



Addressing Hunger Through Innovation

Feeding People with High Production Greenhouses

A Presentation by Andrew Jay Sanger

The United Nations' Sustainable Development Goals

The Sustainable Development Goals (SDGs) are a set of 17 goals that were adopted by all United Nations Member States in 2015. The goals aim to end poverty, protect the environment, and ensure prosperity for all by 2030.

The SDGs are interconnected, meaning that progress on one goal will often depend on progress on other goals. For example, ending hunger (SDG 2) will require improving agricultural productivity (SDG 2), reducing food waste (SDG 12), and ensuring access to clean water and sanitation (SDG 6).

The SDGs are important because they provide a framework for countries to work together to address the most pressing challenges facing the world today. They are also important because they are ambitious and aspirational. The goals set out a vision for a better future for all, and they provide a roadmap for how to achieve that vision.

SDG 1: No Poverty: This goal aims to end extreme poverty for all people everywhere by 2030. This includes reducing the number of people living on less than \$1.90 a day by half, and achieving full and productive employment and decent work for all women and men.

SDG 2: Zero Hunger: This goal aims to end hunger, achieve food security, improve nutrition, and promote sustainable agriculture. This includes doubling the agricultural productivity and incomes of small-scale food producers, especially women, by 2030.

SDG 3: Good Health and Well-Being: This goal aims to ensure healthy lives and promote well-being for all at all ages. This includes reducing premature mortality from non-communicable diseases by one-third by 2030, and achieving universal health coverage, including financial risk protection, access to quality essential health-care services, and access to safe, effective, quality, and affordable essential medicines and vaccines for all.

SDG 4: Quality Education: This goal aims to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. This includes ensuring that all girls and boys complete free, equitable, and quality primary and secondary education leading to relevant and effective learning outcomes by 2030.

SDG 5: Gender Equality: This goal aims to achieve gender equality and empower all women and girls. This includes eliminating all forms of discrimination against women and girls everywhere, and ensuring universal access to sexual and reproductive health and reproductive rights.

SDG 6: Clean Water and Sanitation: This goal aims to ensure availability and sustainable management of water and sanitation for all. This includes achieving universal and equitable access to safe and affordable drinking water for all by 2030, and achieving adequate and equitable sanitation and hygiene for all, and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations.

SDG 7: Affordable and Clean Energy: This goal aims to ensure access to affordable, reliable, sustainable, and modern energy for all. This includes increasing the share of renewable energy in the global energy mix to at least 20% by 2030.

SDG 8: Decent Work and Economic Growth: This goal aims to promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all. This includes achieving full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value.

SDG 9: Industry, Innovation and Infrastructure: This goal aims to build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation. This includes developing quality, reliable, sustainable, and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on improving access for women and people in vulnerable situations.

SDG 10: Reduced Inequalities: This goal aims to reduce inequality within and among countries. This includes reducing the gap in income levels between the richest 10% and the poorest 10% of the population by half by 2030.

SDG 11: Sustainable Cities and Communities: This goal aims to make cities and human settlements inclusive, safe, resilient, and sustainable. This includes ensuring access for all to adequate, safe, and affordable housing and basic services, and improving the quality of life in slums by 2030.

SDG 12: Responsible Consumption and Production: This goal aims to ensure sustainable consumption and production patterns. This includes substantially reducing the per capita global consumption of resources by 2030.

SDG 13: Climate Action: This goal aims to take urgent action to combat climate change and its impacts. This includes substantially increasing the ability of countries to deal with the impacts of climate change, including through early warning systems and the development of appropriate adaptation plans, and making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.

SDG 14: Life Below Water: This goal aims to conserve and sustainably use the oceans, seas and marine resources for sustainable development. This includes preventing and significantly reducing marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.

