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WORLD ECONOMIC FORUM

The Food Rules:
How Regulation Is Transforming the Future of Food

COMMUNITY PAPER

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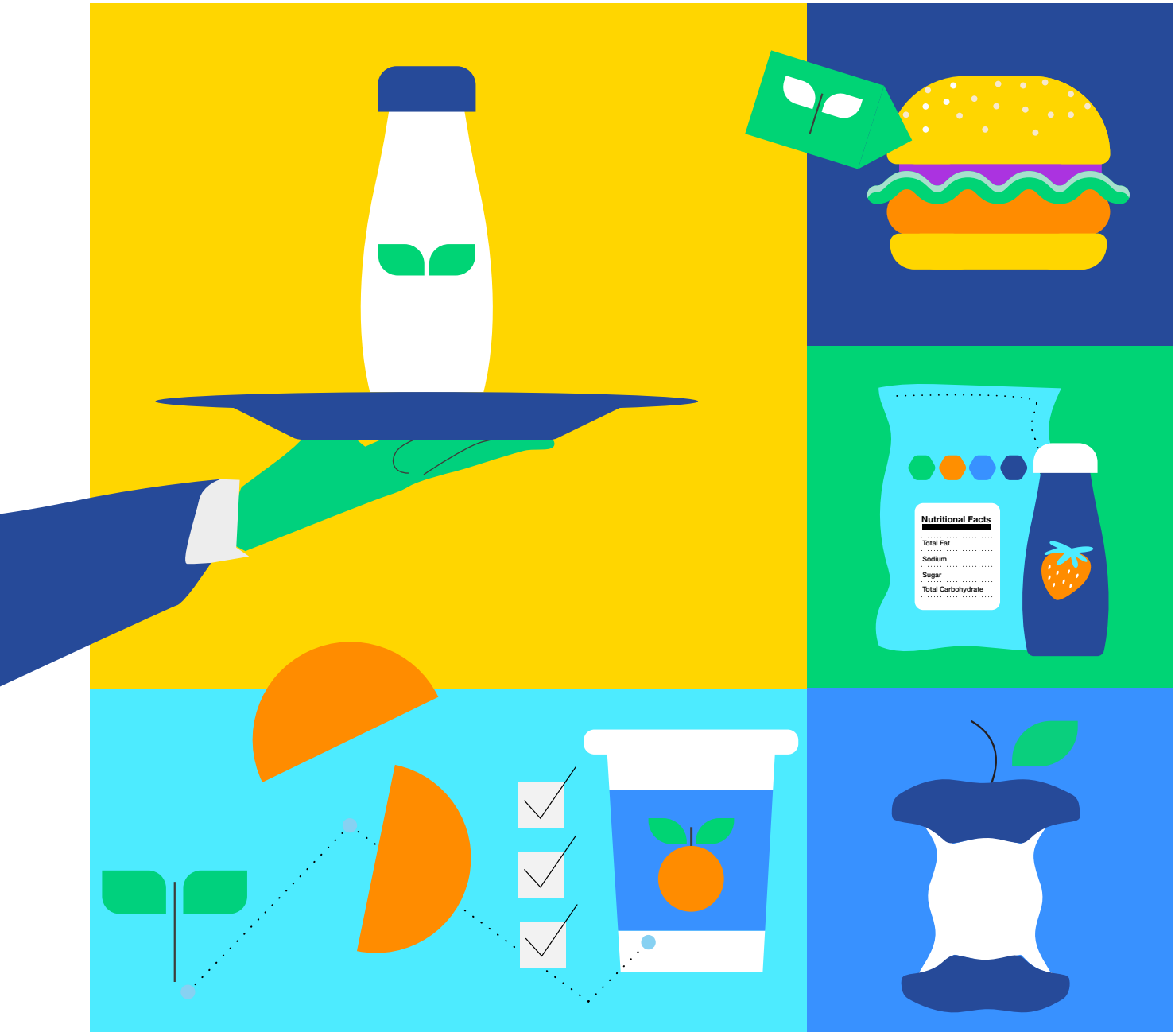

Images: Accenture

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Foreword

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People love innovation almost as much as they despise change. The difference between the two is trust, and regulation is how societies build it.

Science tells us what we can do. Society tells us what we should do. Regulation is the conversation between them. When it works, it transforms uncertainty into confidence and change into innovation. It creates the social licence that allows progress to be deployed at scale.

The future of food will not arrive by accident. It will arrive by design, and regulation is part of that design. The right rules don't slow progress; they shape it. They give innovators the confidence to invest, entrepreneurs the ability to compete, and the public the assurance that new technologies will serve the common good.

Despite headlines that suggest otherwise, the story of food is not one of decline; it is one of extraordinary improvement. We produce more food on less land, with fewer inputs, and reach more people than ever before. Things are not bad and getting worse. They are good and getting better, but not fast enough.

That's where regulation matters most. Transparent, predictable and science-based frameworks create the conditions for investment and a level playing field for competition. Well-designed rules don't just protect us from risk. They help us move faster towards the future we want, one that is safe, fair and shared.

They turn possibility into practice and invention into impact.

Regulation is not the opposite of innovation. It is the story structure that makes progress credible. It defines the boundaries within which creativity can thrive and gives society the confidence to embrace what comes next.

The challenge ahead is not simply to produce more food or smarter technologies, but to design systems that make innovation trustworthy, inclusive and sustainable. Because in the end, the story we tell through our rules will decide whether the future of food feeds our hopes or our fears.

Executive summary

This paper explores how regulation is, and can be, a platform to catalyse innovation in nutritious and sustainable food.

The global food system stands at the threshold of profound transformation. For much of modern history, regulation has been a boundary, a set of rules defining what cannot be done. Yet in today's context of complex climate, health and economic needs, regulation can be an impetus for innovation. When adaptive and co-designed with industry, scientists and civil society, regulation can unify fragmented agendas and turn policy into a foundation for collective progress.

In this paper, Accenture and the World Economic Forum's New Frontiers of Nutrition initiative explores the critical policies shaping the future of food production. The discussion is grounded in immediate reforms affecting all players in the industry, followed by a scan of emerging signals of change.

The analysis centres on four regulatory clusters shaping this transition:

- **Access and fiscal policies:** Fiscal policies, subsidies, tariffs and social welfare programmes are increasingly shaping food formulation and consumer choice, turning public procurement into engines of systemic health improvement.
- **Marketing:** New rules on transparency and AI accountability are reshaping communication norms, while broader advertising restrictions, particularly those protecting children, are tightening globally. Policies aim to ensure that health and sustainability claims are verifiable, accurate and aligned with the realities of digital media.
- **Climate:** Supply chain disclosure and extended producer responsibility laws are redefining how environmental costs are accounted for, requiring companies to demonstrate climate progress across their value chains.
- **Novel foods:** Emerging governance models for biotechnology, including alternative proteins, are moving towards co-design, where regulators, scientists and industry can accelerate safe innovation while maintaining consumer trust.

Across these clusters, a common pattern emerges. Regulation is not the end of innovation, but rather an enabling architecture. Collaboration, shared data and transparency are becoming the new currency of compliance. The next decade will determine whether policy remains a patchwork of restrictions or evolves into a global framework for transformation. By embracing regulation as a platform for partnership, the food sector can turn mandates into mechanisms for trust, supplying nutritious and sustainably grown food that is resilient by design.

Introduction

Global food policy is entering a new era, one focused on health, sustainability and shared prosperity.

Throughout the history of industrialized society, the food system has been driven by a singular mission: to feed the world. In just a few generations, agricultural productivity, food processing and global trade lifted diverse communities out of hunger. Yet the very success of this system now demands reinvention. Today's challenge is not just producing more, but producing better: nourishing people, regenerating ecosystems and ensuring resilience in the face of converging supply chain, environmental and economic pressures.

Governments, businesses and consumers are increasingly aligned in this vision, and there is a clear mandate for systemic realignment. In 2025 alone, EAT–Lancet 2.0 redefined its Planetary Health Diet, the United Nations published a landmark study on the sustainable transition for agribusiness, and the World Business Council for Sustainable Development (WBCSD) delivered Re-WIRE Agri-Food Value Chains.[1,2,3]

Transformation on this scale is built from the foundation up, with shared policy that establishes public trust, transparency and health.

Accenture has partnered with the World Economic Forum on the New Frontiers of Nutrition initiative to explore how the food industry can move from compliance to health-focused innovation, while legislation supports investments in a healthy and sustainable future. This will necessarily affect how food is grown, formulated, manufactured, measured, verified, retailed, advertised and disposed of, with data from every phase of the supply chain.

In order to chart the direction of travel, this paper starts with an exploration of current dynamics in food regulation, followed by a view of potential future legislative development.

The journey ahead will be complex, but it is also profoundly hopeful. The food system has always evolved to meet humanity's greatest demands. As human and planetary needs become a singular imperative, the food sector has a unique opportunity to create solutions that are both nutritious and sustainable.

Tracing paths of change

Before focusing more precisely on the food industry, the team analysed the broader innovation horizon, synthesizing scientific and technological developments, regulatory trends and larger changes in societal expectations. These advances in finance, digital governance and artificial intelligence (AI) signal future evolution, but also enable change at scale and speed. The five dominant currents below shape nearly all policy clusters in this document, and they also underpin many of the signals of change.

1. **From static to adaptive:** The most advanced governing bodies are moving towards responsive policy generation, using data-driven evaluation to continuously update compliance rules. This more iterative legislation matches product and market conditions. The Financial Conduct Authority's (FCA) 2025 *AI Update* exemplifies this shift, regulating behaviours and risks instead of specific technologies.[4] Its principle of proportionality also applies restrictions based on expected benefits.

