

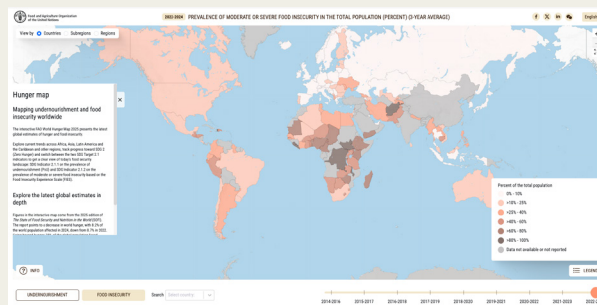


UNITED NATIONS ECONOMIC AND SOCIAL COUNCIL RESEARCH REPORT II

Ensuring global food security and sustainable agriculture in relation to climate change

Introduction to the Topic:

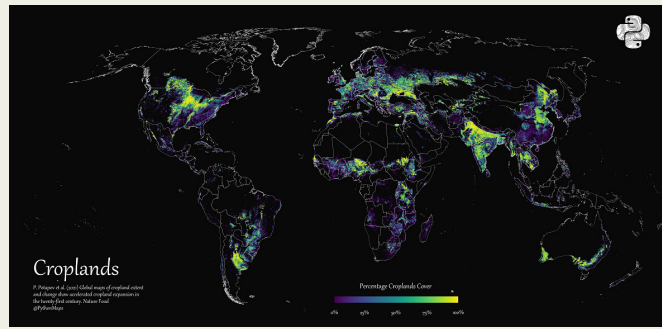
In recent times, nations have worked more closely through global organizations to boost farming output and ensure stable food supplies. However, shifting climates have started undermining this progress. Higher average temperatures, along with irregular rainfall and stronger storms - such as dry spells, heavy rains, or intense heat - are damaging crop yields across regions. As a result, access to sufficient food has diminished while costs have risen, hitting hardest those who already struggle to meet their basic dietary needs.



The Food and Agriculture Organization (FAO) reports that weather extremes tied to climate shifts have lowered harvests of key staples - wheat, maize, and rice - especially where farming relies on rainfall. Meanwhile, farming worsens climate conditions by releasing greenhouse gases via animal rearing, chemical fertilizers, or shifting land use patterns. Food-related activities make up a large portion of worldwide emissions, tying crop and livestock output closely to global warming trends. Because of this, poor farm methods speed up ecological damage, leading to weaker outputs and greater risks over time.

In response, the United Nations supports various approaches to tackle food shortages linked to shifting climates. One is the 2030 Agenda for Sustainable Development - especially Target 2, which aims to end hunger. Others involve practices like farming methods adapted to weather changes, along with the Koronivia collaboration on agriculture within the United Nations Framework Convention on Climate Change (UNFCCC). The goal of these actions is to boost farm output, yet also strengthen adaptability and lower ecological damage. Even so, worldwide hunger levels have grown lately as a result of overlapping pressures from climate shifts, financial crises, and armed conflicts, indicating current strategies are not enough.





The effects of climate change on food availability have influenced economies and societies worldwide. Because weather extremes disrupt farming and distribution networks, prices shift more unpredictably, so healthier diets become harder for poorer families to afford. Nations in Sub-Saharan Africa and parts of South Asia face greater risks - not only because they depend heavily on farming but also due to poor infrastructure and fewer resources to adapt. Farmers working on small plots grow much of the planet’s food; however, many do not receive enough help from financing systems, risk protection tools, or updated techniques that withstand changing conditions.

As temperatures rise, securing enough food worldwide becomes harder - especially when shifting to farming methods that do not harm nature. If countries act alone, extreme weather may undo years of growth in reducing poverty. Because of this, governments, global agencies, and businesses must work together - not just react - to strengthen how we grow and share food now and later.

Key temperature statistics for 2024

Region	Anomaly (vs 1991–2020)	Actual temperature	Rank (out of 85 years)
Globe	+0.72°C (+1.60°C vs pre-industrial)	15.10°C	1st highest 2nd - 2023
Europe	+1.47°C	10.69°C	1st highest 2nd - 2020
Arctic	+1.34°C	-11.37°C	4th highest 1st - 2016
Extra-polar ocean	+0.51°C	20.87°C	1st highest 2nd - 2023

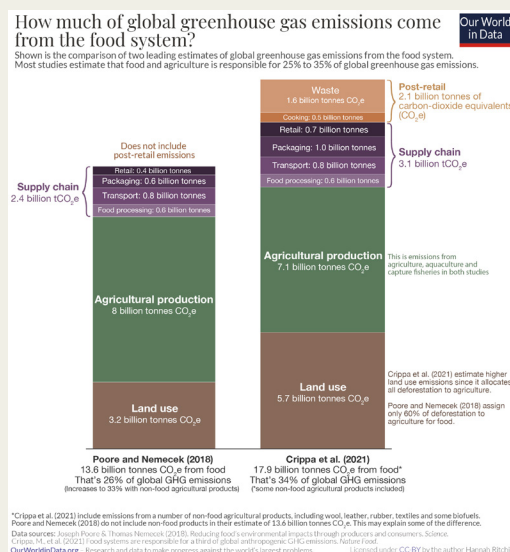
Background information

Agriculture has been central to human survival and economic development for centuries. Historically, societies around the globe have relied on local and seasonal food production, with farming methods shaped by climate, tradition and technology. During the Industrial Revolution, innovations such as mechanical farming, synthetic fertilizers, and improved irrigation techniques increased food output, supporting population growth and mass urbanization. However, in doing so, this began altering ecosystems and contributing to environmental changes.