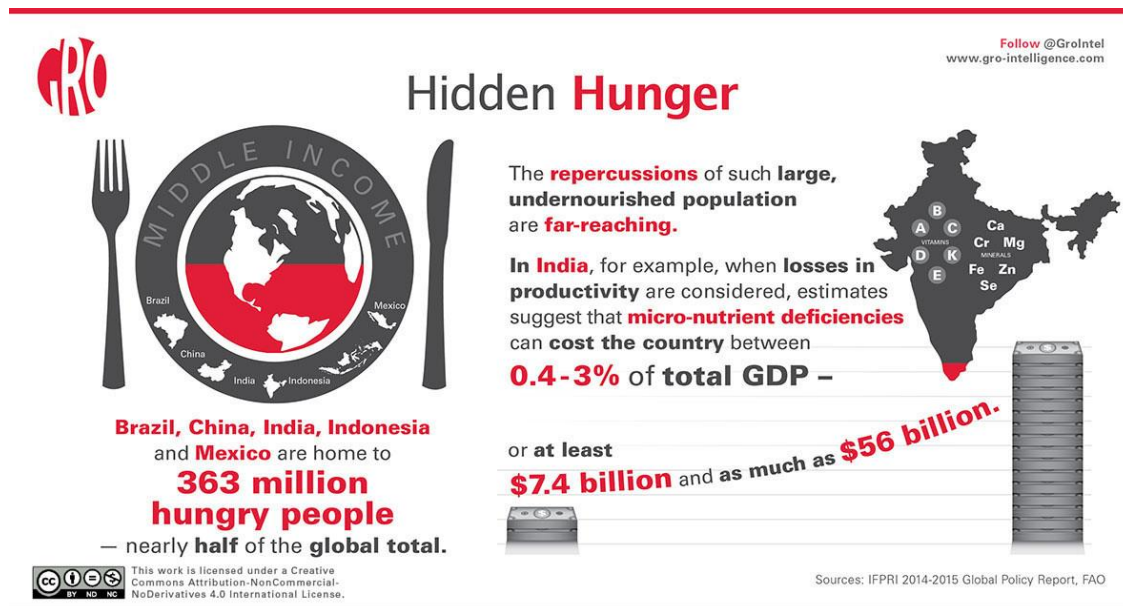
SDG 15: Life on Land: This goal aims to protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss. This includes ensuring the conservation of ecosystems, the sustainable use of their components, and the fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as mutually agreed upon.

SDG 16: Peace, Justice and Strong Institutions: This goal aims to promote peaceful and inclusive societies for sustainable development, provide access to justice for all, and build effective, accountable and inclusive institutions at all levels. This includes providing access to justice for all, building effective, accountable and inclusive institutions at all levels, and reducing corruption and bribery in all their forms.

SDG 17: Partnerships for the Goals: This goal aims to revitalize the global partnership for sustainable development. This includes mobilizing additional financial resources for developing countries from all sources, including through enhanced development cooperation, to implement the SDGs, in

accordance with the principle of common but differentiated responsibilities and respective capabilities, in the spirit of global partnership.

These goals are important because they address some of the most pressing challenges facing the world today, including climate change, environmental degradation, and inequality. They also provide a framework for countries to work together to address these challenges and build a more sustainable and equitable future for all.



Hunger

SDG 2, eliminating hunger, is one of the 17 Sustainable Development Goals (SDGs) that were adopted by the United Nations in 2015. The SDGs are a set of goals that aim to end poverty, protect the environment, and ensure prosperity for all by 2030.

SDG 2 specifically focuses on ending hunger, achieving food security, and improving nutrition and promoting sustainable agriculture. Hunger is a major problem that affects millions of people around the world. It is estimated that 828 million people did not have enough to eat in 2021.

The current status of SDG 2 is mixed. There has been some progress in recent years, but there is still a long way to go to achieve the goal of zero hunger. In 2021, the prevalence of hunger declined to 9.8% globally. However, this is still higher than the target of 2% by 2030.

In Georgia, the status of SDG 2 is also mixed. In 2021, the prevalence of hunger was estimated at 4.1%. This is lower than the global average, but it is still higher than the target of 0% by 2030.

How hunger connects to other SDGs

SDG 1: No Poverty: Hunger is a major cause of poverty. People who are hungry are less likely to be able to work or go to school, which can trap them in a cycle of poverty.

SDG 3: Good Health and Well-Being: Hunger can lead to malnutrition, which can have a serious impact on health. Children who are malnourished are more likely to be sick and to have lower educational attainment.

SDG 4: Quality Education: Hunger can make it difficult for children to learn. Children who are hungry are more likely to be absent from school and to have lower academic achievement.

SDG 5: Gender Equality: Women and girls are disproportionately affected by hunger. In many countries, women have less access to land, water, and other resources, which can make it more difficult for them to produce food.

SDG 13: Climate Action: Climate change is a major threat to food security. Extreme weather events, such as droughts and floods, can damage crops and make it more difficult to produce food.

