If we get food right, we get everything right:

rethinking the food system in post-COVID-19 Hawai'i

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"We are facing unprecedented ecological and public health challenges driven by agriculture and the food system. We now have a choice: We can use our scientific and traditional knowledge to understand and transform the food system of Hawaii toward sustainability, climate change resilience, human health and aloha, or we can squander this opportunity only to pay dearly down the road through unfulfilled human potential, the degradation of Earth's life support systems and immeasurable climate- and disease-related suffering and loss of life."

A Survey of Impacts of COVID-19 on Food Security

The Hawaii Food Bank is working around the clock to meet the spike in demand as families scramble to secure a two-week supply of emergency food reserves. As businesses shutter and unemployment surges, food banks around the nation anticipate tens of thousands of additional people may begin relying on them for meals. Long lines of cars idle outside of Hawaii public schools waiting for staff and volunteers to provide much needed meals to children whose access to free lunch has been interrupted by mandated campus closures. Across the nation, poor and unemployed communities watch and wait for the collision of multiple crises: the widespread onset of the COVID-19 disease and household money and food supplies running out. At an international level, the Committee on World Food Security has reported that the crisis is already affecting the food system directly through impacts on supply and demand with unknown impacts on medium- and long-term food supply.[1]

Agriculture & the Emergence of Infectious Diseases

The ongoing spread of the Coronavirus and the resultant COVID-19 disease pandemic has exposed many systemic vulnerabilities to health care, the economy and to the normal functioning of society world wide. As the current crisis deepens, claiming more and more lives and livelihoods, we are learning the origins of this and other virulent diseases: agriculture and the larger food system.

It is through the rapid expansion of agriculture and human development into wild ecosystems combined with the specific ways that we produce food - as large scale industrial monocultures of plants and animals - that deadly pathogens and diseases

[1] https://www.csis.org/programs/global-food-security-program/covid-19-and-food-security

emerge and eventually spread. A 2019 review of the scientific literature has found that since 1940, agricultural drivers were associated with more than 25% of all - and greater than 50% of infectious diseases caused by germs that spread between animals and people. These percentages are anticipated to increase along with human population growth and the further expansion and intensification of agriculture.[2] An incomplete list of deadly pathogens recently emerging from agriculture include H5N1- Asian Avian Influenza, H5N2, multiple Swine Flu variants (H1N1, H1N2), Ebola, *Campylobacter*, Nipah virus, Q fever, hepatitis E, *Salmonella enteritidis*, foot-and-mouth disease, and a variety of other influenzas including the novel Coronavirus that is now wreaking havoc.[3] These types of pathogen outbreaks are occurring at an increased frequency globally while representing only a small fraction of total "hidden" costs imposed on humanity and the environment by the modern food system. Tragically, the COVID-19 disease and many other epidemics of the recent past could have been prevented.

The Hidden Costs of the Modern Food System

The modern food system is the #1 driver of global environmental change and the primary cause of the chronic diseases - diabetes, heart disease, obesity - responsible for US citizens now living shorter and sicker lives.[4] Though a remarkable achievement of science, technology and economic efficiency, modern food production is increasingly laying waste to natural resources, wild ecosystems and human lives.[5] The food system generates an estimated 30% of global greenhouse gas emissions while simultaneously compromising air, water and soil quality, ecosystem function and biodiversity.[6] The food system is also an important social determinant of public health, with low-quality diets often consumed by poor communities being a significant factor in the substantial rise of diet-related chronic diseases globally.[7] Agriculture uses an astonishing 70% of the world's fresh water resources**.** It is well documented that pesticide exposure drives the loss of crop pollinators, negatively impacts biodiversity and increases the risks of cognitive developmental disorders in children along with certain types of cancers.[8] Modern farming practices increase soil erosion, desertification, habitat loss, water pollution with fertilizers and the development of genetic resistance to antibiotics in pathogens to name only a few.[9] Importantly, feeding the anticipated 10 billion people by 2050 with a healthy and sustainable diet will simply not be impossible without

