ST.GALLEN SYMPOSIUM

Global Essay Competition 2024

Title: **Cultivating Resilience: A Paradigm Shift in U.S. Agricultural Subsidies for a Food Secure Future**

Essay:

Climate change poses a growing danger to the global food supply. Droughts and extreme weather events linked to rising temperatures are becoming more frequent, disrupting food production across the world. Last year Argentina, a major soy producer, saw declines in production due to its worst drought in 60 years. India, a global rice supplier, experienced heavy rice yield reductions in 2022 stemming from a destructive heat wave (Jha, 2023). In East Africa, a multi-year drought has left 20 million people in the region food insecure (Kabukuru, 2023). If climate change goes unaddressed, staple crop yields could fall by as much as 23 percent well into the 21st century (NASA, 2022).

To be sure, other factors including conflicts and geopolitical tensions have also contributed to rising food insecurity in recent years. The war in Ukraine and the faltering of the Black Sea Grain Deal notably cut off critical wheat supplies for many countries, raising global food prices. Additionally, the COVID-19 pandemic drove up food insecurity as global economic activity ground to a near halt leaving millions at risk of hunger (Aminetzah, 2022). Although these events sparked serious food crises, climate change poses a major threat to long term food security. At a time when the global population is expected to reach 10 billion by 2050, experts project a 50 percent increase in food production will be needed to feed the world (Searchinger, 2019). In this context, a worsening climate could severely inhibit agricultural production and risk creating significant global food scarcity that could have disastrous consequences including starvation, displacement and further conflict (Lucchesi, 2023).

Yet while climate change threatens agriculture production, agriculture today is accelerating climate change. Globally, agriculture accounts for 25 percent of greenhouse gas (GHG) emissions, making it a key driver of climate change (Searchinger, 2019). As such, world leaders face the double challenge of boosting food production to meet rising population needs amidst a changing climate, while bringing down agriculture's carbon footprint. Achieving both goals will be necessary to combat food scarcity and ensure a food secure future.

As one of the world's leading food producers, the United States can play a key role in helping safeguard against the risk of a global food shortage. The U.S. ranks among the world's top four agricultural producers and exports a fifth of its agricultural commodities abroad (Ross, 2023; Regmi, 2021). But the effects of climate change could hamper the nation's food production. In the coming decades, rising temperatures will increase the number of days per year where temperatures are too high for crops to grow (Reinsch, 2023). Climate change may also dry up groundwater supplies making water more scarce and crop irrigation more expensive particularly in the Western and Southeastern United States (Walthall, 2013). A

reduction in food production due to increasingly unfavorable climate conditions could not only weaken food security in the U.S. but globally as well given America's role as a major agricultural exporter.

In light of the growing challenge, the U.S. must adjust its agricultural planning to adapt to the realities of a warming planet. Doing so requires restructuring domestic agriculture supports, a key facet of U.S. agricultural policy designed to boost farmer's food production. U.S. agriculture supports or subsidies have generated food system inefficiencies that contribute to climate change and food insecurity. To safeguard future food security, I propose that the U.S. redirect agriculture subsidies away from an emphasis on surplus production and toward strengthening the resilience and sustainability of agriculture. In this vein, I argue that subsidies be shifted toward advancing agricultural productivity research, conservation and climate-smart agricultural practices.

Domestic agriculture supports involve subsidies that governments provide to their agricultural industries in order to boost farmers' food production. Subsidies can come in various forms including direct payment programs, insurance, export subsidies, import barriers and price floors. Dating back to the 1930s, U.S. agricultural subsidies were created in the wake of the Great Depression, a period of major economic downturn that gave rise to a national hunger crisis (Johns Hopkins, 2024). The subsidies were designed to reduce farmers' income fluctuation and incentivize enough food production to feed the country's population, with the aim to provide stability and consistent food supply for all Americans. Today, agriculture subsidies essentially provide billions in financial assistance to farmers to reduce their production costs. In 2023, the U.S. government spent about $12 billion USD on agricultural subsidies and between 1995 and 2020 it spent $424.4 billion in assistance to farmers (USDA, 2023; Environmental Working Group, 2024). The lower cost enables farmers to produce more crops at a cheaper rate typically beyond what the U.S. market demands, creating massive surpluses of agricultural commodities. These surpluses are largely exported abroad and delivered as food aid to countries in crisis, making the U.S. a net exporter of agricultural goods and the world's largest food aid donor (Graber, 2018).