   A similar transition can be seen in food regulation, where authorities are moving from fixed nutrient thresholds to evidence-based standards. For example, nutrient targets or front-of-pack labelling thresholds are recalibrated every few years based on population health data, consumption trends and reformulation progress.

2. **From product to impact:** Regulation focused on specific nutrients, ingredient types or product categories is shifting towards holistic impact measurement. New frameworks combine health and environmental data to define product standards. For example, the EAT–Lancet Commission's Planetary Health Diet provides a reference for this approach. It quantifies healthy dietary patterns within planetary boundaries, enabling regulators to align nutrition guidelines with climate, biodiversity and justice goals.[5] The methodology considers flexibility and cultural variation within clear science-based guidelines.

3. **From mandates to collaboration:** Governments keen on economic development are moving towards greater partnership with industry, enabling faster market entrance and more accurate legislation for leading-edge technologies. From funding to task forces and co-development think tanks, lawmakers are looking towards universities, researchers and start-ups as partners in governance. This trend can be seen in action at the United Kingdom's Engineering Biology Sandbox Fund, a programme that finances regulatory sandboxes across domains such as cultivated meat, precision fermentation and other engineered biology products.[6]

4. **From reporting to real time:** Data in regulation is moving from private to public ownership, with stronger digitalized audit trails. Processes are verified through automated technologies such as distributed ledgers, with traceable sources and precise locations every step of the way. This trend becomes more tangible as digital product passports (DPPs) become requirements, and both China and the EU have mandated highly granular product data. DPPs are a digital record containing information about a product's life cycle, nutrition, food safety, sustainability and compliance, enabling regulators and consumers alike to make informed decisions.[7,8,9]

5. **From information to influence:** Regulation has long influenced behaviour, but a new generation of policies is using a more sophisticated set of incentives to encourage businesses and consumers to adopt change. From innovation funding to modulation fees and preferential access to market, new policies are setting nuanced privileges and limitations. Chile's front-of-pack warning label policy exemplifies this shift, translating complex nutrition data into clear visual cues that nudge consumer choice, while simultaneously incentivizing manufacturers to reformulate products to avoid cautionary branding.[10]

The regulatory clusters

Based on analysis of the United Nations Food and Agriculture Organization (FAO) database, from 2015 to 2025 there were 5,873 pieces of legislation enacted to regulate food.[11] In this legislative whirlwind, companies are often caught in a reactionary paralysis, undertaking immediate requirements at the expense of efficiency or long-term growth.

To make sense of the broader trends, this paper is organized around four thematic clusters, highlighting significant changes in the food system regulation landscape. These focus areas were based on an analysis of the FAO's regulatory database, which isolated the largest movements in food policy. For a more detailed explanation, refer to Appendix 1. The following clusters form the backbone of the analysis.

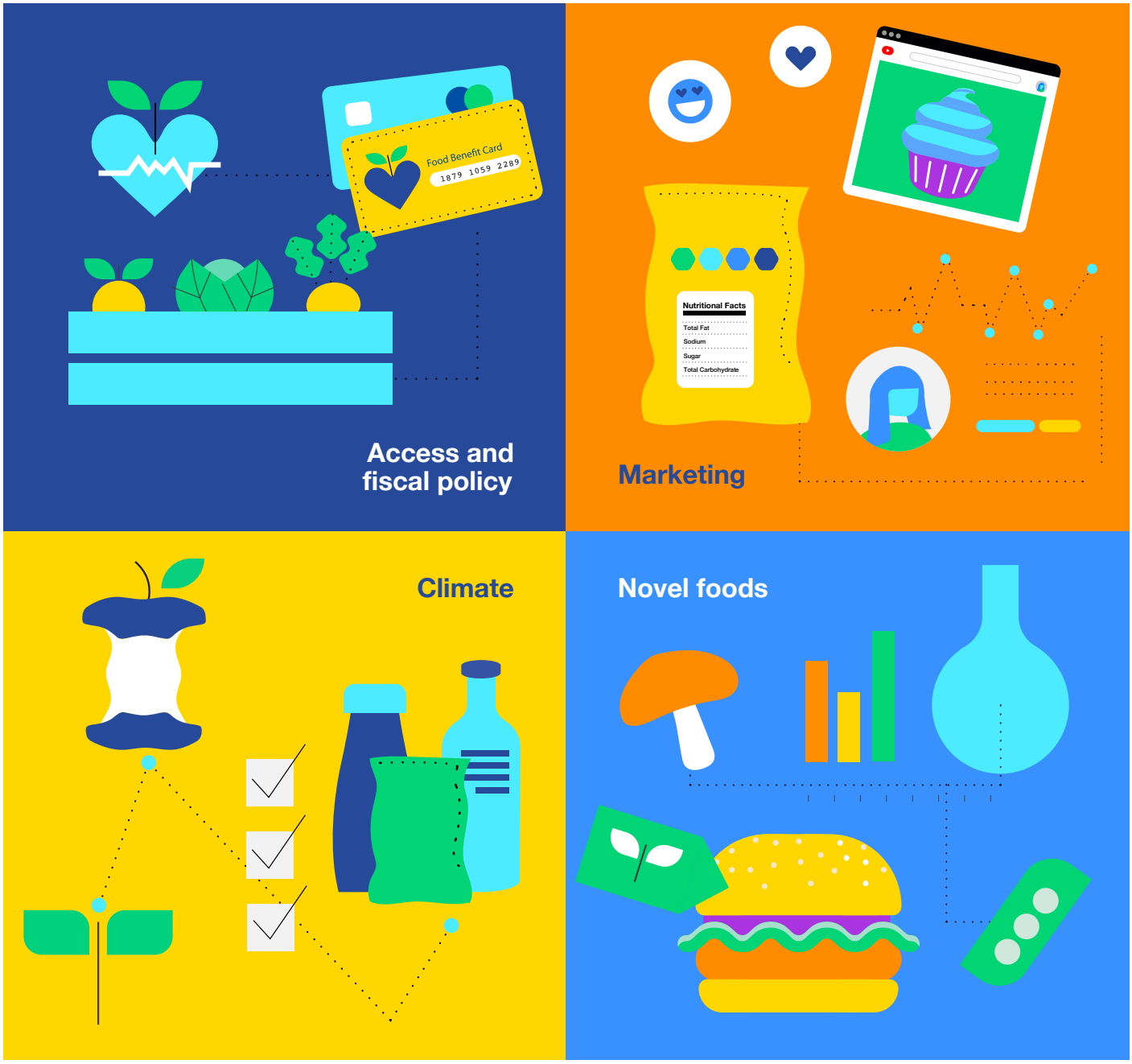
Access and fiscal policies: These fiscal and policy tools aim to make nutritious food affordable and widely available, setting standards for nutrient content and access.

Marketing: Different policies have set rules to ensure transparency, curb misinformation and protect vulnerable groups (especially children) within different sectors of the food industry.

Climate: Aimed at reducing the environmental impact of food systems, these policies may target deforestation, waste, packaging and sustainability across supply chains.

Novel foods: Policies include frameworks for biotech, alternative proteins and new food safety requirements.

Section 1 examines how these regulatory clusters are evolving in practice. Each explores examples of current legislation, recent policy shifts and early signs of emerging change shaping the global food system. Together, they illustrate how diverse regulatory approaches are converging towards a more interconnected, adaptive and innovation-driven future.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Access and fiscal policy
Nutritional Facts
Total Fat
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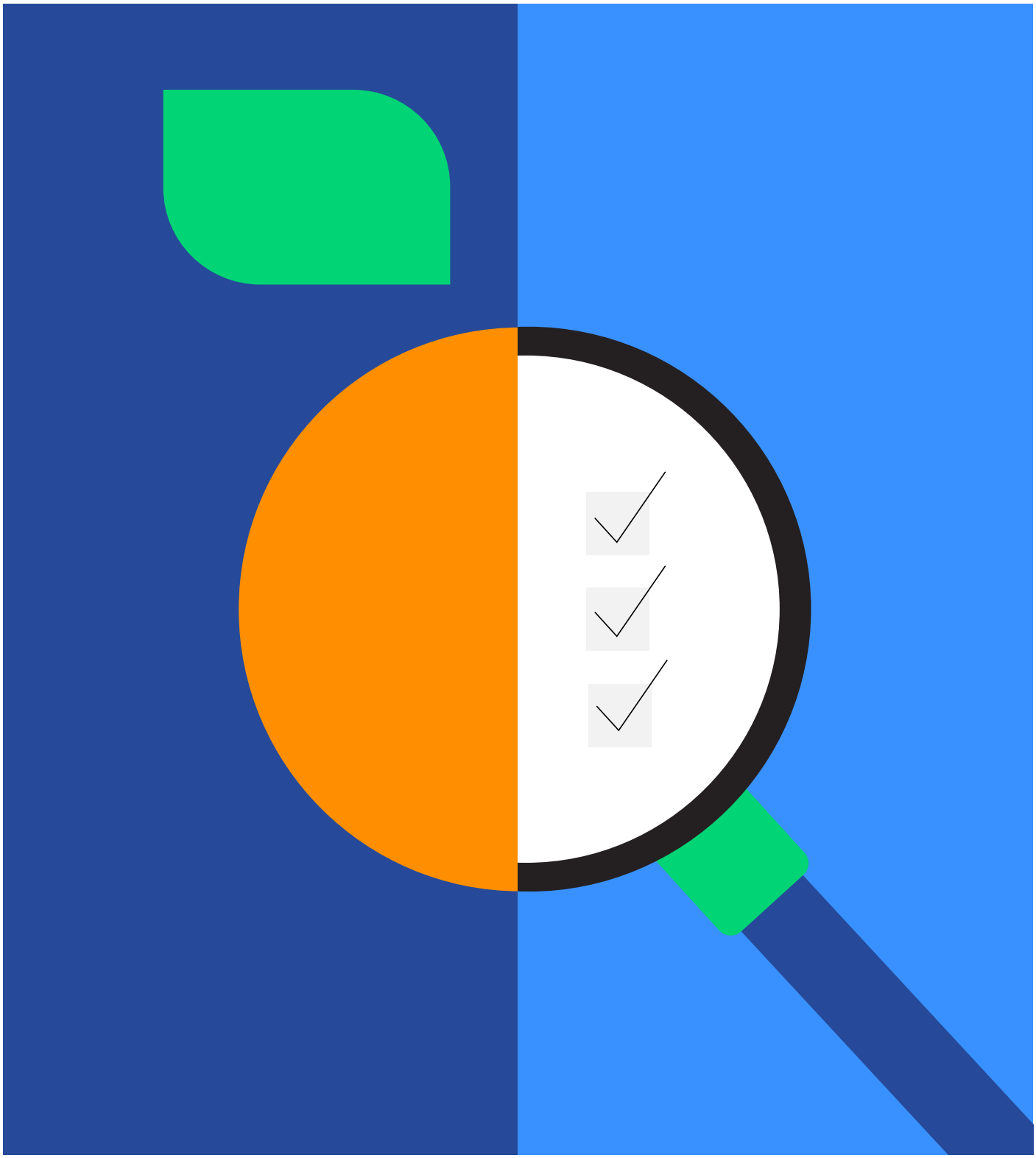
Total Carbohydrate
Marketing
Climate
Novel foods