SDG 17: Partnerships for the Goals: Partnerships are essential to achieving SDG 2. Governments, businesses, civil society organizations, and individuals all have a role to play in ending hunger.

Hunger in Georgia

The Government of Georgia has also taken steps to address SDG 2. In 2017, the government developed a National Food Security Strategy that outlines the country's goals and objectives for improving food security and nutrition. The strategy focuses on four key areas:

1. Increasing agricultural productivity
2. Improving access to food
3. Promoting healthy diets
4. Strengthening the capacity of national food security systems

The government has also implemented a number of programs and initiatives to address hunger. These include providing financial assistance to farmers, promoting sustainable agricultural practices, and increasing access to food for vulnerable groups.

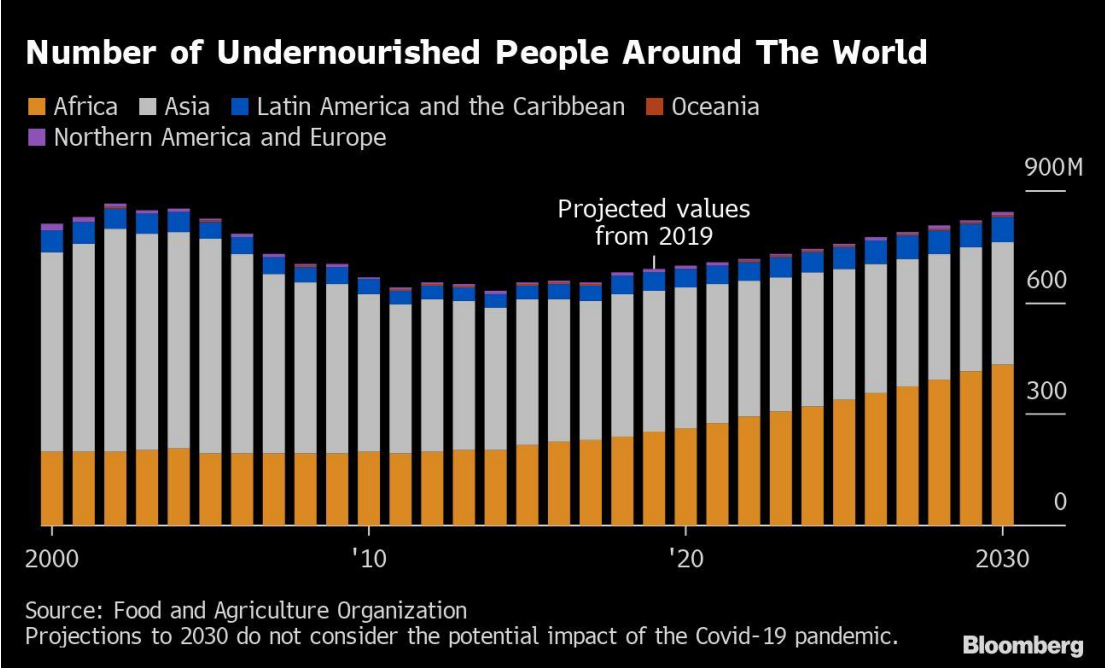
The private sector is also playing a role in addressing hunger in Georgia. Some businesses are providing food assistance to vulnerable groups, while others are developing new technologies and practices to improve food production.

Civil society organizations are also working to address hunger in Georgia. These organizations are providing food assistance, promoting awareness of the issue, and advocating for policies that will help to end hunger.

The government has also implemented a number of programs and initiatives to support these goals. For example, the government has provided subsidies to farmers to help them improve their yields. The government has also launched a school feeding program to provide free meals to school children.

These programs and initiatives have made some progress in improving food security and nutrition in Georgia. However, there are still challenges that need to be addressed. For example, the prevalence of stunting in children under 5 is still high.

Despite the challenges, the Government of Georgia is committed to achieving SDG 2. The government has made food security a priority and is working to implement a number of programs and initiatives to improve food security and nutrition in the country.



Hunger Globally

There are a number of initiatives that have been launched to address SDG 2 globally. These include:

The Global Food Security and Nutrition Forum (GFSNF), which is a global partnership that brings together governments, international organizations, civil society organizations, and the private sector to work together to address food security and nutrition.

The Comprehensive Africa Agriculture Development Programme (CAADP), which is a program that is being implemented by African countries to improve agricultural productivity and food security.