Proponents of U.S. agricultural subsidies argue they support small scale farmers, stabilize agricultural commodity markets and ensure domestic food security. However, today's subsidies do little to accomplish these goals (Sumner, 2017). Agricultural subsidies are typically tied to production or factors of production like land, meaning farms which produce more tend to receive higher subsidies (FAO, 2021). In the U.S., where the bulk of food is produced by a small number of large, conglomerate farms, most subsidies go to a small share of wealthy, commercial-sized farms that can produce at a large scale. Between 1995 and 2021, the richest 10 percent of farms received 79 percent of total subsidies (Environmental Working Group, 2024). Although advocates claim subsidies help small farmers in need of support, in reality these subsidies typically go to large farms and agribusinesses that are the least in need of assistance and better positioned than small farmers to weather price and

income volatility (Schechinger, 2021). Crop-specific subsidies can also exacerbate the harmful effects of price shocks, rather than neutralize them. Many staple foods such as soy and wheat are heavily subsidized in part to keep prices low. But when prices do spike for a widely consumed commodity often due to external factors like high energy costs, this can severely limit food access for economically marginalized populations. Notably, the 2008 Food Price Crisis saw prices spike for wheat, rice and other cereals—all heavily subsidized foods—due to bad weather and energy costs, which drove 40 million people into hunger (Fogarty, 2011; Mittal, 2009). Concerning U.S. food security, research has shown no effect of agricultural subsidies on reducing hunger among the poorest Americans (Sumner, 2017).

Contrary to their intended outcomes, U.S. agriculture subsidies actually undermine global food security by contributing GHG emissions and constraining agricultural production in the U.S. and abroad. Since agricultural subsidies lower farmers' production costs, they make it less costly to engage in farming practices that generate GHG emissions and pollute the environment. As subsidies are tied to production levels, they inadvertently encourage excessive use of farming inputs like fertilizers, which are known to emit greenhouse gasses, as farmers try to maximize their crop yields. Fertilizers, particularly synthetic and nitrogen-based varieties, produce more greenhouse gasses globally than the aviation and shipping industries combined, making them a key driver of agriculture's contribution to climate change (Ritchie, 2024). Additionally, excessive fertilizer use pollutes the surrounding environment through nitrate contamination. Federal subsidies for sugar and corn have been tied to nitrogen pollution in Florida's Everglades, the Mississippi River and the Gulf of Mexico (Edwards, 2023). Subsidies also incentivize practices like monoculture farming or growing a single crop on a plot of land which diminishes soil health, as well as expansion of farm land onto more fragile ecosystems leading to greater soil erosion and carbon emissions (Smith, 2023). While subsidizing such inputs and practices may increase crop yields, doing so comes at the cost of higher carbon emissions, environmental degradation and declining soil quality—all of which jeopardize future food production.

As discussed earlier, some of the agricultural surpluses generated from subsidies get sent to countries overseas as food aid. While this aid is particularly helpful during periods of conflict and other acute humanitarian crises, in other contexts food aid may negatively undermine local agricultural production in recipient countries. Such was the case in previous U.S. relief missions to Haiti and Afghanistan where the influx of American food aid crowded out local agricultural production as local farmers could not compete with cheaper U.S. commodities (Natsios, 2018; Kushner, 2014). This unintended consequence of food aid has led development experts, including U.S. government officials, to call for aid reforms that move away from donating U.S. food surpluses toward investing in the resiliency of food systems in developing countries such as through procuring food directly from local producers or by providing cash assistance to recipients to stimulate local markets (Charles, 2024; Barrett, 2017).