1 Navigating changing policy futures

Emerging regulation is moving towards transparency, accountability and healthier products across the value chain.



1.1 Access and fiscal policies

Current trends: Sugar taxes, category bans and equitable nutrition

As governments manage greater burdens of diet-related disease, food access initiatives are shifting from providing more calories to healthier calories.[12] The predominant approach is purchase restrictions, enforcing reformulation mandates, taxes or outright bans on key food categories. Still, some countries have developed novel coalitions to change national dietary habits.

Of particular focus in recent regulation is ultra-processed food (UPF) formulation, which can be overly relied upon by lower-income families. The precise definition of UPF is still being debated, and while the World Health Organization (WHO) is developing a definition, countries have set conflicting and sometimes nutrient-specific restrictions for their various UPF policies.[13] In Thailand, Poland, Lithuania, Denmark, Brazil and Saudi Arabia, governments have banned industrial trans fatty acids, while voluntary nutrient targets such as those launched in Ireland set goals of reduced salt, sugar and saturated fat in specific food categories.[14,15]

Another approach to mandate reformulation and limit consumption of unhealthy products is taxation. The United Kingdom and the United Arab Emirates have widened their sugar-sweetened beverage (SSB) taxes, making the purchase of beverages with certain percentages of sugar more expensive.[16,17,18,19] These tend to reduce overall purchasing, particularly among lower-income households.[20] There are also noted instances of companies reducing sugar content to avoid the punitive tax.[21] However, experts caution that these policies do not provide an affordable healthy alternative.

In perhaps the most sweeping tax of its kind, Colombia launched a 20% tariff on all industrially manufactured ready-to-eat foods, as well as those high in salt and saturated fat.[22] To improve the affordability and variety of options, India cut taxes for plant-based milk and meat, departing from the prevailing taxation strategies.[23]

Governments are also pursuing greater cross-industry collaboration in their reformulation efforts. The Danish Whole Grain Partnership (Fuldkornspartnerskabet) has encouraged the incorporation of whole grain into a wide range of products. The initiative provides preferential labelling, prime retail placement, discount campaigns, and institutional procurement in schools, hospitals and public workplaces for whole-grain products.[24,25,26] The partnership is notable for its inclusion of the entire supply chain, from farmers to manufacturers to consumers themselves, and it has proven to increase Danish whole-grain consumption from 36g to 82g per day.[27]

The UPF debate

Beyond reformulation, public food access programmes and institutions are trialling bans on selected processed food categories. For example, the US Supplemental Nutrition Assistance Program (SNAP) restricts participants in some US states from purchasing "soda, candy and snack food".[28,29] The country's largest food access programme launched its monthly debit cards in 2008, and it has existed in some form since 1934. This marks the first disqualification of purchases based on sugar, fat or nutritional credentials.

Schools have also been the site of initial bans on ultra-processed foods, defined in California as "having high amounts of saturated fat, sodium or added sugars; or containing surface-active agents; stabilizers or thickeners; propellants, aerating agents, or gases; colors or coloring adjuncts; emulsifiers or emulsifier salts; flavoring agents or adjuvants; flavor enhancers; or non nutritive sweeteners".[30] The city of Rio de Janeiro instituted a UPF ban for its school district, while the government of Mexico initiated its own ban for schools nationwide.

Signals of change: Unequal outcomes, public incentives and coalitions of health

As countries move to tackle the twin challenges of undernutrition and obesity, the legislative agenda remains focused on a limited range of indicators such as sugar, salt and fat, though a more divided formulation landscape is emerging. Nutritional access could connect more directly to health outcomes, particularly in countries with more centralized healthcare, and some national coalitions are illustrating effective voluntary mechanisms to increase nutrient-dense food.

The limits of restricting high-fat, sugar and salt products (HFSS) are becoming visible in an increasingly varied reformulation landscape. Many access policies such as bans have not necessarily led to healthier product availability. In part, this is due to a lack of complementary innovation incentives. HFSS products may be reformulated to have slightly lower levels of fat or salt, but policies do not encourage companies to make these products more affordable.[31]

Despite greater attention to product formulas, what begins to emerge is a two-speed food system. Regulated markets access premium, nutrient-dense products, while lower-income countries with weaker oversight have plentiful low-cost, low-nutrition options.[32]

Linking nutrition access to health outcomes

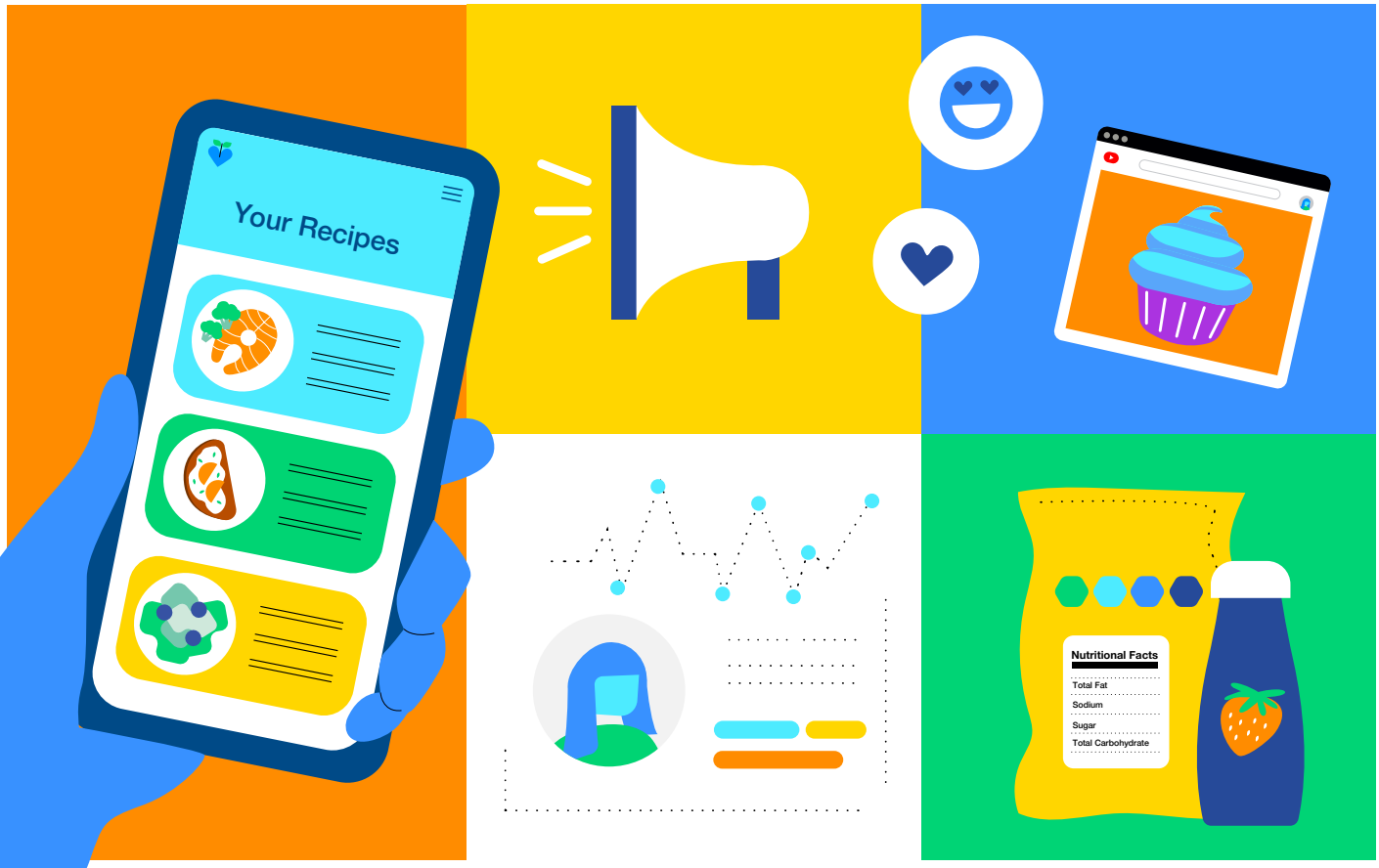
More intentional efforts to connect nutritional support to measurable changes in health were prototyped in the US Department of Agriculture (USDA)'s Gus Schumacher Nutrition Incentive Program (GusNIP).[33] The programme combined healthcare and nutrition through produce prescriptions and digital incentives, generating measurable health outcomes and real-time subsidy data. Similarly, New York City's Good Food Purchasing Program standardizes nutrition, labour and sustainability metrics across public agencies.[34] Given the more fragmented US healthcare system, companies are demonstrating the possibilities of aligning food purchasing and health incentives. For example, "food-is-medicine" companies such as FoodHealth, Season and NourishedRx have developed products that reward low-income consumers' healthy food purchases. The programmes partner with private insurance providers to support specific populations and measure key health indicators, with personalized dietary recommendations and coaching depending on the condition.

