



Regeneration

is Life

REGENERATION IS LIFE

AN AGROECOLOGICAL PARADIGM TO OVERTAKE THE CLIMATE CRISIS

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THE INDUSTRIAL PARADIGM IS AT THE ROOT OF OUR CRISES

There are two main paradigms of thinking of ourselves in the world and of our relationship with the Earth. We either think of ourselves as being separate from Nature or as being one and part of it. The industrial agriculture paradigm, which sees the world as a machine, has created devastation on the planet.

Fossil fuels, the lifeblood of the industrial paradigm, are used in almost every phase of the food chain from fossil-fuel-based pesticides or synthetic fertilizers, gas-guzzling farm equipment, and a fossil-fuel-based global processing, packaging, and transport system. The fertilizer industry is responsible for more than a fifth of total estimated greenhouse gas emissions from agriculture systems worldwide. Representing 2.4% of total worldwide emissions, of which 60% are generated after the products are applied to soils

Glyphosate, one of the most commonly sprayed pesticides, has caused the mass extinction of biodiversity, and is linked to a range of detrimental health effects. Around 44% of farmers are poisoned by pesticides every year, equalling around 20,000 deaths annually. Monsanto, the creator of glyphosate, has been sued for over \$2.42 billion USD for having caused cancer to thousands of victims.

Together, these ecologically destructive practices account for 29% of all greenhouse gas emissions (GHG), making the global food system one of the main culprits behind climate change and environmental degradation. systems.





FALSE SOLUTIONS ONLY DISEMPOWER US

Climate change and climate catastrophe is also being weaponized to finish funneling the last remaining small farmers into an industrialized system.

In the European Union, for example, total numbers of all types of farmers fell from 14.5 million to 10.3 million between 2005 to 2016. Global rates of small farmer disappearance are similar, as many small farmers have been actively displaced by agribusiness operations of massive monocultures or concentrated animal feeding operations (CAFOs).

Factory farms represent a receptacle of diseases and antimicrobial resistance, animal suffering and unethical working conditions. CAFOs are significant contributors to soil and water pollution, land use change, and nitrogen and phosphorus pollution. The FAO considers that livestock in CAFOs accounts for 14.5% of global greenhouse gas emissions, while some estimates put the figure above 30%.

But the same industry who is eliminating these small and medium farms through factory farms, are now selling us a variety of false solutions to the problems their system has caused. Pinning the blame away from these corporate actors and the industrial system is an attempt to keep power in the hands of corporations at the expense of the true solution to our multiple crises.

CONCENTRATION OF CORPORATE POWER

Today the majority of the globalized industrialized food system is concentrated into the hands of a few corporations.

For example, as of 2019, 5 agrochemical companies hold a 55% monopoly over the \$61.5 USD billion world seed market. In 2018, 61% of global seeds and pesticide production was owned by three mega-corporations. Four corporations hold a monopoly over global commodity food trade, and approximately 80% of the US beef market is controlled by only four firms. In 2018, seven firms dominated poultry, pigs, cattle, and aquaculture genetics, and made over \$80 billion in sales.

Due to such concentration of power, these corporations can influence the types of seeds farmers plant, what crops are grown and how, what breeds of animals are raised and in what conditions, the working conditions of farm workers, and the types and prices of food items that appear on grocery store shelves.

Using the critique that ecological movements have been sharing for decades about the problems of industrial food and animal production, corporations are greenwashing their new push for synthetic and lab-grown foods as part of the climate change solution.

But these very corporations are behind the push for synthetic and lab-made foods, with meat industry giants like Tyson foods, JBS, Cargill, Nestlé, and Maple Leaf Foods have invested up to \$2.78 billion, in this new sector.

Synthetic and lab-cultured foods are quickly becoming a next means to consolidate even more power and profit into the hands of a few food giants without holding them accountable to the consequences of the system they perpetuate.



