2026

U.S. JUST FOOD TRANSITION ROADMAP

Policy Pathways

Contents

Acknowledgments

The U.S. roadmap was primarily authored by the Center for Biological Diversity and World Animal Protection US, in consultation with more than 20 other U.S.-based labor, environmental, public health, and food advocacy organizations.

The full roadmap and resources are available at JustFoodTransitionNetwork.com/us-roadmap.

Introduction

The just food transition requires a strong commitment and inclusive process from government at all levels. There must be government policy coherence that aligns food and agriculture with social, environmental, health and labor goals and commitments. Corporate control of the food system must be dismantled to make an equitable, humane, and sustainable food system possible. Any exploitation of people, communities, workers, or the planet is not a just transition.

The policy pathways in this document expand on and demonstrate the feasibility of the public policy priorities identified in the *U.S. Just Food Transition Roadmap*. They reflect many of the priorities for which civil society groups and coalitions working to transform industrial animal production have long advocated, with a focus on key government interventions to remove barriers to a just transition and policies that are needed to enable and grow a just food system.

This document was created as a resource for advocates to better understand different types of policies that can support a just transition. Although it can be used to begin building strategic policy campaigns, it is not intended to represent a comprehensive policy platform.

These policies don't need to happen in the exact order in which they're listed, nor should changes that are easier to achieve and implement wait for more challenging structural changes to occur. Simultaneously advancing these efforts will help build a food system where workers, farmers, rural communities, animals, and the environment can thrive.

For additional information on the historical and political context for these policies, see supplemental U.S. Just Food Transition Roadmap: Understanding the U.S. Food System to Catalyze Change document.

Abbreviations

AMS: Agricultural Marketing Service, under USDA

APHIS: Animal and Plant Health Inspection Service, under USDA

CAFOs: Concentrated Animal Feeding Operations (CAFOs) are regulatorily defined agricultural operations in the United States that raise land animals for food in confined quarters, normally without access to the outdoors or vegetation. The U.S. government defines whether a CAFO qualifies as large, medium, or small depending on the specific number of animals confined, on a species-to-species basis. For example, large CAFOs house at least 1,000 cows, 2,500 pigs, and 125,000 broiler chickens, while small CAFOs house fewer than 300 cows, 750 pigs, and 37,500 broiler chickens.[1]

CDC: Centers for Disease Control and Prevention, under HHS

DGA: Dietary Guidelines for Americans

EPA: The Environmental Protection Agency (EPA) was established in 1970 by President Nixon with the approval of Congress. Its mission is to protect human health and the environment — ensuring clean air, land, and water — by developing and enforcing regulations, giving grants, studying environmental issues, working with partners, and providing information.[2]

FDA: Food and Drug Administration, under HHS

FNS: Food and Nutrition Service, under USDA

FSA: Farm Service Agency, under USDA

FSIS: Food Safety and Inspection Service, under USDA

HHS: U.S. Department of Health and Human Services

NRCS: Natural Resources Conservation Service, under USDA

NSLP: National School Lunch Program

OSHA: Occupational Safety and Health Administration, under U.S. Department of Labor

SBP: School Breakfast Program

USDA: U.S. Department of Agriculture

Just Transition Policy Recommendations

This list of public policy recommendations is not intended to be comprehensive of all possible or necessary mechanisms for food system transformation. Rather it identifies particularly influential interventions that can help advance key components of a just transition: corporate accountability, worker empowerment, food sovereignty, supporting small and independent farmers, healthy diets and nutrition security, environmental sustainability, and/or animal welfare.

It's important to note that while these policies have the potential to improve aspects of our food system, none of them can address the complex interconnections of a just transition on their own. Providing an in-depth analysis of their benefits, shortcomings, and opportunities for improvement is beyond the scope of this document.

Thus the policies should be considered with those caveats. The focus must remain on food, agriculture, and public health policy architecture as a whole while strengthening corporate accountability and public transparency, prevention of conflicts of interest, and an increase in democratization of food system governance that must remain central to any political discourse on these issues.

Recognizing the current U.S. political challenges to advancing a just transition at the federal level, these recommendations also identify where action can be taken at the state or local level to make meaningful changes. Many of these policies can and should be implemented concurrently and at different levels to accelerate the just transition and protect workers, communities, animals, the environment, public health, and food sovereignty.

Policies to Remove Barriers to a Just Transition

Corporate Accountability

- **Strengthen and expand worker-protection laws to guarantee basic labor rights for all food and agriculture workers.**

Congress should equalize labor laws to make sure farmworkers and other food chain workers (including slaughterhouse, meatpacking, restaurant, and retail) are covered by all worker protection and fair wage laws and direct OSHA to oversee these new requirements, in coordination with USDA and collaboration with worker-driven social responsibility programs. This should include funding to increase the Department of Labor and OSHA's capacity for monitoring, support for independent monitoring following worker-driven social responsibility principles, and consequences for noncompliance.

It should also ensure that farmworkers and food chain workers are paid a living wage and have the same rights as other workers, including but not limited to access to proper medical care; access to legal representation; ability to attend parent-teacher conferences; protections from heat, smoke, and other climate-related impacts; paid leave and days off; health insurance; housing at a safe distance from pesticide spraying; protection for immigrant workers from unfair treatment, regardless of legal status; and closing the loophole on child labor in agriculture.

An example of a bill like this is the Fairness for Farmworkers Act, which would update national labor laws to remove exemptions and ensure fair wages for farmworkers.[3] **States legislatures** can also seek to pass even stricter legislation within their own jurisdictions, including laws that guarantee a living wage, protect the right to unionize, and establish penalties for companies that undermine the rights of workers.

- **Force companies to meet strong worker-protection standards.**

Congress should pass legislation requiring that companies that engage in unfair labor practices be prevented from government funding and contracts, including procurement. This should be overseen by the Department of Labor in coordination with USDA. Several bills have sought to prohibit companies that violate labor laws from

federal contracting, including the Fair Pay and Safe Workplaces Act.[4] **States** can also pass laws to strengthen worker protection standards.

- **Strengthen environmental and animal protection regulations, oversight, and enforcement for farms and food producers.**

Federal, state, and local governments should hold food and agriculture corporations responsible for pollution, animal cruelty, poor on-farm conditions, and other environmental and animal welfare harms caused throughout their supply chains, including those due to monoculture feed crops, animal production facilities, slaughterhouses, and industrial fishing operations. These poor practices also have severe implications on workers and environmental justice issues, often deeply harming communities of color in the regions where these corporate activities are concentrated.

Congress and state legislatures should fully fund agencies and programs that enforce environmental and animal welfare protections and related laws, such as the Clean Water Act, Clean Air Act, Humane Methods of Slaughter Act, and the Twenty-Eight Hour Law. **USDA** should establish a new office solely responsible for this oversight and enforcement, which should include fines, permit revocation, suspension of market access, and other appropriate liability actions and sanctions.

However, these laws must also be strengthened and amended to close loopholes and increase effectiveness. For instance, **Congress** must close the Clean Water Act's loophole that allows the majority of CAFOs to be exempt from permitting requirements, and the Humane Methods of Slaughter Act and Twenty-Eight Hour Law should be amended to no longer exempt poultry animals. Additionally, when regulating companies' environmental impacts, companies' responsibility must not be expressed as carbon or biodiversity offsets, net zero, gene editing, breed selection, or other false solutions that would not tackle the root cause of the damage**.** Furthermore, **states** that have enacted "right-to-farm" laws must exempt CAFOs and large operations to allow them to be held accountable for pollution and environmental harms.

- **Reject carbon or biodiversity offsetting schemes in all food and agriculture policy and hold those doing harm through these schemes legally liable.**

Offset schemes, including voluntary carbon markets and trading, shift the harm caused by industry to marginalized communities — particularly small-scale and urban farmers, small-scale fishers, women, Indigenous peoples, and people of color — while destroying irreplaceable ecosystems and accelerating climate change (*see Appendix I: False Climate Solutions in Agriculture)*.

USDA currently funds carbon offsets through programs such as NRCS's Environmental Quality Incentives Program (EQIP) and Conservation Stewardship Program (CSP), and it partners with private voluntary carbon offset programs such as the American Carbon Registry. **Federal agencies** must stop supporting these practices and instead invest in real climate solutions that reduce and mitigate carbon emissions instead of offsetting them while holding those behind these schemes liable for their harm.

States should also seek to move away from these carbon and biodiversity offsetting practices, such as by ending state-based cap-and-trade programs like the Regional Greenhouse Gas Initiative.

- **Hold corporations accountable for paying a fair share of taxes and fiscally responsible for the harm they cause.**

Congress should pass legislation to end tax breaks and loopholes for corporations, prevent egregious misuses of mailbox companies in tax havens, and increase corporate tax rates. Some bills that would reform corporate tax loopholes are the Stop Tax Haven Abuse Act[5] and the Corporate Tax Dodging Prevention Act.[6]

- **Strengthen rules to prevent corporate interference in government policy.**

Congress should pass legislation to restrict lobbying and corporate spending and improve reporting transparency to prevent corporate influence over policy and elections. Example bills that address transparency include the DISCLOSE Act[7] and the Shareholder Political Transparency Act, [8] which would both require

additional disclosures of political expenditures from companies and special interests; however, future legislation must go further to prohibit lobbying.

- **Stop the revolving door between government agencies and multinational corporations and industry lobby groups.**

Congress should end the revolving door between federal agencies and the food and agriculture industries. It must pass legislation mandating public disclosures of conflicts of interest for all government roles and restrict the eligibility of representatives of multinational corporations and lobby groups to serve in government roles that have any oversight or regulatory influence over their former industry, and vice versa. For example, the Drain the Swamp Act is a bill that would impose a two-year restriction on former lobbyists from working in executive agencies or on matters related to their former lobbying activities.[9]

- **Strengthen and enforce antitrust rules.**

Congress should pass legislation to strengthen and enforce antitrust rules, which should address the full range of social and environmental impacts related to market consolidation in the animal agriculture industry. This includes accountability for direct and indirect harms to independent and contract farmers and local communities caused by corporate consolidation, restrictions on corporations moving abroad to avoid regulation, and ending monopoly control of slaughterhouses. An example is the Meat and Poultry Special Investigator Act, which would establish a USDA office to investigate anticompetitive practices and price fixing in the meat industry.[10]

- **Strengthen processes to assess and address corporate influence over scientific ideas and research in the food system arena.**

Corporations often exert their influence to ensure that scientific data, including around food and health, is favorable to their own interests. **USDA** should establish mechanisms to identify, disclose, monitor, and mitigate conflicts of interest in food system spaces and processes. This should include preventing industry influence over regulatory guidance (e.g. advisory committees), public-education narratives, and research at government and public institutions. It should require independent, third-party reporting and evaluation of data instead of relying on corporate-funded data. The agency can also prioritize and invest in research initiatives led by farmers, nutritionists, and other food system experts who are not affiliated with or influenced by corporations.

