

Committee: Special Commission on Climate Change

Topic: The question of Food Security

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Summary

Food security is one of the greatest threats posed by climate change. Though for many, living with a constant source of food throughout the year in more economically developed regions, it does not seem a great issue, but for millions living in regions such as the arctic it is a constant ongoing battle, made even more vicious by the effects of climate change.

Particularly for those in the arctic, lack of food security is threatening their traditional hunting methods and traditional way of life. For example, the melting of sea ice has caused great disruption to travel and hunting by making formerly used routes far too dangerous.

Food security is (at its core) composed of five cornerstones, with which one can deem the extent of a region's food security. These are: **availability**, **access**, **quality**, **utilisation**, and **stability**. If a region does not have stable access to quality food and does not have the means to utilise the raw product to create food, that region is not food secure.

Definition of Key Terms

- **Availability:** Availability is a region's ability to produce enough food for its population, i.e. is there enough food available within the region to support its population.
- **Access:** A region's access to food is its ability to acquire food from the global market.
- **Quality:** Quality of food refers to its nutritional value and how well it sustains life.
- **Utilisation:** Utilisation is a region's ability to process a raw product to produce a food product.

- **Stability:** Stability refers to the consistency of a region's access to food. E.g. if a region's main food source were strawberries, the stability would be poor as strawberries do not grow throughout the year.
- **Precision Agriculture:** The science of improving crop yields and assisting management decisions using high technology sensor and analysis tools.
- **Grid Sampling:** A method used to determine the distribution of nutrients around the field.

Background Information

Modern agriculture is said to begin after the Second World War, as countries began switching back to a peacetime economy, and LEDCs began gaining independence and hence control over agricultural practices.

Having experienced great supply issues throughout the war, many countries began to pursue a greater degree of self-sufficiency. With this, there arose what is now referred to as the 'Green Revolution' (first used by William Gaud in 1968), as agricultural production boomed: developing countries began utilising new crops (wheat, rice, and corn) and began using more pesticides and machinery, resulting in a great increase to production and quality.

The development of semi-dwarf, high-yield, disease-resistant varieties of wheat in Mexico by Norman Borlaug was a groundbreaking success that revolutionised the agricultural field. The wheat also proved itself effective in different climates, with India importing 18000 tons of this wheat seed in 1966 and reporting a record-breaking harvest of 16.5 million tons (only 11.3 million tons in 1967). Pakistan followed suit, and both countries doubled their harvests in a mere 5 years. A calculation by Paul Waggoner determined that India's use of high-yield crops saved an inordinate 100 million acres of natural land from being converted to farmland. So, food security and climate change go hand in hand, not only with climate change reducing food security, but also with efficient food security allowing for more natural land and biodiversity.

Borlaug won the 1970 Nobel Peace Prize for his monumental achievements in food security.

In his speech, he highlighted that although his solution has saved millions of lives, the issue of starvation had certainly not been abolished, and there was much work still to be done in the field of food security. He stated this possibly as an address to his critics, who accurately pointed out that this 'Green Revolution' required a huge amount of water, expensive fertiliser, and regular use of pesticide; not all farmers could afford all this. Following this, ecologists began to criticise Borlaug's methods, and the huge chemical output and loss of soil fertility and biodiversity as a result of the intense use of pesticides, so ironically his methods resulted in a long-term vulnerability to pests. To add insult to injury, sociologists and economists began pointing out that Borlaug's methods had caused rural impoverishment, increased debt, social inequality, and the displacement of many farmers.

In summation, Borlaug's methods truly revolutionised modern agriculture and they are still used today. Hence, a firm understanding of this is imperative when evaluating modern day food security.

In the present day, people such as Prof. Mankombu Swaminathan, a pioneer of India's green revolution, are calling for an 'evergreen revolution.' Such a revolution would integrate what we have learnt about socioeconomics, will spread wealth more evenly, and will protect the biodiversity of the land used and unused, being more mindful of chemical effects.

It is clear that a new revolution is needed. But this will be an incredibly difficult balancing task, dealing with an ever-growing population and food demands against climate change and loss of biodiversity. After all, agriculture is responsible for 8.5% of all greenhouse gas emissions, and 4% of the global GDP.