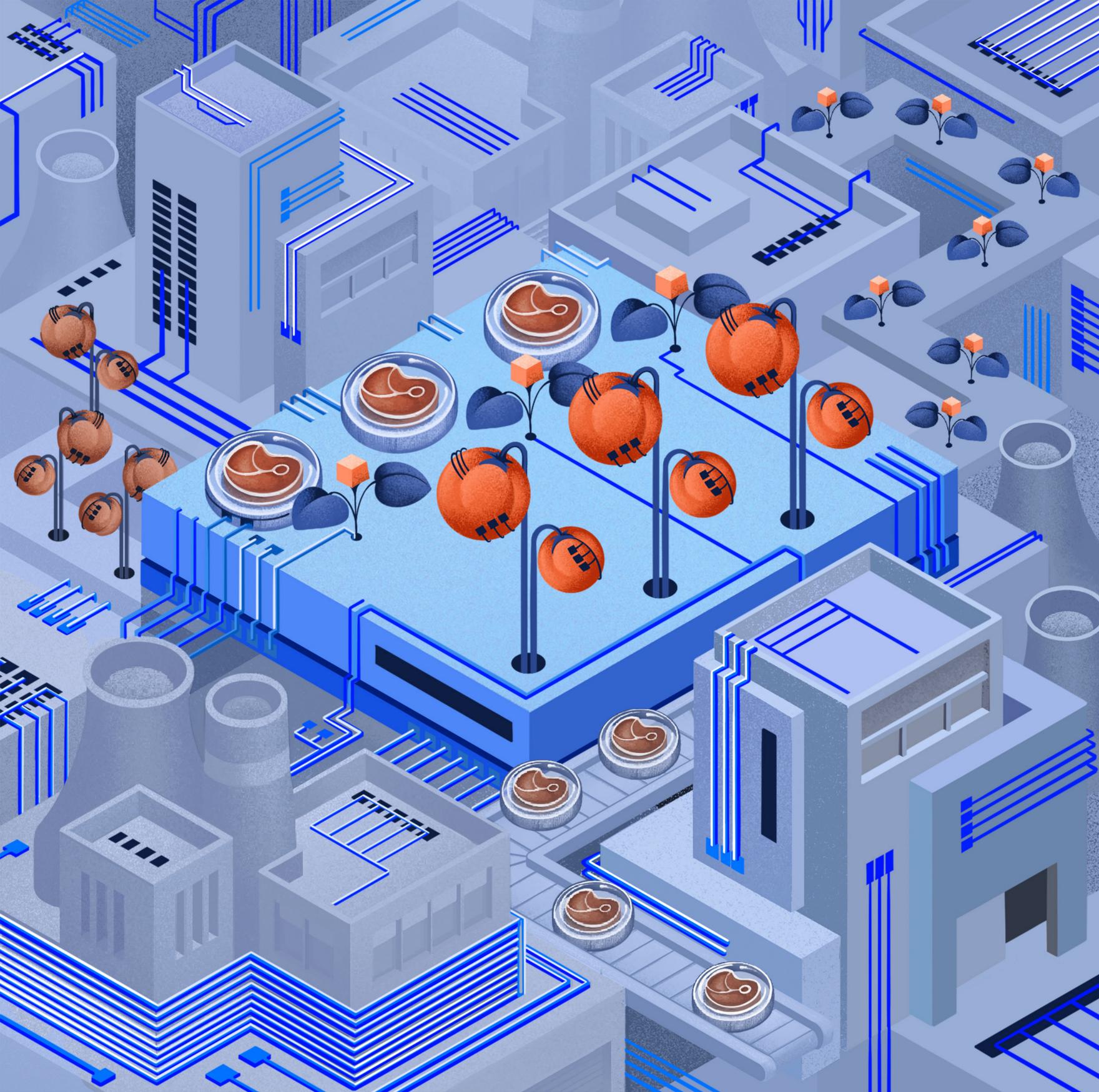
FOOD SLAVERY

The consolidation of our food resources into the hands of a select few multinational corporations leaves us at the mercy of these profit-driven systems. The ongoing integration of food and agriculture based on lab-made and synthetic foods, gene editing and other false solutions puts at direct risk our food sovereignty and security, posing significant threats to local food networks and ecological harmony.

This monopolization, evidenced by the staggering statistics—where a mere few corporations hold a significant sway over the world food system—highlights the erosion of our autonomy.

The consequences are the extinction of small-scale farmers, erosion of traditional agroecological practices, and the decline of diverse, nutritious diets. What's alarming is how individuals, often dubbed consumers, unwittingly become cogs in this colossal machine. Despite the illusion of choice, our options are systematically shrinking. Our diets, once diverse, are now monopolized by industrial and artificial junk foods. It's a modern iteration of food slavery, where true freedom of choice is eclipsed by a narrow selection dictated by profit-driven giants.





THE DYSTOPIA OF THE MECHANIZED WORLDVIEW

Now, in the name of climate action, industrial agriculture giants have launched a long offensive to recolonize seed and food through a series of false solutions to the climate crisis. The deregulation and renewed imposition of GMOs, the replacement of real food with lab made synthetics, and the expansion of the already detrimental model of the Green Revolution. All to make way for a new era of digitalization and further vertical integration of the global food system. Having reduced food to a commodity that can be constituted in the lab.