Finance and Land Access

- **Reform agricultural subsidies.**

Congress should pass appropriations bills that shift subsidies away from multinational corporations, animal agriculture, feed crops, commodity crop insurance, food additives, and genetically modified organisms. Instead, they should support farmers producing whole plant foods and ingredients for plant foods, especially those who are using agroecological practices, adopting strong worker-led protections, and making plant foods and products more widely available, accessible and affordable. For example, the Food and Farm Act would, among other provisions, repeal certain commodity crop subsidy programs, set caps on agricultural subsidies, require environmental conservation standards for producers who receive farm subsidies, and increase funding for specialty crops and local and regional food systems.[11]

- **Increase funding for land access and ownership, and control over land and other resources, for marginalized farmers including Indigenous peoples, ethnic minorities, women, and people of color.**

Congress should pass legislation that reduces barriers to land acquisition and retention by agroecological farmers by providing technical assistance to farmers applying for funding to return stolen land to Indigenous peoples and tribes and establish land co-ops and land trusts led by people of color. Congress should also enact measures to empower independent, marginalized farmers to access and control land, water, seeds, and other productive resources.

This includes prioritizing access to land by capping land acquisitions, removing speculative capital and financial actors from land markets, and rejecting land-based carbon offset schemes while supporting alternative forms of land ownership and access such as the commons, cooperatives and other group ownership and financing models. For example, the Increasing Land Access, Security, and Opportunities Act would expand a USDA program to provide assistance to historically underserved farmers, ranchers, and forest owners, including helping them acquire land.[12]

- **Defund false climate solutions, including carbon offsets, biodigesters and carbon removal or "carbon farming" schemes.**

USDA's Rural Development, NRCS, and FSA have funded hundreds of millions of dollars' worth of projects that support false climate solutions such as anaerobic digesters and carbon removal (*see Appendix I: False Climate Solutions in Agriculture*). **USDA** should stop granting funds to any schemes or practices that further entrench industrial animal agriculture models, increase harm to marginalized communities, or grant licenses to large corporations to continue polluting the environment.

- **End government-supported promotions of industrial animal proteins.**

Congressionally authorized "checkoff programs" allow USDA's AMS to advantage the animal agriculture industry with preferential research and marketing. **Congress** should end these programs — as well as any other financial, administrative, or advertising resources — that provide research and marketing for sectors such as beef and dairy and shift those resources to plant foods that support healthy, sustainable food systems. An example of legislation that would reform checkoff programs is the Opportunities for Fairness in Farming (OFF) Act, which would prohibit conflicts of interest and anti-competitive practices in checkoff programs.[13]

- **End wasteful government spending on harmful industrial practices.**

The federal government provides the animal agriculture and commodity crop industries with favorable treatment in the form of tax breaks, surplus purchases, and preferential loans. **Congress** should pass legislation to equalize treatment across other agricultural sectors, including specialty crops and small farms, and prevent the government from favoring sectors that conduct activities most harmful to the environment and public health.

Trade

- **Restrict trade in products associated with deforestation.**

Congress should pass legislation requiring corporations to prove that food and agricultural products were produced without harming forest ecosystems and establish a USDA office, free of any conflict of interest with the industry, to regulate these claims. An example of a similar federal bill is the FOREST Act, which would prohibit the importation of products from illegally deforested land;[14] this bill should be amended to regulate products that harm forest ecosystems, even when not from illegally deforested land.

- **Reinstate mandatory Country of Origin Labeling (COOL) for all meat products to support independent domestic producers and improve consumer transparency.**

Congress should reinstate mandatory Country of Origin Labeling for beef and pork to increase support for small- and mid-size independent producers in the United States and improve consumer transparency around the provenance of meat products. Mandatory COOL labeling must be paired with regulation and oversight to prevent loopholes that would allow multinational corporations to mislabel products that aren't produced in the United States. This must be enacted alongside other recommended policies that strengthen corporate governance, support agroecological production, and promote dietary shifts to avoid inadvertently increasing industry consolidation and harm.

- **Strengthen and enforce corporate accountability and liability rules, including in trade agreements, and implement duty of care mechanisms and a "do no harm principle" with**

mandatory disclosures.

Congress should pass legislation directing USDA, EPA, the Department of Labor, and the U.S. Trade Representative to work together to establish a mechanism requiring corporations to report on human rights and environmental issues, including child and slave labor, greenhouse gas emissions, deforestation, Indigenous land rights, water hoarding, and threats to endangered species. This should be required along their entire global supply chain, including subsidiaries, and require them to perform duty of care[15] and prevention of harm throughout their business operations with appropriate enforcement and punishment for failure to do so.

Corporations that are receiving government investments, incentives, and access to import/export markets should be held accountable for environmental and social harms across their entire supply chains, with affected communities having equitable access to justice and legal recourse and penalties such as banning companies with child or slave labor violations from receiving government contracts.

For example, the Corporate Governance Improvement and Investor Protection Act would require publicly traded companies to disclose environmental, social, and governance performance metrics and risks related to climate change.[16] The federal government must also affirm the extraterritorial obligations of transnational corporations to protect against human rights violations, as advanced by stakeholders working on the international business and human rights treaty.

Policies to Grow a Just Food System

Worker Empowerment

- **Shift power to food and agriculture workers by ending unfair labor contracts, protecting the right to collective bargaining, and incentivizing worker-led programs.**

Congress should pass legislation requiring corporations to move from contractor relationships to employer relationships to increase protections, benefits, and collective bargaining for farmers and farmworkers. Corporations should also be held responsible for the downward pressure they put on producers through unfair practices such as setting low prices and oppressive contracts that result in the exploitation of workers, the environment, and animals.

An example of a bill that would expand collective bargaining rights to agricultural workers is the Richard L. Trumka Protecting the Right to Organize (PRO) Act, which would remove existing farmworker exclusions in the National Labor Relations Act.[17]

Policies such as this should promote worker-owned companies and worker-led protections in accordance with the Worker-Driven Social Responsibility Model to ensure legally binding agreements with a worker-authored code of conduct outlining workers' rights and protections, employer accountability, worker-to-worker education, independent monitoring including audits, and a living wage paid to each worker.[18] **Federal agencies** can increase grant opportunities that support worker-led human rights programs on farms and in processing facilities, such as the USDA's Farm Labor Stabilization and Protection Pilot Program grants and the Department of Labor's support for the Fair Food Standards Council.[19] [20]

States can also pass collective bargaining laws to go above and beyond federal requirements.

- **Require transparent information sharing for all food and farmworkers, including through right-to-know laws.**

Congress and the **Department of Labor** should strengthen laws and regulations requiring that all information and outreach relevant to employee rights and safety, including chemical use, is presented in clear, multilingual, and visual formats to ensure accessibility for all workers. Regulations should also support worker-to-worker education, such as the Fair Food Program model.

State and local governments can create their own right-to-know requirements within their jurisdictions, much as New York City did via its Local Law 161, which requires all employers to post multilingual "Know Your Rights at Work" notices.[21]

- **Protect immigrant communities, including food and farmworkers, from mistreatment, unlawful detention, and deportation.**

Congress should pass legislation that protects all immigrant food and farmworkers, regardless of legal status, from unfair treatment by immigration enforcement officials. This should include provisions to limit prolonged detentions without judicial review, provide a right to counsel in immigration proceedings, protect against abuse during detention, guarantee access to medical care in detention, and ban unnecessarily cruel practices like solitary confinement. An example of a bill that would increase some of these protections is the Dignity for Detained Immigrants Act.[22]

Congress should pass legislation that creates easier pathways for undocumented food and farmworkers to obtain legal status. An example of such a bill is the Farm Workforce Modernization Act, which would create a new Certified Agricultural Worker Status for undocumented agricultural workers and protect them from deportation while their applications are being reviewed, provide a pathway for permanent residency, and improve and expand upon the H-2A visa program.[23]

Shifting Production

- **Provide incentives and technical support to help animal agriculture producers shift to sustainable plant production.**

Congress should pass legislation to fund programs that assist farmers who want to escape the animal agriculture model — whether to get out of exploitative contracts or for environmental reasons — and transition to growing a diverse variety of whole plant foods, such as legumes, grains, nuts and seeds. Examples of bills that would do this are the Industrial Agriculture Conversion Act[24] and the Farm System Reform Act.[25] **USDA** should also support companies, investors, and other farm and food workers who want to make this transition by providing technical assistance and other support, including incentives and market opportunities, during the transitional period.

- **Incentivize and invest in plant agriculture and specialty crop production and markets.**

Congress, with cooperation from USDA, should invest in improving and expanding markets for plant foods by providing and expanding funding for programs that increase the price parity and affordability of plant foods, leveraging tax breaks and direct investments to incentivize increased production and availability, and subsidizing plant foods at the retail level through tactics such as produce prescriptions.

Current programs that support specialty crop producers are USDA AMS's Specialist Crop Block Grant Program (SCBGP), which provides grants for increasing the competitiveness of specialty crops through market development, research, education, and promotion; USDA NIFA's Specialty Crop Research Initiative; and USDA's Risk Management Agency (RMA)'s crop insurance policies that are tailored to specialty crops.

Examples of bills that have attempted to expand funding for specialty crop production and market development include the Specialty Crop Security Act,[26] Specialty Crop Domestic Market Promotion and Development Program Act,[27] Specialty Crop Mechanization Assistance Act,[28] and Specialty Crop Research Act.[29]

State and local governments can also fund their own programs to support plant food and specialty crop production.

- **Establish regulatory frameworks for alternative protein investments.**

Any investment in alternative proteins by **federal and state governments** must be paired with regulatory and safety approvals. This will ensure that this growing sector prioritizes domestic production and open-

source, communal properties; is subject to the robust level of accountability required in food supply chains; and respects the guidelines contained in global agreements such as the Paris Agreement, the SDGs, and the Kunming-Montreal Global Biodiversity Framework. It will also ensure the sector is prevented from locating commercial-scale facilities in regions where worker, environmental, or other standards are laxer.