The United Nations Food and Agriculture Organization (FAO) has a number of programs and initiatives that are focused on improving food security and nutrition.

These initiatives have made some progress in addressing SDG 2. For example, the prevalence of stunting in children under 5 has been declining in recent years. However, there is still a long way to go to achieve SDG 2.

- In 2020, between 720 million and 811 million persons worldwide were suffering from hunger, roughly 161 million more than in 2019.
- Also in 2020, a staggering 2.4 billion people, or above 30 per cent of the world’s population, were moderately or severely food-insecure, lacking regular access to adequate food.

- Globally, 149.2 million children under 5 years of age, or 22.0 per cent, were suffering from stunting (low height for their age) in 2020, down from 24.4 per cent in 2015.
- To achieve the target of a 5 per cent reduction in the number of stunted children by 2025, the current rate of yearly decline – 2.1 per cent – must double to 3.9 per cent.
- In 2020, wasting (low weight for height) affected 45.4 million or 6.7 per cent of children under 5 years of age.
- The share of countries burdened by high food prices, which had been relatively stable since 2016, rose sharply from 16 per cent in 2019 to 47 per cent in 2020.

References

United Nations. *2022 Sustainable Development Report*.
<https://www.un.org/sustainabledevelopment/progress-report/>

Food and Agriculture Organization of the United Nations (FAO). *Georgia: Country profile on food security and nutrition*. <https://www.fao.org/3/cb4675en/cb4675en.pdf>

United Nations (UN). *Sustainable Development Goal 2: Zero hunger*.
<https://www.un.org/sustainabledevelopment/hunger/>

United Nations Sustainable Development Goals: <https://www.un.org/sustainabledevelopment/>

Food and Agriculture Organization of the United Nations: <https://www.fao.org/>

Georgia: Country profile on food security and nutrition: <https://www.fao.org/3/cb4675en/cb4675en.pdf>

Country Profile: Georgia

Georgia is a country located in the South Caucasus region of Eurasia. It is a landlocked country, bordered by Russia to the north, Turkey to the south, Armenia to the southwest, and Azerbaijan to the east. The capital of Georgia is Tbilisi, a city with a rich history and culture.

Georgia has a long and rich history, dating back to the ancient kingdom of Colchis. The country was later ruled by the Romans, Byzantines, Persians, and Ottomans. In the 19th century, Georgia was annexed by the Russian Empire. The country gained independence in 1991, following the collapse of the Soviet Union.



Georgia is a country with a diverse population. The majority of the population is Georgian, but there are also significant minority populations of Armenians, Azerbaijanis, Russians, and Ossetians. The official language of Georgia is Georgian, but Russian is also widely spoken.

Georgia is a beautiful country with a stunning landscape. The country is home to the Caucasus Mountains, which are some of the highest mountains in Europe. Georgia is also home to a number of historical and cultural sites, including the ancient city of Mtskheta, the Gelati Monastery, and the Vardzia cave city.

Georgia is a developing country, but it has made significant progress in recent years. The economy is growing, and the country is becoming more integrated with the global economy. Georgia is also a popular tourist destination, and tourism is a major source of income for the country.

Georgia is a country with a bright future. The country has a young and dynamic population, and it is well-positioned to benefit from the growth of the global economy. Georgia is also a member of the European Union and NATO, which will help to ensure the country's stability and security.