As the world grapples with unprecedented hunger crises along with the effects of climate change, the U.S. has an opportunity to strategically pivot its agriculture subsidies away from waste and inefficiency toward promoting sustainability and food security globally. Simply abolishing agricultural supports would be politically challenging and may do little to curb greenhouse gas emissions (Laborde, 2021). Instead, I recommend three main priorities for repurposing U.S. agricultural subsidies to bolster food security and climate resilience.

1. *Invest in agricultural research and development:* There is a pressing need to boost agricultural productivity to feed the growing global population while reducing carbon emissions. Though research on emissions-reducing agriculture practices is relatively new, promising innovations already exist such as dietary supplements for cattle or new rice varieties that reduce methane emissions (Laborde, 2021; Searchinger, 2019). The U.S. can direct more of its subsidies to promote farmers' adoption of these technologies and support further research into developing new agricultural technologies and innovations that boost food security in a sustainable manner. Breakthroughs in agricultural research would not only benefit American agriculture but also agriculture in countries where productivity has been low vis-à-vis growing populations.
2. *Increase conservation funding as a larger share of subsidies:* Directing more subsidy funding to conservation efforts, such as restoring degraded land and preserving other natural resources can mitigate the environmental toll of large-scale agriculture. Conservation practices can also support carbon sequestration which removes greenhouse gasses from the atmosphere and retains them in the ground, thereby reducing emissions. Currently, only five percent of global agricultural subsidies support conservation objectives, and only six percent go to conservation research and technical assistance (Searchinger, 2020). Increasing the share of such investments will help address the negative externalities of environmental pollution, natural resource overuse and GHG emissions caused by current farming practices.
3. *Support sustainable, climate-smart agriculture:* As climate change transforms weather patterns, there is a need to adapt agriculture and farming practices to the new reality. Subsidies can be leveraged to scale climate resilient agricultural practices and inputs. Domestic agricultural supports can go towards incentivizing the practice of precision agriculture techniques to promote more efficient fertilizer usage. Subsidies could be repurposed to encourage farmers to use products like controlled-release or slow-release fertilizers that reduce the amount of GHG emissions released into the atmosphere (Houlton, 2019). Additionally, initiatives like the U.S. Department of Agriculture's Environmental Quality Incentives Program (EQIP) can be scaled up to equip more farmers to grow cover crops. Cover crops help prevent soil erosion and have been identified as a climate-smart practice as they strengthen farms' adaptation to drought, excess precipitation and other extreme weather. EQIP has also been shown to have more equitable allocation having reached farmers in every U.S. state (Schechinger, 2023).

Repurposing U.S. agricultural subsidies holds significant promise for bolstering global food security by advancing more effective and resilient agriculture. However, successfully implementing the reforms discussed above will require effective engagement with all relevant stakeholders, including farmers and special interest groups who may oppose such changes. Policymakers should be transparent about how the subsidy reforms may affect these groups and provide assistance to help farmers and agribusinesses to adjust to the redesigned subsidies. Effective evaluation and monitoring of the reforms will also be necessary to ensure revamped subsidies have the intended effect of advancing climate resilient agriculture to strengthen food security.

Beyond the United States, there is also a need for broader agricultural subsidy reform. Globally, governments contribute $540 billion USD annually in support to the agriculture sector, largely to measures that are inefficient, unequally allocated and harmful for environmental and human health (FAO, 2021). As with the U.S., other countries can reassess the effects of their domestic agriculture subsidies and redesign them where needed to achieve a more food secure future. Repurposing agricultural supports across the world would advance progress on curbing agriculture's carbon footprint, and better meet the challenge of feeding the world.