Examples of bills that would invest in the alternative and plant-based protein industries while supporting local and small producers include the PROTEIN Act, which would provide training and education for careers in alternative protein production and conduct local economic development planning for alternative protein production and processing.[30] The PLANT Act is another bill that would support farmers growing plant-based ingredients, prioritizing rural economies and cooperative development and small and independent producers.[31]

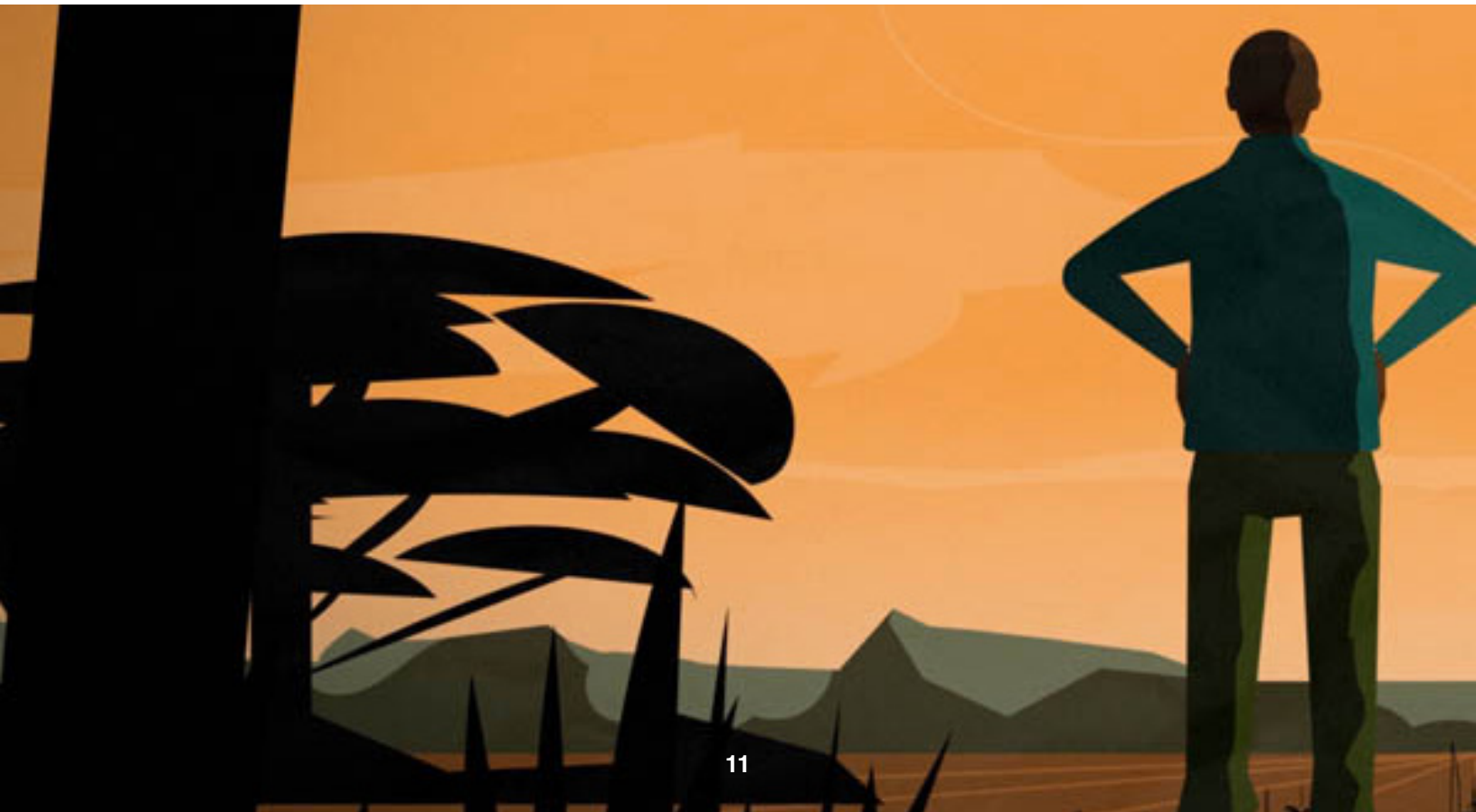
Local and Cooperative Ownership

- **Increase support for local food systems and community-driven, worker- and farmer-led economic models such as food and land co-ops.**

Congress should shift funding to policies that prevent land grabbing and expansion by industrial agribusinesses or outside investors. It should bring land from private back to public ownership, with protections to prevent the land from being sold back to corporations. It should also protect the commons, including cooperatively managed land supporting small-scale or subsistence farming that benefits food sovereignty and the shared interests of the community.

Existing USDA programs that support local food systems and cooperative models include the Rural Cooperative Development Grant Program, Local Agriculture Market Program (LAMP), Local Food Purchase Assistance Program (LFPA), Socially Disadvantaged Groups Grant, and USDA Cooperative Services.

However, many of these programs are currently frozen or in limbo, so Congress must reappropriate and increase funding to them. An example of a bill that would support local food economies is the Local Farms and Food Act, which increases funding for local food hubs, farmers' markets, local nutrition, and more.[32]



- **Address food-deprived areas by increasing access to fresh food.**

Federal, state, and local governments should remove barriers to fresh food access in low-income, low-access neighborhoods — such as banning restrictive covenants that block new grocery stores from replacing closed grocery stores on the same site — and offer tax incentives to build food resources and hubs in communities where they're needed most, including independently owned grocery stores and food co-ops. They should also increase support for farmers markets, community-supported agriculture programs, community and school gardens, and other urban agriculture initiatives.

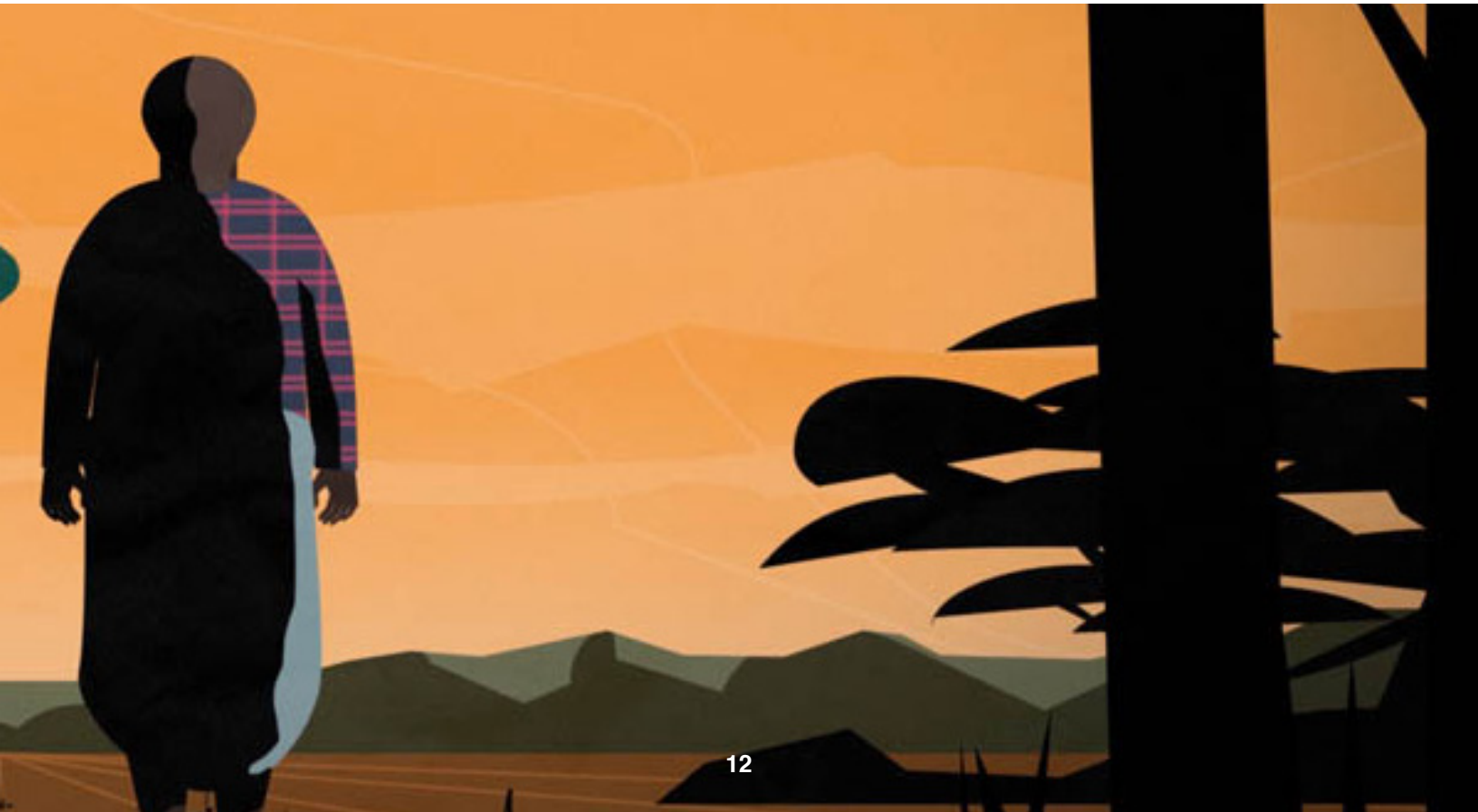
Example federal bills are the Healthy Food Access for All Americans Act, which provides tax credits and grants to increase access to healthy food in food deserts,[33] and the Healthy Food Financing Initiative Reauthorization Act, which would reauthorize and provide funding for USDA's program that improves access to fresh, healthy, and affordable food in underserved communities.[34] At the state level, Washington passed House Bill 2294 in 2026, which prohibits private agreements that restrict the use of properties for grocery stores or pharmacies in most cases where they would be otherwise allowed by zoning laws.[35] This followed a similar local law banning the use of restricted covenants on grocery stores and pharmacies passed by the city of Seattle in 2025.[36]

Small and Independent Farmers

- **Reinstate a modern supply management system that protects small- and mid-size producers and consumers.**

Below-cost, cheap feed subsidies have long favored large agribusinesses and the expansion of industrial animal production at the expense of small- and mid-size independent farmers.[37] **Congress** should reinstate a modern supply management system with a price floor at the real cost of production to protect farm income and a price ceiling to protect consumers from climate volatility, along with a strategic grain reserves through a farmer-led Market-Driven Inventory System.[38]

- **Fund research and academic courses to institutionalize agroecology in science and education.**



Federal, state and county governments should shift research and extension program funding at public institutions — including land-grant universities, public state universities, and food and agriculture research centers — away from industrial animal production and toward scaling up agroecological production and farm transitions. Examples of funding that should be shifted include capacity grants from USDA's National Institute of Food and Agriculture (NIFA), competitive grants from NIFA, the National Science Foundation (NSF), and National Institutes of Health (NIH), and state and county appropriations for state universities and cooperative extension programs. Grants should prioritize farmer-led research that is co-created and co-implemented with community stakeholders.

