2025 APRU Virtual Global Health Case Competition

"Advancing Inclusive Growth in Southeast Asia by Leveraging Data and AI for Food Security"

INTRODUCTION

Thank you for participating in the 10th annual APRU Global Health Case Competition. We hope that you will have a challenging and rewarding educational experience. Please remember that this case represents a complex scenario and that there is no single "right" plan. Your challenge is to develop and justify a strategy to respond to the challenge. We encourage teams to consider a balance of innovative yet realistic, evidence-based solutions. Note that this challenge is hypothetical but many economies around the world are currently considering how to address this problem.

OVERVIEW

Due to urbanization, growing populations, conflict, climate change, rising cost of living, and declining food production, food insecurity is expected to rise in coming years. Your team has been asked to work with one national government in Southeast Asia to inform the development of a five-year strategic plan to address food insecurity through a food systems approach. Previous attempts to address food insecurity have used a siloed way of thinking that failed to take into consideration the complex, inter-connected issues, and different dimensions of food insecurity. This nation's government aims to collaborate with many stakeholders on the design of new policies and programs. However, convening and collecting data from many stakeholders can be very resource intensive. Therefore, this government wants to employ the power of artificial intelligence (AI) but acknowledges the limitations of AI, including the shortcomings of data currently available. In this challenge, your team is tasked with conducting a detailed analysis and critique of the existing data available on one dimension of food insecurity in one Southeast Asian nation, as well as a plan to collect new, more inclusive data.

BACKGROUND

Introduction

Two billion people worldwide do not have regular access to safe, nutritious, and sufficient food. It is estimated that as many as 783 million people face chronic hunger, representing 9.2% of the world's population (SOFI, 2023). Global hunger levels have not been this high since 2005; this staggering rise highlights a growing crisis in which conflict, climate change, rising cost of living, and declining food production have all contributed to food insecurity. Globally, about 148 million children have stunted growth and 45 million children under five years old are affected by wasting, a chronic condition caused by malnutrition (WHO, 2024).

The UN Sustainable Development Goal (SDG) 2 aims to "end hunger, achieve food security and improved nutrition and promote sustainable agriculture" by 2030. Further, while nutrition is mentioned specifically in SDG 2, it is pivotal to the achievement of all 17 SDGs, specifically those related to health, education, gender equality, and the climate. Yet the world is off track to achieve SDG2; the United Nations (UN) says that urgent coordinated action and policy solutions are urgently needed to address "entrenched inequalities, transform food systems, invest in sustainable agricultural practices, and reduce and mitigate the impact of conflict and the pandemic on global nutrition and food security" (UN, 2023a).

Hunger & Malnutrition

Unhealthy diets remain one of the main contributors to the global burden of disease. A healthy diet throughout the life cycle is critical for preventing all forms of malnutrition, including child stunting and wasting, micronutrient deficiencies, and overweight/obesity. It also helps reduce the risk of non-communicable diseases (NCDs) such as cardiovascular diseases, diabetes, and some types of cancer (WHO, 2020). The consequences of malnutrition not only include avoidable negative health outcomes and premature death, but also enormous financial and societal costs. Global estimates suggest that malnutrition in all its forms costs society up to US$3.5 trillion per year (Global Nutrition Report, 2018). Clearly more efforts are needed to prevent these negative consequences.

To address global malnutrition, the world must adopt healthier a diet, composed of a variety of nutritious and safe foods that provide dietary energy and nutrients in the correct amounts. A healthy diet is based on a wide range of unprocessed or minimally processed foods, balanced across food groups; it includes wholegrains, legumes, nuts, an abundance and variety of fruits and vegetables, and can include some eggs, dairy, poultry and fish, and small amounts of red meat (SOFI, 2023). Yet, more than 3.1 billion people in the world, or 42%, could not afford a healthy diet in 202, representing an increase of 134 million people compared to 2019 (SOFI, 2023).