Reference List / Bibliography / Sources:

- *A multi-billion-dollar opportunity – Repurposing agricultural support to transform food systems.* (2021). Food and Agriculture Organization of the United Nations (FAO). https://www.fao.org/documents/card/en/c/cb6562en.

- Aminetzah, Daniel et al. (2022). *A reflection on global food security challenges amid the war in Ukraine and the early impact of climate change.* McKinsey and Company. https://www.mckinsey.com/industries/agriculture/our-insights/a-reflection-on-global-food-security-challenges-amid-the-war-in-ukraine-and-the-early-impact-of-climate-change.

- Barrett, Christopher B. (2017). *Response to Questions for the Record Received from Senators Corker and Menendez Supplement to testimony before the United States Senate Committee on Foreign Relations Hearing on "Modernizing the Food for Peace Program," October 19, 2017.* Cornell University. http://barrett.dyson.cornell.edu/presentations/Senate%20Foreign%20Relations%20Barrett%20responses%20Nov%202017.pdf.

- Charles, Dan. (2024). *Why there's a storm brewing about global food aid from the U.S.* National Public Radio (NPR). https://www.npr.org/sections/goatsandsoda/2024/01/09/1222952895/why-theres-a-storm-brewing-about-global-food-aid-from-the-u-s?utm_source=pocket-newtab-en-us.

- *Commodity subsidies in the United States totaled $276.1 billion from 1995-2021.* Accessed: 2024. Environmental Working Group. https://farm.ewg.org/progdetail.php?fips=00000&progcode=totalfarm&page=conc&regionname=theUnitedStates.

- Edwards, Chris. (2023). *Cutting Federal Farm Subsidies.* Cato Institute. https://www.cato.org/briefing-paper/cutting-federal-farm-subsidies.

- Fogarty, David. (2011). *Factbox: 2008 food price crisis -- what caused it?* Reuters. https://www.reuters.com/article/us-climate-crops-price-factbox/factbox-2008-food-price-crisis-what-caused-it-idUSTRE7590IJ20110610/.

- *Government Payments by Program.* (2023). U.S. Department of Agriculture (USDA), Economic Research Service. https://data.ers.usda.gov/reports.aspx?ID=17833.

- Graber, Cynthia et al. (2018). *Feed the World: How the U.S. Became the World's Biggest Food Aid Donor—And Why That Might Not be Such a Great Thing.* Gastropod Podcast. https://gastropod.com/feed-the-world-how-the-u-s-became-the-worlds-biggest-food-aid-donor-and-why-that-might-not-be-such-a-great-thing/.

- Houlton, Benjamin Z et al. (2019). *A World of Co-benefits: Solving the Global Nitrogen Challenge.* Earth's Future. 7(8). https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2019EF001222.

- *Hunger and Food Insecurity.* Accessed: 2024. Johns Hopkins Center for a Livable Future. https://foodsystemprimer.org/food-nutrition/hunger-and-food-insecurity.

- Jha, Somesh. (2023). *Is a global food crisis the new normal?* Al Jazeera. https://www.aljazeera.com/features/2023/8/29/is-a-global-food-crisis-the-new-normal.

- Kabukuru, Wan Johi. (2023). *Scientists: Climate change worsened Eastern Africa drought.* Associated Press. https://apnews.com/article/horn-of-africa-eastern-africa-drought-climate-change-a11f612bc6c0f1a27324652146d24e55.

- Kushner, Jacob. (2014). *In Haiti, all eyes on US to reform 'unjustifiable' food aid program.* The World. https://theworld.org/stories/2014-01-13/haiti-all-eyes-us-reform-unjustifiable-food-aid-program.

- Laborde, David et al. (2021). *Agricultural Subsidies and Global Greenhouse Gas Emissions.* Nature Communications. 12(2601). https://www.nature.com/articles/s41467-021-22703-1.