- **Prioritize smaller producers and those with strong worker rights in government food procurement.**

Federal and state agencies and local governments should amend their food procurement standards to prioritize smaller producers and producers that are worker-owned and/or have worker-led protections, such as worker-driven social responsibility contracts. An example of a program that protects worker rights for food and farmworkers through shared agreements and third-party monitoring is the Fair Food Program.[39] In **Congress**, the EFFECTIVE Food Procurement Act is an example of a bill that would require USDA to purchase sufficient foods that support equity and inclusion, including foods sourced from small, beginning, and socially disadvantaged producers and from producers that support worker wellbeing and justice.[40]

- **Expand public and private funds that support farmers to implement agroecological practices.**

Government grants, incentive payments, cost share programs, low-cost loans, and other mechanisms can help farmers make strategic changes to their operations that build long-term ecological and financial resilience.

Dozens of strategies exist to invest in agroecological farming across asset classes, including financial mechanisms to leverage catalytic funding.[41] Subsidy programs can also help farmers avoid consolidation by incentivizing small-scale production that meets agroecological and worker-led protection standards.

Both public and private lenders are successfully expanding financial mechanisms that meet the needs of new and beginning farmers, underserved farmers, and farmers of color practicing agroecology. For example, direct loans with low interest rates, technical assistance grants, tax credits, opportunity zone funds, joint financing, and bridge financing are just a few examples of ways for diverse investors to help expand agroecology.

Capital partners can generate impact for farmers, sustainable food markets, land access, and climate resilience, while garnering financial returns. Government programs are also essential to partner with lenders to catalyze these innovative financing mechanisms that benefit agroecological farming. However, public-private partnerships must be designed with appropriate guardrails to ensure private investments reach those who need it most (such as marginalized farmers and farmers transitioning from industrial animal production to agroecological and plant agriculture) and don't supersede or distort government investments.

Food Sovereignty

- **Increase support for urban agriculture.**

In the United States, regulations for urban agriculture vary by jurisdiction, but many cities' zoning codes restrict or require permits to conduct urban agriculture. **Cities and counties** should end regulations that restrict people's ability to grow plants for food in urban areas and instead enact policies that make it as easy as possible for people to start urban agriculture projects — for instance, allocating empty lots to be converted to community gardens.

States and cities can also enact policies that support gardens instead of lawns, increase access to land for community gardens, and fund Black, Indigenous, and people of color-led urban agriculture programs. Examples of U.S. cities that have enacted urban agriculture-friendly policies include Detroit, Michigan, where zoning laws focus on local food production; Portland, Oregon, where urban food zoning code allows for community gardens and more; and Chicago, Illinois, which amended its zoning code to include urban

agriculture as a permitted land use.[42]

- **Provide financial support for entrepreneurs and small businesses in rural areas.**

Congress should pass legislation to foster thriving rural communities through support for small food businesses, improving access to information, services, and markets for small, independent farmers transitioning to agroecological practices, and aiding a more resilient, diversified and just local economy.

Example bills include the Rural Prosperity and Food Security Act, which would increase funding for programs to support small rural businesses and rural communities,[43] and the Rural Opportunities and Revitalization Act, which would invest in research and pilot programs to improve rural businesses and economies.[44]

USDA should amend its existing programs that aid small rural businesses, including the Rural Microentrepreneur Assistance Program (RMAP), Rural Business Development Grants, and Business Builder Award Program to specifically support agroecological farming and local food systems. **State and local governments** can also support rural businesses and communities by funding their own grant programs.

- **Develop gender-sensitive training programs to improve access to diverse, polyculture, plant-based agriculture for women farmers.**

USDA should support women farmers in accessing resources, technical assistance, and markets for plant production, including providing training programs that address gender-specific experiences. In addition, **Congress** should pass bills that support and increase access for women farmers, such as the Women in Agriculture Act, which seeks to advocate for and advance women farmers,[45] and the Empowering Women in Agriculture Act, which would include women in the definition of "socially disadvantaged farmers and ranchers" assisted via the Food, Agriculture, Conservation, and Trade Act of 1900.[46] These bills should be amended to specifically prioritize assisting women farmers in agroecological and plant-based agriculture.

Healthy Diets

- **Incentivize healthy diets within planetary and social boundaries by integrating them into federal food and nutrition programs.**

Congress should continue to encourage purchases of fresh fruit and vegetables and plant foods by increasing the availability of these foods in assistance programs like the Supplemental Nutrition Assistance Program (SNAP), school meal programs, The Emergency Food Assistance Program (TEFAP), and the Food Distribution Program on Indian Reservations (FDPIR). Furthermore, restoring and expanding SNAP funding as a whole will increase the accessibility of healthy, fresh food and plant-rich diets for tens of millions of American families.

Congress should also increase funding for programs that incentivize fresh produce purchases, such as the Gus Schumacher Nutrition Incentive Program (GusNIP) and the Farmers' Market Nutrition Programs.

Examples of bills that would increase access to fresh fruit and vegetables in federal nutrition programs include the Opt for Health with SNAP Act, which would expand GusNIP,[47] and the Local School Foods Expansion Act, which would create a permanent program for purchasing local fruits and vegetables in school meals.[48]

- **Update government procurement policies to emphasize diets within planetary and social boundaries, food waste reduction, and purchasing culturally appropriate foods.**

Historically U.S. government food procurement has not always prioritized healthy or sustainable foods and consumption practices. For example, USDA's Food Distribution Program on Indian Reservations (FDPIR) has notoriously fed Indigenous populations unhealthy commodity and ration foods, leading to their high rates of chronic diseases. **Federal, state, and local governments** should update their food procurement policies to prioritize healthy, sustainable, reduced-waste, and culturally appropriate foods.

Municipalities such as Los Angeles County have done this; the county updated its food standards to require a

certain number of plant-based and reduced-emissions foods in county departments' food contracts.[49]

At the federal level, the EFFECTIVE Food Procurement Act would require USDA to align its food procurement practices with equity, environmental sustainability, nutrition, and other values-aligned principles.[50] Also, the Fresh Produce Procurement Reform Act would require USDA AMS to increase its procurement of fresh fruits and vegetables, prioritizing produce from socially disadvantaged, veteran, and woman-owned farms.[51]

- **Provide assistance to shift toward and increase access to culturally appropriate, plant-rich meals in all public and private institutions' food policies and programs (e.g. schools, hospitals, prisons).**

USDA should provide financial and technical support to help embed plant-based or plant-rich menus into institutional procurement policies, including the development of traditional and culturally diverse meals to ensure inclusivity. For example, the federal Plant Powered School Meals Pilot Act would increase the availability of plant-based foods in school meals.[52]

Meanwhile, **states and municipalities** can enact their own policies, such as California's law that requires state-operated hospitals, healthcare facilities, and prisons to offer plant-based meals,[53] and New York, which requires hospitals to provide plant-based meals.[54]

- **Expand implementation of evidence-based dietary guidance at the state, local, and institutional levels.**

State and local governments, as well as healthcare institutions, should promote evidence-based dietary guidance to the public that acknowledges the connection between sustainability and healthy diets. USDA and HHS could help facilitate this by creating educational materials that encourage consumption of plant proteins such as beans, peas and lentils and discourage consumption of red and processed meats and saturated fat.

- **Ensure the Dietary Guidelines for Americans is produced in a scientific and evidence-driven manner and addresses the connection between sustainability and healthy diets.**

The process for developing the next federal Dietary Guidelines for Americans (DGA) should be transparent, unbiased, and scientific, based on the current prevailing evidence for what constitutes a healthy diet.

To ensure that industry influence and political bias do not disrupt this process, **Congress** should pass legislation that strengthens the transparency and accountability in the development process and specifies the protocols that USDA and HHS must follow.

Additionally, the next DGA should address the connection between planetary and human health by exploring sustainable diets. Based on prevailing evidence about healthy and sustainable diets, appropriate recommendations in the next DGA would expand the role of legumes as a protein source and decrease the emphasis on red and processed meats to improve public health and food security.

A strong, evidence-based process will ensure that it is aligned with the recommendations of international organizations including the UN Food and Agriculture Organization, the World Health Organization, and the UN System Standing Committee on Nutrition.

Environmental Sustainability

- **Establish clear biodiversity and conservation metrics for federal food and agriculture policies and programs.**

Through **congressional** and/or **executive order**, the federal government should establish government-wide, evidence-based metrics for food emissions reductions, water conservation, and deforestation or reforestation targets and require all agencies, including USDA, to adapt their own policies to those metrics. Food and agriculture policies and programs under **USDA and FDA, as well as those at the state level**, should include

measurable, science-based goals for protecting and promoting native plants and animals, maintaining and improving ecosystem health, and protecting and conserving biodiverse areas.

Clear metrics should also be built into future **legislation at both the federal and state levels**. While the Agriculture Resilience Act[55] and the Agriculture Innovation Act[56] are examples of bills that would develop greenhouse gas reduction metrics for agriculture and strengthen data collection on conservation practices, respectively, both bills should be amended to include explicit biodiversity metrics and set clear targets for conservation. Any legislation or administrative policies establishing metrics and targets must reject false solutions like voluntary market or offset schemes for real solutions grounded in accountability and prevention of harm.

- **Pay producers to retire and restore ecosystems on land previously used for industrial meat and dairy production.**

Congress should pass legislation that supports farmers with long-term funding and technical assistance to convert land used for pasture and feed crops into native habitats that can store carbon and restore nature. It should also fund the exploration of alternative uses for former agricultural land and ensure equitable management of changes in land availability. USDA NRCS's Conservation Reserve Program and Agricultural Conservation Easement Program are examples of programs that currently pay landowners to restore farmland to grassland, forest, or wetlands, and should continue to be funded by Congress. **USDA** should seek to maximize the use of funds for these programs and prioritize small and disadvantaged farmers.

- **Strengthen reporting requirements for gross and net greenhouse emissions associated with the full industrial animal supply chain, and track and report consumption-based emissions for food and agriculture using a comprehensive lifecycle analysis.**

Congress should pass legislation requiring all corporations to regularly report to the public all greenhouse gas emissions, including Scope 3 emissions, for their entire value chain — including from land conversion, feed crop production, transport and slaughter, methane from enteric fermentation and manure management, and nitrous oxide from feed production — and provide the standardized, science-based methodology used.

Corporate targets and GHG reporting and monitoring schemes should be consistent with the IPCC's scenarios to limit warming to 1.5˚C. USDA and EPA should regularly analyze and synthesize this data, provide assessments with recommendations to reduce emissions, and set requirements for institutions to establish clear targets for reducing food-related emissions. An example of a similar policy occurred in 2024, when the Security and Exchange Commission (SEC) approved new rules that require public companies to disclose climate-related risks and Scope 1 and 2 GHG emissions data. However, they excluded a previously proposed requirement to include Scope 3 emissions. This was quickly met with legal challenges, and the SEC withdrew its defense of the rules in 2025.[57] [58]

Meanwhile **state and local governments** can also build these types of reporting requirements into their own climate action plans. Carbon trading and voluntary carbon markets are not viable alternatives for emissions reductions; credits from such schemes must be prohibited from emissions reporting.