Agriculture & Sustainability

By 2050, about 2.5 billion people will be added to the planet, with about 70% residing in cities. While developments in food systems over the past three decades have improved, rapid demographic and structural transformations have also resulted in daunting challenges, with potentially wide-reaching future consequences for food security and nutrition. For example, urbanization is associated with increased consumption of highly processed convenience foods with little nutritional value (SOFI, 2023). Agriculture is a vital source of livelihood for about one billion people but is also a key driver of environmental degradation (UNDP, 2024). In fact, food systems are a leading cause of depletion of natural resources, responsible for 30% of global, human-caused greenhouse gas emissions, 90% of global deforestation, and 70% of water use. They are also the single greatest cause of terrestrial biodiversity loss (UN, 2022, FAO, 2024). Further, by 2050, global greenhouse gas emissions from food production are projected to increase by 50% to 80%, and cropland use is projected to increase by 200 million to 700 million hectares, which will also result in further deforestation, land use changes, and increased greenhouse gas emissions (Springmann et al., 2018; Clark et al., 2020). Increasing dependence on national and global food markets in areas that were previously self-sustaining is another major concern (SOFI, 2023). Other challenges at a global level include conflicts and war, climate change, limited access of small-scale agricultural producers to viable markets; high levels of food loss and waste; increasing concern over food safety and

foodborne illness, animal health issues; and the increased energy-intensity and ecological footprint associated with the lengthening and industrialization of food supply chains (FAO, 2018).

The population of the Asian region represents about 60% of the world's population (UN, 2023b). According to Paul Teng, editor of the new book *Food Security Issues in Asia* (2024), increasing population size, aging farmers, urbanization, limited land and water resources, declining agricultural production, rising incomes, and changes in dietary habits and preferences, are all factors contributing to current and future challenges in meeting the demand for food in the region. Securing food security for Asia's population, approaching 5 billion people, will require more disruptive technologies, such as biotechnology and digital technologies (Montesclaros et al., 2023; Teng, 2024).

Food Insecurity

Food security is achieved when "all people, at all times, have physical, social, and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (FAO, 2002). About 30% percent of the global population, or 2.4 billion people, were moderately or severely food insecure in 2022, translating into 391 million more people than in 2019 (SOFI, 2023).

There are four main dimensions of food security, which must be fulfilled simultaneously (World Bank, 2025):

- *Physical availability of food:* Food availability addresses the "supply side" of food security and is determined by the level of food production, stock levels, and net trade.
- *Access to food:* An adequate supply of food at the national or international level does not in itself guarantee household-level food security. Concerns about insufficient food access have resulted in a greater policy focus on incomes, expenditure, markets, and prices in achieving food security objectives.
- *Food utilization:* Sufficient energy and nutrient intake by individuals are the result of good care and feeding practices, food preparation, diversity of the diet and intra-household distribution of food. Combined with good biological utilization of food consumed, this determines the nutritional status of individuals.
- *Stability:* Even if an individual's food intake is adequate today, they may have inadequate access to food on a periodic basis. Adverse weather conditions, political instability, or economic factors (unemployment, rising food prices) can impact food security status.

Food Systems

Diets are shaped by the way food is produced, procured, distributed, marketed, chosen, prepared, and consumed. In order to promote healthy diets, the entire infrastructure of the food system, encompassing a range of actors and institutions involved in the production, aggregation, processing and packaging, distribution, marketing, preparing, consumption, and disposal of food products, must be considered. Food systems are complex and context-specific, relating to unique historical, economic, and sociocultural factors. Policies and programs to promote healthy diets must take into account the resources, cultural and individual preferences, practices, and environmental factors of each context in order to be effective (Tilman and Clark, 2014; Monterrosa et al., 2020; Alexandropoulou et al, 2022). Over the last few decades, it has become clear that a more holistic framework is needed to address the complex drivers of food insecurity. A food systems approach can help to identify and analyze the impact of different actors, activities, and outcomes to improve food security (Oxford, nd). As seen in the figure in appendix 1, developing a healthy and sustainable food system requires a multilevel approach that includes global, federal, state, and local policies; the food industry; the agricultural industry; public health and medicine; communities, worksites, and schools; and individuals and families (Anderson et al., 2019).

