MEF SCHOOLS MODEL UNITED NATIONS 2026

“Achieving SDGs (Sustainable Development Goals) in line with the 2030 United Nations agenda."

Committee: APQ

Agenda Item: Ensuring Food Security and Sustainable Agriculture in the Face of Climate Change
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Position: Deputy Chair

Introduction

Food security and sustainable agriculture are two of the most pressing and interconnected global challenges of the 21st century. Rising temperatures, unpredictable rainfall, prolonged droughts, floods, and more frequent extreme weather events have disrupted agricultural systems worldwide. These disruptions threaten not only crop yields and livestock productivity but also the stability of global food supply chains.

Developing and climate vulnerable regions such as Sub-Saharan, Africa, South Asia, and small island states face the greatest risks due to limited resources and less productivity. Ensuring that every person has access to sufficient and safe food while protecting the planet's ecosystems has become a top global goal for us. Comforting with this issue requires not just innovation in technology, but also international cooperation that connects economic, social, and environmental dimensions.

Definition of Important Terms

Food security :
This is when all people always have enough money and access to buy safe, healthy, and nutritious food to live a good life.

Sustainable Agriculture :
A way of farming that produces food without hurting the environment. It makes sure that people in the future can also grow food on the same land.

Climate Resilience :
The ability of a farm or a country to survive and recover quickly from climate problems like big storms, floods, or long droughts.

Greenhouse Gases :
Gases like CO_2 and methane that trap heat in the Earth's atmosphere. Agriculture is a major source of these gases.

Monoculture :
A farming method where only one type of crop (like only corn) is grown over a very large area. This is bad for nature and makes it easier for pests to destroy crops.
Biodiversity :
The variety of different plants, animals, and insects in an area. High biodiversity helps farms stay healthy and strong against diseases.

Aquifer :
An underground layer of water. Many farmers pump this water up to grow food, but these are drying up because of climate change.

Smallholder Farmers :
Farmers who own very small pieces of land (usually less than 2 hectares). They produce a lot of the world's food but are the most at risk from climate change.

Salinization :
This happens when salt builds up in the soil, usually from sea levels rising. Most plants cannot grow in salty dirt.

Supply Chain :
The whole process of getting food from the farm to the store and then to your plate. If one part breaks (like a road closing from a flood), food cannot reach people.

Carbon Sequestration :
The process of pulling carbon dioxide out of the air and storing it in trees or the soil. Sustainable farming helps do this.

Genetically Modified Organisms :
Plants or animals that have had their DNA changed by scientists in a lab, usually to help them survive heat or insects.

Erosion :
When the top, healthy layer of soil is washed away by rain or blown away by wind, making the land useless for farming.

Malnutrition :
A health condition that happens when a person does not eat the right amount of vitamins and minerals, even if they are eating enough calories.

Detailed Background of the Issue

The world's food system is facing a massive crisis. By the year 2026, we have realized that the old ways of farming do not work anymore because the climate is changing too fast. Agriculture is a very special topic because it is both the victim and a cause of the problem. We need to produce more food for a growing population, but the environment is making it harder every year.

The Problem of Rising Temperatures

The most obvious problem is that the Earth is getting warmer. Plants are like people; they have a "comfort zone." If the temperature stays too high for too long, the plant stops growing.

Subtitle :

Crop Failure: Scientists have found that for every celsius the world warms up, we lose about 5% to 7% of our harvests for crops like corn and wheat. In 2025, many countries in Europe and

North America saw their crops dry up because of record-breaking heatwaves.

Shorter Seasons: In some places, the growing season is becoming too short. Plants do not have enough time to become strong before the extreme heat or winter storms arrive.

The Water Too Much or Too Little

Water is the most important thing for a farm. Climate change is making water very unpredictable.

Subtitles :

Droughts: In regions like East Africa and the Middle East, it has stopped raining for long periods. When the ground is dry for a long time, it becomes hard like concrete. Then, when it finally rains, the water cannot go into the ground.