The vision of this mechanized worldview leads us to a future of farming without farmers, farming without biodiversity, and farming without soil.

The future they are taking us to is a dystopian, fully artificial and fully separate from nature. All in the false name of saving the planet. Without accounting for the estimated at 12.7 trillion 2020 dollars of hidden costs, from GHG and nitrogen emissions, water use, land-use change, unhealthy dietary patterns, undernourishment and poverty, to the current food system, according to the FAO. The industrial agriculture model has already brought us to the brink of catastrophe.

Climate change and its very real consequences cannot be addressed without recognizing the central role of the industrial and globalized food system in both contributing to and perpetuating the climate and ecological crisis.

REAL SOLUTIONS TO CLIMATE CRISIS IS BASED ON A AGROECOLOGICAL WORLDVIEW

The true solution is biodiversity based agroecological systems that work in harmony with nature, that regenerate ecosystems. Ecological food systems protect biodiversity, water, and land.

Agroecological systems can enhance soil health and reduce erosion by 22%, and increase resilience against climate change impacts, thanks to the conservation of biodiversity, and to reversing land degradation. Biodiversity is protected through increasing the number and diversity of species and individuals, especially soil organisms, plants, birds, and pollinators. Increase biodiversity increases pollination, biological pest control, nutrient cycling, and water cycling.

Agroecology and organic farming also reduce the need for external inputs through integration of agroecosystem, increase crop diversification and soil management. Increasing food sovereignty, food democracy through eliminating dependence on the industrial system. Directly empowering small farmers, women, young farmers, and indigenous peoples.

Today, the world's small farmers already produce around 1/3 third of the world's food. The real solution does not lie in creating substitutes for food, but expanding and scaling the initiatives all over the world that are already working on healing our connection with the Earth through care.





CARING FOR THE EARTH

Global biodiversity has declined by 69% on average since 1970 across tens of thousands of different wildlife populations, around the world. Biodiversity of plants, animals, and microorganisms are key to providing the stability and balance necessary to create resilient agroecosystems in the face of climate change. The same agrifood systems that conserve and rejuvenate biodiversity, also mitigate climate change and contribute to health and increased livelihoods through regenerative, living economies.

This is why the transition to local, biodiverse, ecological systems that work in harmony with Nature is the cornerstone to healing ourselves through healing the Earth. We are all connected through biodiversity, from the soil microorganisms, to plants, animals, our food and our microbiome.

Biodiversity-based agroecological farming is key for improving soil quality and fertility, conserving water resources, reduced use of chemicals through natural pest control, and increasing crop yields.

We need diversity in food systems, diversity in seed, diversity in food and economies. Just as the biodiversity of life connects us all, so does our cultural diversity, our language diversity, and the diversity of our struggles. We are all made and interconnected through these living webs of diversity.

WE CAN ALL WORK TO REGENERATE THE EARTH

Today more than ever we need the agroecological cultures of the world to take the forefront and show us what it means to be rooted in harmony with the Earth. Solutions are in the hands of women, farmers, and peoples that practice biodiversity-based farming, social movements and networks that are resisting the disruption of nature and society.

By working alongside nature, regenerative, agroecological farming can generate greater food resilience while drawing down carbon from the atmosphere and putting it back into the soil through photosynthesis. By increasing carbon absorption, organic farming has a lower climate impact than industrial agriculture. Regenerative, agroecology have the potential to sequester 52 gigatons of CO₂, as they can harvest 733– 3000 kg or more of CO₂ per hectare, per year from the atmosphere, equivalent to the amount needed to stay below the 2 degree centigrade range.

But soil carbon sequestration, can only happen in living soil. More than 100 billion organisms can live in just one handful of healthy soil, and all of them contribute to the overall health of the ecosystem. To facilitate nutrient exchanges and symbiotic relationships in the soil is to facilitate the survival of our own species, because through the relationships and exchanges of the soil, which can only happen in the abundance of biodiversity, do the properties of soil ecosystems that we rely on emerge.





BIODIVERSE CULTURES PRODUCE REAL FOOD

Real food is not created in a laboratory, but comes from biodiverse farms that take care of the land. Food is the web of life and we cannot separate food from life. Just as we cannot separate ourselves from the Earth. Real food made through real farming is the direct result of a process of care for the land, animals, and fellow humans that celebrates the connection between food and life.