Problem-Solving

The UN has underscored that "within food and agriculture systems – whether at the global, regional, or local level – there are multiple different and competing perspectives on what the most critical problems are, why they exist and how to fix them." Identifying how to balance the interests of different stakeholders, and how to prioritize trade-offs between different environmental, social, economic, and political objectives are complex tasks. The UNDP report titled "Navigating Complexity in Food Systems" (2024) has highlighted some of the challenges and drivers of food systems, as seen below:

Food system challenges	Food system drivers
• Income below living standards	• Market dynamics
• Availability of food	• Policies and regulations
• Affordability of food	• Environmental constraints
• Food safety	• Demographic changes
• Nutritional quality of food	• Access to finance
• Sustainability and the environment	• Social and cultural factors
• Employment creation and stability	• Power misuse / imbalances
• Diversity of food	• Access to markets
• Political stability	• Science and technology
	• Conflict and insecurity

The report also identifies some of the limitations of the current strategies to address food insecurity, which are found in appendix 2.

According to the experts, a more effective approach to transforming food systems will require:

1. **Acknowledging the dynamic, multi-dimensional nature of the issues-** A food systems approach considers the food system in its totality. The FAO reported that this approach "considers all relevant causal variables of a problem and all social, environmental, and economic impacts of the solutions to achieve transformational systemic changes" (FAO, 2018).
2. **Facilitating collaboration through participatory processes-** More inclusive, collaborative, and adaptive processes are needed for program design and implementation. Governments must ensure coherence among agriculture, health, water, and environmental policies. Convening and connecting stakeholders to identify problems and potential solutions increases the probability of community buy-in and long-term sustainability of the program.
3. **Putting learning at the heart of change processes**- This means complementing quantitative metrics with a more holistic, systemic perspective that considers the wider context and interconnections of different issues and qualitative indicators of change (UNDP, 2024).

A food systems approach addresses the limitations of many traditional approaches to improving food security and nutrition. Traditional food security programs have tended to focus on food production, aiming to

directly influence food security through increasing the supply of food. However, the food system has changed dramatically in many places around the world. A more holistic food systems approach examines potential synergies and can reveal often hidden trade-offs, to ensure that a positive impact on the *whole* food system (FAO, 2014). In sustainable food system development, sustainability is examined holistically. Any proposed solutions to address a problem (e.g. animal diseases) or new opportunity (e.g. a new green technology or profitable market), are assessed against all other dimensions of sustainability to ensure there are no undesirable impacts. The interwoven facets of a food system can mean that interventions in one area risk creating or exacerbating problems in another. More about sustainable food systems can be found in the appendix. No single "magic bullet" solution exists; the context-dependent nature of sustainability means that developing food systems that are sustainable at local and global scales is challenging. To do this, new or improved data and metrics are crucial for shaping effective solutions.

Digital & Artificial Intelligence

Artificial Intelligence (AI) is now being used to analyze many of the global challenges of our time. It can be a powerful tool by leveraging big data, machine learning, and predictive analytics to provide insights in a very short amount of time and with limited resources required. For nutrition and food security, some of its potential uses include:

1. **Predicting Food Insecurity Trends**
    - **Machine Learning Models**: AI can analyze historical data on food production, climate patterns, conflicts, and economic indicators to predict future food insecurity hotspots. AI models can offer significant advantages in terms of efficiency, accuracy, consistency, automation, pattern recognition, and scalability of models (Kutyauripo et al., 2023; Liu et al., 2023). AI can also simulate the effects of policy decisions, such as how climate change policies may impact future food security.
    - **Early Warning Systems & Predictions**: AI-powered models can identify risks such as weather patterns and diseases in animals or crops before they turn into crises (Liu et al., 2023). AI can integrate satellite data to anticipate droughts, floods, and other extreme weather events that impact food availability (Zhou et al., 2021; Liu et al., 2023; Busker et al., 2024; Herteux et al., 2024).
2. **Remote Sensing & Satellite Imagery**
    - **Crop, Soil and Water Assessment & Monitoring**: AI can evaluate soil health and water availability using remote sensing, helping optimize agricultural practices. AI analyzes satellite images to assess crop health,

yield forecasts, and potential losses due to pests, droughts, or diseases (Kutyauripo et al., 2023, Liu et al., 2023).

