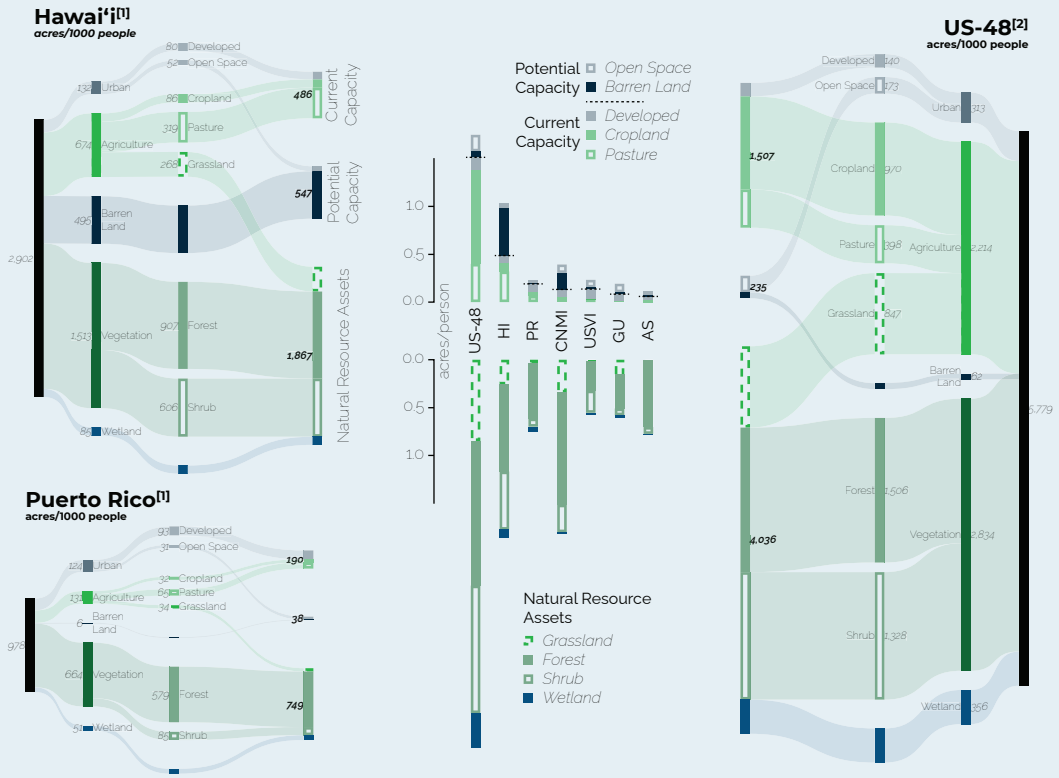
Land+Food:

An Inventory of Ag and Food Resources in US Islands

How do we reliably feed our communities? With the majority of our food imported across the sea through complex supply chains, at higher cost, and at the mercy of climate change and global pandemics, we must chart a course to self-sufficient, local agriculture. To help this return to the land, we here take inventory of the land itself: **How much land is there? How much food can it grow? Is it enough?**

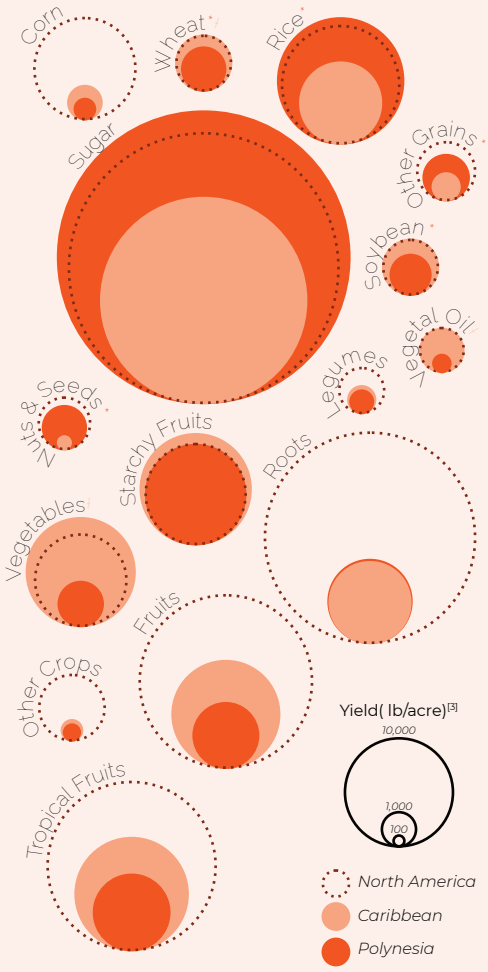


How much land is there? How is it being used?

Unsurprisingly, Hawai'i, Puerto Rico, the USVI, Guam, American Samoa and the CNMI must get by with significantly less land per person than the US mainland. With most land already allocated, communities must balance crop and livestock production with natural resource protection, and urban housing with industrial manufacturing and food processing.

How much food can we grow in an acre?