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[2] Rohr et al. 2019. Emerging human infectious diseases and the links to global food production. *Nature Sustainability*, *2*(6), 445-456.
[3] https://newleftreview.org/issues/II102/articles/rob-wallace-rodrick-wallace-ebola-s-ecologies; https://theamericanscholar.org/who-should-we-blame-for-coronavirus/
[4] https://www.health.com/mind-body/life-expectancy-2040
[5] IAP 2018; Willette et al. 2019.
[6] Tilman et al. 2001; Zhang et al. 2007; Foley et al. 2011; Tscharntke et al. 2012; West et al. 2014; Pretty et al. 2018; IPBES 2019
[7] Peters 2018; Blüher 2019; Fears et al. 2019
[8] Hayes et al. 2011; Shelton et al. 2014; Steffen at al. 2015; USDA ERS 2018; WHO 2018
[9] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4388096/

significantly changing our eating habits, improving food production techniques and reducing food waste.[10]

The Systemic Vulnerabilities in Hawai‘i’s Food System

Through the rapid and devastating expansion of COVID-19, we once again see how Hawai‘i’s critical systems like our food supply are also vulnerable to natural and human-caused disasters. Were the COVID-19 pandemic to continue during Hawaii’s hurricane season - and it may very well do so - one can envision a cascade of negative consequences to our food security, health and wellbeing.

With the closest port of call 2,345 miles away in Oakland, California, the Hawaiian islands are one of the most geographically isolated and food-import dependent populations in the world. Though varying considerably by commodity group, the state of Hawaii imports approximately 90% of its food and over 73% of its energy. All of our critical infrastructure - airports, seaport, fuel refinery and power station - lies along the same 12-mile stretch of low-elevation coastline on the south shore of Oahu. At any given time, we have a 5-7 day supply of food in the state. With a state economy dominated by industrial tourism, just-in-time inventory managment and with with few functional redundancies in critical systems infrastructre, Hawai‘i’s 1.4 million residents and 10 million annual visitors are uniquely vulnerable to interruptions in food distribution due to natural disasters, terrorism, fuel price fluctuations, and other economic or social disturbances.

Hawaii’s food system is not only vulnerable to natural disasters. For many low-income residents living in Hawaii, the high cost of living combined with a low minimum wage contribute to the state’s high poverty rate (14%) when compared to the national average (13.1%). These key factors contribute to moderate to high rates of household food insecurity, the frequent consumption of low-quality, ultra-processed and fast foods, and the generation of significant health disparities in the low-income and indigenous communities of Hawai‘i. Further, legal cases over indigenous land and water rights remain unresolved for many Hawaiian communities, while concerns over the environmental quality, human health, economic viability of local agriculture and biocultural self-determination feature prominently in debates about the future of food and agriculture in Hawai‘i. The above conditions raise critical questions as to whether the food system of Hawai‘i is capable of delivering adequate nutrition in the instance of a natural disaster and meet the ecological, economic, cultural, public health and food security needs of its residents and visitors over the long-term. The unfolding COVID-19 pandemic has thrown this question into sharp relief.

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[10] IAP 2018; Willette et al. 2019; Eyhorn et al. 2019.

To begin addressing these systemic challenges in the context of recurring epidemics, natural disasters and global environmental change, we must begin the process of transforming the food system to help Hawai‘i achieve both state and UN Sustainable Development Goals over the next ten years. Through coordinated, large-scale and multi-institutional collaboration on research, education, business, planning, policy analysis and community engagement, these goals may be achieved. Such an initiative now exists. It is called the 'Ike 'Ai Consortium on Sustainable Food Systems ('Ike 'Ai).