Floods: In other places, like Pakistan and Southeast Asia, we see massive floods. These floods do not just kill the plants; they wash away the "topsoil." This is the healthy part of the dirt that has all the nutrients. Without topsoil, nothing can grow for many years.

Salt in the Land: Near the ocean, the sea level is rising. This salty water is moving into the farmland. Most plants, like rice, will die if there is too much salt in the soil.

The "Hidden" Nutrition Crisis

A very serious part of this problem is something we cannot see. Scientists have discovered that when there is a lot of carbon dioxide in the air, plants grow bigger, but they are less healthy.

Subtitles :

Staple foods like rice and wheat now have less protein, iron, and zinc.

This means that even if a person eats enough food, their body might still stay weak because the vitamins are missing. This is a big problem for children in developing countries who need these vitamins to grow properly.

How Farming Actually Makes Climate Change Worse

We also have to talk about how farming hurts the planet. About 25% of all pollution that causes global warming comes from agriculture.

Subtitles :

Cows and Methane: Raising animals for meat, especially cows, produces a gas called methane. This gas is much stronger than CO_2 at trapping heat.

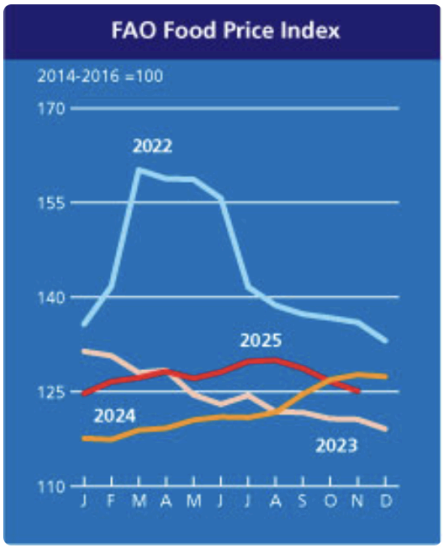
Chemical Fertilizers: Many farmers use chemicals to help plants grow. These chemicals release a gas called nitrous oxide, which is very bad for the atmosphere.

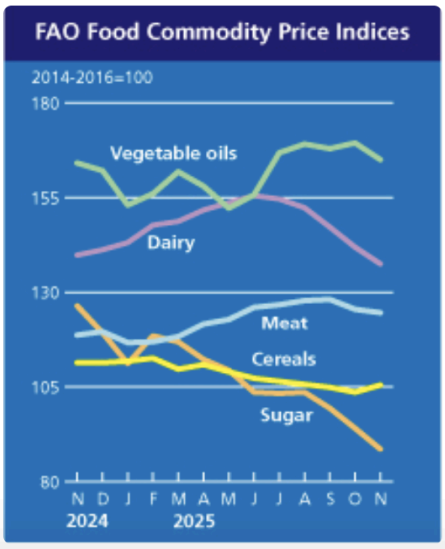
Cutting Down Trees: To make more space for farms, millions of trees are cut down in places like the Amazon Rainforest. Trees are the "lungs" of our planet. When we cut them down, we lose our best tool to fight climate change.

