

Forum: ECOSOC

Issue: Reducing the risks of food insecurity caused by natural disasters

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Introduction

Food insecurity is one of the most urgent and complex challenges facing the global community in the twenty-first century. At its core, the issue involves much more than just a temporary lack of food; it directly threatens economic stability, community development, public health, and social peace across entire regions. When natural disasters strike, they disrupt every single stage of the food system. These events range from sudden, violent disasters like tropical cyclones, flash floods, landslides, and earthquakes to slower, long-term hazards such as multi-year droughts, rising sea levels, and progressive land degradation. In both cases, the immediate result is the destruction of standing crops, the loss of livestock, and the total disruption of local supply chains. Consequently, affected communities face severe food shortages and prolonged financial distress that can last for years after the physical event has passed.

Extreme weather events account for over 80 per cent of all direct losses and damages absorbed by the agricultural sector in developing nations (FAO, 2023). This statistic highlights how vulnerable rural areas are to environmental shocks. When a natural hazard destroys a harvest, it not only affects the farmers who grew the crops. It also creates a domino effect that impacts local market sellers, transport workers, urban consumers, and national trade balances. In many low-income countries, agriculture forms the backbone of the national economy. Therefore, a major natural disaster can quickly turn into a full-scale national economic crisis that halts broader socio-economic progress.

Within the United Nations Economic and Social Council (ECOSOC), dealing with disaster-driven food insecurity requires an integrated policy approach. It is no longer enough to rely solely on emergency humanitarian aid after a disaster has already devastated a region. Instead, there must be a focus on linking short-term crisis management with long-term disaster risk reduction, structural economic resilience, and local climate adaptation plans. Understanding how environmental hazards interact with social and economic vulnerabilities is essential for developing workable solutions that protect vulnerable populations, secure food production, and support sustainable development goals globally.

Definition of key terms

Food insecurity

A situation that exists when people lack secure access to sufficient amounts of safe and nutritious food for normal growth and development and an active and healthy life. It can be caused by the unavailability of food, insufficient purchasing power, inappropriate distribution, or inadequate use of food at the household level (FAO, 2021).

Natural disasters

Serious disruptions of the functioning of a community or a society involving widespread human, material, economic, or environmental losses and impacts, caused by natural hazard events such as droughts, floods, storms, landslides, and earthquakes that exceed the affected community's ability to cope using its own resources (UNDRR, 2020).

Disaster Risk Reduction (DRR)

The concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters. This includes reducing exposure to hazards, lessening the vulnerability of people and property, wise management of land and the environment, and improving preparedness for adverse events (UNDRR, 2020).

Climate adaptation

Adjustments in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderate harm or exploit beneficial opportunities. In agriculture, this includes changing cropping patterns, improving water management, and introducing hazard-resistant crop varieties (IPCC, 2022).

Resilience

The ability of a system, community, or society exposed to hazards to resist, absorb, accommodate, adapt to, transform, and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions (UNDRR, 2020).

Smallholder farmers

Rural producers who farm small plots of land, typically less than two hectares, relying mostly on family labour. They produce a significant portion of the food supply in developing nations but often lack access to capital, advanced technology, and formal financial insurance systems (FAO, 2021).

Background information

The devastating impact on agricultural economies and smallholders

To fully understand how natural disasters trigger food insecurity, one must examine the specific mechanics of damage within agrarian communities. When extreme weather

strikes, the impact on farming systems is immediate, profound, and multi-layered. For example, severe coastal storms and cyclones often bring massive surges of saltwater onto low-lying farmland. This process, known as soil salinisation, ruins the fertility of the soil for multiple planting seasons, making it nearly impossible for farmers to grow traditional crops. Similarly, torrential rains and river floods submerge field crops, wash away essential topsoil, destroy seed storage facilities, and ruin delicate irrigation networks. On the other hand, slow-onset droughts deplete groundwater tables, dry up rivers, and scorch pastures, leaving livestock without drinking water or grazing land.