- **Deforestation and Land Use Tracking**: AI-powered GIS (Geographic Information Systems) tools help monitor agricultural land use changes that affect food production (Kutyauripo et al., 2023).

3. Supply Chain and Market Analysis

- **Food Price Prediction**: AI models can track market trends and predict food price fluctuations, allowing policymakers and aid organizations to intervene before prices spike.
- **Food Safety & Availability**: AI has been used for risk assessment, to examine food quality and to study food safety issues. It can also be used to develop contingency or reaction plans for potential disruptions in the supply chain, such as conflict, terrorism, or acts of nature.
- **Logistics & Food Waste Reduction**: AI can track surplus food from retailers and redistribute it efficiently to minimize waste and improve access. AI can also analyze transportation and distribution networks to optimize food supply chains, reducing waste, and ensuring food reaches those in need. Devices with AI-powered sensors can monitor food storage conditions, preventing spoilage in warehouses and markets (Liu et al., 2023; Montesclaros et al., 2023).

4. Monitoring and Crowdsourced Data

- **Social Media and Mobile Data Analysis**: AI can analyze social media, SMS reports, and call records to detect early signs of food insecurity (e.g., increasing mentions of hunger, migration trends).
- **Mobile Apps for Local Reporting**: AI-driven apps allow individuals to report food shortages or malnutrition signs, providing grassroots-level data.
- **Targeted Aid Distribution**: AI can help humanitarian organizations allocate food aid more efficiently by identifying the most vulnerable populations through predictive analytics.

5. Precision Nutrition

- **Customized Diet**: AI can be used to develop optimal and customized dietary support that promotes health and nutrition based on each individual's unique set of genetic, biological, and sociocultural factors (Kirk et al., 2021; Livingstone et al., 2022).

However, several limitations and challenges have been noted in the use of AI to address food insecurity. Some of the major ones include:

- **Data Gaps and Quality Concerns:** Many databases on food insecurity rely on self-reported surveys, government reports, or NGO assessments, which can be incomplete, outdated, or inconsistent across regions. AI may not produce accurate insights when data quality is poor. Further, data may be overly aggregated, and not relevant for examining problems at lower scales, like community or household levels (Villacis & Badruddoza, 2023).
- **Standardization Challenges:** Different economies and organizations collect and report food insecurity data using varying methodologies and indicators. This limits the ability of AI to analyze trends across multiple databases without extensive additional work.
- **Lack of Real-Time Updates & Real-World Application:** Many databases are not updated on a regular basis, which hinders real-time insights. Further, many AI models are experimental and have not been used in real-world applications (Sarku et al., 2023; Herteux et al., 2025).
- **Limited Contextual Understanding**: While AI can identify correlations in food insecurity data, it cannot understand the complexities of broader socio-political factors (e.g., trade policies, conflicts, or cultural food preferences) that influence food systems. Therefore, its analysis and potential solutions are not dynamic. They often reflect a narrow, simplistic analysis that lacks consideration of multiple, interconnected issues involved.
- **Inherent biases:** AI models can inherit biases from training/calibration data. If databases underrepresent or exclude communities or aspects of the food system, AI-generated insights may be skewed. In addition, there may be bias in algorithms trained with data mostly from developed countries. For example, platforms like Google, Wikipedia, and OpenAI centralize knowledge production, often privileging Western perspectives, making it difficult for Indigenous, local, and non-Western knowledge systems to be widely represented. Further, many non-dominant languages lack representation in AI models, reinforcing digital exclusion. Existing databases have been critiqued for being too reliant on quantitative data, leaving out voices from certain segments of the population. Further, data may not represent smaller stakeholders at the individual, household, and community levels (Sarku et al., 2023).