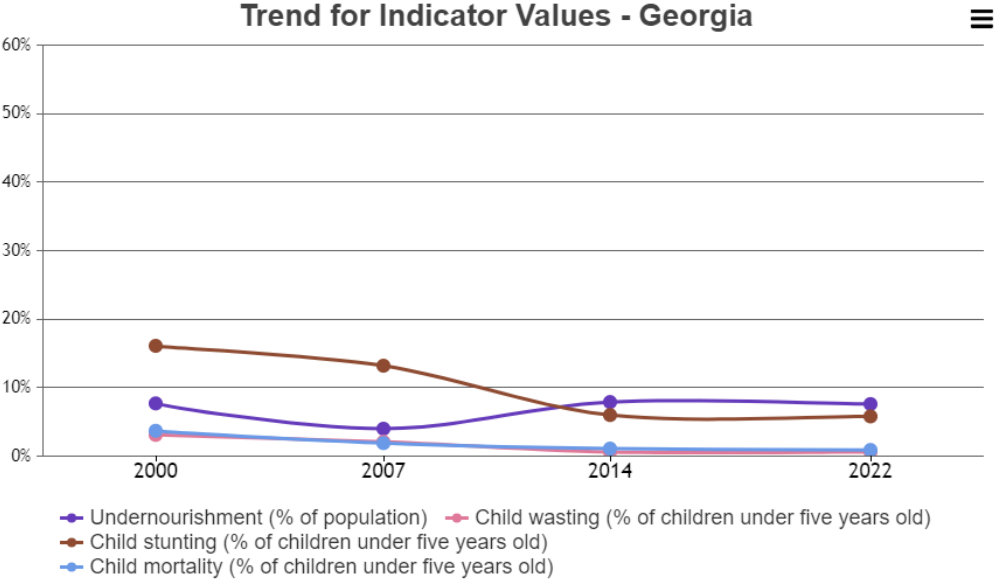
Some additional details about Georgia, non-hunger related that you may find interesting: The national flower of Georgia is the azalea. The national dish of Georgia is khachapuri, a cheese-filled bread. Georgia is home to the world's deepest lake, Lake Baikal. Georgia is a popular destination for wine tourism. Georgia is a Christian country, and the Georgian Orthodox Church is the national church.

Economy and Politics

The economy of Georgia is based on agriculture, tourism, and manufacturing. The country has been experiencing strong economic growth in recent years, but this growth has been unevenly distributed. Poverty remains a problem, particularly in rural areas.

The political situation in Georgia is relatively stable. The country has a democratically elected government. However, there are ongoing tensions with Russia over the status of the breakaway regions of Abkhazia and South Ossetia.

Hunger and Famine



Georgia has a history of hunger and famine. The most recent major famine occurred in the early 1990s, following the collapse of the Soviet Union. The famine was caused by a combination of factors, including economic collapse, political instability, and drought.

The country's mountainous terrain makes it difficult to grow crops. This has led to a reliance on imported food, which makes Georgia vulnerable to food shortages. The country's high poverty rate also makes many people unable to afford food.

In addition, Georgia's history of conflict has disrupted agricultural production and led to displacement of people. This has made it difficult for the country to recover from famines in the past.

Challenges and Opportunities

In recent years, Georgia has made progress in reducing hunger and famine. The government has implemented a number of programs to improve food security, including agricultural subsidies, food distribution programs, and school feeding programs. These programs have helped to reduce the number of people who are food insecure in Georgia.

However, the country still faces a number of challenges, including poverty, climate change, and conflict. These challenges will need to be addressed in order to ensure food security for all Georgians.

Conclusion

Georgia is a country with a rich history and culture. The country has made significant progress in recent years in reducing hunger and famine. However, there are still challenges that need to be addressed. With continued effort, Georgia can achieve food security for all its citizens.

References

BBC News. (2009, February 25). Georgia: Famine fears as food prices rise. Retrieved from <https://www.bbc.com/news/world-europe-17301647>

Action Against Hunger. (n.d.). Georgia. Retrieved from <https://www.actionagainsthunger.org/location/europe/georgia/>

The New Humanitarian. (2022, December 12). Georgia-Russia: Hunger, prices, refugees. Retrieved from <https://www.thenewhumanitarian.org/analysis/2022/12/12/Georgia-Russia-hunger-prices-refugees>

Addressing Hunger through Innovation

Hunger is a global problem that affects millions of people. According to the World Food Programme, 821 million people do not have enough to eat. This hunger can have a devastating impact on people's health, education, and economic opportunities. There are many factors that contribute to hunger, including poverty, conflict, climate change, and natural disasters. However, there are also many things that can be done to address hunger. One promising solution is to use high-production greenhouses.

High-production greenhouses are able to produce food year-round, even in areas with harsh climates. They are also able to produce food more efficiently than traditional agricultural methods. This makes them a valuable tool for addressing hunger in areas that are prone to food insecurity.

In this proposal, I will discuss how high-production greenhouses can be used to help address hunger. I will also discuss the benefits of using high-production greenhouses, as well as the challenges that need to be addressed in order to make this a successful initiative.

