

U.S. Food Systems

Americans enjoy a diverse abundance of relatively low-cost food, spending 9.7% of disposable income on food.¹ However, store prices do not reflect the external economic, social, and environmental costs that affect the sustainability of the food system. Examining the full lifecycle of the U.S. food system reveals the connection between consumption behaviors and production practices.

The Food System Life Cycle²



Patterns of Use

Agricultural Production

Socio-Economics

- In 2022, farmers were 1% of the U.S. population and 63% of these farmers were over the age of 55, up 2% from 2017.^{3,4,5}
- Large-scale family farms and industrial non-family farms account for under 8% of farms, but 65% of production (in \$).⁶ Small-scale family farms represent 86% of U.S. farms, but only 11% of production.⁶
- In 2024, only 11.8¢ of every dollar spent on food went back to the farm, compared to 40¢ in 1975.^{7,8}
- From 2020-2022, 42% of the hired agricultural labor force lacked authorization to work in the United States.⁹

Environmental Resources

- U.S. cropland declined by 14% between 1997 and 2022, from 445M to 382M acres, while the portion of irrigated cropland increased from 12.6% to 14.4%.³
- Many agricultural regions face groundwater depletion, where water withdrawal exceeds recharge.¹⁰ In 2015, irrigation used 118B gal/day of water, 48% came from groundwater.^{11,12}
- Nutrient runoff from upper Mississippi River farms contributes to a hypoxic “dead zone” in the Gulf of Mexico. In 2017, it reached 8,776 mi²—the largest since 1985.¹³
- From 2007 to 2012, pesticide use rose 10% while herbicide use increased 20% from 2010–2014.¹⁴ In 2012, U.S. agriculture used 899M lb of pesticides;¹⁴ use is now estimated at over 1B lb annually.¹⁵
- The share of major crops that are genetically engineered increased from 25% of corn, 61% of cotton, and 54% of soybeans in 2000 to 94%, 96%, and 96% in 2024.¹⁶
- In the U.S. Midwest, more than 57B tons of soil have eroded

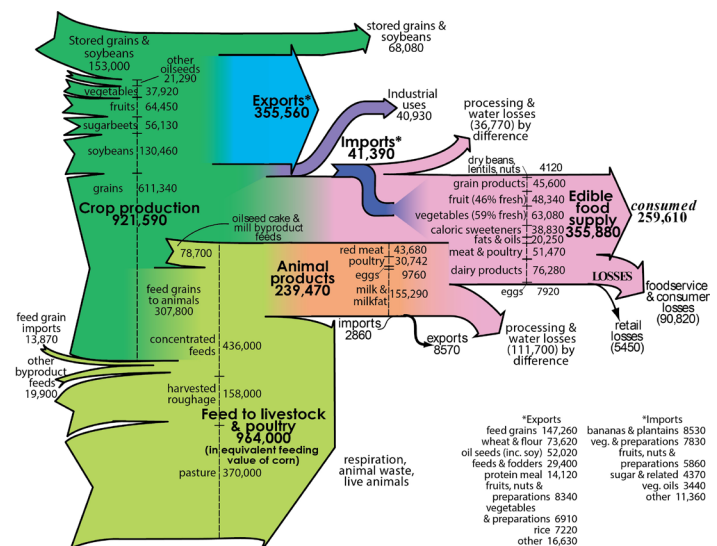
over the past 150 years,¹⁷ with future scenarios predicting an additional 8–21% increase.¹⁸ Erosion was highest in croplands cultivated with corn, soybean, sorghum, and wheat.¹⁸

- In 2022, agriculture accounted for 10% of total U.S. greenhouse gas (GHG) emissions. The sector’s primary emissions include methane (CH₄), nitrous oxide (N₂O), and carbon dioxide (CO₂), mainly from livestock and soil management.²⁰

Consumption Patterns

- In 2010, the U.S. food supply provided 4,000 calories per person per day.²¹ Accounting for waste, the average American consumed 2,501 calories per day, up 22% from 1970.²²
- In 2021, 185 lb of meat per person were available for consumption, up 11.6 lb from 1969.²³ Red meat consumption declined 24% since 1970, while chicken consumption more than doubled.²³
- Americans have access to 22.3 tsp of sweeteners per day, while the American Heart Association recommends limiting added sugars to 6–9 tsp.^{24,25}
- Approximately 41.9% of U.S. adults and 19.7% of 2-19 year-olds are obese (BMI > 30).²⁶ Poor diets—especially those low in fruits and vegetables—are linked to higher risks of heart disease, certain cancers, and stroke.^{27,28}
- Ultraprocessed food consumption is associated with adverse health outcomes like obesity, diabetes, and cardiovascular disease.²⁹
- 30–40% of the 2023 food supply was lost as waste, 50% more than in 1970.^{30,31} Food accounts for more landfill waste than any other material,³⁰ making up 22% of the municipal solid waste stream in 2018,³² a loss of \$450 and around 350 lb of food per person annually.^{30,31} See [MSW Factsheet](#).
- Producing food that is ultimately wasted accounts for 2% of total U.S. annual energy use.³³

