



# Redefining A Food Security Crisis: Food Security Danger or Food Security Disaster

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**Citation:** Jamaludin, M.H., Marsal, C.J., & Chowdhury, A.J.K. (2023). Agriculture Reports, 2(1): 22-28

**Received:** 07 March 2023

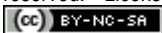
**Accepted:** 27 April 2023

**Published:** 30 April 2023

**eISSN Number:** 2948-4138



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**Keywords:** Food Security Disaster, Food Security Danger, Risk management, Climate change

**Abstract:** There has been a significant global increase in the intensity and frequency of extreme weather events in recent years, which is expected to continue in a future warmer climate affecting agriculture production around the world. With the onset of the Covid-19 pandemic, food security instability is no longer due to natural disasters alone. Geopolitical events, economic instability, and country dependency have extended the possibilities of crisis to occur. Defining a country level on food security has become even more complex, and understanding how it works and the effect of implementing decision and policy as a country becomes more controversial. This particular paper is about conceptual food security issues and is not about specific methods of risk assessment or which methods are the best. The idea is that if we can better understand the concepts behind food security, we can make better assessments of how likely it is that a particular risk will actually happen.

## INTRODUCTION

The widely accepted definition points to the dimensions of food security covering four pillars which are food availability, food access, food utilization and food stability. Food availability is the availability of sufficient quantities of food of appropriate quality, supplied through domestic production or imports (including food aid). Food access is the access by individuals to adequate resources (entitlements) for acquiring appropriate foods for a nutritious diet. Entitlements are defined as the set of all commodity bundles over which a person can establish command given the legal, political, economic and social arrangements of the community in which they live (including traditional rights such as access to common resources). Food utilization is the intake of food through adequate diet, clean water, sanitation and health care to reach a state of nutritional well-being where all physiological needs are met. This brings out the importance of non-food inputs in food security. Food stability is the ability to be food secure, a population, household or individual must have access to adequate food at all times. They should not risk losing access to food as a consequence of sudden shocks (e.g. an economic or climatic crisis) or cyclical events (e.g. seasonal food insecurity). The concept of stability can therefore refer to both the availability and access dimensions of food security.

The term "food security" originated in the mid-1970s, when the World Food Conference (1974) defined it in terms of food supply - ensuring the availability and price stability of basic foodstuffs at the international and national level (Clapp et al, 2022). Over the past 50 years, the concept of food security has evolved to reflect changes in official policy thinking, and calls has been made to review how food security can be better defined (Bodirsky, 2020; Clapp et al, 2022).

*"Availability at all times of adequate world food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices".*

In 1983, FAO analyzed food access and came up with a definition based on the balance between demand and supply on the food security equation.

*"Ensuring that all people at all times have both physical and economic access to the basic food that they need"* (FAO, 1983).