We must reinstate the ecological laws of Nature including ecology-honoring diversity, sharing the commons, caring for Mother Earth, and respecting her creativity. By protecting, regenerating, and caring for our biodiversity, the pillar of a thriving planet, we can end our global dependence on industrial agriculture. We do not need mass quantities of fossil fuels and artificial synthetic resources to care for the land we live on and produce healthy food.

The aim should be to work alongside nature to restore its biodiversity and rejuvenate its natural cycles to produce Real Food. These solutions already exist and are being implemented by local, diverse food communities around the world. Showing us that it is possible to walk a path of living in harmony with nature.

Sowing the seeds of the future demands that we participate in democratically shaping our economies and how and what we produce and consume.

BASED ON NAVDANYA REPORTS AND ARTICLES INCLUDING:

Making Peace with the Earth – Through Diversity, Mutuality, Non-Violence & Care – An Ecofeminist Manifesto. Navdanya International, Diverse Women for Diversity Network (2023)
<https://navdanyainternational.org/publications/making-peace-with-the-earth-an-ecofeminist-manifesto/>

Shiva V., Bhatt V., Panigrahi A., Mishra K., Singh V, Seeds of Hope, Seeds of resilience – How Biodiversity and Agroecology offer Solutions to Climate Change by Growing Living carbon, Navdanya RFSTE (2017)
<https://navdanyainternational.org/publications/seeds-of-hope-seeds-of-resilience/>

Dr Vandana Shiva, What's missing from the climate change debate, *Pressenza* (2022) <https://www.pressenza.com/2022/12/dr-vandana-shiva-whats-missing-from-the-climate-change-debate/>

Dr Vandana Shiva, A Declaration – Beyond Climate Colonialism and Food Imperialism to Earth Democracy and Food Freedom (2023)
<https://navdanyainternational.org/beyond-climate-colonialism-and-food-imperialism-to-earth-democracy-and-food-freedom/>

The Corporate Push for Synthetic Foods: False Solutions That Endanger Our Health and Damage the Planet." Navdanya International (2022)
<https://navdanyainternational.org/publications/the-corporate-push-for-synthetic-foods/>

Diverse Women for Diversity, Regeneration of the Earth through Agroecology and Economies of Care: Diverse Women for Diversity against ecological, economic and social collapse (2023)
<https://navdanyainternational.org/dwd-regeneration-of-the-earth-through-agroecology-and-economies-of-care/>

Dr Vandana Shiva, Soil Not Oil: Transforming the Industrial Fossil Fuel Food system into Fossil Fuel Free, Biodiverse, Regenerative Food Systems for Real Solutions to Climate Change (2023)
<https://navdanyainternational.org/soil-not-oil-transforming-the-food-system/>

Dr Vandana Shiva, Plants, Planet & People – The Living Earth and Climate Change (2021) <https://navdanyainternational.org/publications/plants-planet-people-the-living-earth-and-climate-change/>

Navdanya International, Biodiversity Is Life (2022)
<https://navdanyainternational.org/publications/biodiversity-is-life/>

Navdanya International, What is Missing from the Climate Debate (2022)
<https://navdanyainternational.org/what-is-missing-from-the-climate-debate/>

Navdanya International, Climate Change is Ecological Destruction: Greenwashing and false solutions (2021)
<https://navdanyainternational.org/greenwashing-and-false-solutions-at-cop-26/>

Navdanya International, Pact for the Earth – Terra Viva, Earth Democracy. One Planet, One Humanity. A people’s pact to protect the planet & each other (2015)

<https://navdanyainternational.org/publications/pact-for-the-earth/>

Navdanya International, Manifesto Terra Viva – Our Soil, Our Commons, Our Future (2015)

<https://navdanyainternational.org/publications/manifesto-terra-viva/>

“Food Systems and Climate.” Navdanya International, 28 Sept. 2023, <https://navdanyainternational.org/food-systems-and-climate/>.

“How Green Is Lab-Meat?” Navdanya International, 28 July 2023, <https://navdanyainternational.org/how-green-is-lab-meat/>.

“The Attempted Destruction of Land-Based Cultures.” Navdanya International, 1 Mar. 2023, <https://navdanyainternational.org/the-attempted-destruction-of-land-based-cultures/>.