Incentivizing sustainable diets

Subsidizing healthier and more biodiverse food remains niche, usually in concert with funding to reduce climate risk for farmers.[35,36] A leading model, however, is Denmark, which has legislated a series of policies to promote lower-cost organic food. Though many countries have national organic labelling schemes – even programmes for smallholder farmers such as in Brazil and India – Denmark's centralized and multilevel certification scheme has raised organic food to 13–14% of market share, the world's highest. Not only does the government pay for certification, public institutions are mandated to purchase up to 60% of their total produce in local organic food, providing farmers with a strong incentive to shift production from conventional crops. The system's multiple levels of certification also ensure that a low price point is available in local shops and convenience stores.[37]

Voluntary industry change

Voluntary coalitions are also leading efforts to increase product health requirements, sometimes in unusual partnerships. For example, in response to China's National Obesity Campaign, Starbucks launched a Coffee Festival for sugar-free syrups.[38] Other companies are synchronizing with changing public sentiment and regulatory pressure. Tyson Foods, for example, recently pledged to remove high-fructose corn syrup, sucralose and additives such as butylated hydroxyanisole (BHA)/butylated hydroxytoluene (BHT) and titanium dioxide from its products. Although this is not currently mandated, increased regulatory pressure and scrutiny of ultra-processed foods has prompted this change.[39]



1.2 Marketing

Current trends: Transparency, digital accountability and responsible communication

Food marketing regulation primarily targets specific food categories for specific audiences, namely HFSS products and youth. There are broad regional movements towards front-of-package warning labels, though countries' differing formulas can lead to selective product labelling. Governments continue to align on protecting young populations from an increasing array of marketing platforms including in-game marketing, but the definition and threshold for HFSS products vary significantly by country.

Signalling nutritional change

The majority of regulatory efforts focus on front-of-pack labelling, with either a warning symbol or grading system based on nutrient composition. Many developing economies are leading labelling efforts, as can be seen in a wave of Latin American labelling laws originated by Chile. In 2016, the government introduced its now ubiquitous black octagonal "stop sign" under the country's Law of Food Labelling and Advertising, marking products with high levels of sugar, calories, sodium or saturated fat.

By 2025, almost half of Latin American countries had adopted a similar system.[40] Other warning labels target key ingredients such as artificial sweeteners or colours, though experts warn that alarmist messaging about processed foods is not always productive, noting that certain formulations enable affordability, longer shelf life and stability.[41]

Product labels may also rely on nutrient density scoring systems. Nutri-Score, for example, uses a letter and colour-based system, rating products from A to E based on a set of nutrient and food category-specific attributes.[42] While France and several EU countries have officially endorsed Nutri-Score, its use remains voluntary and experts warn that companies may selectively display this label on brands for which it looks favourable, while leaving other brands unlabelled.[43]

Protecting early exposure

Among regulators there is a strong consensus in favour of advertising controls for young audiences, in many cases banning content for viewers up to age 18. In Norway, for example, the law bans key categories such as ice cream, soft drinks and confectionery, while specifying levels of sugar and dietary fibre for cereals, fast food and yoghurt.[44] The Norwegian ban has been notified to the European Free Trade Association Surveillance Authority (ESA), and the law is currently under review, with comments being provided by members.

Belgium is set to follow suit, and in since-delayed legislation, the United Kingdom has taken aim at all products high in salt, sugar and saturated fat, with limits on advertisements at specific times of day and an outright ban on online advertisements.[45,46] Governments are trying to develop clearer guidelines for social media platforms, and some preexisting laws have been amended to include stricter, platform-specific controls.

Signals of change: Digital influence, real-time compliance and AI personalization

Though governments remain focused on traditional advertising, social media platforms have an outsize role in providing nutrition information, boosted by AI content-generation tools that alter how visuals reach consumers. These internationally operational platforms are changing far faster than laws can regulate, and evidence of their adverse effects on dietary habits is widely acknowledged.[47]

Outpacing regulation through digital influence

AI-integrated marketplaces are overtaking governments as the gatekeepers of food choice, leaving regulators out of step with the growing influence of health content creators. Generative platforms increasingly curate personalized health information and product discovery, and they are currently the top purchase recommendation source for 18% of active generative AI users, according to Accenture's Consumer Pulse 2025.[48] As the EU's Digital Services Act takes full force, companies such as TikTok are already under court order to detail ad content, targeted users and ad purchasers.[49] This law marks a significant move towards real-time compliance, requiring every instance of an ad to be recorded for its author, payment and other parameters. However, these policies have not managed to govern the technical concerns of health claims, nor do they regulate recommendations outside of a compensated promotion.

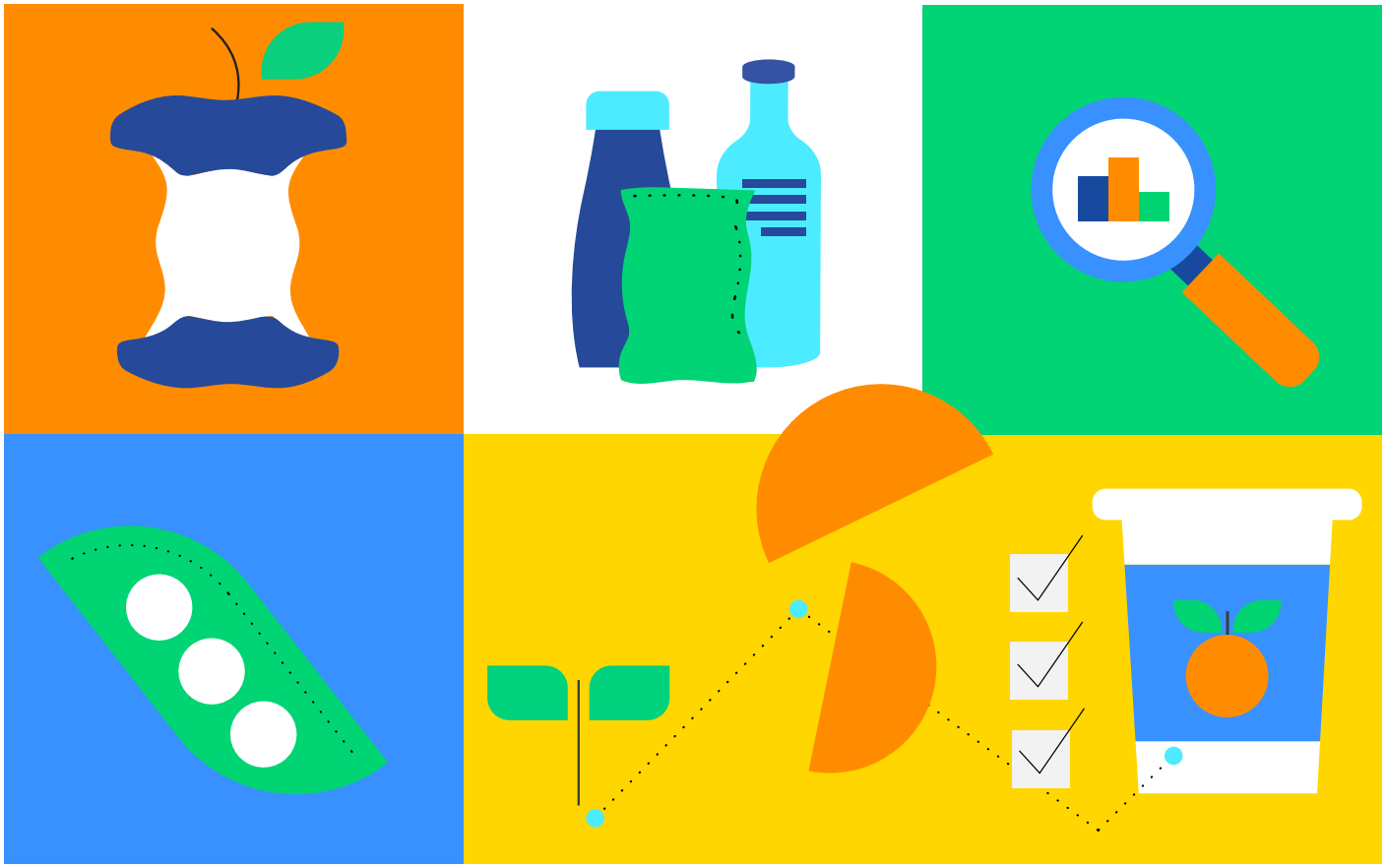
Evolving legal frameworks for digital accountability

The international community is racing to develop baseline rules, such as the Global Digital Compact, an international framework outlining digital governance, especially of AI.[50] Governments are taking initial steps by mandating standardized labelling of AI generated or manipulated content, as with the EU Artificial Intelligence Act's transparency obligations.[51]

In parallel, Consumers International is beginning to define standards for digital consumer rights. The organization is developing policy to create transparent, ethical and accountable use of data and AI in commerce, ensuring that digital innovation advances consumer protection as much as competitiveness.[52]

Companies themselves are increasingly integrating AI into a wide variety of marketing efforts. Customized machine learning models are conducting unprecedented social listening, scanning social media, product reviews and search results to synthesize trends, feeding into hyper-personalized messaging and segmentation.[53] Brands are using generated assets quietly or with increasing creativity. For example, Heinz proved the ubiquity of its product by asking AI to "imagine ketchup in every possible world" then inviting customers to create their own ketchup creations.[54]

Consumers are forming tighter communities around distinct values and lifestyles, which can create echo chambers of misleading health claims. As the public gains equal access to nutrition and marketing information, companies are building new engagement strategies with their "food expert" customers, similar to new service models resulting from health data democratization.