- **Expand environmental and nutrition education programs in schools.**

The **Department of Education** should support educational programming for children on healthy eating, local food systems, traditional foodways, and the environmental impact of food to help instill lifelong habits and dispel industry-driven misperceptions about food and nutrition. In **Congress**, an example of a bill that would increase nutrition education in schools is the Food & Nutrition Education in Schools Act, which would additionally provide funding for hands-on learning opportunities such as school gardens.[59]

Animal Welfare

- **Prevent the federal government from usurping states' rights to more strictly regulate on-farm standards.**

There is a prominent ongoing battle between U.S. states, such as California and Massachusetts, that have passed legislation to enforce stricter welfare standards for animals on farms, and the meat industry in cooperation with certain members of Congress and the federal government.

Congress should pass legislation that protects states' rights to enact their own laws regulating agricultural operations and prevents the federal government from interfering. These rights are particularly relevant to agricultural operations because the impacts of pollution cause profound local harm.

- **Strengthen reporting requirements for industrial animal agriculture facilities and other public health responses to zoonotic diseases and pandemics.**

USDA's APHIS and FSIS should enact a more robust and comprehensive system to require and oversee the widespread testing of animals. They should also require robust reporting and personal protective equipment, sick days, and healthcare for workers to protect their health and stop zoonotic diseases emerging from or spreading through industrial animal agriculture facilities.

In addition, **Congress** should pass the Advancing Emergency Preparedness Through One Health Act, which would require a comprehensive interagency One Health framework to coordinate response to zoonotic diseases.[60] A One Health approach recognizes the interconnectedness of human, animal, and environmental health for achieving optimal health outcomes.

- **End ag-gag legislation.**

Congress should pass legislation to preempt[61] and/or overrule any state law that seeks to prevent and punish whistleblowers for revealing cruel and/or illegal activities in animal agriculture operations, and to protect all whistleblowers and allow them to share undercover information from animal agriculture operations publicly.

- **Enforce stronger inspections and line-speed restrictions in slaughterhouses.**

Underregulated slaughterhouses pose a great threat to both worker safety and public health. **Congress** should allocate more funding to FSIS's food safety inspectors to ramp up oversight and inspections of U.S. slaughterhouses. They should amend the Federal Meat Inspection Act, Poultry Products Inspection Act, and Egg Products Inspection Act to authorize prosecution and stricter punishment for noncompliance. **USDA** should also amend its regulations to enforce stricter line speed restrictions in slaughterhouses. For example, the Protecting America's Meatpacking Workers Act would end line speed increases and expand workplace safety and health in meat-processing facilities.[62]

- **Restrict antibiotic use in animal agriculture.**

Congress should pass legislation severely restricting the usage of antibiotics in animal agriculture to protect public health and hold animal agribusinesses more responsible for the harms they cause. An example of such legislation is the Prevention of Antibiotic Resistance Act (PARA), which would significantly reduce the use of antibiotics by creating a stricter process by which FDA must approve the use of antimicrobial drugs for use in animal production.[63]

Appendix I: False Climate Solutions in Agriculture

Carbon offsetting

Carbon offsetting is the practice of "compensating" for emitting greenhouse gas emissions in one area by investing in practices that claim to reduce or remove emissions in other areas. This is often done through carbon markets or cap-and-trade programs, in which companies or agricultural operations will purchase carbon credits to supposedly counterbalance their own emissions.

But carbon offsets and other market schemes are almost always voluntary, lack accountability, and may even increase emissions and facilitate land theft from rural and Indigenous peoples in the Global South.[64] This puts offset schemes directly at odds with a just transition.

The most carbon credits tend to be purchased by the largest corporations causing the most damage, making it easy for the biggest polluters to greenwash their operations and continue causing environmental harm.[65] Carbon credit prices are notoriously low, making it hard for smaller farms to profit from selling them as big polluters buy up credits at little cost.[66]

These credit schemes lack accountability and transparency,[67] and there have been documented cases of fraud and inaccurate reporting.[68] Carbon sequestration is a popular form of offsetting, but without scientific consensus on how to measure soil carbon, it cannot be accurately quantified in the form of credits.[69] One analysis found that carbon offset projects didn't result in the greenhouse gas emissions reductions they claimed, while a study of California's cap-and-trade program found that the majority of participating facilities reported higher emissions since the start of the program.[70]

Also, carbon markets often harm marginalized populations by allowing facilities to pay to continue to pollute vulnerable communities.[71] Some carbon offset projects have been linked to human-rights violations, particularly around Indigenous land rights.[72]

Although biodiversity offsets are currently not as common as carbon offsets, the same concerns around lack of accountability and transparency, effectiveness, and environmental injustice apply to these emerging programs.

Biogas conversion

Biogas conversion is the practice of capturing methane, ammonia, and other gases emitted from manure produced by animal agriculture and using an anaerobic digester, which breaks down the organic waste matter via microbes, and turning it into a usable energy source.[73] It is often proposed, and even incentivized, as means to mitigate agricultural emissions and create an alternative energy source. However, biogas — more accurately described as manure methane — fails to effectively address emissions or reduce pollution.

Studies of biogas operations found that they increased on-farm ammonia emissions by 46%[74] and 47%[75] and that generating electricity from biogas created worse environmental impacts compared to hydro, wind, and geothermal power.[76] Another study concluded that biogases are unlikely to deliver GHG-negative or zero-GHG energy at scale because of the inability to capture sufficient methane and the common occurrence of leakage.[77]

Furthermore, anaerobic digesters do not reduce or eliminate manure waste; its byproducts still pollute the environment,[78] and digesters can increase the amount of nitrogen converted to ammonia in effluent, creating additional nitrous oxide air pollution.[79] Biogas facilities and pipelines are also prone to leakage, at a rate as high as 15%,[80] and biogas is highly toxic and dangerous to handle because it's flammable and potentially explosive.[81]

On top of that, anaerobic digesters can only be used by large operations, cost millions of dollars to install,

and require significant management and operation time and resources.[82] [83] As a result, biogas only further entrenches the industrial animal production model, including the toxic pollution that disproportionately harms Black, Indigenous, and communities of color and low-income communities.

Feed additives

Feed additives refers to the practice of adding ingredients to animals' diets to try to reduce enteric methane emissions from their digestive processes, but it has yet to be proven as an effective, feasible or scalable strategy. Analyses of feed additives are still new, limited, and inconclusive. Many studies on their effectiveness were produced with backing from the animal agriculture industry, yet even they admit that more long-term research is needed to draw conclusions.[8485]

Furthermore, many studies touting the benefits of feed additives failed to use a lifecycle assessment (LCA) approach to measure GHG emissions, meaning they only measured enteric methane reduction without accounting for the net methane produced from other sources such as manure storage. When using an LCA analysis, the claimed GHG reductions are greatly diminished.[86]

Most commercial feed additives are not currently available for widespread usage, and if they were, they can only feasibly be fed to confined livestock since they must be added to animals' daily food supplies.[87] This further entrenches industrial animal agriculture. Feed additives may even cause increased emissions from manure, decreased food digestibility, antibiotic resistance, and increased toxic nutrients.[88] Even the most "promising" additive, red seaweed, poses implementation challenges: Cattle have low uptake of the additive, it is difficult to store without losing effectiveness, and large-scale harvesting would pose significant environmental risks.[89] Cows' microbes have been known to adapt to additives over time, causing them to lose effectiveness.[90]

Commercial feed additives are also used by the industrial animal agriculture industry to increase productivity — primarily through boosting animal growth or production rates — in an effort to reduce the amount of feed crops, land, and emissions attributed per unit of meat or dairy produced. For this reason prioritizing increased productivity of individual animals has been touted as a climate solution.[91]

Growth-promoting feed additives raise significant concerns for animal welfare as they promote rapid, unnatural weight gain and can have detrimental impacts on animal physiology. Ractopamine, a beta-agonist used widely in U.S. industrial pig production for weight gain, is linked to increased exhaustion, muscle tremors, broken limbs, cardiovascular harm, and increased aggression in the animals.

Several other feed additives are approved for growth promotion effects, including zilpaterol (a beta-agonist), heavy metals, and melengestrol acetate (a synthetic hormone), and either have documented animal welfare concerns or have not been sufficiently studied.[92]

Appendix II: Key Diet Shifts for a Just Transition

Healthy, sustainable diets will vary across people and communities. Diets higher in whole grains, vegetables, fruit, legumes, nuts and seeds, and lower in red and processed meat reflect the best generalized health and environmental outcomes. Promoting dietary patterns that feature a diversity of plant-sourced, minimally processed foods will protect our ecosystems, support biodiversity, and safeguard the health of humans, the environment and animals.[93] Where these foods are accessible, individuals can achieve a healthy, nutritious diet free of all animal products and animal-based ingredients.

Below are three recommended diet shifts to support human and planetary health in the United States. These are not meant to be comprehensive dietary guidelines but to highlight areas that have the greatest impact on dietary health, the environment, and food justice.

1. Reduce overall consumption of red and processed meat, while increasing the consumption of plant proteins from beans, legumes, nuts and seeds.

Although the majority of Americans meet or exceed recommended intake for protein foods, most fall short in protein subcategories containing beans, peas and lentils, nuts, seeds and soy. A strong body of scientific evidence links excess meat consumption, particularly of red and processed meat, with heart disease, stroke, type 2 diabetes, obesity, certain cancers, and earlier death. In a recent study each 10-gram increase in red and processed meat consumption per day was associated with a 1.8% increase in the risk of cardiovascular mortality.[94] On the other hand, regular legume consumption is associated with lower rates of diabetes, cardiovascular disease (CVD), better weight management and overall health.[95] [96] [97]

A shift toward less meat and more plant-rich consumption from beans, lentils, nuts and seeds would also support a just transition away from industrially produced animal foods and reduce the outsized burden on climate, water, land, energy and biodiversity. The EAT Lancet Planetary Health Diet targets both health and environmental impacts recommending daily legume consumption and no more than one serving of red meat per week, two servings of poultry, and two servings of seafood.[98] [99]

2. Shift dairy consumption to align with health and environmental goals.

For most adults consuming carefully selected plant-based dairy in place of dairy foods has both nutritional and environmental benefits. Consumption of dairy in the United States has shifted over the past few decades, with important implications for both human nutrition and planetary health. A decrease in fluid milk consumption has been partially offset by a growing demand for cheese and yogurt and a rapid increase in the demand for plant-based milks, cheeses, yogurts, and butters made from soy, nuts, legumes, seeds and grains.[100] [101]

Dairy is considered an affordable source for three of five nutrients of concern identified in the 2020–2025 U.S. Dietary Guidelines: calcium, potassium, and vitamin D (all of which can also be found in other foods).[102] Overall, regular consumption of dairy appears to confer health benefits particularly for children. Studies have shown neutral or slightly favorable associations for cardiovascular disease and type 2 diabetes risk with various forms of dairy intake in U.S. and European contexts.[103] Dietary patterns that incorporate dairy along with vegetables and fruit and lower intake of red meat, such as the Mediterranean diet, have been positively associated with bone health.[104]

However, plant-based milks can be nutritionally equivalent and even superior in some cases to cow milk (fortified with vitamins A and D), especially for adults, though the nutrient content, added ingredients, and taste

vary greatly by product.[105] The protein, fat and micronutrient profile of plant-based milks depend on the primary ingredient (e.g., legume, nut, seed, etc.) and fortification (e.g., calcium and B12 and other micronutrients added). Compared to cow milk, they're typically far lower in saturated fat and cholesterol-free. Some plant milks contain dietary fiber or bioactive compounds, such as isoflavones and phytosterols in soymilk.[106]

Increasing access to, and acceptance of, plant-based milks is important to meet the needs of a diverse population. Ninety-five percent of Asian Americans, 60%-80% of African Americans, 80%-100% of Native Americans, and 50%-80% of Latino Americans can't effectively digest lactose.[107]

Dairy production is among the most resource-intensive foods in terms of fresh water and land use and makes an outsized contribution to global greenhouse gas emissions. Also, intensification of production is associated with numerous ecological, public health, and animal welfare concerns, including runoff and contamination of drinking water, antimicrobial resistance, and decreased biodiversity.