Smallholder farmers are by far the most affected group during these natural catastrophes. In low- and middle-income countries across Africa, Asia, and Latin America, smallholders grow over 70 per cent of the total food consumed locally. However, despite their vital role in feeding communities, these farmers usually live on thin economic margins with very few financial safety nets. They rarely have access to savings accounts, commercial credit, or crop insurance policies. When a disaster destroys their fields, smallholders face an immediate loss of both their food supply and their primary source of income. To survive the immediate crisis and buy basic food for their families, many smallholders are forced to make desperate financial decisions. They often sell off vital productive assets, such as draft animals, hand tools, land titles, or breeding livestock. Selling these essential assets undermines their future farming capacity, pushing households into long-term poverty traps and leaving them even more defenseless against the next weather event.

Supply chain fragility and urban food price spikes

Figure 1: Food Supply Chain

The impact of a natural disaster extends far beyond the borders of rural farm fields. Modern food security relies heavily on functional post-harvest supply chains that move produce from rural fields to urban retail markets. Natural disasters frequently destroy physical transportation infrastructure, including rural access roads, primary highway bridges, local storage warehouses, and regional port facilities. When heavy flooding or landslides wash away key roads, entire agricultural zones become isolated from the rest of the country. Hauliers cannot reach farms to collect harvested crops, causing huge quantities of perishable produce like vegetables, fruits, and dairy to rot in the fields.

This physical breakdown in the supply chain creates severe market shocks in cities and towns. When food shipments from rural areas stop arriving, urban markets experience immediate local food shortages. In response to reduced supply, food merchants quickly raise prices on basic staples such as rice, wheat, maize, and beans. High food inflation hits low-income urban families hardest, as they often spend more than half of their monthly income on food alone. When prices spike, these families are forced to cut back on meals or switch to cheaper, less nutritious food items. Consequently, a natural disaster that originates in a distant rural farming area quickly transforms into an urban nutrition crisis, demonstrating how interconnected modern food markets really are.

Previous international attempts to solve the issue

The international community, guided by the United Nations system and regional partnerships, has introduced several frameworks over the past two decades to address disaster-induced hunger. One of the most important agreements is the Sendai Framework for Disaster Risk Reduction 2015–2030, adopted by UN Member States in 2015. The Sendai Framework shifted the global focus from simply reacting to disasters after they occur to actively managing and reducing disaster risks beforehand. It calls on governments to invest in disaster-resilient infrastructure, protect rural livelihoods, and strengthen community preparedness.

In addition to general disaster frameworks, the United Nations system has increasingly integrated disaster risk management directly into international agricultural policies. Specialised agencies have pioneered practical emergency response mechanisms to mitigate natural hazard impacts on food systems. A key example is the World Food Programme's (WFP) Forecast-based Financing (FbF) initiative. Unlike traditional humanitarian aid that arrives weeks or months after a disaster, FbF uses weather forecasting models and satellite data to automatically release funds and emergency supplies to vulnerable farming communities days before a predicted hazard strikes. This anticipatory approach allows farmers to harvest crops early, protect irrigation pumps, and evacuate livestock before floodwaters arrive.

Organisations and major countries involved

FAO (Food and Agriculture Organisation)

The Food and Agriculture Organisation is the specialised agency of the United Nations that leads global efforts to defeat hunger and support sustainable rural development. FAO plays a central role in mitigating disaster-related food insecurity by providing technical

advice to governments, monitoring global crop health, and developing early warning data systems. Following major natural disasters, FAO assists affected Member States by distributing emergency seeds, livestock vaccines, and farming tools, helping rural communities rebuild their agricultural livelihoods as quickly as possible.