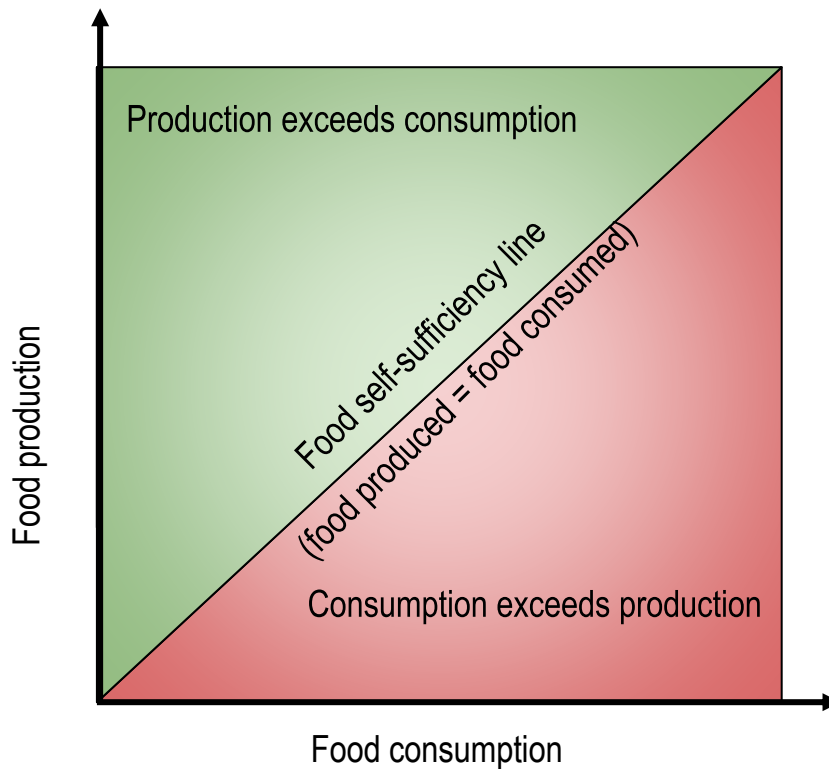
In 1986, the World Bank Report on Poverty and Hunger drew a distinction between chronic food insecurity, associated with structural poverty and low incomes, and transitory food insecurity, caused by natural disasters, economic collapse or conflict. This was complemented by Sen's theory of famine, which highlighted the effect of personal entitlements on food access (Rubin, 2022).

In short, as the link between food security, starvation and crop failure becomes a thing of the past, the analysis of food insecurity has evolved to include political and social factors (Devereux 2000). Increasing climate related events are expected to increase (Ripple et al, 2020). The widely accepted World Food Summit (FAO, 1996) definition reinforces the multidimensional nature of food security, including food access, availability, food use and stability. This has enabled policy responses focused on the promotion and recovery of livelihood options (Martin-Neuning, 2022). They are increasingly applied in emergency contexts and include the concepts of vulnerability, risk coping and risk management.

Demands for assistance due to conflict-induced emergencies have increased and the frequency of natural disasters is also growing. The interaction between man-made and natural disasters compounds the crises and raises practical assessment problems. Global events have far reaching consequences, as viewed from the effect of a pandemic. The recent outbreak of COVID-19 has put immense pressure on the global food supply system, unlike anything seen before (Laborde et al, 2020; Alabi and Ngwenyama, 2023). Vos et al. (2022) emphasize the difference between the COVID-19 pandemic and previous ones, such as Severe Acute Respiratory Syndrome (SARS) or the Middle East Respiratory Syndrome (MERS). While those previous outbreaks led to food shortages in isolated areas due to damage to the livestock sector, COVID-19 has emerged as one of the greatest global health challenges in just a few months (Erokhin and Gao, 2020). The COVID-19 pandemic was disrupting food supply chains and impacting people's lives in many ways. The virus has caused border closures, quarantines, and other disruptions that have strained the global food system. Additionally, the pandemic has degraded the purchasing power of countries and populations, and undermined the ability to produce and distribute food. These factors emphasize the two-faced nature of the pandemic's effects on food security, both direct (disrupted food systems) and indirect (undermined economic access to food). Dependency on particular food sources, especially those that are required to be imported pose a possible risk, if the producing countries are faced with a situation that limits their agriculture output (Ahn and Steinbach, 2022). Those affected would likely be not just the producing countries, but also the importing countries of the specific food commodities (Falkendal et al, 2021; Ahn and Steinbach, 2022; Hellegers, 2022; Kaitibie et al, 2023).