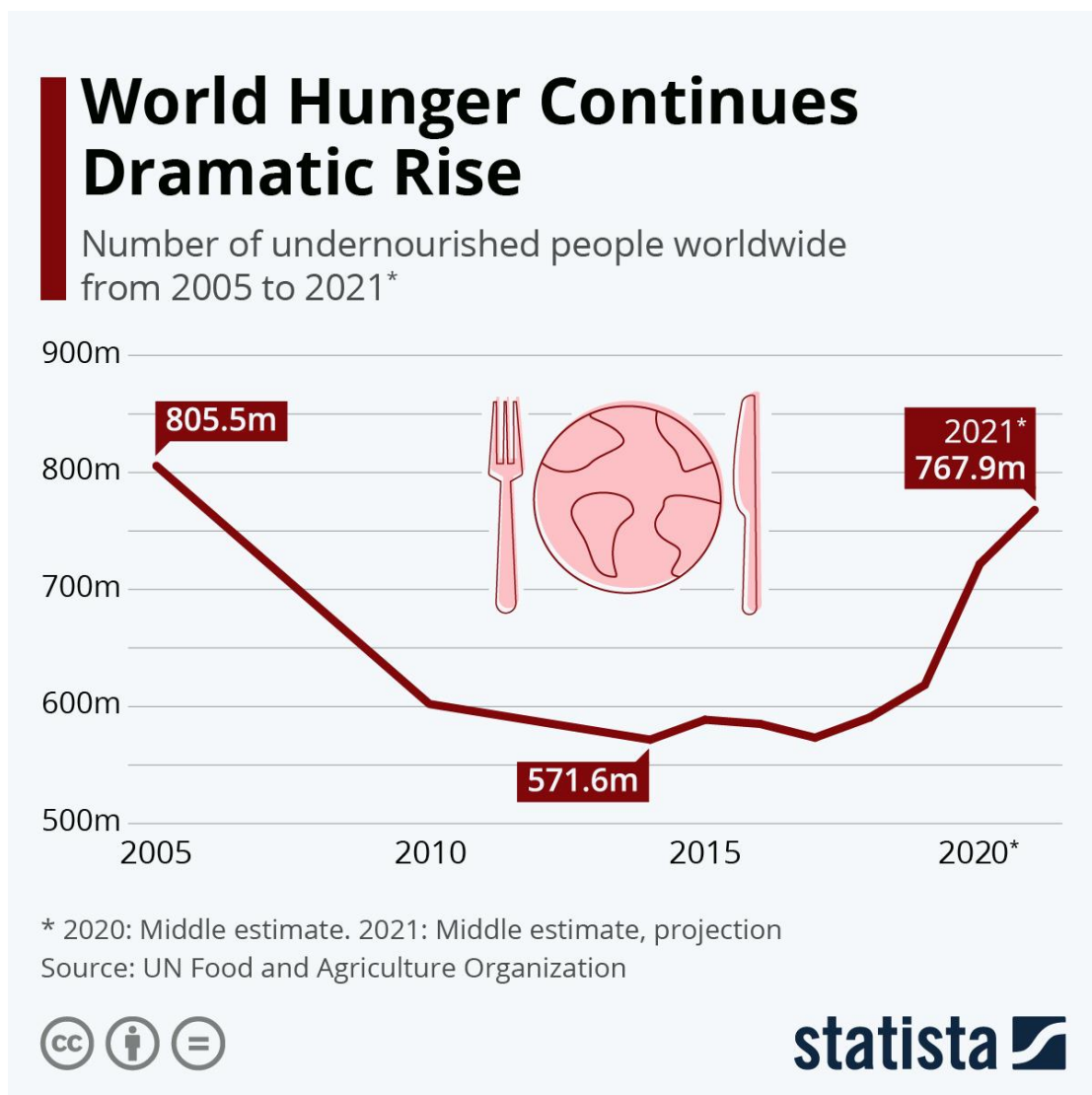
I believe that high-production greenhouses have the potential to make a significant impact on the fight against hunger. By using these greenhouses, we can help to ensure that everyone has access to the food they need to survive and thrive.

Target Audience

The target audience for my SDG proposal is the World Food Programme (WFP). WFP is a United Nations agency that is responsible for fighting hunger worldwide. WFP has a strong focus on sustainable development, and I believe that my proposal would be a good fit for their mission.

Problem

The problem that I am addressing is hunger. According to the World Food Programme, 821 million people do not have enough to eat. This hunger can have a devastating impact on people's health, education, and economic opportunities. The issue is rising at a rate faster than population growth as pictured in the graph below. This leads to increases in chronic disease, lower economic outputs, and much lower Gross National Happiness (GNH).