WFP (World Food Programme)

The World Food Programme is the primary international humanitarian organisation addressing acute hunger and emergency food crises. During and immediately after natural disasters, WFP delivers rapid emergency food assistance, specialised nutrition products for children, and cash-based transfers to affected populations. Beyond emergency relief, WFP works extensively on building long-term community resilience by constructing flood defence walls, clearing drainage canals, and training smallholders in soil conservation techniques.

UNDRR (United Nations Office for Disaster Risk Reduction)

UNDRR serves as the focal point within the United Nations system for coordinating disaster risk reduction activities worldwide. It works closely with national governments to design national DRR strategies that align with the Sendai Framework. UNDRR focuses on helping countries understand risk profiles, improve multi-hazard warning networks, and integrate disaster prevention plans directly into national economic development strategies.

Horn of Africa Nations (e.g., Somalia, Ethiopia, Kenya)

Horn of Africa Nations (e.g., Somalia, Ethiopia, Kenya) The Horn of Africa represents one of the regions most vulnerable to compound climate hazards in the world. Over recent years, countries like Somalia, Ethiopia, and Kenya have suffered from back-to-back catastrophic droughts followed by sudden, destructive flash floods. These recurring climate shocks have destroyed millions of acres of crops, killed vast herds of livestock, and left tens of millions of people facing acute food shortages, requiring continuous emergency international support.

Small Island Developing States (SIDS)

Small Island Developing States (SIDS) Small Island Developing States, including nations such as Vanuatu, Fiji, and Haiti, face extreme structural risks to their food security. Because of their geographic location and small land area, these island nations are hit hard by intense tropical cyclones, rising sea levels, and coastal erosion. A single severe cyclone can ruin an island nation's entire agricultural sector in a few hours, contaminating limited freshwater supplies and destroying local food production for extended periods.

Possible solutions

Setting up Early Warning and Anticipatory Action Systems

Member States must invest in expanding modern, community-level early warning

systems that utilise satellite monitoring, automated weather stations, and mobile phone alert networks. Crucially, these early warning networks must be linked directly to pre-approved contingency funding mechanisms, such as Forecast-based Financing. When weather data indicates a high probability of a hazard, funds should be released automatically to local agricultural authorities. This allows farming communities to harvest mature crops early, secure stored grains in elevated facilities, reinforce irrigation channels, and move valuable livestock to safe higher ground before disaster strikes.

Protecting Rural Storage and Transport Infrastructure

National governments and international financial institutions must prioritise funding for disaster-resilient rural infrastructure. This includes building elevated community seed banks, flood-resistant grain storage silos, and temperature-controlled storage facilities powered by renewable energy. Additionally, rural access roads and primary bridges connecting farming areas to urban markets must be reinforced against landslides and flash floods. By climate-proofing transport corridors, countries can ensure that food distribution networks remain functional even during major weather events, preventing urban food shortages and price spikes.

Expanding Climate-Smart Agriculture (CSA) and Resilient Crop Varieties

International agricultural research centres and national ministries should collaborate to scale up the distribution of climate-smart agricultural technologies. This includes providing smallholder farmers with affordable access to seed varieties that are specifically bred to withstand environmental stress, such as drought-tolerant maize, flood-tolerant rice, and heat-resistant beans. Furthermore, training programmes should be established to teach farmers sustainable land management practices, including drip irrigation, rainwater harvesting, cover cropping, and agroforestry, which help preserve soil moisture and prevent erosion during climate shocks.

Offering Microinsurance and Financial Buffers for Small Farmers

To protect smallholders from falling into devastating poverty traps after natural disasters, governments and private insurance companies should expand index-based crop and livestock microinsurance schemes. Unlike traditional insurance that requires lengthy visual inspections of damaged fields, index-based insurance triggers automated cash payouts based on pre-set environmental data, such as rainfall totals or satellite vegetation indices. Providing smallholders with rapid cash payouts allows them to buy food for their families and purchase seeds for the next planting season without having to sell off their vital farming assets.

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Appendix

- I. Global Information and Early Warning System on Food and Agriculture (GIEWS)