

## **Resilience to Global Food Supply Catastrophes**

Seth D. Baum, David C. Denkenberger, Joshua M. Pearce, Alan Robock, and Richelle Winkler  
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### **Background: Global Food Supply Catastrophes**

A global catastrophic risk is a risk of an event that would cause major harm to global human civilization. Many global catastrophic risks are risks of *global food supply catastrophes* because they threaten major disruption to global food supplies. These include risks of nuclear wars, volcanic eruptions, asteroid and comet impacts, abrupt climate change, and plant disease outbreaks. Global food supply catastrophes are an important class of global catastrophic risk. *This paper studies how to make humanity more resilient to global food supply catastrophes, so that humanity could successfully withstand, adapt to, and recover from such a catastrophe.*

### **Food Supply Options: Food Stockpiles, Agriculture, and Alternative Foods**

There are three basic options for food supplies during global food supply catastrophes. *Food stockpiles* are collections of food prepared before the catastrophe. Food stockpiles are versatile but expensive. *Agriculture* is the primary food supply during normal times and may not work well during a catastrophe. *Alternative foods* are foods produced using energy sources other than sunlight, such as trees or natural gas. Alternative foods are less expensive than stockpiles, but they drain natural resources and would take time to scale up after the catastrophe. *The paper finds that agriculture should in general be the first option, followed by alternative foods, and then food stockpiles.*

### **Local Factors**

Under normal circumstances, there is global trade in food supply. During a global catastrophe, trade may be shut down, forcing each location to be self-sufficient. Each location should consider its own mix of the three food supply options depending on local circumstances, such as resources for alternative foods and transportation infrastructure. For example, northern Maine has many trees and a small population, so it may be able to depend on the trees for alternative foods. However, the Dallas metropolitan area has a large population and few trees, so it will need other food supply options.

### **Making Food Supply Decisions**

The paper discusses some important factors in how decisions about the food supply options should be made. It is important to keep the food supply above some minimum threshold, in order to keep people alive. But what should that threshold be? This is a difficult ethical question with many possible answers.

### **A Research Agenda**

Specific food supply decisions can be informed by dedicated analysis. The paper outlines a research agenda for analyzing these decisions. For example, the amount of food that a location should stockpile depends on its capacity for agriculture and alternative food as well as an ethical judgment about the appropriate minimum food supply threshold.