In comparison plant-based milk production has a lower environmental impact. A shift toward more plant-based milks would reduce food-related greenhouse gas emissions, land use, and pollution, and, in most cases, require lower water footprints while providing adequate nutrition for growth and long-term health.[108]

3. Focus on whole grains and whole foods over refined, ultra-processed foods.

One of the key global dietary risk factors identified by nutrition researchers is low intake of whole grains compared to refined grains.[109] Whole grains are packed with fiber, B vitamins, protein and antioxidants that contribute to a healthy microbiome and reduce the risk of diabetes and other chronic diseases.[110] [111] The 2020-2025 U.S. Dietary Guidelines recommend that half of grain-based foods come from whole grains; however, under 5% of U.S. consumers meet the recommendations for consumption of whole grains.[112]

In a recent systematic review and meta-analysis of dietary factors and cardiovascular mortality risk, each 10-gram increase in whole grain consumption per day was associated with a 4% reduction in the risk of cardiovascular mortality.[113] Americans also under- consume all categories of vegetables, fruit, legumes, nuts and seeds.[114] These food groups are excellent sources of potassium and fiber, which are nutrients of concern in the U.S. diet, as well as other health protective vitamins, minerals, and phytochemicals.

Counter to whole grains and minimally processed whole foods, ultra-processed foods (UPFs) make up nearly 60% of calories consumed by Americans.[115] UPFs can be defined as highly palatable, commercially formulated foods made from cheap ingredients extracted or derived from whole foods (primarily fats, refined flours, starches, and sugars), often combined with additives such as artificial colors, flavors or stabilizers containing little or no whole foods.

High consumption of ultra-processed foods is associated with many negative health outcomes, including mortality, cancer, and mental, respiratory, cardiovascular, gastrointestinal, and metabolic outcomes.[116] Reducing UPF consumption may also lead to better overall nutrient intake as consumers replace them with more diverse, nutrient-dense foods.[117] In a 2024 study, compared with those with the lowest intake of ultra-processed food consumption, participants with the higher intake had a 4% higher all-cause mortality and 9% higher mortality from causes other than cancer or cardiovascular diseases.

The production and overconsumption of UPFs place a burden on the environment through reliance commodity crops that rely heavily on synthetic fertilizers, pesticides, and other inputs contributing to eutrophication, soil depletion and biodiversity loss.[118] Following production, the energy demand of processing and packaging exceeds that of whole and minimally processed foods.[119] [120]

The prevalence of UPFs often comes at the expense of diverse, traditional, and minimally processed foods that are essential for a fair transition. UPFs tend to be more affordable and available than their less

processed, whole food counterparts and are disproportionately sold and marketed in low-income communities. Consequently, households with lower incomes, lower educational levels, and higher rates of food insecurity purchase and consume larger quantities of UPFs, compared to higher-income households.

*A note on seafood and the importance of foods high in omega-3 fatty acids

Omega-3 fats are essential for cell membrane structure (especially in the brain and retina) and are associated with cardiovascular benefits, related to inflammation, blood pressure and triglyceride levels.[121] Aquatic food holds promise for meeting omega-3 fatty acid and other nutritional requirements, however, there are wide variations in environmental impacts across aquatic species and production systems.[122]

Most Americans under-consume aquatic foods — only about 10% of the U.S. population meets the recommendation of two servings of seafood per week — though this doesn't necessarily need to be met by consuming fish or crustaceans. Aquatic species, including those lower on the food chain with minimal environmental impacts like seaweed and algae, contain the more usable forms of omega-3 fats (EPA and DHA). Many plant oils and seeds, including soybean and canola oils, chia and flaxseeds, contain high levels of omega-3 fats; however, they are in a less usable form (mostly ALA).

Aquatic food production is complicated by overfishing, pollution, bycatch, and economic challenges. Aquaculture production of low-trophic species like oysters and seaweed can be highly sustainable to meet the growing global demand for seafood. Unfortunately other forms of aquaculture — particularly of carnivorous species like salmon — can lead to public health risks due to the use of chemicals and antibiotics, bioaccumulation of contaminants through feed made from fishmeal, diseases and pollution from farmed animals reducing wild populations and threatening food security for local communities, and increasing pressure on limited cropland and resources to produce crop-based feed for an expanding industry.

Opportunities exist to align seafood production and consumption patterns with species that have optimal nutrition and minimal environmental and climate impacts.[123]

References

[1] U.S. EPA. (n.d.). *Regulatory definitions of large CAFOs, medium CAFOs, and small CAFOs.* https://www3.epa.gov/npdes/pubs/sector_table.pdf

[2] U.S EPA. (n.d.). *Our mission and what we do.* https://www.epa.gov/aboutepa/our-mission-and-what-we-do

[3] Fairness for Farmworkers Act, S. 2253 (2023). https://www.congress.gov/bill/118th-congress/senate-bill/2253/text

[4] Fair Pay and Safe Workplaces Act, S. 3448 (2020). https://www.govtrack.us/congress/bills/116/s3448

[5] Stop Tax Haven Abuse Act, H.R. 1712 (2019). https://www.congress.gov/bill/116th-congress/house-bill/1712/text

[6] Corporate Tax Dodging Prevention Act, S. 4098 (2024). https://www.congress.gov/bill/118th-congress/senate-bill/4098

[7] DISCLOSE Act, S. 4822 (2022). https://www.congress.gov/bill/117th-congress/senate-bill/4822

[8] Shareholder Political Transparency Act, H.R. 2190 (2025). https://www.congress.gov/bill/119th-congress/house-bill/2190

[9] Drain the Swamp Act, H.R. 2857 (2025). https://www.congress.gov/bill/119th-congress/house-bill/2857

[10] Meat and Poultry Special Investigator Act, S. 1312 (2025). https://www.congress.gov/bill/119th-congress/senate-bill/1312

[11] Food and Farm Act, H.R. 1824 (2023). https://www.congress.gov/bill/118th-congress/house-bill/1824/text#toc-H7255B969221A4BD3989A66013BA2A820

[12] Increasing Land Access, Security, and Opportunities Act, S. 2340 (2023). https://www.congress.gov/bill/118th-congress/senate-bill/2340

[13] Opportunities for Fairness in Farming Act, S. 557 (2023). https://www.congress.gov/bill/118th-congress/senate-bill/557

[14] FOREST Act, S.3371 (2023). https://www.congress.gov/bill/118th-congress/senate-bill/3371/text

[15] Dorado, D., Monsalve, S., Naik, A., & Suárez, A. M. (2021). Towards Building Comprehensive Legal Frameworks for Corporate Accountability in Food Governance. *Development (Society for International Development)*, *64*(3-4), 236–244. https://doi.org/10.1057/s41301-021-00319-8

[16] Corporate Governance Improvement and Investor Protection Act, H.R. 1187 (2021). https://www.congress.gov/bill/117th-congress/house-bill/1187

[17] Richard L. Trumka Protecting the Right to Organize (PRO) Act, H.R. 20 (2023). https://www.congress.gov/bill/118th-congress/house-bill/20

[18] Worker-Driven Social Responsibility Network. (n.d.) *What is WSR?* https://wsr-network.org/what-is-wsr/

[19] Herrick, Christina. (2024, June 17). *USDA awards $50M to support farmworkers and agricultural employers.* The Packer. https://www.thepacker.com/news/social-responsibility/usda-awards-50m-support-farmworkers-and-agricultural-employers

[20] Department of Labor. (n.d.) *Example in Action: Fair Food Program.* https://www.dol.gov/agencies/ilab/comply-chain/steps-to-a-social-compliance-system/step-3-develop-a-code-of-conduct/example-in-action-fair-food-program

[21] New York City Department of Consumer and Worker Protection. (n.d.). *Worker rights.* https://www.nyc.gov/site/dca/workers/worker-rights.page

[22] Dignity for Detained Immigrants Act, H.R. 6397 (2025). https://www.congress.gov/bill/119th-congress/house-bill/6397/text

[23] Farm Workforce Modernization Act, H.R. 3227 (2025). https://www.congress.gov/bill/119th-congress/house-bill/3227/text#toc-HE07B3C1A253C4463A53E6E8473BB0D4C

[24] Industrial Agriculture Conversion Act, H.R. 9794 (2024). https://www.congress.gov/bill/118th-congress/house-bill/9794

[25] Farm System Reform Act, S. 271 (2023). https://www.congress.gov/bill/118th-congress/senate-bill/271

[26] Specialty Crop Security Act, S. 4168 (2024). https://www.congress.gov/bill/118th-congress/senate-bill/4168

[27] Specialty Crop Domestic Market Promotion and Development Program Act, H.R. 5030 (2025). https://www.congress.gov/bill/119th-congress/house-bill/5030/text

[28] Specialty Crop Mechanization Assistance Act, H.R. 5062 (2023). https://www.congress.gov/bill/118th-congress/house-bill/5062/text

[29] Specialty Crop Research Act, H.R. 5199 (2023). https://www.congress.gov/bill/118th-congress/house-bill/5199

[30] PROTEIN Act, H.R. 5097 (2023). https://www.congress.gov/bill/118th-congress/house-bill/5097/text

[31] PLANT Act, H.R. 5023 (2023). https://www.congress.gov/bill/118th-congress/house-bill/5023

[32] Local Farms and Food Act, H.R. 2723 (2023). https://www.congress.gov/bill/118th-congress/house-bill/2723

[33] Healthy Food Access for All Americans Act, H.R. 7762 (2024). https://www.congress.gov/bill/118th-congress/house-bill/7762

[34] Healthy Food Financing Initiative Reauthorization Act, H.R. 3506 (2025). https://www.congress.gov/bill/119th-congress/house-bill/3506

[35] Engrossed House Bill 2294 (2026). https://lawfilesext.leg.wa.gov/biennium/2025-26/Pdf/Bills/House%20Passed%20Legislature/2294.PL.pdf

[36] City Council News Releases. (2025). *Council acts to boost food access in Seattle Neighborhoods*. Seattle City Council Blog. https://council.seattle.gov/2025/10/28/council-acts-to-boost-food-access-in-seattle-neighborhoods/

[37] Starmer, Elanor and Wise, Timothy A. (2007). Feeding at the Trough: Industrial Livestock Firms Saved $35 billion from Low Feed Prices. GDAE Policy Brief 07-03. Medford, Mass.: Global Development and Environment Institute. Tufts University, December 2007.