Proposal

My proposal is to use high-production greenhouses to help address hunger. High-production greenhouses are able to produce food year-round, even in areas with harsh climates. They are also able to produce food more efficiently than traditional agricultural methods.

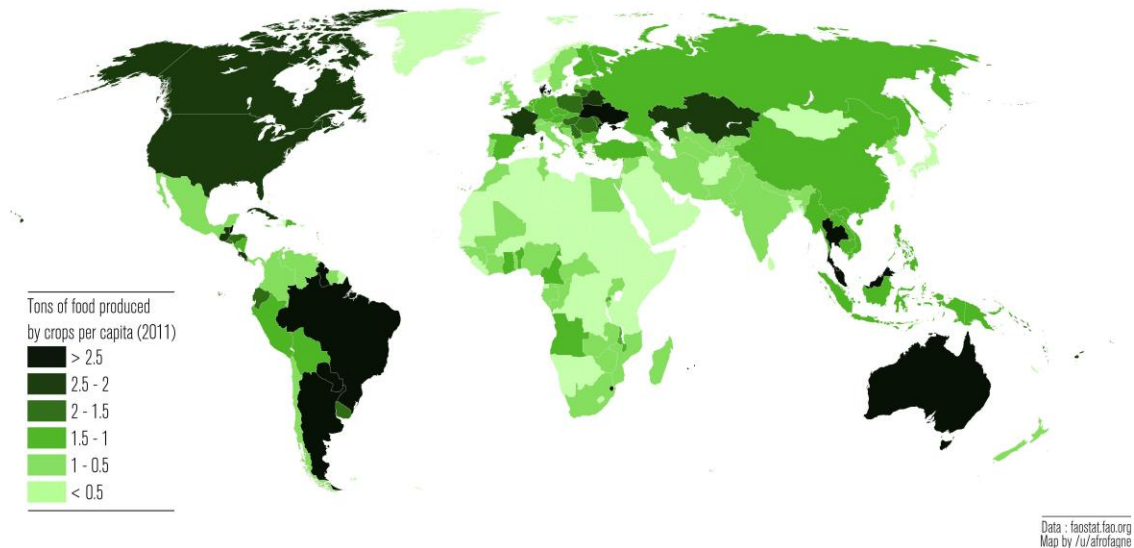
Dutch greenhouses are able to produce up to 10 times more food per square foot than traditional farming methods. This is because greenhouses can be controlled to provide the ideal conditions for plant growth, such as temperature, humidity, and light. They can also be protected from pests and diseases, which can reduce crop losses.

According to a study by the University of Amsterdam, Dutch greenhouses produce an average of 15 kilograms (33 pounds) of tomatoes per square meter. This is compared to an average of 1.5 kilograms (3.3 pounds) of tomatoes per square meter for open-field tomatoes.

The high production of Dutch greenhouses is due to a number of factors, including the use of: high-tech irrigation systems that deliver water and nutrients directly to the plants' roots, artificial lighting to extend the growing season and increase yields, and pest- and disease-resistant varieties of plants.

The high production of Dutch greenhouses has made the Netherlands a major exporter of fruits and vegetables. In 2021, the Netherlands exported 8.7 billion euros worth of fruits and vegetables, making it the world's second-largest exporter of fruits and vegetables after the United States while being 0.42% the size of the US.

CROP PRODUCTION PER CAPITA



Goals

SMART goals are the standard of Lean Six Sigma process improvement. This system has shown itself to be the best practice for maximizing productivity and outcomes in the corporate world since the 1980's. SMART goals are specific, measurable, achievable, relevant, and time-bound. SMART goals can help you achieve your goals by providing you with a clear and concise plan of action.

The SMART goal for this project is to identify and build high-production greenhouses in 50 areas that are prone to hunger and build and operate greenhouses in those areas within 5 years. The project will be measured by the tonnage of food produced in each area. As well as the number of greenhouses that are built in the identified areas. The project will be considered a success if it reduces the prevalence of hunger in the areas by 60%.

Specific: The first step in my proposal is to identify areas that are prone to hunger. These areas will be identified by working with the World Food Programme (WFP) and other organizations that are working to combat hunger. The areas will be identified based on the following criteria: The prevalence

of hunger in the area, the availability of land for greenhouses, the availability of water for irrigation, and the availability of technical expertise to build and operate greenhouses.

Measurable: The number of areas that are identified will be measured by the number of countries, provinces, or districts that are included in the project. The prevalence of hunger in the areas will be measured by the prevalence of undernourishment, stunting, and wasting.

