

Agriculture, Food Systems, and Rural Communities

Artist: Julia Y.



Key Message 11.1

Agricultural Adaptation Increases Resilience in an Evolving Landscape

Climate change has increased agricultural production risks by disrupting growing zones and growing days, which depend on precipitation, air temperature, and soil moisture (*very likely, very high confidence*). Growing evidence for positive environmental and economic outcomes of conservation management has led some farmers and ranchers to adopt agroecological practices (*very high confidence*), which increases the potential for agricultural producers to limit greenhouse gas emissions (*likely, medium confidence*) and improve agricultural resilience to climate change (*high confidence*).

Key Message 11.2

Climate Change Disrupts Our Food Systems in Uneven Ways

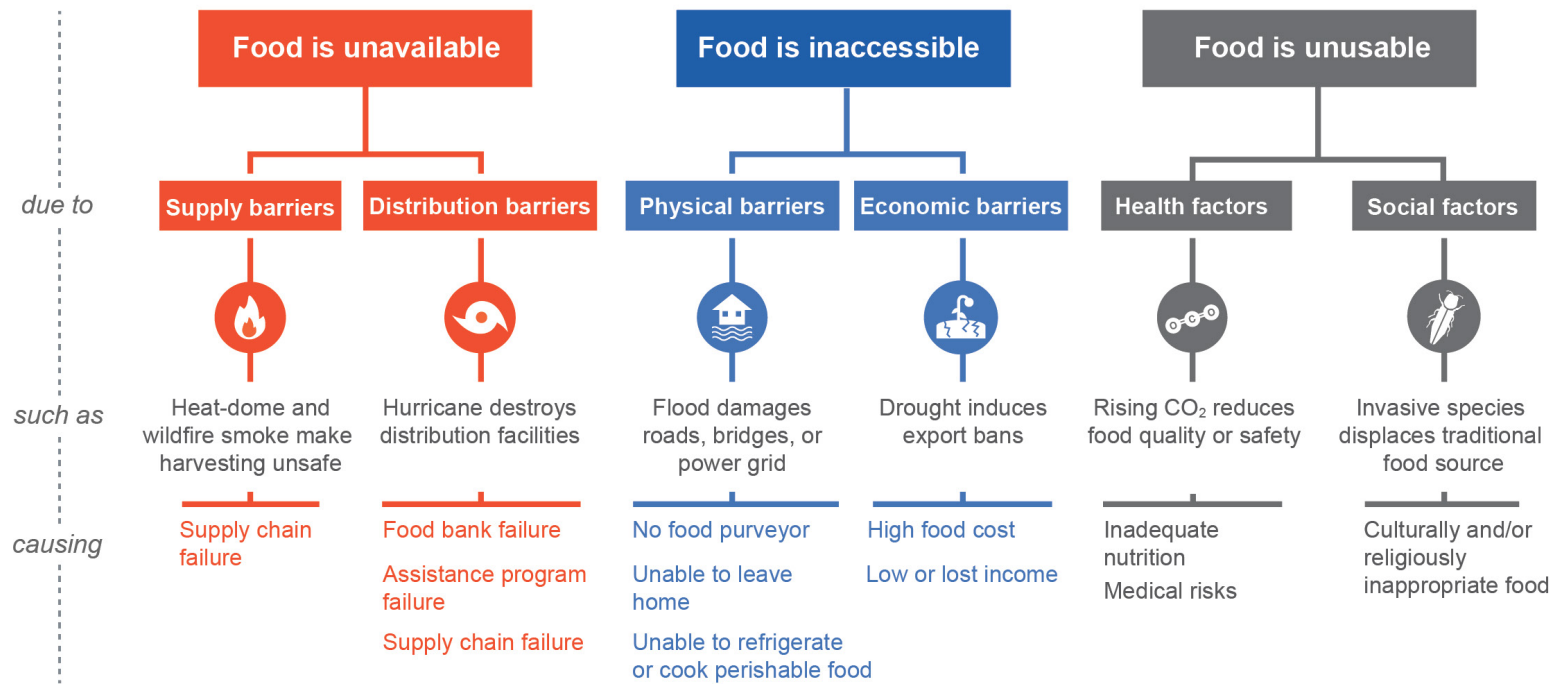
Climate change is projected to disrupt food systems in ways that reduce the availability and affordability of nutritious food, with uneven economic impacts across society (*likely, medium confidence*). Impacts of climate change on other measures of human well-being are also distributed unevenly, such as worsening heat stress among farmworkers (*high confidence*) and disruptions to the ability of subsistence-based peoples to access food through hunting, fishing, and foraging (*high confidence*).

Key Message 11.3

Rural Communities Face Unique Challenges and Opportunities

Rural communities steward much of the Nation's land and natural resources, which provide food, bioproducts, and ecosystem services (*high confidence*). These crucial roles are at risk as climate change compounds existing stressors such as poverty, unemployment, and depopulation (*likely, medium confidence*). Opportunities exist for rural communities to increase their resilience to climate change and protect rural livelihoods (*high confidence*).

Examples of Food System Failure Due to Climate Change



Climate change is expected to increase risks to food security in multiple ways.

Figure 11.11. This fault-tree shows some of the many ways that food system failures can occur due to climate change, ultimately making food less accessible, available, or usable. In some cases, food may still be available yet inaccessible or unusable. For example, power outages during extreme heat events or after a hurricane may prevent some consumers from safely refrigerating or cooking perishable foods they have already purchased. Adapted from Chodur et al. 2018 [CC BY 4.0] (see full chapter for detailed citation).

Recommended Citation

Bolster, C.H., R. Mitchell, A. Kitts, A. Campbell, M. Cosh, T.L. Farrigan, A.J. Franzluebbers, D.L. Hoover, V.L. Jin, D.E. Peck, M.R. Schmer, and M.D. Smith, 2023: Ch. 11. Agriculture, food systems, and rural communities. In: *Fifth National Climate Assessment*. Crimmins, A.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, B.C. Stewart, and T.K. Maycock, Eds. U.S. Global Change Research Program, Washington, DC, USA. <https://doi.org/10.7930/NCA5.2023.CH11>