Major Countries and Organisations Involved

- **The Arctic Council, Current Projects:**
 - 'Protection from invasive species'

- Working Groups: CAFF (Conservation of Arctic Flora and Fauna), PAME (Protection of the Arctic Marine Environment)
- Leads: Norway, Sweden, The Kingdom of Denmark
- Summary: 'Setting priority actions that The Arctic Council and its partners are encouraged to take to protect the Arctic region from a significant threat:
the adverse effects of invasive alien species.'
- 'Indigenous youth, food knowledge and climate change (EALLU)'
 - Working groups: SDWG (Sustainable Development Working Group)
 - Leads: Aleut International Association, Canada, Norway, Saami Council, The Russian Federation.
 - Summary: 'Developing a sustainable and resilient reindeer husbandry in the Arctic in face of climate change and globalisation working towards a vision of creating a better life for circumpolar reindeer herders.'
- 'Arctic Resilience Action Framework (ARAF)'
 - Working groups: SDWG
 - Leaders: Finland, Sweden, The United States
 - Summary: 'Advancing a coordinated, regional approach to building resilience and adapting to rapid change.'
- **Ethiopia** ○ Ethiopia is experiencing rampant famine, due to intense conflict in the north and climate shocks in the south.
- **Niger**
 - There is little data on famines in Niger, but estimates place it in the top ten hungriest countries in the world.
- **South Sudan**
 - Similarly to Ethiopia, South Sudan is experiencing famine due to years long civil war and erratic weather in recent years.

- **Haiti** o Haiti has had food concerns for many years, but this escalated in 2018 due to political instability, brutal violence, and high food prices.
- **The United States** o The United States export more food than any other country, with 52% of the entire country being used for agriculture.

Timeline of Events

- **1922:** The first hybrid corn is produced and sold commercially.
- **1950-1964:** Drip irrigation is developed, which initially by Blass, who later partnered with Kibbutz Hasterim. Together they created an irrigation company called Netafim and then developed and patented drip irrigation technology.
- **Early 1980s:** Precision farming begins to emerge, and in **1985** the University of Minnesota varied lime inputs in crop fields, and grid sampling began being employed.
- **1994:** The first GMO produce produced through genetic engineering —a GMO tomato— is released to be sold after being confirmed safe for ingestion by federal agencies.
- **2003:** The World Health Organisation and Food and Agriculture Organisation of the UN develop international guidelines and standards to determine the safety of GMO food products.
- **2014:** Hotline developed in Ethiopia to provide agricultural information to local farmers, through calls and text messages.
- **15.12.2013 — 22.02.2020:** Civil war in South Sudan.
- **02.04.2018:** Civil war breaks out in Ethiopia, paving the way for mass famine.
- **07.07.2018:** The Haitian Crisis begins, causing mass poverty and thus famine.

Relevant UN Treaties and Events

- “State of Global Food Insecurity” (adopted without a vote on 23.05.2022) introduced the ‘Global Crisis Response Group on Food, Energy and Finance.’ It stressed the need to keep trade routes and markets open for food, fuel, fertiliser,

and other important agricultural resources, and it called upon member states to keep food and agriculture supply chains functioning.

- Of the UN's 17 SDGs (sustainable development goals), the second regards food security stating that they aim to “End hunger, achieve food security and improved nutrition and promote sustainable agriculture” by 2030.
- The United Nations Food Systems Summit took place on 23rd September 2021, aiming to alleviate public discourse about the importance of food systems leading to the achievement of the SDGs, and create a systematic approach to improving food security and systems.

Previous Attempts to Solve the Issue

One of the previous attempts to alleviate world hunger, and improve food security was that of William Borlaug, as mentioned earlier. He led the ‘Green Revolution’ and developed modern practices for growing agriculture. However as pointed out by both his critics and him, it was not a full solution, and more was still needed.

In the Arctic, greenhouses have been used to grow crops typically found in warmer climates. However, they are generally small scale, and the Arctic doesn't have enough sunlight year-round to properly sustain them.

Possible Solutions

Solving the issue of food insecurity is an incredibly hard task. Not only must you consider the issue from an economical standpoint, but you must also consider protecting traditional practices and religious beliefs, as well as considering the impact of food production on climate change.

One solution might be to fund the production of larger farms in certain regions. But this of course would negatively impact the local flora and fauna and damage an already dwindling biodiversity.

Another might be investing in GM crops. However, this might forsake some religious beliefs or personal values.

Another might be to increase humanitarian aid in regions of conflict. However, logistically this would require lots of support and resources, so might not work on a long-term basis.

You might see it as more realistic to target specific cases such as the conflicts in Ethiopia, South Sudan and Haiti or food security in Arctic groups. These are two very different scenarios and it would be highly impossible to find a solution that tackles both; the former three all have rampant food insecurity due to conflicts, exacerbated by weather, whereas the latter is facing food insecurity due to climate change and melting ice caps, as well as continuing traditional practices in a very different world.

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