1.3 Climate

Current trends: Traceability, packaging, waste and beyond

Governments are responding to a dual climate imperative: stabilize the impact of the food system on the environment while mitigating disruptions from extreme weather fluctuations. The new generation of environmental regulation emphasizes traceability, transparency and shared responsibility across the entire supply chain.

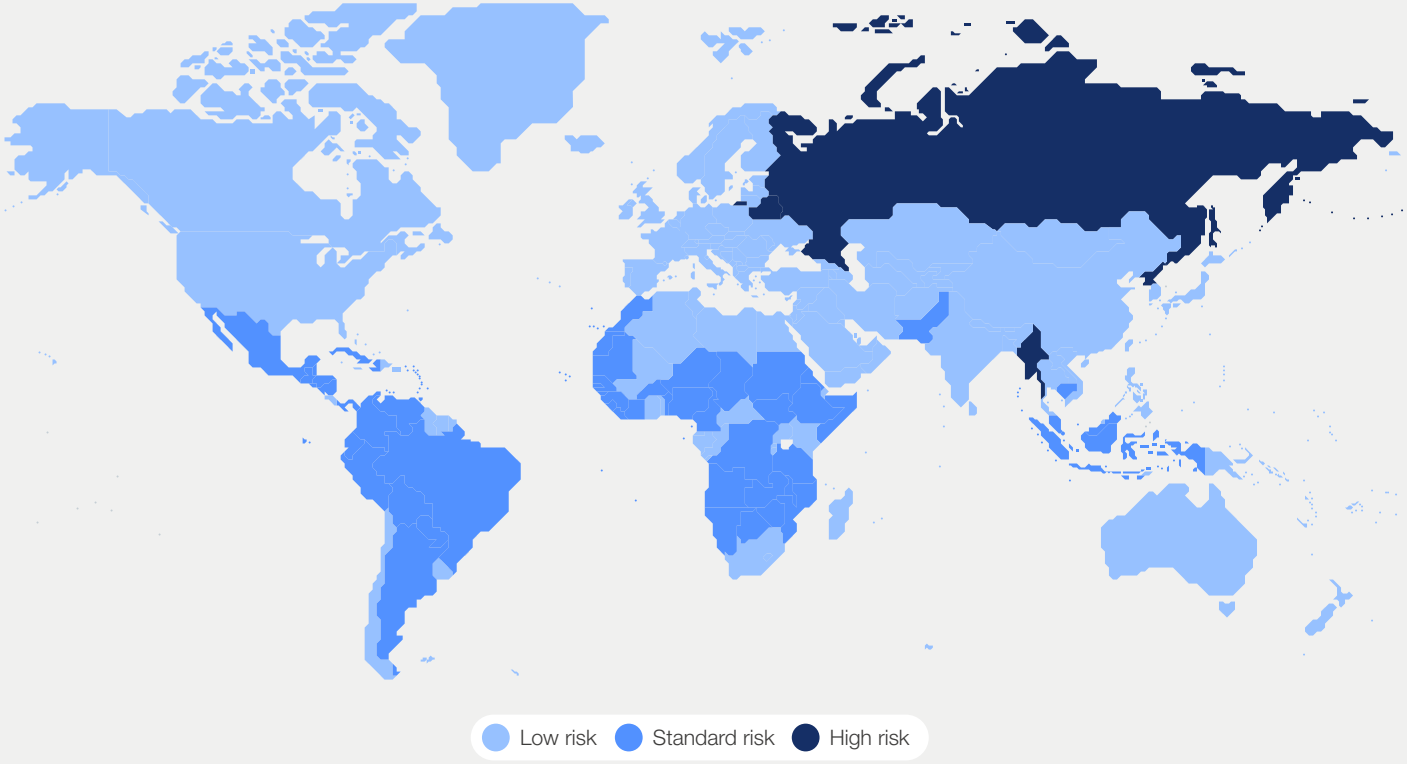
The European Union's Deforestation Regulation (EUDR) is at the forefront of this accountability movement. The legislation requires commodity importers – including of cattle, cocoa, coffee, palm oil, rubber and soya – to prove that their products derive from land that has not been deforested or degraded since 31 December 2020.[55] EUDR monitors geolocation data from primary producers of more than 300 products, pressurizing small and medium businesses to meet high technical standards.[56] Throughout Latin America, countries are developing their own national plans to ensure export products will meet stringent EU policies, as the region's exports are highly affected by them. In a similar vein, China requires beef companies to report their products' traceability as part of its larger food security and smart agriculture plan. The recently announced 2028 rural big data platform may further require integration of supply chain data.[57,58]

Shifting life-cycle responsibility

To reduce the impacts of the product life cycle, countries are beginning to introduce producer responsibility for packaging. The newly unified EU Packaging and Packaging Waste Regulation (PPWR) standardizes requirements for recyclability, reuse targets and waste reduction across the 27 member states.[59] By 2030, all packaging in the EU market must be recyclable in an economically viable way, with mandatory recycled content thresholds for plastic packaging and graduated performance grades. Australia has its own plastics and waste policy action plans, while India, Costa Rica and Mexico all introduced their respective extended producer responsibility (EPR) policies.[60,61,62,63]

This shifting accountability for waste management represents a fundamental restructuring of environmental costs to the producer, requiring businesses to internalize previously external environmental impacts throughout their product life cycles.

FIGURE 1 | **European Union's Deforestation Regulation (EUDR) risk levels of production from deforested areas**



Source: European Commission

Signals of change: Data investment, national reversals and waste as resource

Within this landscape, transparency is becoming a global currency. Sustainability data is already non-negotiable: 85% of executives plan to continue sustainability disclosures regardless of regulatory changes.[64] As new administrations come to power, companies are accelerating compliance adaptation, while some countries are actively changing the agenda. Within this environment, governments are shifting the emphasis to food waste reduction, while companies are investing in climate-forward technologies.

Localizing responses, regionalizing supply chains

In the corporate response to accelerated climate pressure, consumer packaged goods companies are using distributed and decentralized ledgers to validate every step of their production, as is being piloted in Australia.[65] There have been trials of synchronized environmental, safety and compliance data to secure commodity supply while protecting human rights.[66]