[38] Schaffer, H. D., Hellwinckel, C., Ray, D. E., & Daniel, G. (2012). An Analysis of a Market-Driven Inventory System (MDIS). *Grain Reserves and the Food Price Crisis*, 39.

[39] Fair Food Program. (n.d.). *About: The power of prevention.* https://fairfoodprogram.org/about/

[40] EFFECTIVE Food Procurement Act, H.R. 6569 (2023). https://www.congress.gov/bill/118th-congress/house-bill/6569

[41] Croatan Institute. (2019). *Soil Wealth: Investing in Regenerative Agriculture across Asset Classes.* https://croataninstitute.org/wp-content/uploads/2021/03/soil-wealth-2019.pdf

[42] Popovitch, T. (2014, May 30). *10 American cities lead urban agriculture.* Ag Funder News. https://agfundernews.com/10-american-cities-lead-the-way-with-urban-agriculture-ordinances

[43] Rural Prosperity and Food Security Act, S. 5335 (2024). https://www.congress.gov/bill/118th-congress/senate-bill/5335/text

[44] Rural Opportunities and Revitalization Act, S. 4945 (2024). https://www.congress.gov/bill/118th-congress/senate-bill/4945

[45] Women in Agriculture Act, H.R. 4425 (2023). https://www.congress.gov/bill/118th-congress/house-bill/4425

[46] Empowering Women in Agriculture Act, H.R. 9363 (2024). https://www.congress.gov/bill/118th-congress/house-bill/9363/text/ih

[47] OH SNAP, Close the Fruit and Vegetable Gap Act, S. 2015 (2023). https://www.congress.gov/bill/118th-congress/senate-bill/2015

[48] Local School Foods Expansion Act, S. 2320 (2023). https://www.congress.gov/bill/118th-congress/senate-bill/2320/titles

[49] Stone, E. (2025, January 7). *Moving to plant-based foods: LA County expanding program to cut down on emissions.* LAist. https://laist.com/news/climate-environment/plant-based-foods-la-county-expanding-program-emissions

[50] EFFECTIVE Food Procurement Act, H.R. 6569 (2023). https://www.congress.gov/bill/118th-congress/house-bill/6569

[51] Fresh Produce Procurement Reform Act, S. 2874 (2023). https://www.congress.gov/bill/118th-congress/senate-bill/2874

[52] Plant Powered School Meals Pilot Act, H.R. 5867(2025). https://www.congress.gov/bill/119th-congress/house-bill/5867

[53] Pallotta, N. (2018, December 10). *California enacts law requiring plant-based options in state facilities.* Animal Legal Defense Fund. https://aldf.org/article/california-becomes-first-state-to-require-plant-based-options/

[54] True Health Initiative. (2019, December 6). *NYS hospital patients guaranteed healthful plant-based option at every meal*. https://www.truehealthinitiative.org/news/all-nys-hospital-patients-guaranteed-healthful-plant-based-option-at-every-meal/

[55] Agriculture Resilience Act, S. 1016 (2023). https://www.congress.gov/bill/118th-congress/senate-bill/1016

[56] Agriculture Innovation Act, S. 1713 (2025). https://www.congress.gov/bill/119th-congress/senate-bill/1713

[57] De Martino, R.V., et al. (2024, March 13). *SEC approves climate-related disclosure requirements.* National Law Review. https://natlawreview.com/article/sec-approves-climate-related-disclosure-requirements

[58] SEC. (2025, March 27). *SEC votes to end defense of climate disclosure rules.* Securities and Exchange Commission. https://www.sec.gov/newsroom/press-releases/2025-58

[59] Food and Nutrition Education in Schools Act, H.R. 4282 (2021). https://www.congress.gov/bill/117th-congress/house-bill/4282

[60] Advancing Emergency Preparedness Through One Health Act, S. 861 (2021). https://www.congress.gov/bill/117th-congress/senate-bill/861/text

[61] Zielenski, M. (n.d.). *Uncovering the truth: Defeating ag-gag legislation through preemption*. Vermont Law Review. https://lawreview.vermontlaw.edu/uncovering-the-truth-defeating-ag-gag-legislation-through-preemption/

[62] Protecting America's Meatpacking Workers Act, S. 270 (2023). https://www.congress.gov/bill/118th-congress/senate-bill/270/text#toc-id17f77b1c246540dc91af717c2295c50f

[63] Preventing Antibiotic Resistance Act, S.629 (2017). https://www.congress.gov/bill/115th-congress/senate-bill/629/text

[64] GRAIN. (2024, September). From land grabbers to carbon cowboys: a new scramble for community lands takes off. https://grain.org/en/article/7190-from-land-grabbers-to-carbon-cowboys-a-new-scramble-for-community-lands-takes-off

[65] Gabbatiss, J. (2023). *Analysis: How some of the world's largest companies rely on carbon offsets to 'reach net-zero.'* Carbon Brief. https://interactive.carbonbrief.org/carbon-offsets-2023/companies.html

[66] Ritter, T., & Treakle, J. (2020, January). *Why carbon markets won't work for agriculture.* Institute for Agriculture and Trade Policy and National Family Farm Coalition. https://www.iatp.org/sites/default/files/2020-02/2020_01_ CarbonMarketsAndAg_FINAL.pdf

[67] U.S. Department of Agriculture. (2023, October). *Report to Congress: A general assessment of the role of agriculture and forestry in U.S. carbon markets.* U.S. Department of Agriculture. https://www.usda.gov/sites/default/files/documents/ USDA-General-Assessment-of-the-Role-of-Agriculture-and-Forestry-in-US-Carbon-Markets.pdf

[68] Lakhani, N. (2024, May 30). *Corporations invested in carbon offsets that were 'likely junk,' analysis says*. The Guardian. https://www.theguardian.com/environment/article/2024/may/30/corporate-carbon-offsets-credits

[69] Friends of the Earth. (2023). *Report: Big Ag plans to use carbon markets, farmer data to tighten stranglehold on food system.* https://foe.org/news/report-carbon-markets/

[70] Cushing, L., Blaustein-Rejto, D., Wander, M., Pastor, M., Sadd, J., Zhu, A., & Morello-Frosch, R. (2018). Carbon trading, co-pollutants, and environmental equity: Evidence from California's cap-and-trade program (2011–2015). *PLOS Medicine,* 1–21. https://doi.org/10.1371/journal.pmed.1002604

[71] *Ibid.*

[72] Cabello, J., & Hartlief, I. (2024, October 24). *Carbon offsets often disenfranchise communities.* Somo. https://www. somo.nl/carbon-offsets-often-disenfranchise-communities/

[73] USDA NRCS. (2023, August). *Conservation practice overview: Anaerobic digester (code 366).* https://www.nrcs.usda.gov/sites/default/files/2023-08/366_NHCP_PO_Anaerobic_Digester_2023.pdf

[74] Harper, L.A., Flesch, T.K., Weaver, K.H., & Wilson, J.D. (2010). The effect of biofuel production on swine farm methane and ammonia emissions. *Journal of Environmental Quality, 39*(6), 1984-1992. https://doi.org/10.2134/jeq2010.0172

[75] Weaver, K. H., Harper, L. A., & Brown, S. M. (2012). Effects on carbon and nitrogen emissions due to swine manure removal for biofuel production. *Journal of Environmental Quality, 41*(5), 1371–1382. https://doi.org/10.2134/jeq2011.0374

[76] Fusi, A., Bacenetti, J., Fiala, M., & Azapagic, A. (2016). Life cycle environmental impacts of electricity form biogas produced by anaerobic digestion. *Frontiers in Bioengineering and Biotechnology, 4,* 26. https://doi.org/10.3389/fbioe.2016.00026

[77] Grubert, E. (2020). At scale, renewable natural gas systems could be climate intensive: the influence of methane feedstock and leakage rates. *Environmental Research Letters, 15,* 084041. https://doi.org/10.1088/1748-9326/ab9335

[78] DiFelice, M., & Ruane, K. (2023, April 12). *We can't let this gas greenwash factory farms.* Food and Water Watch. https://www.foodandwaterwatch.org/2023/04/12/we-cant-let-this-gas-greenwash-polluting-factory-farms/

[79] Murphy, S., & Lilliston, B. (2022, July 27). *True or false? Evaluating solutions for agriculture and climate change.* Institute for Agriculture & Trade Policy. https://www.iatp.org/true-or-false-climate-solutions

[80] Grubert, E. (2020). At scale, renewable natural gas systems could be climate intensive: the influence of methane feedstock and leakage rates. *Environmental Research Letters, 15,* 084041. https://www.doi.org/10.1088/1748-9326/ab9335.