Pests, Insects, and Diseases

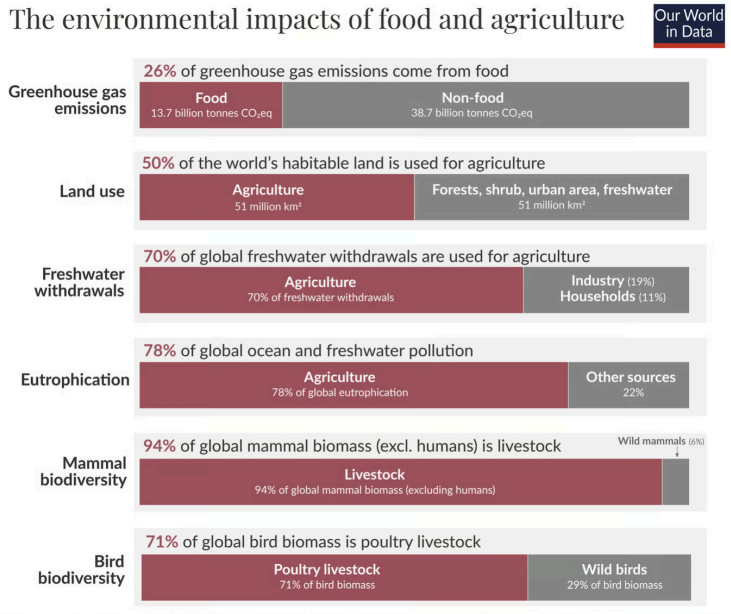
In the past, cold winters killed many harmful insects. Now, because winters are warmer, insects like beetles are surviving and moving to new countries. They can eat an entire farm in just one day. Also, new types of "fungus" are spreading because the air is more humid and warm. This makes farming more expensive because farmers have to buy more medicine for their plants.

This image shows 'how climate events correlate with global food price spikes.'

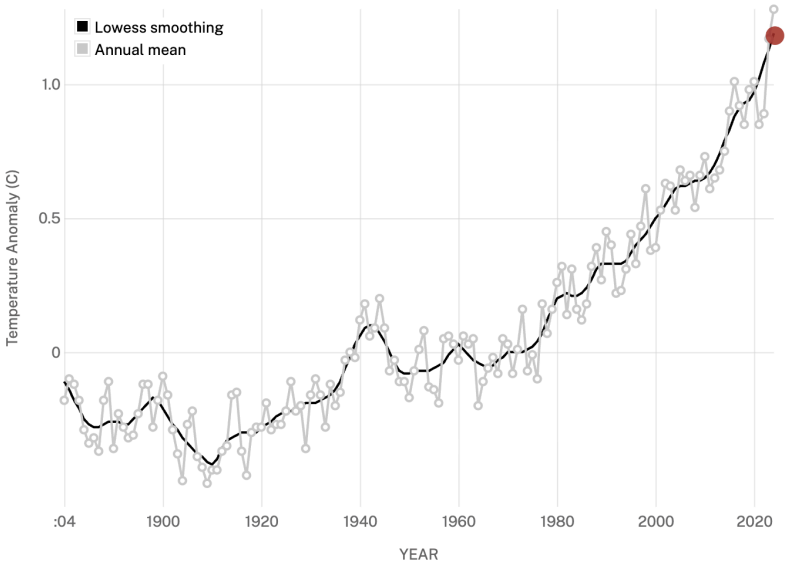

FAO Food Price Index
2014-2016 =100
170
155
140
125
110
2022
2025
2024
2023
J F M A M J J A S O N D


FAO Food Commodity Price Indices
2014-2016=100
180
155
130
105
80
Vegetable oils
Dairy
Meat
Cereals
Sugar
N D J F M A M J J A S O N
2024
2025

This chart demonstrates excellent "land use" vs "emissions" per food type.



This image from NASA shows the rising heat levels per 20 years



- **Timeline of Key Events**

Date	Event	Description
1945	**Creation of the FAO**	The United Nations starts the Food and Agriculture Organization to help end world hunger.
1960s	**The Green Revolution**	Scientists create new seeds and chemicals. Food production grows fast, but it starts the heavy use of fertilizers.

1992 **Rio Earth Summit** World leaders agree for the first time that human activities and farming are changing the climate.

1996 **World Food Summit** The "Rome Declaration" is created. Leaders define Food Security as a human right.

2008 **Global Food Price Crisis** Droughts and high oil prices make food very expensive. This causes protests in over 40 countries.

2014 **IPCC 5th Report** Scientists warn that global warming is already making it harder to grow enough wheat and corn.

2015 **Paris Agreement** Almost every nation signs a deal to stop global warming. They agree that food production must be protected.