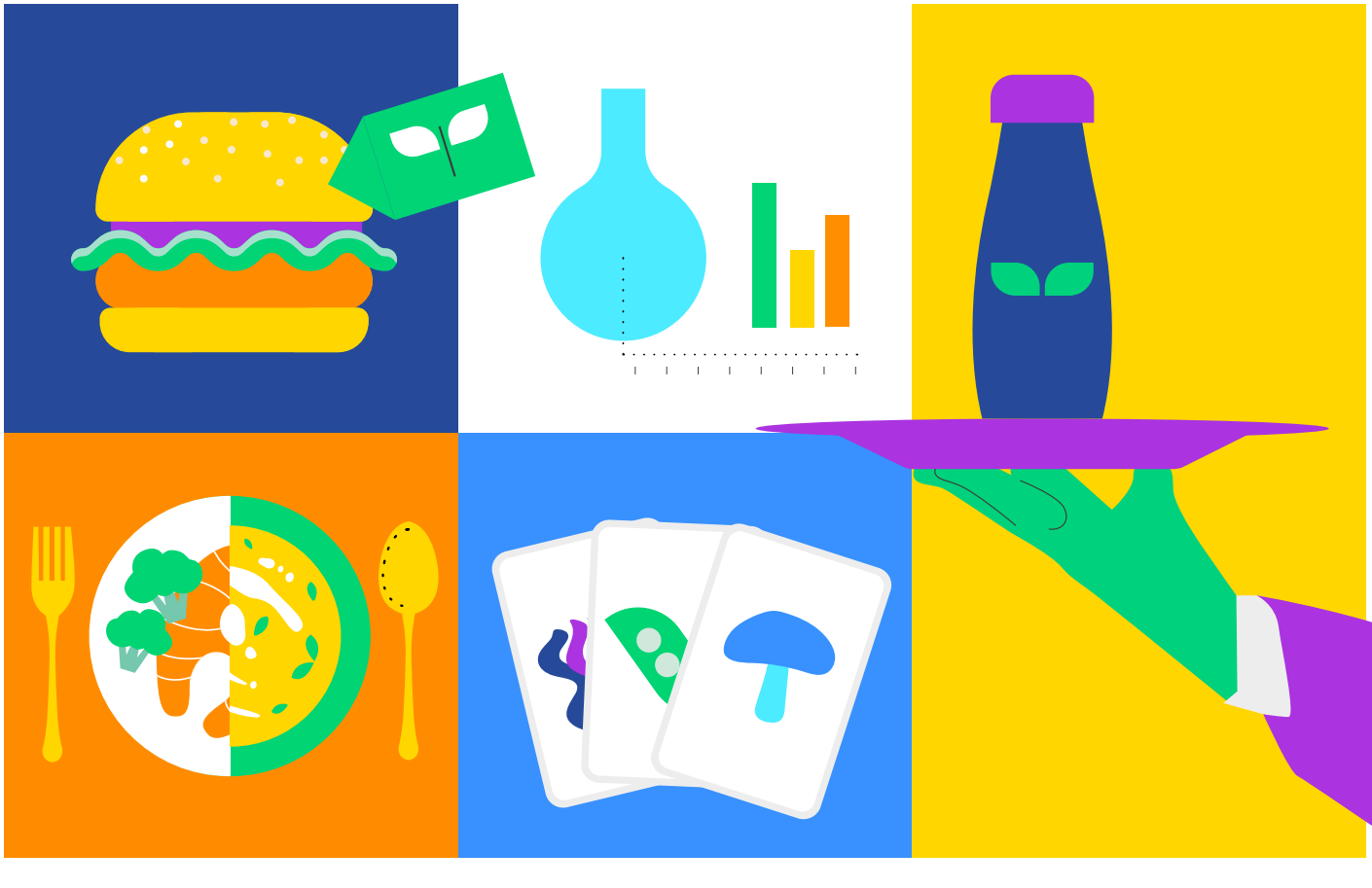
Yet the unilateral focus of climate regulations is creating national-level reactions, both within Europe and among commodity-producing nations. The European Commission has delayed its EUDR legislation for a year, in addition to revisiting its Corporate Sustainability Due Diligence Directive (CSDDD) in a stated attempt to reduce the undue burden on businesses.[67,68] Differences in deforestation regulation have also become a point of conflict in EUDR regulation, with countries such as Brazil criticizing the "punitive grading system" in favour of their own national deforestation plans.[69]

Nations such as Denmark are pursuing even more ambitious legislation, having passed the first emissions tax on agriculture last year.[70] Tax rates are based on tonnes of greenhouse gases (GHG) produced, with additional incentives for emissions reductions from nitrogen fertilizer abatement.[71] As a result, more discussions of localized and regional trade blocs are taking place, with attempts to align environmental policy and preferential market access.[72]

Defining food waste as a climate frontier

Governments are beginning to target food waste as a path to emissions reduction. More minimal policies may include easing food donation restrictions or mandating discounts on expiring food. The most comprehensive efforts address the entire value chain from grower and processor to retailer, restaurant and end consumer. Norway's recent Food Loss Act is just setting a legislative foundation, while Spain's Food Waste and Loss Act sets targets above the 2025 EU-mandated 10% reduction in waste from food processing and manufacturing and 30% cut from retail, restaurants, food services and households per citizen of the respective EU member state.[73,74,75] Efforts such as FOLOU, the EU-funded project to monitor food waste in primary production, further illustrate global research in this domain.[76] It should be noted that food waste has varying definitions legislatively and in academic literature, and the laws sometimes exclude substances such as agricultural residues and manufacturing by-products.

No matter the national response, companies are competing to mitigate the effects of climate change by investing in or acquiring agtech solutions. For example, Mars is using gene-editing CRISPR technology to make cocoa plants more disease- and climate-resilient, improving yield stability and reducing waste across the supply chain. In a more direct response, Nestlé is developing a technique to upcycle the underused cocoa pulp, placenta and cocoa pod husk in chocolate production.[77,78] While these products indicate competitive responses to climate adaptation, the positive environmental impact may be limited by the innovations' proprietary nature.



1.4 Novel foods

Current trends: Alternative proteins, biotechnology and economic growth

Often focused on fats and proteins, the investment in novel ingredients originated in part because of their potential sustainability and supply chain advantages. Many start-ups position their offerings as a low-impact alternative to ingredients that currently fuel climate change, intensify land-use and biodiversity loss, and threaten supply chain stability. From 2016 to 2025, investments in alternative proteins exceeded $18 billion, with $443 million allocated in the first half of 2025 alone.[79,80] Though sales of some plant-based categories declined post-pandemic, this accompanied a general retreat from investment in non-AI-focused start-ups.[81,82]

Cultivating an economy of novelty

The sector's rapid innovation is outpacing a fragmented global regulatory landscape, and companies are selecting preferential policy environments to launch pilots. Differences occur in regulatory philosophy (precautionary or permissive), mechanics (requirements, speed and transparency) and market interface (labelling and communication). In an FAO review of precision fermentation frameworks, the organization confirms that no international definition or harmonized regulation yet exists, and policies are more likely to align with governments' prioritization of novel foods as a pillar of economic development.[83]

For example, the European Novel Food Regulation requires assessments that take between 18 months and three years. By contrast, Singapore maintains one of the world's fastest approval processes at 9–12 months, and it became the first globally to approve cultivated meat for sale. The country launched an ambitious 30 by 30 goal, requiring that the state produce 30% of food needs domestically by 2030.[84,85,86] Malaysia has also designated cultivated meat research as a core growth strategy in its National Biotechnology Policy 2.0,[87] while China, South Korea and Japan are signalling clear government commitment to novel foods technology.[88] The United States, despite having the Food and Drug Administration's (FDA) approval for federal inspections and eventual sale of cultivated meat in 2023, relies on states to legislate novel meat sales. California has become the first state to permit retail sales.[89]

The majority of existing legislation concentrates on the resulting meat, lipid substitute or flavour compound, instead of its method of production. However, governments are beginning to more precisely regulate innovations in food processing, especially where new technologies lead to changes in nutritional composition or food safety.

Signals of change: A novel space race, co-regulation and pilot purgatories

Within the highly fragmented landscape of food innovation regulations, the novel food "space race", as the Good Food Institute described it, is already under way. However, some companies cannot afford to fund multiple regulatory strategies or lack the necessary testing infrastructure to begin the path to market.[90] There are the beginnings of international unification on substance definitions, but the greatest movement is between regulators and innovators as co-creators of policy.

Diverging routes to market

These labyrinthine paths are visible in an interesting case study within the US, where a significant proportion of novel food companies are registered.[91] Depending on the type of product, there are two potential regulatory pathways. Companies may submit as a food additive requiring FDA approval, or they may proceed through the Generally Recognized as Safe (GRAS) process, requiring assessment by an independent expert panel.[92] Companies face radically different requirements and launch timelines depending on what part of the system they encounter.

Other countries are restricting nationally important sectors from novel foods outright, as with Italy and cultured meat, or very specifically regulating marketing claims concerning terminology and language such as "burgers" and "sausages".[93,94]

In response to such radically different approaches, the FAO has begun mapping frameworks and hazards across 35 jurisdictions, a precursor to shared substance definitions, joint testing or safety requirements.[95]

Co-regulating leading-edge technology

Perhaps the most successful way governments are keeping pace with the speed of innovation is through formal partnerships with innovators. The United Kingdom has already launched a food regulatory sandbox, allowing companies and governments to co-create legislation as products are developed. As Joshua Ravenhill, Head of the Cell-Cultivated Product Sandbox at the Food Standards Agency (UK), states, "[the] sandbox … is an extensive dialogue programme between the food regulator, innovators and academia that will allow the regulator to fast-track its knowledge on these products, create tailored regulatory guidance to companies without lowering standards, and provide clarity to companies about what they need to do to produce safe food and the timelines for assessment".[96]

Beyond regulatory bodies, a growing ecosystem of innovation enablers is helping companies build regulatory readiness. Organizations such as MISTA in San Francisco and The Cultured Hub in Switzerland provide access to shared infrastructure, advanced food-safety analytics and expert networks that connect start-ups with established ingredient and food manufacturers.[97,98] These collaborative environments help emerging companies generate the safety data and process validation required to meet stringent standards, particularly under frameworks such as the EU Regulation (EU) 2015/2283 on novel foods.