Additional References:

Boedeker, Wolfgang, Meriel Watts, Peter Clausing, and Emily Marquez. “The global distribution of acute unintentional pesticide poisoning: estimations based on a systematic review.” *BMC Public Health* 20 (2020): 1875 <https://www.medicalnewstoday.com/articles/does-roundup-cause-cancer>

“Concentration in Global Food and Agriculture Industries.” Welthungerhilfe.de – Für Eine Welt Ohne Hunger Und Armut, <https://www.welthungerhilfe.org/news/latest-articles/2021/concentration-in-global-food-and-agriculture-industries>. Accessed 28 Nov. 2023

Howard, Philip. The Politics Of Protein: EXAMINING CLAIMS ABOUT LIVESTOCK, FISH, ‘ALTERNATIVE PROTEINS’ AND SUSTAINABILITY. Executive Summary , IPES–Food, Mar. 2022. https://ipes-food.org/_img/upload/files/ProteinExecSummary.pdf

Clapp, Jennifer. “The Problem with Growing Corporate Concentration and Power in the Global Food System.” *Nature Food*, vol. 2, no. 6, June 2021, pp. 404–08. www.nature.com, <https://doi.org/10.1038/s43016-021-00297>

Jones, Nicola. “Lab-Grown Meat: The Science of Turning Cells into Steaks and Nuggets.” *Nature*, vol. 619, no. 7968, July 2023, pp. 22–24. www.nature.com, <https://doi.org/10.1038/d41586-023-02095-6>.

McGreal, Chris. “How America’s Food Giants Swallowed the Family Farms.” *The Guardian*, 9 Mar. 2019. *The Guardian*, <https://www.theguardian.com/environment/2019/mar/09/american-food-giants-swallow-the-family-farms-iowa>.

Pimentel D., Hepperly P., Hanson J., Doude D., Seidel R. (2005) – Environmental energetic, and economic comparisons of organic and conventional farming systems. “*Bioscience*”, 55, pp.573–582.

Regenerative Organic Agriculture and Climate Change A Down-to-Earth Solution to Global Warming, Rodale Institute, 2015, <https://rodaleinstitute.org/wp-content/uploads/rodale-white-paper.pdf>

Water Pollution Concerns Surround CAFOs – National Farmers Union. 30 Oct. 2015, <https://nfu.org/2015/10/30/water-pollution-concerns-surround-cafos/>.

FAO. Hidden Costs of Agrifood Systems at the Global Level. <https://doi.org/10.4060/cc7724en>. Accessed 28 Nov. 2023.

How Agroecology Can Respond to a Changing Climate and Benefit Farmers." IFAD, <https://www.ifad.org/en/web/latest/-/story/how-agroecology-can-respond-to-a-changing-climate-and-benefit-farmers> . Accessed 28 Nov. 2023.

European Commission (2023). AgriResearch: Agroecology and Organic Farming. Brussels. https://agriculture.ec.europa.eu/system/files/2023-04/agricultural-outlook-2022-report_en_0.pdf

Lowder, Sarah K., et al. "Which Farms Feed the World and Has Farmland Become More Concentrated?" *World Development*, vol. 142, June 2021, p. 105455. ScienceDirect, <https://doi.org/10.1016/j.worlddev.2021.105455>.

Ritchie, Hannah, et al. "Biodiversity." *Our World in Data*, Dec. 2022. [ourworldindata.org](https://ourworldindata.org/biodiversity), <https://ourworldindata.org/biodiversity>.

"Biodiversity and Agriculture." FoodPrint, <https://foodprint.org/issues/biodiversity-and-agriculture/>. Accessed 28 Nov. 2023.

Farm Biodiversity: A Healthier Ecosystem. <https://farmtogether.com/learn/blog/farm-biodiversity-a-healthier-ecosystem-and-a-healthier-investment>. Accessed 28 Nov. 2023.

FAO – News Article: Pollutants from Agriculture a Serious Threat to World's Water. <https://www.fao.org/news/story/en/item/1141534/icode/>. Accessed 28 Nov. 2023.

FAO. 2022. Greenhouse gas emissions from agrifood systems. Rome, <https://www.fao.org/3/cc2672en/cc2672en.pdf>

Power in the Food System – Food Ethics Council. <https://www.foodethicscouncil.org/theme/power-in-the-food-system/>. Accessed 28 Nov. 2023.

Eskenazi, Brenda et al. "Childhood exposure to common herbicide may increase the risk of disease in young adulthood." *Environmental Health Perspectives* (2023) <https://publichealth.berkeley.edu/news-media/research-highlights/childhood-exposure-to-common-herbicide-may-increase-the-risk-of-disease-in-young-adulthood/>

"Bayer Expects Significant Surge in Number of U.S. Glyphosate Cases." Reuters, 17 Oct. 2019. www.reuters.com, <https://www.reuters.com/article/idUSKBN1WV1JA>

"New research shows 50-year binge on chemical fertilisers must end to address the climate crisis." *Nature*, 2022

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