

TREND REPORT

How The Food Industry Innovates To Solve Big Problems

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Summary

The food industry has embraced frugal, technology, and insights-driven innovation; technology leaders in all industries can apply those practices to their own hard problems. We'll need 70% more food to meet the needs of the world's population by 2050. And an estimated 821 million people are already undernourished today. Venture capitalists and investors are plowing money into innovations from autonomous aerial crop dusters to meals personalized for an individual's gut flora to electronic tongues. The food industry is ripe for frugal innovations like edible packaging and services that connect budget-conscious consumers with surplus restaurant food and "ugly" produce. For further insights and guidance, read [Apply The Food Industry's Recipe For Success To Your Own Insights-Driven Transformation](#) and [schedule an inquiry](#).

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Today's Food Industry Is The Dog's Breakfast

The food industry is in a pickle, with producers, distributors, and consumers waking up to its systemic problems and inequities. That awareness influences the daily choices consumers make; information on consumer preferences helps food producers and distributors address their evolving choices; and data-fueled innovation improves efficiency and customer experience across the food value chain. We need innovative solutions urgently because:

- **Demographic trends mean we will require a lot more food.** Global population growth and increasing urbanization will require improved efficiency in food production and delivery. A combination of young populations and economic growth in Asia and sub-Saharan Africa will exacerbate the existing imbalance. China and much of Africa are already net importers. Alarming, the [UN's Food and Agriculture Organization \(FAO\)](#) estimates a 70% increase in food demand by 2050.
- **Food inequality is growing.** Despite global economic growth, the [FAO's most recent estimates](#) indicate that 821 million people, approximately one in every nine people worldwide, were undernourished in 2017. Since then, [the pandemic has amplified economic inequality](#) and further diminished food security with rising global food prices. Addressing hunger, food insecurity, and malnutrition features prominently in the targets of the “[Zero Hunger](#)” Sustainable Development Goal of the 2030 Agenda for Sustainable Development.
- **Environmental degradation threatens food security.** The planet has lost a third of its arable land in the past 30 years, and changing climate patterns increase the unpredictability of food production. [An October 2018 report](#) by the UN offers a dire picture of the future if we don't radically reduce our global carbon footprint: Food shortages, coastal erosion, drought, wildfires, and other major climate crises will intensify within the next few decades.
- **Diet-related issues damage the health of millions.** Concerns about obesity, diabetes, and allergies are on the rise. [The World Health Organization](#) estimates that about 13% of the world's adult population was obese in 2016. And 32 million Americans live with potentially life-threatening food allergies, and diagnosis of anaphylactic food reactions increased [377% between 2007 and 2016](#).

The Food Industry Addresses Systemic Failures With Both Futuristic And Frugal Innovation

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We have always innovated in how we produce, distribute, and consume food: from hunting and gathering to agriculture and food processing; from self-sufficiency to global supply chains. Today's innovations address the challenges facing the food system. Some might seem futuristic, but many are moving into production today. Continued investment and interest in food innovation will:

- **Transform the (literal) landscape of food production with new tools.** Agricultural robots from vendors like VitiBot and EarthSense perform labor-intensive soil management tasks and collect sensor data on crop health. Autonomous electric planes from Pyka will allow rapid, precise, and safe crop-dusting. Cainthus uses computer vision to track feed accessibility for cattle, ensuring the health and well-being of bovine populations.
- **Deliver insights into our food's chemistry and provenance via sensors.** You are what you eat, but do you really know what you're eating? Consumer Physics's SCiO uses spectroscopy to determine the genetic makeup and nutritional value of many consumables. Zondii uses similar technology to authenticate food origin and varieties. Alpha MOS's Astree, an electronic tongue, enables quantifiable data collection and analysis of various traits of food samples. Brightseed uses AI to discover phytonutrients hidden in plants.
- **Tailor flavor and nutrition to the needs of individual consumers.** Modern food technology not only helps us understand our food but also enables diets that understand us. Viome quantifies the microorganisms in your gut and provides a personalized meal plan to improve health. Gastrograph AI could make acquired tastes a thing of the past; using an enormous sensory data set, it helps food companies create new food concepts tailored to the preferences of particular groups.
- **Reduce food waste with modern materials.** The world wastes [nearly \\$1 trillion worth](#) of food per year. Smarter packaging can help. LiquiGlide developed slippery coatings for containers to prevent high-viscosity foodstuffs like ketchup from sticking to the insides. A reactive label from Mimica changes texture to alert consumers that their product has begun to spoil. These solutions reduce waste and improve customer experiences.

Frugal Innovation Provides Low-Hanging Fruit For Food Industry Transformation

As a complement to [technology-fueled innovation](#), firms must also embrace *jugaad*, a Hindi word meaning frugal innovation, or “[the MacGyver spirit](#).” The idea is to identify simple but effective solutions using limited resources. For example, consumers

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recognize that buying locally sourced produce can reduce their carbon footprint; [farmers markets](#) now [outnumber Burger Kings](#) in the US! Vertical farms, community gardens, farm-to-table restaurants, and consumer-supported-agriculture all shorten or eliminate the supply chain for fresh produce. Other promising examples of food-related frugal innovation include:

- **New channels to bring flawed food to market.** Discolored, misshapen, or unusual-sized produce is often used as animal feed, sold to juicers for pennies on the dollar, or returned to the soil. New subscription services like Imperfect Foods and Hungry Harvest salvage edible produce by catering to eco-conscious consumers. Misfits Market recently closed an [\\$85 million Series B](#) round of financing.
- **New services to reduce restaurant waste and benefit starving students.** Restaurants are notorious for tossing out unused yet still edible food, [generating billions of pounds of food waste annually](#). New services like FareShare, Food For All, and Too Good To Go help restaurants, bakeries, and supermarkets reduce their daily food waste with mobile apps that connect them with hungry patrons looking for a bargain meal.
- **Instructor-led food skills education to reduce childhood hunger.** [Cooking Matters](#) teaches parents and caregivers struggling with limited food budgets how to shop for and cook healthy, affordable meals. Nearly 500,000 families have participated in hands-on cooking classes and grocery store tours led by volunteer chefs and dietitians. The program is a campaign from Share Our Strength, a nonprofit working to end hunger and poverty through community engagement.
- **Ecofriendly packaging to reduce garbage.** An estimated [5 trillion single-use plastic bags](#) are used worldwide each year, mostly for food packaging or delivery. Alternatives abound, including packaging made from post-consumer recycled materials, hay, seaweed, and mushrooms. [Some are even edible](#): Thai supermarket chain Rimping uses [banana leaves and bamboo](#) to package produce.



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