Academia plays an invaluable role in convening regulators, industry and innovators through initiatives such as the Bezos Centres for Sustainable Protein and the Good Food Institute. As Andy Jarvis, Future of Food Lead at the Bezos Earth Fund, emphasizes, "Regulators shouldn't be the referees on the sidelines; they need to get on the pitch with us."[99]

Breaking the pilot barrier

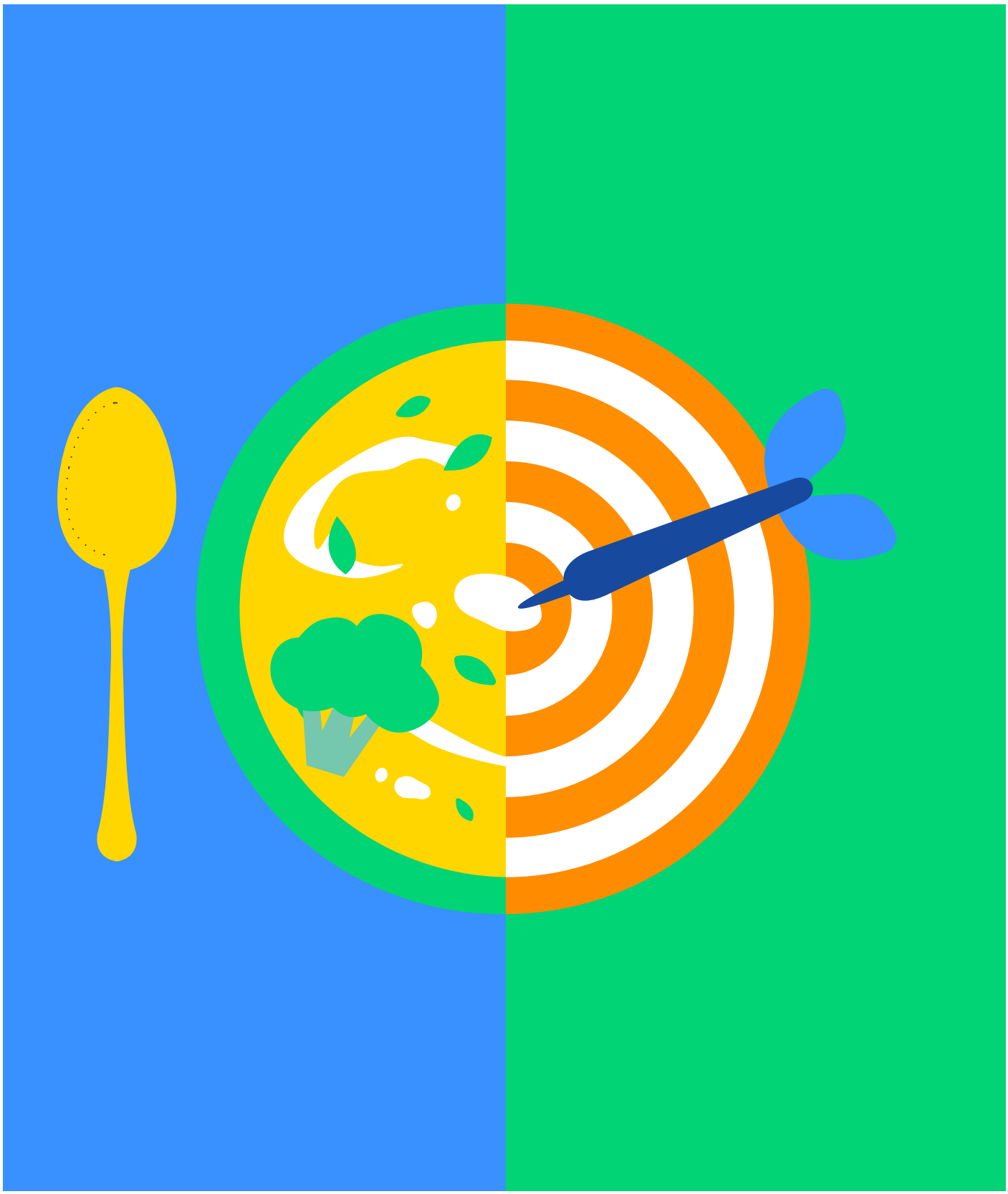
With real-time response to legislative need and adaptive policy partnerships, food regulators may begin to collaborate across regional markets, developing synchronized specializations with shared access to testing data and protocols. Novel foods are often restricted to highly publicized national pilots, with partnerships focused on publicly owned companies, such as airlines or technology manufacturers. The few products that have successfully scaled usually originate from existing multinational consumer packaged goods companies.

Crucially, the narrative of novelty is no longer about sustainability alone, but it is also about nutritional functionality. Companies such as Perfect Day emphasize the health potential of bio-identical dairy proteins that are nutritionally equivalent to casein and whey. Its product meets daily protein needs, but it is lactose-free, cholesterol-free and antibiotic-free. Similarly, Hoxton Farms highlights 70% less saturated fat in its cultivated fat formulations, while maintaining the same sensory and functional performance as conventional fat.

Some pioneers are also expanding the nutritional frontier through bioprospecting. Darwin Bioprospecting Excellence, for instance, explores underused microorganisms and natural processes to identify new bioactive compounds and nutrient-rich ingredients, bridging biotechnology and nutrition science.[100] This new wave of discovery positions novel foods as a new source of nutrition, unlocking functional benefits from plants, microbes and natural ecosystems.

2 Rewriting the rulebook

Regulation sets the direction,
allowing industry innovation
to turn ambition into impact.



As regulation evolves, the question is no longer whether companies will adapt, but how fast they can use policy as a platform for competitive advantage. Public health concerns, sustainability demands and new consumer behaviours are all converging, prompting regulators to act with greater urgency and ambition.

Yet many companies remain reactive, waiting for legislation before changing their core offerings. This approach may seem less risky in the short term, but companies focused on immediate compliance jeopardize future investments in productivity and innovation.[101] Instead, leaders must shift their posture from compliance to co-creation.

In order to remain relevant in the long term, industry needs to be proactive, innovate responsibly and actively engage in setting the platform for change. Achieving this, however, depends on the right enabling architecture – systems that reward innovation and value long-term sustainability and public health benefits. Governments and companies can co-create the "desired future" through collaborative standards, shared data platforms and transparent product profiles.

2.1 Collaborative standards for progress

No single actor can solve today's health and sustainability challenges. A report by the Carbon Disclosure Project (CDP) found that the costs of managing policy-related risks are significantly lower than the potential financial impacts of those risks.[102] Initiatives such as the World Business Council for Sustainable Development's (WBCSD) Positive Policy Engagement Advisory Board illustrate how leading companies are institutionalizing collaboration to ensure regulation drives sustainable growth. The programme convenes businesses, government and civil society to co-design transparent, evidence-based approaches that align corporate action with sustainable policy goals.[103] True progress comes from building trust among companies, regulators and industry bodies, ensuring that ambitious goals are not undermined by fragmented rules or short-lived fixes.

When companies align on common principles and standards, such as restricting unhealthy food marketing to children, they build a more mature and coherent ecosystem to advance formal regulation.

A strong example of collaboration at scale comes from the finance sector: the Open Banking model proved how "regulated interoperability" can unlock innovation when data-sharing becomes a common standard. In the food sector, similar principles are emerging. The United Kingdom's Food Standards Agency (FSA)'s salt-reduction programme, for instance, coordinated voluntary, category-specific reformulation targets among manufacturers and retailers, cutting national salt intake by around 10%.[104] It stands as a powerful example of pre-competitive collaboration that delivers public health impact faster than regulation alone. These efforts not only demonstrate accountability but also create consistency across the market, reducing the likelihood of fragmented or reactive policy responses.

Taking action

1. **Shape regulatory agendas through cross-sector partnerships.**

   Form pre-competitive coalitions to de-risk innovation. Bring together industry, researchers and regulators in shared learning spaces that evolve policy in step with emerging nutrition technologies.

2. **Strengthen cross-sector and cross-border dialogue.**

   Establish regular forums among governments, agencies and advocacy groups to share data, best practices and case studies, reducing fragmentation and accelerating coherent global standards.

3. **Use public procurement and incentives to signal priorities.**

   Embed nutrition and sustainability targets in public purchasing, funding and labelling policies to steer private innovation towards public-health outcomes.[105]

> **We have to worry less about regulation and show governments and consumers that industry can come together and set targets that make a real difference.**
>
> Wolfram Alderson, Executive Manager, Research and Innovation, Kuwaiti Danish Dairy (KDD)

2.2 Shared data and innovation infrastructure

Good regulation is built on good information, and the private sector holds much of the data that regulators need to craft practical, impactful policies. When companies proactively disclose internal metrics, nutritional criteria or sales breakdowns to regulators, they empower them to act with more clarity, nuance and confidence and push the industry towards a more efficient and progressive innovation process. Governments can request data in large public tenders, rewarding companies for transparency in nutrition, emissions or other health markers. Backed by known health improvements or carbon reductions, governments can more accurately scope overarching strategies and commitments.

When paired with data-sharing and AI-enabled tools, compliance becomes more than just meeting standards. It evolves into a real-time engine for growth, allowing decision-making responsive to market developments.

Taking action

1. **Expand open data protocols throughout the value chain.**

   Sync information on production methods, ingredient sourcing and nutritional quality through secure, public data management. Companies can take advantage of reduced production costs while enabling real-time compliance and enhanced transparency for consumer choice.

2. **Co-pilot products and processes with regulators.**

   Test novel foods and ingredients through joint pilot programmes that align innovation with safety, nutritional integrity and consumer understanding from the outset.[106]

3. **Invest in reformulation acceleration technologies.**

   Expedite portfolio reinvention through tools such as AI formulation platforms (algorithmic ingredient recommendations) and digital tongues (electronic sensors that replicate human taste). Companies can efficiently trial higher volumes of product iterations while prioritizing nutrient standards and sustainable ingredients.

> **The industry should stop preparing for the expected future and work with governments to create the future we want.**
>
> Jack A. Bobo, Executive Director, Rothman Family Institute for Studies, UCLA

2.3 Transparency as a competitive edge

Independent benchmarks, such as the Access to Nutrition Initiative (ATNI), are raising the bar for corporate accountability by assessing how companies' strategies, product portfolios and marketing practices align with public health and sustainability objectives. These efforts complement emerging regulatory frameworks, helping to translate transparency into tangible trust.

Food-processing technologies are critical to providing nutritious, accessible and low-cost food, but their opacity promotes distrust among regulators and consumers alike. Taking an analogous industry as inspiration, "in the clean beauty revolution, retailers put a stake in the ground, defined clean, and said what they won't allow. Just as consumers were trained by this shift, [we're] seeing a similar expectation for food retailers," explained Samantha Citro Alexander, Chief Executive Officer and Founder at FoodHealth Company.

