FOOD AND AGRICULTURAL ORGANIZATION (FAO)

TOPIC A

Promoting effective responses to climate shocks with specific focus on agricultural production

I. Introduction of the topic

Climate shocks, including extreme weather events like droughts, floods, storms and temperature swings, are becoming more frequent and severe. The increasing frequency of these climate-related disruptions is one of the most important worldwide problems, especially considering its destructive impact on agricultural output and food systems. These extreme weathers seriously damage agricultural systems, such as a decrease in crop yields, livestock health, and soil fertility, jeopardising food security and the livelihoods of smaller farmers, who are very vulnerable due to limited resources.

Given agriculture's crucial role in supporting local and global economies, effective responses to climate shocks are essential. This topic, has in fact, received increased attention from international organisations such as the FAO (Food Agricultural Organization), who are working to integrate climate change adaptation and mitigation techniques into agricultural practices.

Agriculture, being one of the most important sectors affecting the global economy, is highly vulnerable to climate shock, which disrupts and significantly impacts food production. These shocks lead to enormous disasters such as soil degradation, also making the cost of food

higher than normal. For example, a study conducted by NASA predicts that corn yields might decrease by 24% worldwide if greenhouse gas emissions are not reduced by 2030 as well as an increase in heavy precipitation which significantly affects soil fertility according to research done by the U.S. EPA. Moreover, Prices of simple foods, such as oil and bread are rising. For example, in Spain, there has been a decrease in olive oil production by 40% due to water shortages, and as it is one of the main olive exporters in the world, it raised the prices of its products by 27%.

II. Definition of Key Terms

- **Climate Shocks:** Severe and extreme weather events that disrupt agricultural systems resulting in decreased crop yields, animal losses, and food security. Examples of these occurrences include: droughts, floods, storms and heatwaves.
- **Mitigation techniques:** Methods and techniques used to prevent the consequences of climate shocks on agricultural production
- **Adaptation techniques**: Strategies to adjust agricultural practices to minimize the damage caused by climate shocks, such as introducing drought-resistant crops, improving irrigation systems… Despite uncertain weather patterns, these approaches help to preserve food production.
- **Agricultural systems:** any system that produces crops and livestock
- **Soil degradation:** It's the physical, chemical and biological decline in soil quality

III. Background Information and important historical events

Agriculture and climate are deeply interconnected. Climate change has gradually altered weather patterns, increasing the frequency and severity of climate shocks including droughts, floods, and temperature changes. These developments pose enormous challenges to food production and security around the world. Smallholder farmers, particularly in developing nations, are especially sensitive to these shifts.

The timeline below depicts major events and milestones in climate change, agriculture, and climate-related response initiatives.

1. **The 1972 United Nations Conference on the Human Environment in Stockholm:** First conference to make the environment a priority. The participants approved a set of environmental management properties, including the Stockholm Declaration and Action Plan for the Human Environment as well as a number of resolutions. One of the major results of the Stockholm conference was the creation of the United Nations Environment Programme (UNEP).
2. **1988 Establishment of the Intergovernmental Panel on Climate Change:** Established by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP), aims to provide governments at all levels with scientific information that they can use to develop climate policies.
3. **1992 The Rio Earth Summit:** One of the first UN conferences on Environment and Development, known as the Rio Earth Summit, was held in Rio de Janeiro. With almost 150 nations in attendance, the Earth Summit promoted the concept of sustainable development as the best way to address the underlying links between economic progress

and environmental protection. generated major papers such as the Rio Declaration and Agenda 21, which urged countries to incorporate sustainable practices into all sectors, including agriculture. The meeting also contained the Convention on Biological Diversity, which acknowledges the importance of biodiversity in maintaining agricultural output in the face of climate shocks

4. **2006 FAO's State of Food and Agriculture Report**: emphasised the link between agriculture and climate change, highlighting agriculture's vulnerability to climate shocks and the urgent need for action to strengthen food system resilience. Advocated for a shift in farming practices
5. **2015 Paris Agreement:** Under the UN Framework Convention on Climate Change (UNFCCC) it establishes global targets for decreasing greenhouse gas emissions. While it focused on mitigation, it also acknowledged the need for adaptation in vulnerable sectors like agriculture
6. **2016 The FAO's Climate-Smart Agriculture (CSA) Initiative:** The FAO launched the Climate-Smart Agriculture program to encourage agricultural techniques that are adaptable to climate change while mitigating its effects. CSA is built on three pillars: boosting production, improving resilience to climate change, and lowering greenhouse gas emissions.
7. **2021 Food System Summit**: Its goal was to revolutionise global food systems to accomplish the 17 SDGs. Initiated by the UN Secretary-General Antonio Guterres and brought together more than 150 countries

IV. Possible solutions

Solutions and strategies to this issue are necessary in order to handle such climate shocks affecting agriculture. Governments should boost international collaboration, encourage sustainable framing, and enact climate resilience policies. Moreover Climate - resilient crops and renewable energy are examples of technologies that can improve efficiency and adaptability. In addition to encouraging effective water management and soil restoration, it is critical to support farmers with training, early warning systems and easily available insurance.

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