10-year Vision and Goals for Hawaii's Food System[11]

The vision for Hawai‘i's food system includes the establishment of a robust network of community actors, educational institutions, foundations and state agencies that work in collaboration to integrate sustainable food production, processing, distribution, consumption and waste management to enhance the environmental, economic and social health of all people in Hawaii. The establishment of a sustainable community food system in Hawai‘i includes the following 10-year goals:

- Generation of a stable base of locally owned and family farms using ecologically-based production practices and local inputs;
- Biocultural restoration of traditional Hawaii land and seascapes;
- Marketing and processing practices that create direct links between farmers and citizens;
- Secure access by all community members to an adequate, safe, affordable, culturally-appropriate and nutritious diet;
- Food and agriculture-related businesses that create jobs and re-circulate financial capital within the Hawai‘i's economy;
- Living wages for all people and enhanced working conditions for agricultural and food system laborers;
- Expansion of state food and agriculture policies that promote local and sustainable food production, processing and consumption; and
- Widespread adoption of dietary behaviors that reflect concern about individual, environmental and community health and well being.
- Food system planning and infrastructure development efforts to achieve resilience to natural and human-caused disasters.

The 'Ike 'Ai Consortium on Sustainable Food Systems ('Ike 'Ai)

'Ike 'Ai is a multi-institutional research, education, policy analysis, planning and community engagement initiative designed to transform Hawaii's food system to

[11] Adapted from Defining Sustainable Community Food Systems by the Agricultural Sustainability Institute, UC Davis.

achieve state and UN SDGs by 2030.[12] Specifically, 'Ike 'Ai is designed to achieve and exceed UN SDG #2 relating to hunger, food security, sustainable agriculture and food system resilience. The project is named 'Ike 'Ai, from the Hawaiian words for "knowledge" and "food," respectively. Key objectives of 'Ike 'Ai are to achieve and sustain, through agri-food system change in Hawaii, the following goals: 1.) ecological sustainability; 2.) social equity; 3.) human health and nutrition; 4.) biocultural restoration of Hawai'i' land and seascapes; 5.) climate change adaptation and mitigation; 6.) security/disaster preparedness; and 7.) sustainable economic development. Its vision is to promote food system development in Hawai'i that is data driven, ecologically sustainable and socially just.

A Call to Action:

We are facing unprecedented ecological, social and public health challenges driven by agriculture and the food system. How we act now will set into motion a new set of conditions enabling Hawai'i to achieve its vision and goals of sustainable development, resilience, health and aloha.[13] The 'Ike 'Ai Consortium provides a model and a vehicle for food system transformation to achieve sustainability, resilience and equity for Hawai'i' and to serve as a model for the world. The science is now abundantly clear: our food systems are harming public health, diminishing regional food economies and compromising the integrity of the biosphere.

Time is running out to build equitable and resilient food systems and prevent unnecessary human suffering and climate and diet-related deaths. We have decades of robust natural and social science research to support transformative change toward sustainability, human health and well being. We now need to act. We must apply our intellectual, financial and natural resources toward creating a new ecological society starting with transforming the food system. Multi-sector and multi-institutional collaboration is the only way forward and our local people, institutions, Hawaiian values and our innovative models - grounded in place - will provide the essential leadership. We must pause and make a conscious decision: we can continue to pay indirectly through the unnecessary loss of lives, economic downturns and profound levels of human pain and suffering, or we can invest in prevention, diversity, resilience, health and stability. The choice is now ours to make. Together, we can get the Hawai'i food system and so much else right.

Strategies for Promoting Food Security, Health & Sustainable Food Production in Hawai'i

[12] Hawai'i 2050 Sustainability Plan: http://planning.hawaii.gov/sustainability/hawaii2050/; Hawaii Green Growth and Aloha + Challenge: https://aloha-challenge.hawaiigreengrowth.org/

[13] Ibid.