Decolonization of data

It has been said that “data is the new oil” (CLEAR-AA, 2021). Increasing attention is being given to the ways in which data can “replicate or even amplify existing injustices and inequalities” (Muyoya et al., 2022). There is a

global call for more efforts to "decolonize data." Historically, data have been collected by individuals and companies from high-income countries from populations in LMICs, with decision-making power, data ownership, and the benefits of the data being concentrated within high-income institutions (McCutchan, 2022; Muyoya et al., 2022). Decolonization of data refers to the process of challenging and transforming how data is collected, analyzed, and used, particularly in ways that dismantle power imbalances rooted in colonial histories and structures. It seeks to ensure that data practices respect the sovereignty, knowledge systems, and voices of indigenous and marginalized communities, rather than reinforcing Western-dominated narratives and decision-making processes. The idea that only institutions like Western academia, governments, or international organizations produce valid data is rejected, and value is also placed on oral traditions, lived experiences, and non-Western epistemologies (UIHI, 2023).

There are several important issues to consider in decolonizing data. The extraction of data from communities without fair benefit-sharing or accountability must be avoided (McCutchan, 2021). Communities, especially Indigenous and historically marginalized groups, should have control over how their data is collected, stored, and used. Ethical and participatory data collection means that communities are involved in the data process to ensure that they shape how information is gathered and interpreted, to accurately represent them (UIHI, 2023). There is also a growing movement to make more data publicly available and accessible; examples include organizations like Open Data Charter, Open Knowledge Foundation, ODI, and GODAN. Open data promotes equitable access to information, ensuring more transparency, accountability, and public trust in decision-making. In addition, knowledge-sharing across sectors and economies can improve efficiency and conserve resources by avoiding duplicative efforts. By embracing the main principles of decolonization of data, data are reflective of diverse cultural contexts, leading to more effective and just outcomes and the advancement of society.

THE CHALLENGE

Your team, from a national non-profit organization working in data science, has been asked to work with one national government in Southeast Asia to inform the development of a five-year strategic plan to address issues and risks of food insecurity through a food systems approach. To its credit, the government recognizes that most previous attempts to address food insecurity have used a siloed way of thinking that failed to consider the complex, inter-connected issues, and different dimensions of food insecurity. It acknowledges that an integrated, multi-disciplinary systems thinking approach is essential.

Now, the government is pursuing a much more comprehensive analysis, seeking to understand the facilitators and barriers to food security through a triangulation of multiple different types of data in different forms. This nation's government aims to develop solutions and programs with collaboration across many sectors, such as multiple government agencies, the private sector, and civil society, because clear stakeholder engagement can inform a more inclusive, holistic, and ultimately more effective response. However, convening and collecting input and robust data from many stakeholders can be very resource-intensive, requiring a lot of time, money, and human-power.

While this nation's government officials don't have much expertise in the use of AI to inform policy, they appreciate its potential and seek to use it to inform the strategic plan. Government officials are familiar with the existing databases available through various UN agencies and other groups, which have major utility, but also recognize that these large databases are highly quantitative, focused on country-level indicators, and often represent high-income country issues rather than LMICs. Government officials are willing to provide funding for your organization as a sub-contractor to create and manage the collection and analysis of more data to provide more comprehensive evidence for decision-making. It is willing to fund up to US$500,000 for a three-year pilot project, with the intention to take over this program once it is up and running.

Your team is tasked with conducting a detailed analysis and critique of the existing data available around this topic, as well as a plan to collect more comprehensive data to develop a more dynamic, holistic approach to address food insecurity in one Southeast Asian nation (Brunei, Cambodia, East Timor, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, or Vietnam). Your team is asked to provide a video report of a max of 10-minutes to the Ministers of Agriculture, Health, and the Environment with your analysis and proposal relating to ONE of the four aspects of food insecurity as an example.

In summary, while the ultimate goal is to develop a comprehensive food security strategy based on a food systems approach, your team is being tasked with developing a plan for the use of AI with more comprehensive data evidence to inform future recommendations and policies.

Recommended Existing Databases

Food Systems Dashboard

FAO - Food Security | Land Portal

SDG Indicators Data Portal

FAOLEX Database

FAO/WHO Global Individual Food Consumption Data Tool

FAO Food and Agriculture Microdata Catalogue

FAOSTAT (Statistics on Dietary Data)

FAOLEX (Legislative and Policy Database)

Global Food and Nutrition Security Dashboard

Food Security Information Network (FSIN)

FAO Statistical Yearbook 2024

FAO/WHO Global Individual Food Consumption Tool (GIFT)

The INFORMAS Government Healthy Food Environment Policy Index (Food-EPI)

Fill the Nutrient Gap

Cost of the Diet

The video report should include the following:

- A broad overview of the problem of food insecurity in the chosen nation, acknowledging the inter-connectedness of the food system and the contextual factors specific to this nation. This should also include a basic overview of the progress of this nation in meeting SDG #2.

