clothing.

Feed, fuels and fertiliser: Potential positives and negatives for increasing food waste inputs

	Animal feed	Biofuel	Biofertilizer
✓	• Limited safety concerns (for rendering) • Cost competitive • Increasing policy support	• Decarbonization policy support • Supportive of energy security • Logistics/usage can, in part, leverage existing fossil fuel infrastructure and tech	• Helps alleviate dependence on phosphorus
⊘	• Underdeveloped collection infrastructure • Competition from biofuel input demand	• Underdeveloped collection infrastructure • Limited supply of waste fats, oil and grease • Concern that high demand might impact food supply	• Competition from protein feedstock • Lower nutrient density than conventional fertilizers

Source: Capital Group

16. Source: World Wildlife Fund, 19 August 2021

Regulation is generating additional tailwinds. The UK, Japan and European Union have drafted, or already implemented, new regulations on GHG emissions for food waste reporting. We expect fuel created from food waste could play a role in helping decarbonise some types of transportation, utilities and certain other sectors blighted by high GHG-emissions.

Food waste management is just one of a variety of efforts that can help move the world toward a "circular economy." Put simply, a circular economy involves sharing, leasing, reusing, repairing, refurbishing and recycling existing materials and products to make production and consumption more sustainable.

For food in particular, the business lines of Darling Ingredients help illustrate the sheer breadth of opportunities. The US-based company repurposes organic waste to develop and manufacture ingredients for customers in the pharmaceutical, food, pet food, fuel and fertiliser industries. Animal by-products, for example, are transformed into gelatine, fats, proteins, pet food ingredients, fertilisers and other specialty products.

The firm also recovers and converts used cooking oil and bakery remnants into fuel ingredients. Darling says its renewable fuel produces 85% less GHG emissions than traditional fossil fuels. The company also plans to begin producing sustainable aviation fuels (SAF) by 2025.

According to official guidance related to UN SDG 12.3 (put simply, halving global food waste by 2030), animal feed is among the "best" uses of food waste, which is unsafe or unfit for human consumption. Generally, rendering (using heat and pressure to eliminate disease risk) is considered a safer way to transform waste from the meat industry, compared to industrial composting or "anaerobic digestion" by microorganisms.

At present, costs and perceptions of biosafety vary significantly across the globe. For instance, the European Union has prohibited use of food waste containing animal products to produce animal feed. In contrast, Japan, South Korea and Taiwan allow the practice. In the US, federal law permits the practice under certain restricted circumstances, but some individual states have imposed additional restrictions.

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Food for flight: Sustainable aviation fuel

Passengers on one Virgin Atlantic flight in November 2023 made "sustainable history" as they touched down in New York. As the first 100% sustainably fuelled commercial transatlantic flight, the historic journey from London Heathrow to JFK airport also shone a light on the future of air travel. Waste oils, fats and grease from restaurants and food processing more broadly are increasingly important inputs for SAF. Existing oil refineries, with some tweaks, can be used for the refining process known as HEFA (hydro processed esters and fatty acids).

According to the US Department of Energy, a SAF made from cooking oils could have 50% lower lifecycle GHG emissions than conventional jet fuel. In October 2023, scientists at the US government department's National Renewable Energy Laboratory (NREL) announced they had developed a "carbon-negative" SAF. Their innovative technique used fermented waste – from food, manure, sewage and inedible fats, oils, and greases – to create fuel out of volatile fatty acids. Compatible with existing jet engines, the scientists said the new SAF's carbon footprint was as much as 165% smaller than conventional jet fuel.

With aviation believed to account for around one-tenth of transportation GHG emissions, SAF's lower carbon intensity could be very impactful. In 2021, President Biden's administration said it was aiming for at least three billion gallons of domestic SAF production by 2030. Other parts of the world have also implemented specific targets. For example, the European Union's SAF blending mandate requires that at least 2% of aviation fuel be supplied to airports by 2025; the percentage rises to 32% in 2040 and 63% in 2050.

Concerns over food security make waste fat, oil and grease an attractive feedstock for SAF, as it does not require additional feedstock that could instead be used for food consumption. That said, both availability and an undeveloped infrastructure for collection are limiting factors. Competition for the feedstock may also heat up as shipping and long-haul trucking sectors also look to decarbonise.

SAF snapshot: Numbers to know

Year	Number of flights	SAF production*	"Approved" technologies†	Average carbon dioxide emissions reduction
2023	>490K	>300M	11 (+7 under valuation)	70%
2016	500	8M	4	60%

*SAF production in 2022 measured in litres.

†Approved technologies reflects conversion technical pathways approved by ASTM International.
Sources: International Air Transport Association, International Civil Aviation Organization.

Final thoughts

Governments, regulators, companies and consumers are rethinking the way food is produced and consumed in an increasingly resource-constrained world. In response, innovation and disruption are already happening and, in our view, will accelerate in coming years.

Here, we have only touched on a handful of the key trends that we expect to unfold, propelled by consumers' increasing preferences for products that are sustainably sourced and more conducive to their own well-being.

Similarly, regulation plays a key role in setting both the direction and pace of change. One of the more ambitious legislative efforts to accelerate the food system's transition toward sustainability – the European Commission's Farm to Fork Strategy – looks likely to result in much more modest measures and targets than originally envisioned.

Undoubtedly, all the longer-term trends we have highlighted here will face setbacks at certain times. For example, one of the largest producers of plant-based foods, US-based Beyond Meat, has seen a steep decline in its recent revenues from the US (seemingly due to some price-sensitive consumers opting for cheaper traditional meat), partly offset by increased international revenues.

In our view, however, these developments are among those that will shift food production toward a more sustainable future while also providing compelling opportunities for selective investors who can take the long view.

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Seema Suchak *is an ESG sector research director at Capital Group. She has 20 years of industry experience and has been with Capital Group for two years. She holds a master's degree in international business from Birkbeck, University of London and a bachelor's degree in international relations with French from the University of Birmingham. Seema is based in London.*

Cheryl Wilson *is an ESG senior manager at Capital Group, home of American Funds. She has 13 years of industry experience and has been with Capital Group for two years. She holds a master's degree in climate and environmental science from Queen's University and a master's degree in public policy from Columbia University, as well as a bachelor's degree in biology from Queen's University. Cheryl is based in Los Angeles.*

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