2015 **Sustainable Development Goals** The UN creates Goal 2: Zero Hunger, aiming to fix the food system by 2030.

2017 **The Koronivia Decision** At COP23, countries start a specific plan to fix the relationship between farming and the environment.

2021 **UN Food Systems** SummitGlobal leaders, companies, and farmers meet to discuss how to make the whole food system "green.

2022 **Black Sea Grain Crisis** A war in a major "breadbasket" re**gion shows how easily the world can run out of food and grain.**

2023 **Emirates Declaration** Over 150 countries promise to include agriculture in their official national climate laws.

2024 **Record Heat & Loss** The hottest years on record cause massive crop failures in Europe, Asia, and Africa.

2025 **Seed Vault Milestone** The "Doomsday" Seed Vault in Norway reaches a record number of samples to protect plants from extinction.

2026 **The Present Day** Governments begin to give more money to farmers using vertical farming and sustainable methods.

Major Countries and Organizations Involved

The United Nations :

The Food and Agriculture Organization (FAO): Based in Rome, the FAO is the "technical expert." They provide data, training for farmers, and help governments create new laws for sustainable farming.

The World Food Programme (WFP): They are the "emergency responders." When a drought or war causes a famine, the WFP delivers food to millions of people. In 2026, they are focusing on "anticipatory action"—giving food and money to people *before* a predicted flood or heatwave happens.

The United States of America :

As one of the world's largest food exporters, the USA focuses on technology.The U.S. government and American companies lead the world in developing CRISPR (gene-editing) seeds and AI-driven tractors. Their goal is to produce more food using "Precision Agriculture." However, they also face pressure to reduce the massive greenhouse gas emissions from their

large industrial cattle farms.

China :

China has a very large population and limited farmland. For them, food security is a matter of national survival. China is investing billions of dollars in "Vertical Farming" and "Salty Rice" (rice that can grow in seawater). They are also buying farmland in other countries (like in Africa and South America) to make sure they always have a food supply for their citizens.

4. The European Union :

The EU is the global leader in regulations and environment.Through their "Farm to Fork" strategy, the EU is forcing farmers to reduce the use of chemical pesticides by 50%. They want to make the EU the first "climate-neutral" continent. While this is good for the Earth, some farmers complain that these rules make food more expensive to produce.

5. Brazil :

Brazil is a "Global Breadbasket," providing a huge amount of the world's beef and soy. Brazil faces a difficult choice. To grow more food, they often cut down parts of the Amazon Rainforest. However, they are now trying to use "Regenerative Ranching," which allows them to raise cows on existing land without cutting down more trees.

6. India :

India has millions of smallholder farmers who are very vulnerable to climate change. India is focusing on "Natural Farming" to reduce the cost of expensive chemicals. They are also the world’s largest producer of a traditional grain that needs very little water and can survive extreme heat. They want the rest of the world to start eating millets instead of water-hungry wheat or rice.

7. The World Bank :

The World Bank provides the money needed for change. They provide low-interest loans to developing countries to build better irrigation systems (water pipes) and roads. This helps farmers get their food to the market before it rots in the heat.

Previous Attempts to Solve the Issue

For many years, the international community has tried to fix the problems of hunger and climate change. Some attempts were very successful, while others faced big challenges because countries could not agree on who should pay for the changes.

- The Green Revolution (1960 – 1980)

This was the first major global attempt to stop hunger. Scientists created "High-Yield" seeds that grew much faster. It saved over a billion people from starving, especially in India and Mexico. Whereas ıt relied too much on chemical fertilizers and huge amounts of water. This caused long-term damage to the soil and the environment, which we are still trying to fix today.

- The Millennium Development Goals (2000 – 2015)

The United Nations set a goal to reduce the number of hungry people by half by the year 2015.Many countries in Asia and South America became much better at feeding their citizens. On the other hand progress was very slow in Africa. Also, this plan did not focus enough on *how* climate change was making farming harder.