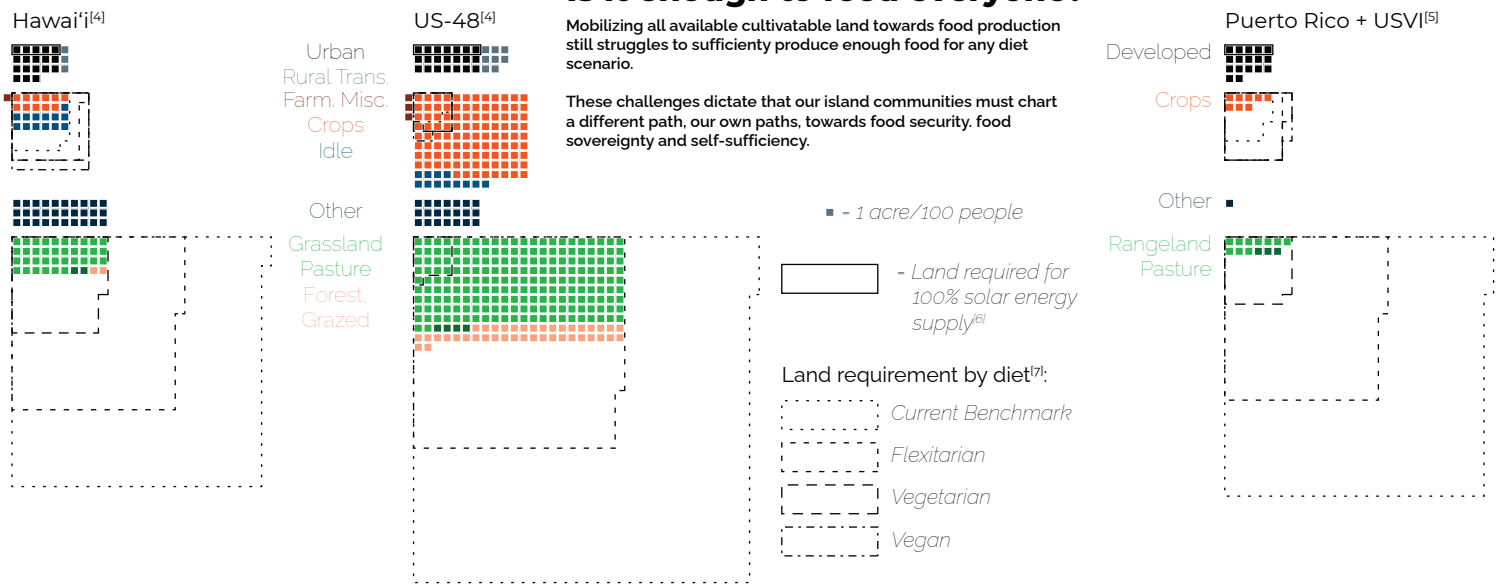
It really depends on where that acre is. The technological advances and management practices of modern agriculture in North America to improve crop yields have not translated to the US islands despite an abundance of sun, water, and year-round growing seasons.



Is it enough to feed everyone?

Mobilizing all available cultivatable land towards food production still struggles to sufficiently produce enough food for any diet scenario.

These challenges dictate that our island communities must chart a different path, our own paths, towards food security. food sovereignty and self-sufficiency.



Notes and References:
All areas were per capita normalized to population estimates from the most recent available US Census Bureau Survey https://data.census.gov/cedsci/

[1] Area estimates were calculated based on the latest available (2010-2016) National Oceanic and Atmospheric Administration (NOAA) Coastal Change Analysis Program (C-CAP) for Hawaii and the US Territories. https://coast.noaa.gov/digitalcoast/data/ccapregional.html

[2] Area estimates of the 48-contiguous US States calculated from the 2016 US Geological Survey (USGS) National Land Cover Database (NLCD). https://www.mrlc.gov/data/nlcd-2016-land-cover-conus

[3] Agricultural Yields were calcuated as 10-year averages (2009-2019) for all major crop categories for grouped regions (North America, Caribbean, Polynesia). http://www.fao.org/faostat/en/#data
*Where yield data was unavailable for Polynesia, values for Oceania were substituted.
†Where yield data was unavailable for the Caribbean, values for the Americas were substituted.

[4] Land use for Hawaii and the 48-contiguous US States were calculated based on the 2012 US Department of Agriculture (USDA) Economic Research Service (ERS) Major Land Use Study https://www.ers.usda.gov/data-products/major-land-uses/

[5] Land use for the Puerto Rico and the US Virgin Islands were calculated based on the 2017 USDA Natural Resource Conservation Service (NRCS) National Resources Inventory (NRI). https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/nra/nri/

[6] Energy consumption was calculated based on data from the US Energy Information Administration (EIA). Per capita energy demand for Puerto Rico and the US Virgin Islands were assumed to be equal to that of Hawaii. https://www.eia.gov/state/
Land use for solar photovoltaic energy generation was calculated based on the US Department of Energy (DOE) National Renewable Energy Laboratory (NREL) report "Land-Use Requirements for Solar Power Plants in the United States". https://www.nrel.gov/docs/fy13osti/56290.pdf

[7] Land requirements based on diet were calculated for the Food and Agriculture Organization of the United Nations (FAO) 2020 report "The State of Food Security and Nutrition in the World 2020". http://www.fao.org/3/ca9692en/online/ca9692en.html#chapter-7a_1
The land requirments were calculated based on agricultural yields for major food crop categories determined in [3]. These values represent a conservative lower limit, not taking into account losses in the food supply chain, processing and storage. Land requirements for fish, seafood and aquaculture products are not depicted here. Protein yields were roughly estimated similarly to [3], not taking into account the land required for supplemental feed production, again, representing a conservative lower limit.

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