In the 20th century, the Green Revolution dramatically transformed agriculture, most prominently Latin America and Asia. Chemical fertilizers, large-scale irrigation and the ability to grow special strains of crops in larger amounts under similar conditions enabled countries to produce enough food to feed growing populations, reducing famine in many regions. Yet these methods often came with costs to local environments, including soil degradation, water overuse, and increased greenhouse gas emissions from fertilizers and machinery. Though food availability increased, the ecological impacts of intensive farming set in motion the climate-related challenges faced in agriculture today.



Additionally, climate change has drastically influenced food production. A rise in global temperatures, unpredictable rainfall patterns, and extreme weather events, such as droughts, storms and floods, have begun to reduce yields of major crops like wheat, maize, and rice. Developing countries, where rain-fed agriculture is predominant, become dangerously vulnerable. At the same time, agriculture itself contributes significantly to greenhouse gas emissions through livestock production and fertilizer application, creating a cycle between farming and climate change.



International organizations, such as the United Nations, and national governments have acted by promoting sustainable and climate-resilient agricultural methods. Programs such as climate-smart agriculture, adaptation frameworks under the United Nations Framework Convention on Climate Change (UNFCCC), and the 2030 Agenda for Sustainable Development aim to improve food security while reducing environmental damage. Despite these efforts, global hunger has risen in recent years due to overlapping pressures from changes in climate, global economic instability, and armed conflicts.

Past UN Actions

Sustainable Development Goal 2 – Zero Hunger (2030 Agenda): Adopted by all UN Member States in 2015 as part of the 2030 Agenda for Sustainable Development, Goal 2 explicitly states the aim to “end hunger, achieve food security and improved nutrition, and promote sustainable agriculture” by 2030. Including targets such as ensuring access to sufficient food year-round, improving agricultural productivity and sustainability, and strengthening the resilience of food production systems to climate change and extreme weather changes

UN General Assembly Resolution on Agriculture and Climate Resilience (A/C.2/77/L.25): In 2024, the UN General Assembly recognized the need to increase the resilience and sustainability of food and agricultural production amidst climate change. The resolution pushed for efforts to support climate-sensitive agricultural practices such as agroforestry and drought and flood-resistant seeds.

FAO’s Climate-Smart Agriculture Promotion: The Food and Agriculture Organization (FAO) has developed a global framework to transform agrifood systems to be more climate-resilient and sustainable. Through its Climate-Smart Agriculture (CSA) method, FAO integrates productivity, adaptation, and greenhouse gas control objectives into national agricultural planning, aligning agriculture with sustainable development.



Focus of the Debate

The central debate should focus on the tension between ensuring worldwide food security and the need for cooperative and sustainable agricultural methods. Delegates must examine whether national strategies such as subsidies, trade restrictions, or rapid adoption of high-yield or climate-modifying farming technologies are an effective and necessary systems to protect domestic food supplies, or whether these actions risk amplifying global inequalities, furthering environmental degradation, and diminishing the collaborative frameworks established by the United Nations and its agencies. A key

Significant Parties

United States: Due to its economic and technological influence on the globe, the United States has been a leading country in global food security and defence against climate change. The U.S. invests heavily in agricultural research, climate-resilient crop development, and international aid programs to support food security in vulnerable regions. The U.S. also participates in multilateral initiatives such as the UN Food Systems Summit and the Global Alliance for Climate-Smart Agriculture, using its position to influence international policies on sustainable farming and food production. However, recent alignments and decisions made under Donald Trump's presidency have undermined the U.S.'s reputation as a figurehead due to recent foreign and domestic policy choices, raising concerns about their commitment to humanitarian access and food security.

China: As the world's largest agricultural producer and consumer, China is a key figure in discussions on sustainable agriculture and food security. China has launched major programs to achieve better crop yields, reduce emissions from farming, and use climate-smart agricultural technology. Investments in their own Belt and Road Initiative are put towards bettering agricultural infrastructure in both Asia and Africa, shaping global food supply chains and influencing resilience to climate change.

India: India is one of the largest producers of core food products such as rice and wheat and has a major portion of its population dependent on agriculture. India faces high vulnerability to climate change, affecting yields and therefore national food security, including droughts, floods, and heatwaves. India has implemented programs promoting sustainable farming and water-efficient irrigation and it actively engages in UN-led initiatives on climate-resilient agriculture.

Glossary and Key Terms:

Food Security: A state in which all people have consistent access to clean, healthy, nutritious foods to meet dietary needs and requirements.

Climate Change: Major changes over a long period of time to global weather and climates, mainly caused by human activities.

Greenhouse Gasses: Gasses that trap heat in the atmosphere, primarily released by agriculture and industry, ultimately contributing to global warming

Climate-Resilient Agriculture: Farming practices designed to adapt to climate change whilst still continuing food production.

Climate-Smart Agriculture: An FAO led initiative to increase productivity and resilience in the food industry whilst mitigating its emissions and effects on global warming.



The Green Revolution: The Green Revolution was a mid-20th-century agricultural transformation that increased food production with the use of high-yield crop varieties, modern farming techniques, irrigation and chemical fertilisers, significantly reducing famine in many developing regions.

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