- Lucchesi, Emilie Le Beau. (2023). *The Domino Effects of a Global Food Shortage.* Discover. https://www.discovermagazine.com/the-sciences/the-domino-effects-of-a-global-food-shortage.

- Mittal, Anuradha. (2009). *The 2008 Food Price Crisis: Rethinking Food Security Policies.* United Nations Conference on Trade and Development (UNCTAD). https://unctad.org/system/files/official-document/gdsmdpg2420093_en.pdf.

- NASA. (2022). *Impact of Climate Change on Global Agricultural Yields.* NASA Scientific Visualization Studio. https://svs.gsfc.nasa.gov/4974.

- Natsios, Andrew S. (2018). *Testimony of Andrew S. Natsios, Professor George H.W. Bush School of Government at Texas A&M University "Modernizing Food Aid:*

Improving Effectiveness and Saving Lives." United States House Committee on Foreign Affairs. https://docs.house.gov/meetings/FA/FA00/20180214/106858/HHRG-115-FA00-Wstate-NatsiosA-20180214.pdf.

- Regmi, Anita. (2021). *U.S. Agricultural Export Programs: Background and Issues.* Congressional Research Service. https://crsreports.congress.gov/product/pdf/R/R46760.

- Reinsch, William Alan. (2023). *Climate Change and U.S. Agricultural Exports.* Center for Strategic and International Studies. https://www.csis.org/analysis/climate-change-and-us-agricultural-exports.

- Ritchie, Hannah et al. (2024). *Emissions by sector: where do greenhouse gases come from?* Our World in Data. https://ourworldindata.org/emissions-by-sector.

- Ross, Sean. (2023). *Four Countries That Produce the Most Food.* Investopedia. https://www.investopedia.com/articles/investing/100615/4-countries-produce-most-food.asp#citation-50.

- Schechinger, Anne. (2021). *Under Trump, Farm Subsidies Soared and the Rich Got Richer Biden and Congress Must Reform a Wasteful and Unfair System.* Environmental Working Group. https://www.ewg.org/interactive-maps/2021-farm-subsidies-ballooned-under-trump/.

- Schechinger, Anne. (2023). *Giving IRA conservation funds to farm subsidies threatens millions of cover crop acres.* Environmental Working Group. https://www.ewg.org/news-insights/news/2023/10/giving-ira-conservation-funds-farm-subsidies-threatens-millions-cover.

- Searchinger, Tim. (2019). *Creating A Sustainable Food Future: A Menu Of Solutions To Feed Nearly 10 Billion People By 2050.* World Resources Institute. https://research.wri.org/sites/default/files/2019-07/WRR_Food_Full_Report_0.pdf.

- Searchinger, Tim. (2020). *Redirecting Agricultural Subsidies for a Sustainable Food Future.* World Resources Institute. https://www.wri.org/insights/redirecting-agricultural-subsidies-sustainable-food-future.

- Smith, Vincent H. (2023). *What Harm Is Done by the Federal Crop Insurance Program Today?* American Enterprise Institute. https://www.aei.org/research-products/report/what-harm-is-done-by-the-federal-crop-insurance-program-today/.

- Sumner, Daniel A et al. (2017). *Poverty, Hunger, and US Agricultural Policy: Do Farm Programs Affect the Nutrition of Poor Americans?* American Enterprise Institute. https://www.aei.org/research-products/report/poverty-hunger-and-us-agricultural-policy-do-farm-programs-affect-the-nutrition-of-poor-americans/.

- *The United States Farm Subsidy Breakdown, 1995-2021.* Accessed: 2024. Environmental Working Group. https://farm.ewg.org/region.php?fips=00000&progcode=total.

- Walthall, C.L. (2013). *Climate Change and Agriculture in the United States: Effects and Adaptation.* https://www.usda.gov/sites/default/files/documents/CC%20and%20Agriculture%20Report%20(02-04-2013)b.pdf.

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