For food producers and retailers alike, defining "nutritious" in clear, plain language can create a differentiated brand reputation. In the *Nutrition Marketing Principles* playbook, the New Frontiers of Nutrition initiative recently explored how to make nutrition desirable, using ethical and evidence-based messaging to create a differentiated market position.[107] Transparent descriptions of ingredients and nutritional benefits not only reduce legal risk but also rebuild consumer trust. Confusion around labelling, certifications and health indicators is reduced when there are public-facing rules.

Taking action

1. **Communicate health benefits with clarity and simplicity.**

   Translate nutritional data and health requirements into meaningful information for consumers, avoiding the confusion of regulatory language.

2. **Position transparency as the innovation goal.**

   Stay ahead of regulations by using data in company marketing platforms. With enhanced consumer engagement platforms and advanced RFID tracking, the product journey is a source of authentic storytelling, while preparing for more detailed disclosure.

3. **Connect healthy and sustainable choices to customer loyalty.**

   Use personalization and advanced data analytics to layer product benefits, including discounts, exclusive access and even opportunities to co-develop new flavours and options. Companies can connect with new audiences while forging authentic market positioning based on their customer's personal values.

> **Nutrition transparency is ultimately about empowering people with the information they need to make better health choices.**
>
> Patrícia Oliveira Pereira Tagliari, Associate Director of the Second Directorate, Brazilian Health Regulatory Agency (ANVISA)

2.4 Safeguarding credibility by managing conflicts of interest

As public and private actors collaborate to co-design nutrition and sustainability regulation, credibility depends on clear safeguards against conflicts of interest. Well-defined mechanisms ensure that industry engagement accelerates innovation while protecting public objectives from undue influence.

Shared protocols for partnership enable diverse and sometimes opposing parties to accept ambitious reforms. Clear boundaries also protect well-intentioned collaborations from scepticism, ensuring accountability and transparency in public objectives. Ultimately, strong safeguards create the stable, credible environment required for long-term policy coherence in both nutrition and sustainability.

Taking action

1. **Disclose partnership roles.**

   Require public reporting by all organizations participating in policy pilots, working groups or sandboxes, including funding sources and voting rights.

2. **Balance representation and governance.**

   Establish multistakeholder committees, ensuring diverse and balanced participation while maintaining independent oversight to safeguard public interest.

3. **Appoint independent leadership.**

   Nominate independent chairing and secretariat to oversee agenda setting, record keeping and publication of meeting summaries.

4. **Install independent evaluation of evidence inputs.**

   Ensure that while company-generated evidence may inform discussions, it should undergo independent review.

Conclusion

Regulation is a catalyst for innovation, promoting an alliance to create a healthy, equitable food system.

The next few years will define whether regulation becomes a constraint or a catalyst. Companies that wait to react may find themselves negotiating from the back foot; those that engage early will benefit from a first mover advantage.

The path forward demands collective leadership, where regulators, businesses and civil society move from fragmented agendas to shared accountability. By aligning around common evidence, transparent communication, and innovation that serves both people and planet, the industry can turn regulatory pressure into collective progress. The opportunity lies not just in complying with change, but in creating the conditions for change as a key driver for growth. By helping shape credible and relevant category norms, companies can bring the consumer voice into policy and innovation, ensuring that regulation reflects real needs and builds lasting trust. Those who align early with science-based standards will pioneer new associations with transparency, strengthening consumer loyalty and investor confidence alike. Anticipating regulatory shifts avoids rushed reformulations and fragmented compliance efforts, enabling global economies of scale and operational efficiency. It helps companies future-proof supply chains against climate shocks and policy volatility, but also de-risk R&D and shorten time-to-market.

Supply chain disclosure and extended producer responsibility are driving collective action towards net-zero goals. Farmers, producers and retailers are building new partnerships to meet sustainability targets that no actor could achieve alone. Social procurement, subsidy reform and “food-is-medicine” initiatives demonstrate how regulation can realign public and private incentives towards health equity.

Converging rules on nutrition labelling and marketing are defining transparency in consumer communication, creating a level playing field where responsible brands can lead through verified data. As companies continue to create new ingredients, science-based collaboration accelerates safe, sustainable food technologies, from alternative proteins to circular ingredients.

Across these domains, a common pattern emerges: effective regulation creates a shared language that allows companies and governments to elevate ambition into measurable advancements in health. As health and nutrition rise on policy and consumer agendas, the opportunity for industry lies in treating regulation not as a constraint, but as a catalyst for growth and innovation. With policy that is clear, predictable and evidence-based, the course is set for a fairer future, one that prioritizes nutrition and the sustainability of future generations. Well-designed regulation is a framework that enables the food system to operate at scale, turning shared ambition into collective progress.

Appendix 1: The regulatory clusters

The regulatory clusters presented in this report were derived from an analysis of the United Nations Food and Agriculture Organization (FAO) database of legislation, which includes 5,873 pieces of food system-related legislation. Each legislation entry in the database was pre-tagged by the FAO with two descriptors identifying its thematic focus (from a total of 43 tags, adding up to 335 combinations; see Table 1).

The analysis involved categorizing these tagged legislations into four thematic clusters: access and fiscal policies; marketing; climate; and novel foods.

To determine cluster placement, the FAO tags associated with each legislation were reviewed and classified through a combined manual and AI-assisted process. Manual classification established the foundational grouping of the 43 tags, while AI tools and manual reviews were used to cross-check and validate classifications based on policy descriptions.

The resulting dataset was then organized by geographical region, producing a comparative matrix.

TABLE 1 **FAO's 43 pre-existing tags**

Climate change	Food loss and waste
Agrifood production (general)	Macroeconomic policy
Natural resources (general)	Social protection
Water resources management	Forest harvesting
Livestock	International trade
Biodiversity	Forest conservation
Territorial development	Nutrition
Food security	Education
Crops	Value chains development
Food safety	Children and youth
Risk reduction	Disaster recovery
Fisheries and aquaculture	Public expenditure
Science, technology and innovation	Employment
Health	Export promotion and diversification
Renewable energy	Public investments
Poverty reduction	Enterprise development
Mid-term development strategy	Migration and diaspora
Long-term development strategy	Domestic trade
Governance	Labour and decent work
Energy (General)	Professional training
Gender	Private investments
Land	

Source: Food And Agriculture Policy Decision Analysis Tool. https://fapda.apps.fao.org/fapda/#main.html

Access and fiscal policies: These fiscal and policy tools aim to make nutritious food affordable and widely available, setting standards for nutrient content and access.

Marketing: Different policies have set rules to ensure transparency, curb misinformation and protect vulnerable groups (especially children) within different sectors of the food industry.

Climate: Aimed at reducing the environmental impact of food systems, these policies may target deforestation, waste, packaging and sustainability across supply chains.

Novel foods: Policies include frameworks for biotech, alternative proteins and new food safety requirements.

FIGURE 2 **Regulatory volume (%) per cluster in each region**

	Africa	East Asia and South-East Asia	Europe	Latin America	Middle East	North America	Oceania	South Asia
Climate	72%	77%	80%	79%	78%	74%	86%	78%
Access and fiscal policies	18%	13%	9%	15%	14%	12%	7%	15%
Marketing	4%	3%	2%	3%	2%	5%	1%	3%
Novel foods	5%	7%	9%	4%	6%	8%	5%	4%

Note: Unclassified regulations not taken into account.

Source: FAO, Accenture analysis

Appendix 2: Glossary

AI formulation platforms
Integrated digital systems that apply artificial intelligence and machine learning methods to assist, optimize and automate the design, testing and refinement of formulations

Co-regulation hub
A collaborative space where regulators, researchers and private-sector actors jointly develop or test new regulatory approaches (often used in the context of emerging technologies or novel foods).

Digital product passport (DPP)
A digital record that tracks key product information such as origin, sustainability metrics and compliance data throughout the supply chain to improve traceability and consumer trust. Within this paper, the DPP mentioned is part of the broader Ecodesign for Sustainable Products Regulation.

Digital tongue
An AI-enabled sensor system that mimics human taste perception to analyse flavour and nutrient profiles, helping food developers reformulate products more efficiently while maintaining sensory quality.

European Deforestation Regulation (EUDR)
A European Union law requiring companies to prove that imported commodities (e.g. soya, palm oil, coffee) are not sourced from deforested or degraded land.

Extended producer responsibility (EPR)
A policy framework that holds manufacturers accountable for the environmental impacts of their products throughout the life cycle, including post-consumer waste and recycling. Most schemes are based on a taxation scheme that evaluates the different sustainability attributes of the product or packaging, such as recycled content, repairability or design for disassembly.

Food-is-medicine
An approach that integrates food-based interventions into healthcare, linking nutrition access and affordability directly to measurable health outcomes.

Novel foods
Foods or ingredients that had not been widely consumed before 1997 (in the EU definition), including new sources of protein (e.g. cultured meat, insects) and biotechnology-derived ingredients.

Nutri-Score
A front-of-pack labelling system developed in France that grades food products from A (healthiest) to E (least healthy) based on nutrient density and category-specific attributes.

Regulatory sandbox
A controlled environment where companies can test innovative products or business models under regulatory supervision, allowing learning and adaptation before full-scale deployment.

Sugar-sweetened beverage tax (SSB)
A public health policy that imposes an excise tax on drinks with added sugar, such as carbonated drinks, sweetened juices and sports drinks, to discourage consumption.

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