- A more detailed analysis of the situation as it relates to one of the four dimensions of food security (availability, access, utilization, or stability) in that nation. Explain why you chose this dimension.

- An overview of the ways that AI could be used to inform the creation and on-going iteration of the national strategy relating to the chosen dimension of food security.

- A description of the existing databases and main indicators available that could be used with AI to provide insight into the main challenges in this nation as relating to the chosen dimension. (Refer to the recommended databases listed on pg 12.)

- A critique of the limitations of existing databases, including the gaps and blind spots. Especially considering the equity piece, whose voices are being left out?

- A detailed analysis of how to fill the gaps in existing data through the collection of multiple forms of new, innovative data (satellite, drone, social media, open source, crowdsourced, qualitative, etc.), with an explanation of how the new data will provide a more holistic picture of the issues and involve more stakeholders.

- A description of how these data will be sourced and how they will be used together in a new, more comprehensive AI model. Specific examples of how these could inform future policies or programs should be provided (through examples from literature or previous cases).

- Please remember that your plan should be clear and understandable to decision-makers and stakeholders. You will need to balance the interests and agendas of multiple government agencies.

Therefore, you should briefly touch on how food security could lead to improved financial health of the nation in order to convince the ministers that this project is valuable!

- Appropriate references.
- A very basic budget outlining how the US$500,000 will be used over three years.

Other Important Information

- Provide a link to your video on YouTube, Vimeo, Bilibili or similar site by June 6, 2025 at 11:59pm pacific time by emailing mwithers@usc.edu
- Video MUST be no more than 11 mins or it will not be eligible.
- At the beginning or end of the video, please provide a slide with full name, discipline of study, affiliated department and institution, and academic status (e.g. undergraduate, graduate, medical, etc.) for each team member. Please make sure to clearly identify your team name and university name.
- Please be explicit in citing sources of work other than your own.
- Teams are encouraged to develop engaging and creative visual materials for the presentation. All team members must be physically shown in the videos at least once. However, just as in a live presentation, you can include video clips, slides, animations, and other media/props. Teams should begin with an introduction as in any presentation to an audience. Following the introduction, the format is open. The team can choose to 'zoom in', showing videos, photos, maps, diagrams, interviews, etc. We highly suggest using visual images as opposed to text.
- We highly recommend that teams use microphones when filming. Please do not speed up the video to make it difficult to understand, especially for non-native speakers. We also encourage the use of subtitles.
- Outside video clips or b-rolls (developed by other people or agencies) are allowed but they should not last for more than 180 seconds total (all clips combined).
- We encourage the use of AI as a tool. However, any use of AI or other generative technology should be explicitly acknowledged. Please include the required AI Use Disclosure Form in the email with your video. The purpose of this disclosure is not to deduct points from the scoring but to ensure that AI was used in an appropriate way.
- All teams automatically grant permission for APRU to screen their videos at the workshop and to post their videos on our website for an unlimited time.

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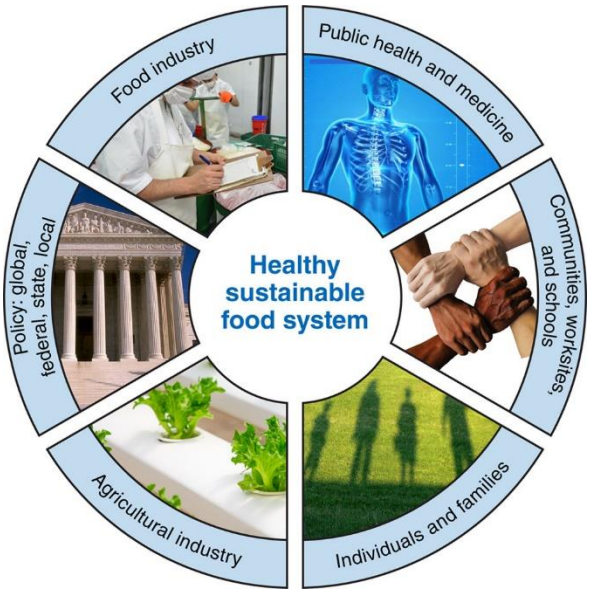
APPENDIX