- The Comprehensive Africa Agriculture Development Programme (2003)

African leaders met in Maputo and promised to spend 10% of their national budgets on farming. It helped many African countries move away from just "emergency aid" to building their own farms. While only a few countries actually reached the 10% goal. Lack of money and local conflicts made it hard to implement.

- The Paris Agreement (2015)

While this is a climate deal, it was a huge attempt for food security. For the first time, nearly 200 countries agreed that we must stop global warming to protect our food.It created a global "Carbon Market" where farmers could be paid to protect forests. But the agreement is "voluntary," which means countries are not punished if they don't meet their targets.

- The Koronivia Joint Work on Agriculture (2017 – 2022)

This was a special project started at the COP23 climate meeting. It was the first time the UN officially brought "farmers" into the room with "climate scientists."

It produced many reports on how to save water and improve soil health.

Alternative Solutions

- High-Tech Innovation (Smart Farming)

Technological solutions use science to help plants survive in a changing world.

Climate-Resilient Seeds : Scientists can "edit" the DNA of plants like rice or corn. This makes them stronger against heat and drought. Unlike older methods, this is very fast and precise.

Drip Irrigation: Instead of flooding a whole field with water, farmers use pipes with tiny holes. This sends water directly to the roots of each plant. This saves up to 50% more water.

Vertical Farming in Cities: We can grow vegetables inside tall buildings using LED lights instead of the sun. This uses 95% less land and allows cities to produce their own food, even during winter.

- Nature-Based Solutions (Regenerative Agriculture)

These solutions focus on working *with* nature to heal the soil and the environment.

Agroforestry: This means planting trees and crops on the same piece of land. The trees provide shade to the crops (keeping them cool) and their roots hold the soil together so it doesn't wash away during floods.

Cover Cropping: Farmers plant "extra" plants like clover between their main harvests. This keeps the soil covered so it doesn't dry out. It also naturally puts nutrients back into the dirt, so farmers need fewer chemical fertilizers.

Restoring Biodiversity: Instead of growing only one crop (monoculture), farmers grow many different types of plants. This makes the farm safer because if one plant gets a disease, the others might survive.

- Community and Economic Solutions

Changing *how* we manage food and money can also protect the world from hunger.

Forecast-Based Financing: This is a new way to help. Instead of waiting for a disaster to happen, the UN uses weather satellites to predict a flood. They give money and seeds to farmers before the flood hits so they can prepare.

Crop Insurance for Small Farmers: Most poor farmers lose everything if their crops die. Providing "weather insurance" means they get money back if there is a drought. This allows

them to buy new seeds and try again next year.

Promoting Local Producers: Buying food from local farmers instead of importing it from other countries reduces pollution from trucks and ships. It also makes the local economy stronger.

- ### Demand-Side Solutions

We can also help by changing our own habits.

Reducing Food Waste: About **one-third** of all food produced is thrown away. If we improve how we store food (using better fridges or silos) and waste less at home, we won't need to cut down more forests to make new farms.

Alternative Proteins: Producing beef uses a lot of water and land. Eating more plant-based proteins (like beans and lentils) or trying lab-grown meat can significantly reduce the "carbon footprint" of our diet.

Useful Links

- **https://www.fsinplatform.org/report/global-report-food-crises-2025/:** shows exactly which countries are in a food crisis right now.
- **https://hungermap.wfp.org/:** An interactive world map that shows real-time hunger data and climate shocks.
- **https://www.worldbank.org/en/topic/agriculture/brief/food-security-update:** The latest economic facts about how food prices are changing around the world.
- **https://www.ipcc.ch/srccl/:** The best scientific source for understanding how global warming ruins the soil.
- **https://www.frontiersin.org/journals/genome-editing/articles/10.3389/fgeed.2025.1533197/full:** A scientific essay that explains how gene editing can help plants survive heat.

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