Strategy	Actionable Steps
Form Hawaii State Food Policy Council	- Fund and form a permanent Hawaii Food Policy Council to advise key state agencies on food system sustainability, resilience, economic development and public health initiatives. - Draft a comprehensive vision and action plan for food system transformation in Hawaii by 2030 to meet the UN SDGs modeled after the Eat-Lancet Commission on sustainable food systems. See the *'Ike Ai Consortium on Sustainable Food Systems* for an example. - Develop an Integrated Food Policy framework for advancing food system sustainability, resilience and public health based on vision and action plan for food system transformation.[14]
Research Systemic Risks/Vulnerabilities to Statewide Food Security in Hawaii	- Identify, assess and measure the key food system vulnerabilities with respect to severe weather events and longer-term climate change impacts on critical infrastructure.
Fund and Develop Food System Resilience and Equity Plan for the State of Hawaii	- Develop a food system resilience and equity plan for the state of Hawaii to implement in coordination with key state/city/county/federal emergency agencies, NGOs and private sector actors (e.g. commercial food distributors).
Increase In-State Commercial Food Storage Articulated with Emergency Management Agencies (EMA)	- Increase quantity of in-state storage of critical foods in commercial/private and government-held food reserves. - Special attention paid to staple foods and critical foods (e.g. infant formula).
Plan and Build for Food System Resilience: Relocate Commercial Food Storage Facilities Outside of Inundation Zone	- Relocate/add commercial food storage facilities outside of known storm surge/inundation zones (e.g. 1-2 m tsunami, category 3 hurricane storm surge and/or 1-2 m sea-level rise). - Incentivize commercial food distributors to hold larger volumes of non-perishable staple and emergency foods on each island via PPPs. - Articulate emergency food plans involving commercial food distributors and city, county, state and federal Emergency Management Agencies through Public Private Partnerships.
Encourage Household Storage of Staple and Critical Foods	- Develop comprehensive outreach, education and financial incentives program to achieve the recommended 14-day supply of food and water for 75% of Hawaii residents. - Encourage greater home production of taro, breadfruit, sweet potato, and other staple foods.
Increase Purchasing Power for Low-Income & Food	- Increase state, federal and private funds (e.g. private insurance agencies)

[14] For more on Integrated Food Policy.

Insecure Community Members	available through "Double-Up Food Bucks" programming to enhance the purchasing power of low-income community members (e.g. SB 390)[15] - Increased allocation for Double-Up Bucks to achieve a minimum of 25% of all Hawaii SNAP households receiving an addition $25.00/month.
Research Optimization of Local/In-State Production Versus Imports	- Conduct social, economic and cultural costs-benefit analyses to define "optimum" ratio of "local"/in-state food production to imported commodities to achieve ecological, social and economic goals simultaneously. - Integrate the defined "optimum" as state sustainability target for local food production in the state.
Assess and Quantify Visitor Industry Demand for Local and Hawaiian Cultural Foods	- Assess and quantify visitor industry demand and support for local, ecologically sustainable and cultural food production and consumption (e.g. Howard and Alan 2006). - Develop related indigenous certification, branding campaign and procurement strategy (see below) in collaboration with key visitor industries and firms.
Develop Institutional Standards Procurement Program for the Local and Cultural Foods	- Develop and implement "Good Food Purchasing" program and standards and protocols for the visitor industry and key institutions in the state of Hawaii.
Research Structural Obstacles to Increased Food Production in the State of Hawaii	- Identify key structural obstacles that may prevent local and diversified production from reaching its "optimum" level. - See Hawaii Farmer Needs Assessment and preliminary data. - Develop public policy to address key challenges diversified farming operations (small and large) face (e.g. land, capital, labor, pests and diseases). - Increased incentives for conservation planning, farming system diversification and low-input and organic production.
Increase State Minimum Wage to Living Wage Level	- Increase state minimum wage to estimated living wage of $16.46/hour (for 1 person) for Urban Honolulu to increase purchasing power of low-income communities.
Revisit and revise the Jones Act (1920) Restrictions	- Develop proactive strategy to waive/amend the 1920 Jones Act Restrictions in times of state emergency.
Incorporate Indigenous Food Ways into Food System Planning Efforts	- Generate land use ordinances that support the restoration and scaling of traditional farming practices, aquaculture, fisheries management and food ways.

[15] Double Up Food Bucks programs have been shown to achieve the following: a. reduces food insecurity; b. improves dietary behaviors among low-income families; c. supports farmers; d. boosts the local economy - a $1 million investment on behalf of the State would generate nearly $3.6 million in economic activity.

	- Engage Hawaiian academic and practitioner communities in long-range food system planning efforts.[16]

[16] The integration of indigenous knowledge, native Hawaiian leadership, and the restoration of traditional foodways are to be prioritized in all decisions relating to goals and objectives, research and education priorities, planning and implementation.