1. Sustainable Food Systems

A *sustainable* food system is a food system that delivers food security and nutrition for all in such a way that the economic, social, and environmental dimensions to generate food security and nutrition for future generations are not compromised. Regarding the economic dimension, a food system is considered sustainable if the activities conducted by each food system actor or support service provider are commercially or fiscally viable. The activities should generate benefits for all categories of stakeholders, such as wages for workers, taxes for governments, profits for enterprises, and food supply improvements for consumers. Regarding the social dimension, a food system is considered sustainable when there is equity in the distribution of the economic value added, taking into account vulnerable groups categorized by gender, age, race, etc. Food system activities must contribute to the advancement of important socio-cultural outcomes, such as nutrition and health, traditions, labor conditions, and animal welfare. And in terms of the environmental dimension, sustainability is determined by ensuring that the impacts of food system activities on the surrounding natural environment are neutral or positive, taking into consideration biodiversity, water, soil, animal and plant health, the carbon footprint, the water footprint, food loss and waste, and toxicity (FAO, 2018).



Source: Anderson et al., 2019

2: Limitations of Current Strategies to Address Food Insecurity

Simplistic understanding of the complex dynamics of food systems: food systems challenges are multi-dimensional and inter-linked and involve multiple tensions, dilemmas and trade-offs that cannot be easily addressed by a typical logframe approach to programme design.
Emphasis on technocratic solutions: problem analysis and solution design tend to focus on more technocratic factors (e.g. governance mechanisms, policy reform, legal frameworks, standards, capacity building, financial instruments, public private partnerships, technology solutions) and are often too superficial in their consideration of local context, underestimating the impact of historical, cultural, social and political factors and power dynamics.
Limited stakeholder buy-in and adoption: when the design of interventions is led by outside experts, securing meaningful stakeholder buy-in and support is frequently hard to achieve. As a result, the adoption of recommendations, and the implementation and follow-through on commitments, pathways and policies, is often limited.
Insufficient attention to trust and relationship building: when problems and solutions are primarily considered through a technocratic lens, the human side of change is often neglected or ignored. In reality most successful change efforts are driven by coalitions of passionate people working together to create the change they want to see.
Limited attention to shifting mindsets: an essential aspect of the change process involves facilitating stakeholders to consider alternative viewpoints. Some of this can happen through providing access to data and analysis, but most of it needs to happen through skilfully facilitated dialogue and experiential learning. These areas are often under-invested in within typical projects.
Difficulty in adapting to changing contexts: traditional project plans can quickly become out of date and adjusting them is often cumbersome and difficult, even in the face of unexpected events and shocks.
Learning is superficial: accountability mechanisms tend to incentivise delivery organisations to demonstrate the successful delivery of project plans. There is a fear that 'failure' to deliver plans will be penalised. This fear of admitting to 'failure' gets in the way of genuine learning.
Limited long-term project sustainability: once projects end, there is often insufficient local capacity, funding or support to continue the work, which stems from (a) short-term funding cycles and (b) failure to secure genuine stakeholder ownership.

Source: UNDP, 2025

3. Other Recommended Resources

- Free short courses by data.org: Introduction to Responsible Data Management and Ethical AI in Practice
- FAO E-learning Courses (Sustainable Food Systems)
- FAO Science and Innovation Forum
- Digital Public Goods Alliance
- Data.org
- Statistics | FAO | Food and Agriculture Organization of the United Nations
- BASE has developed a virtual cold chain application that could be a useful resource here.
- Examples of cases of multisector collaboration to leverage AI and support the Agrifood sectors https://tomorrownow.org/tomorrownow-kenya-space-agency-launch-partnership-to-accelerate-the-impact-of-next-generation-space-data-for-inclusive-food-security-climate-resilience/