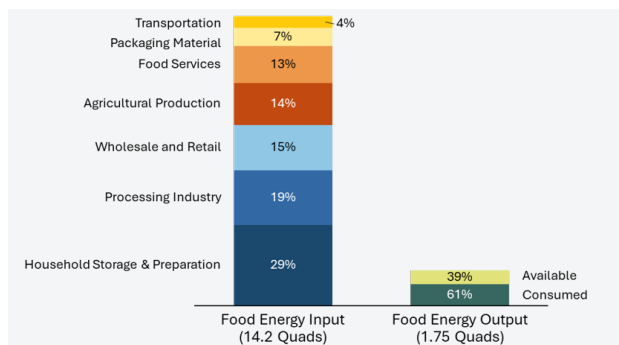
Material Flow in the U.S. Food System, 1995²



Life Cycle Impacts

- Food accounts for over 12% of the U.S. energy budget.³⁴ Every unit of food uses 13 units of (primarily) fossil energy.^{35,36}
- U.S. food production generates 4.7 kg CO₂e in GHG emissions and uses 25.2 MJ of fossil fuel energy daily per capita.³⁷
- Reliance on fossil fuel inputs makes the food system vulnerable to oil price fluctuations.²
- Consolidation in farming, processing, and distribution has increased the distance between food sources and consumers² and concentrated management decisions into a few hands. Four firms control 85% of the beef packing market,³⁹ two firms control 43.6% of the pork processing market,⁴⁰ ten firms control 80% of the broiler chicken processing industry,⁴⁰ and four firms control 82% of soybean crushing.⁵⁶ The top four food retailers sold nearly 35% of U.S. food in 2019, compared to 15% in 1990.⁴¹

Energy Flow in the U.S. Food System^{2,22,35,36,38}



Solutions and Sustainable Actions

Check out the [Foodprint Calculator](#) for more information on the carbon, nitrogen, and water impacts of your diet.⁶⁴

Policy

- U.S. federal nutritional guidelines are influenced by industry lobbies^{42,43} that possibly overstate the benefits of red meat⁴² and lead to excess saturated fat consumption from dairy.⁴⁴

Eat Less Meat

- Beef generate 36 times more GHG per g of protein than plant-based alternatives.⁴⁷
- Meat production significantly impacts land use, water use, and water pollution.⁴⁸ In an average diet, meat accounts for 31% of the water scarcity footprint—the water use that accounts for regional depletion.⁴⁹
- Meat-based diets use twice as much more energy to produce as vegetarian diets,² and produce double the carbon emissions.⁴⁵
- Vegetarian diets reduce carbon emissions by 1,500kg annually, and vegan diets reduce carbon emissions by 2,100 kg annually.⁴⁶

- The top 20% of U.S. diets cause half of food-related GHG emissions; a shift away from meat reduces this up to 73%.^{37,47}
- Between 2003–2018, changes in U.S. eating habits cut diet-related GHG emissions by over 35%.⁵⁰

Reduce Waste

- Much of household food waste is due to spoilage. To prevent this, buy smaller quantities, plan meals, stick to shopping lists, and freeze, can, or preserve excess produce.⁵¹
- Confusion over “sell-by” and “use-by” dates leads to unnecessary disposal of safe food. Consult USDA guidelines for clarity.⁵² “Best before” only refers to taste.⁵³
- Direct-to-consumer meal services streamline supply chains, reduce last-mile transportation, and produce 25% fewer GHG emissions than store-bought meals.⁵⁴
- To save water and energy while washing dishes—whether by hand or machine—avoid running water continuously, rinse with cold water, run full dishwasher loads, and skip pre-rinsing.⁵⁵

Use Refrigeration Efficiently

- Home refrigeration accounts for 13% of total energy use in the U.S. food system.² Refrigerator efficiency more than doubled from 1972 to 1990, when the first set of efficiency standards took effect, but increases in size have largely offset this improvement.^{2,57}
- Improved refrigeration could prevent 620M tons of global food waste each year.⁵⁸
- Replacing old refrigerators with Energy Star models saves 20% more energy and about \$150 over the appliance’s lifetime. To further reduce waste and energy use, consider purchasing smaller quantities of fresh produce more frequently.^{2,59}

Eat Organic

- Organic farms do not use chemicals that require large amounts of energy to produce, pollute soil and water, and cause human health impacts.
- U.S. sales of organic food in 2025 were \$76.6B;⁶⁰ organic food now accounts for roughly 6% of all food sold in the U.S.⁶¹
- Both organic and non-organic food provide important nutrients. The term “organic” does not describe the quality of the food.⁶²

Eat Local

- Transportation accounts for approximately 14% of the total energy used in the U.S. food system.⁶³
- Buying local food and promoting farm-to-table supply chains can save large quantities of food from wasting.⁵⁸
- There is much room for improvement in how people acquire their food. Community Supported Agriculture and Farmers Markets are great ways to support local food systems.