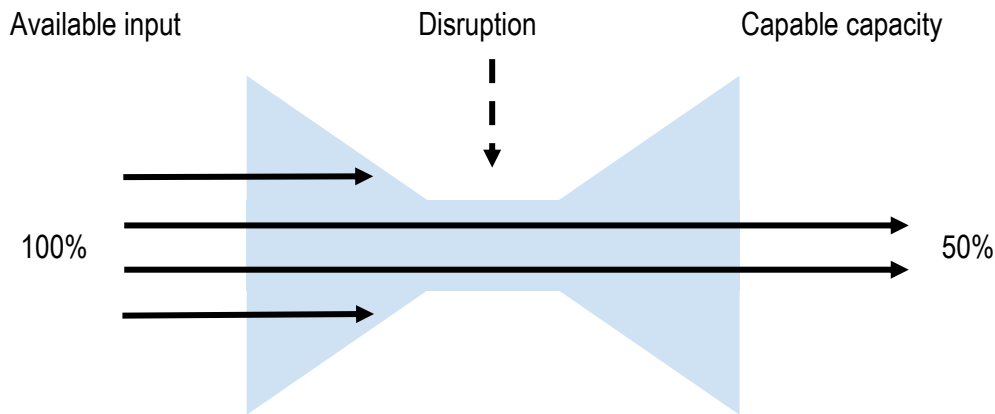
Agriculture supply chain disruption is not new, and has been experienced from time to time due to various reasons such as harvest failure and export restriction in Ukraine, Russia and Kazakhstan in 2010 (Fellmann et al, 2014). The Ukraine-Russia conflict meanwhile had a greater impact on world food stability, as both countries are major producers and exporters of agricultural commodities, minerals, and fertilizers (Behnassi and Haiba, 2022; Ben Hassen and El Bilali, 2022). Although they make up a small share of global gross domestic product, these countries are considered vital to the global food supply, and any disruption in their exports could have a major impact on the world agriculture supply chain (von Cramon-Taubadel, 2022; Orhan, 2022) and have already shown to mostly affect developing countries (Deng et al, 2022).

Global food demand which is shaping the food production chain is another factor that can create possible food security. The shift worldwide in dietary patterns, though not happening synchronously, will later lead to the next food crop or food products for consumption (Popkin, 2001; Jaacks et al, 2019). Being unaware of these changes can lead to surplus and food waste, and also bring negative economic impact to countries that fail to understand its implications (Calicioglu et al, 2019).



**Figure 1.** The self-sufficiency ratio line

The most common measurement tool reported by the majority of the world countries uses the Self Sufficiency Ratio (SSR) to measure a country's production ability for a food product and the amount of it being consumed or used by the country's population. The high SSR is widely being interpreted as being food secure in that particular food product. What is measured is the end product in question that is being produced, but what most do not include in this measurement is the input used to produce the end product. For example, to produce chicken, producers are dependent on feed. Feeds meanwhile are made from grains and grain products, which must first be planted and require fertilizers to grow. If the supply chain to produce chicken is not stable, the end product will be affected. Thus, the question arises, if misrepresentation of SSR which excludes value chain inputs, will it be misinterpreting the real value of food security? The input which a country may have limited control will be a source of disruption (figure 2) leading to a bottleneck effect and will become a risk to food security. Yet these disruptions are not imminent and can be overcome through the right mitigation strategies, such as diversifying import sources, reducing dependencies on import, and having the sufficient stock supply of materials. These strategies are merely to have the ability to withstand substantial changes that can be more disruptive if not attended to, and are mostly short term in nature.



**Figure 2.** The effect of disruption on capable capacity even at high available input.

There need to be a much clearer definition of food security to cover the burden required to put forth policies, based on calculated risk. Current analysis of food security measures mostly the community and even at the individual level. The definition of food security at a country level has not been so straightforward, but it may be relevant to first define levels or urgencies to manage potential risk that will lead to a food security crisis.

As the basis of food security has been explained earlier, further definitions may need to be addressed. Disaster can be defined as “a sudden calamitous event bringing great damage, loss, or destruction”. Danger meanwhile can be defined as “exposure or liability to injury, pain, harm, or loss”.