[81] USDA NRCS. (2023, August). *Conservation practice overview: Anaerobic digester (code 366).* https://www.nrcs.usda.gov/sites/default/files/2023-08/366_NHCP_PO_Anaerobic_Digester_2023.pdf

[82] US EPA. (n.d.). *Practices to reduce methane emissions from livestock manure management.* https://www.epa.gov/agstar/practices-reduce-methane-emissions-livestock-manure-management

[83] Smith, A. (2021, February 3). *What's worth more: A cow's milk or its poop?* UC Davis. https://asmith.ucdavis.edu/news/cow-power-rising

[84] Hristov, A.N. (2024). Invited review: Advances in nutrition and feed additives to mitigate enteric methane emissions. *Journal of Dairy Science, 107*(7), 4129-4146. https://doi.org/10.3168/jds.2023-24440

[85] Carrazco, A. (2021, May 27). *How can cattle feed additives reduce greenhouse gas emissions?* UC Davis CLEAR Center. https://clear.ucdavis.edu/explainers/how-can-cattle-feed-additives-reduce-greenhouse-gas-emissions

[86] Feng, X., & Kebreab, E. (2020). Net reductions in greenhouse gas emissions from feed additive use in California dairy cattle. *PLoS One, 15*(9), e0234289. https://doi.org/10.1371/journal.pone.0234289

[87] Toensmeier, E. (2024, August 1). *Are livestock feed additives the future or folly?* Project Drawdown. https://drawdown.org/insights/are-livestock-feed-additives-the-future-or-folly

[88] USDA NRCS. (2022, July). *Conservation practice standard: Feed management (code 592).* https://www.nrcs.usda.gov/ sites/default/files/2022-09/Feed_Management_592_NHCP_CPS_2021.pdf

[89] Mulhollem, J. (2019, June 17). *Seaweed feed additive cuts livestock methane but poses questions*. Penn State. https:// www.psu.edu/news/research/story/seaweed-feed-additive-cuts-livestock-methane-poses-questions

[90] *Ibid.*

[91] FAO. (2023). *Pathways towards lower emissions – A global assessment of the greenhouse gas emissions and mitigation options from livestock agrifood systems.* https://doi.org/10.4060/cc9029en

[92] Center for Food Safety. (2018). *Opting out of industrial meat.* https://www.centerforfoodsafety.org/files/opt-out_final-med_10824.pdf

[93] Leite, F.H.M., Khandpur, N., Andrade, G.C., Anastasiou, K., Baker, P., Lawrence, M., et al. (2022). Ultra-processed foods should be central to global food systems dialogue and action on biodiversity. *BMJ Global Health, 7,* e008269. https://doi.org/10.1136/bmjgh-2021-00826

[94] Bhandari, B., Liu, Z., Lin, S., Macniven, R., Akombi-Inyang, B., Hall, J., et al. (2023). Long-term consumption of 10 food groups and cardiovascular mortality: A systematic review and dose-response meta-analysis of prospective cohort studies. *Adv Nutr.*,*14*(1), 55-63. https://www.doi.org/10.1016/j.advnut.2022.10.010

[95] Marventano, S., Izquierdo Pulido, M., Sánchez-González, C., Godos, J., Speciani, A., Galvano, F., et al. (2017). Legume consumption and CVD risk: A systematic review and meta-analysis. *Public Health Nutrition*, *20*(2), 245-254.https://www.doi.org/10.1017/S1368980016002299

[96] Lukus, P.K., Doma, K.M., & Duncan, A.M. (2020). The role of pulses in cardiovascular disease risk for adults with diabetes. *American Journal of Lifestyle Medicine, 14*(6), 571-584 https://www.doi.org/10.1177/1559827620916698

[97] Zargarzadeh, N., Mousavi, S.M., Santos, H.O., Aune, D., Hasani-Ranjbar, S., Larijani, B., et al. (2023). Legume consumption and risk of all-cause and cause-specific mortality: A systematic review and dose–response meta-analysis of prospective studies. *Advances in Nutrition, 14*(1). https://doi.org/10.1016/j.advnut.2022.10.009

[98] Willett, W., Rockström, J., Loken, B., et al. (2019). Food in the anthropocene: The EAT–Lancet Commission on healthy diets from sustainable food systems. *The Lancet*,*393*(10170), 447-492. https://www.doi.org/10.1016/S0140-6736(18)31788-4

[99] Rockström, J. et al. (2025). The EAT–Lancet Commission on healthy, sustainable, and just food systems. *The Lancet, 406*10512), 1625 - 1700. https://www.thelancet.com/commissions-do/eat-2025

[100] Stewart, H., Kuchler, F., Dong, D., & Cessna, J. (2022). Examining the decline in U.S. per capita consumption of fluid cow's milk, 2003–18. U.S. Department of Agriculture Economic Research Service. https://ers.usda.gov/sites/default/files/_laserfiche/

publications/102447/ERR-300.pdf

[101] Stewart, H., Kuchler, F., Cessna, J., & Hahn, W. (2020). Are plant-based analogues replacing cow's milk in the American diet? *J Agric Appl Econ., 52*(4), 562–579. https://www.doi.org/10.1017/aae.2020.16

[102] USDA and HHS. (2020). Dietary guidelines for Americans, 2020-2025. https://www.dietaryguidelines.gov/sites/default/files/2020-12/Dietary_Guidelines_for_Americans_2020-2025.pdf

[103] Drouin-Chartier, J.P., Brassard, D., Tessier-Grenier, M., Côté, J.A., Labonté, M., Desroches, S., et al. (2016). Systematic review of the association between dairy product consumption and risk of cardiovascular-related clinical outcomes. *Adv Nutr., 7*(6), 1026–1040. https://www.doi.org/10.3945/an.115.011403

[104] Rizzoli, R., Biver, E., & Brennan-Speranza, T.C. (2021). Nutritional intake and bone health. *Lancet Diabetes Endocrinol., 9*(9), 606–621. https://www.doi.org/10.1016/S2213-8587(21)00119-4

[105] Vanga, S.K., & Raghavan, V. (2018). How well do plant based alternatives fare nutritionally compared to cow's milk? *J Food Sci Technol., 55*(1), 10–20. https://www.doi.org/10.1007/s13197-017-2915-y

[106] Fructuoso, I., Romão, B., Han, H., Raposo, A., Ariza-Montes, A., Araya-Castillo, L., et al. (2021). An overview on nutritional aspects of plant-based beverages used as substitutes for cow's milk. *Nutrients, 13*(8), 2560. https://www.doi.org/10.3390/nu13082650

[107] National Institutes of Health. (2006). *Lactose intolerance: Information for health care providers.* https://webarchive.library.unt.edu/eot2008/20090113185727/http:/www.nichd.nih.gov/publications/pubs/upload/NICHD_MM_Lactose_FS.pdf.

[108] Ramsing, R., Santo, R., Kim, B. F., Altema-Johnson, D., Wooden, A., Chang, K. B., Semba, R. D., & Love, D. C. (2023). Dairy and plant-based ilks: Implications for nutrition and planetary health. *Current Environmental Health Reports, 10*(3), 291–302. https://doi.org/10.1007/s40572-023-00400-z

[109] Afshin, A., Sur, P.J., Fay, K.A., et al. (2019). Health effects of dietary risks in 195 countries, 1990–2017: A https://www.doi.org/10.1016/S0140-6736(19)30041-8

[110] Marshall, S., Petocz, P., Duve, E., Abbott, K., Cassettari, T., Blumfield, M., et al. (2020). The effect of replacing refined grains with whole grains on cardiovascular risk factors: A systematic review and meta-analysis of randomized controlled trials with GRADE clinical recommendation. *Journal of the Academy of Nutrition and Dietetics*, *120*(11), 1859-1883.e31. https://www.doi.org/10.1016/j.jand.2020.06.021

[111] Ying, T., Zheng, J., Kan, J., Li, W., Xue, K., Du, J., et al. (2024). Effects of whole grains on glycemic control: a systematic review and dose-response meta-analysis of prospective cohort studies and randomized controlled trials. *Nutrition Journal, 23*(1),47. https://www.doi.org/10.1186/s12937-024-00952-2

[112] USDA & HHS. (2020). *Dietary guidelines for Americans, 2020–2025.* https://www.dietaryguidelines.gov/sites/default/files/2020-12/Dietary_Guidelines_for_Americans_2020-2025.pdf.

[113] Bhandari, B., Liu, Z., Lin, S., Macniven, R., Akombi-Inyang, B., Hall, J., et al. (2023). Long-term consumption of 10 food groups and cardiovascular mortality: A systematic review and dose-response meta-analysis of prospective cohort studies. *Adv Nutr.*, *14*(1), 55-63. https://www.doi.org/10.1016/j.advnut.2022.10.010

[114] USDA & HHS. (2020). *Dietary Guidelines for Americans, 2020–2025.* https://www.dietaryguidelines.gov/sites/default/files/2020-12/Dietary_Guidelines_for_Americans_2020-2025.pdf.

[115] Juul, F., Parekh, N., Martinez-Steele, E., Monteiro, C. A., & Chang, V. W. (2022). Ultra-processed food consumption among US adults from 2001 to 2018. *The American Journal of Clinical Nutrition, 115*(1), 211–221. https://doi.org/10.1093/ajcn/nqab305

[116] Lane, M.M., Gamage, E., Du, S., Ashtree, D.N., McGuinness, A.J., Gauci, S., et al. (2024). Ultra-processed food exposure and adverse health outcomes: Umbrella review of epidemiological meta-analyses. *BMJ, 384,* e077310. https://www.doi.org/10.1136/bmj-2023-077310

[117] Juul, F., Parekh, N., Martinez-Steele, E., Monteiro, C. A., & Chang, V. W. (2022). Ultra-processed food consumption among US adults from 2001 to 2018. *The American Journal of Clinical Nutrition, 115*(1), 211–221. https://doi.org/10.1093/ajcn/nqab305

[118] Leite, F.H.M., Khandpur, N., Andrade, G.C., Anastasiou, K., Baker, P., Lawrence, M., et al. (2022). Ultra-processed foods should be central to global food systems dialogue and action on biodiversity. *BMJ Global Health, 7,* e008269. https://doi.org/10.1136/bmjgh-2021-00826

[119] Kesse-Guyot, E., Allès, B., Brunin, J. et al. (2023). Environmental impacts along the value chain from the consumption of ultra-processed foods. *Nat Sustain, 6,* 192–202. https://doi.org/10.1038/s41893-022-01013-4

[120] Anastasiou, K., Baker, P., Hadjikakou, M., Hendrie, G. A., & Lawrence, M. (2022). A conceptual framework for understanding the environmental impacts of ultra-processed foods and implications for sustainable food systems. *Journal of Cleaner Production*, *368*, 133155. https://doi.org/10.1016/j.jclepro.2022.133155

[121] Banaszak, M., Dobrzyńska, M., Kawka, A., Górna, I., Woźniak, D., Przysławski, J., & Drzymała-Czyż, S. (2024). Role of Omega-3 fatty acids eicosapentaenoic (EPA) and docosahexaenoic (DHA) as modulatory and anti-inflammatory agents in noncommunicable diet-related diseases - Reports from the last 10 years. *Clin Nutr ESPEN, 63,* 240-258. https://www.doi.org/10.1016/j.clnesp.2024.06.053

[122] Bianchi, M., Hallström, E., Parker, R.W.R., Mifflin, K., Tyedmers, P., & Ziegler, F. (2022). Assessing seafood nutritional diversity together with climate impacts informs more comprehensive dietary advice. *Commun Earth Environ.*, *3*(1), 188. https://www.doi.org/10.1038/s43247-022-00516-4

[123] *Ibid.*


$1