In short, Food Security Disaster may give the following definition;

*“Complete failure of making available, accessible, and stable supply of food material that can be utilized for the prevention of loss of life and its progeny”*

A food security disaster is a straightforward concept where the ultimate outcome is the total collapse of the food supply ecosystem leading to famine and death. What may not be quite straightforward is how the degree of danger is identified as it develops, and at what point the development later becomes a concern. A warning mechanism that is not only measurable, but is capable of indicating at what stage mitigation should be implemented to prevent increased risks and danger that will result in a disaster.

Dangers or risks have been applied in general management and focuses on the issue of vulnerability. The word “vulnerable” comes from the Latin word “*vulnerare*”, which means “to wound”. In general, it refers to someone or something that is more susceptible to being harmed or harmed in a particular way. For example, an army is vulnerable to attack, and a smoker is vulnerable to the carcinogens in cigarettes and to cancer. To measure vulnerability in specific contexts, it is necessary to be more specific about what the vulnerability is.

In disaster management, the question “vulnerable to what?” is typically answered with reference to an external hazard or threat that, if it acted on a vulnerable entity, could lead to an undesirable outcome, such as a disaster. In food-related contexts, the question “vulnerable to what?” is nearly universally answered with reference to famine, food insecurity, or hunger, the undesirable outcomes faced by vulnerable populations.

Vulnerability emerged as a key concept during the late 1980s and early 1990s, when disaster management theorists began to use it to identify the degree of damage that would be experienced by people or economic assets due to natural hazard events. Meanwhile, food security researchers conceived of vulnerability as a measure of how far people were sliding towards a state of food insecurity or famine. This difference in how vulnerability was defined has had far-reaching consequences for the food security discourse, as different groups of researchers continue to argue about what data should be collected and how vulnerability assessments should be interpreted.

Food security which was previously developed to mitigate famine with reference to agriculture food production, is now being highlighted by almost all countries either poor or rich to maintain a certain level of stable access to food within each respective country, with the sole purpose of preventing

disruption to the daily life of each respective community. Taking into consideration on the definition of vulnerability a food security danger can be defined as:

*“The process or risk that can lead to possible failures to ensure an available, accessible, and stable supply of food material that can be utilised. If not mitigated, a food security danger will lead to a food security disaster”*

To reach a food security disaster will require to follow a process or series of events. Yet this definition will not be able to provide the framework or the action plan required to mitigate food security danger. Understanding of the type of dangers that can lead to a disaster will need to be designed and proposed.

The definition and levels of a food security danger are important for policy makers to justify actions or decisions being made (Jamaludin et al, 2023), thus will have to be identified. It is part of good management practices to prevent sugar coating or whitewashing for personal gains (Jamaludin et al, 2022), leading to mismanagement of public fund. A clear definition can readily be differentiated between a food security disaster and food security danger. Yet food security danger may need to be further elaborated to distinguish between risks and vulnerability that can have immediate reaction and normally follow a process of building gradually to later be potential to become a much more intense danger towards becoming a food security disaster. Various matrices to measure food insecurity that are used today are indicators which can be used to measure the degree of an issue, but should be developed to the needs and status of each country.

## CONCLUSION

Agriculture is an important component of food security. The broad definition of food security should consider the development of a matrix that allows action-oriented policies in the management of food crises before a disaster is to occur. The level and risk if not mitigated will increase a possible food security danger into a food security disaster. The various levels of a food security danger, and its risk management approach may need to be further elaborated. It is important that policy makers understand the food production system, and consequences that occur due to decisions that they make.

**Patents:** Not applicable.

**Acknowledgement:** This publication was made possible with the support of Universiti Malaysia Kelantan, Malaysia, Sultan Sharif Ali Islamic University, Brunei and part of the research project UNISSA/PPP/Grant/(17)/2022.

**Funding:** This research was not received any funds by external resources.

**Institutional Review Board Statement:** Not applicable

**Informed Consent Statement:** Not applicable

**Conflicts of Interest:** No conflict of interest

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