Achievable: The areas that are identified will be able to support the construction and operation of greenhouses. The local people in the areas will be able to be trained in how to operate the greenhouses.

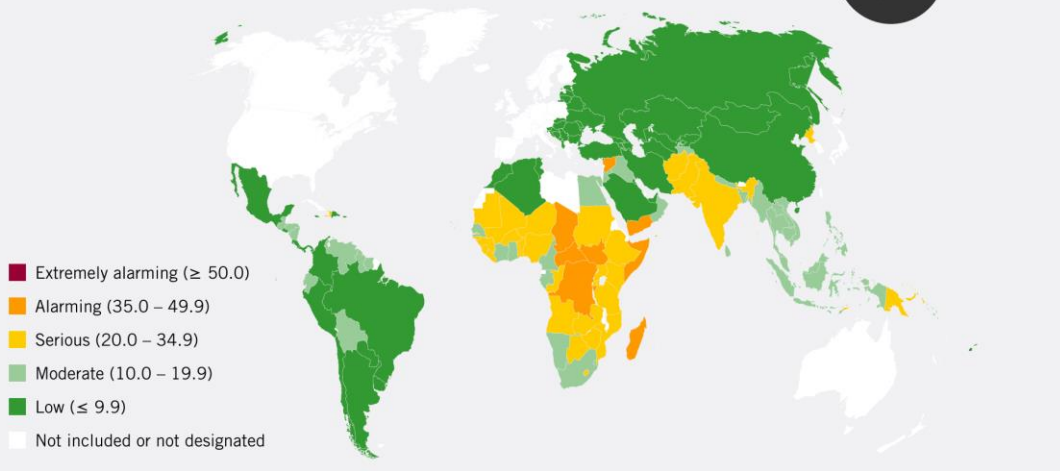
Relevant: The project will be relevant to the goal of reducing hunger. The project will provide a sustainable way to produce food in areas that are prone to hunger.

Timely: The project will be completed within a timeframe of 5 years. The first year will be spent identifying the areas that are prone to hunger and constructing the greenhouses. The next 4 years will be spent building and operating the greenhouses.

Limitations

There are a few limitations to my proposal. First, the cost of building and maintaining high-production greenhouses would be relatively high. However, I believe that the benefits of providing food to people in areas that are prone to hunger would outweigh the costs. Second, the greenhouses would need to be regularly maintained in order to ensure that they are producing food. This would require a commitment from local governments and NGOs.

2022 GLOBAL HUNGER INDEX



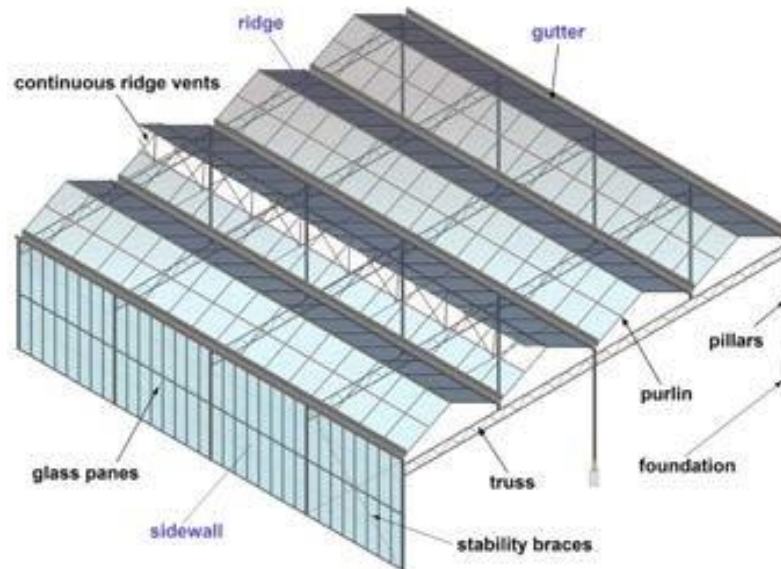
Benefits

The benefits of my proposal would be significant. First, people in areas that are prone to hunger would have access to food, which would improve their health and well-being. Second, children would be able to attend school without having to worry about going hungry. Third, people would be able to work more productively, which would boost the local economy.

Costs

The costs of my proposal would include the cost of building and maintaining high-production greenhouses. The cost of building a greenhouse would be approximately \$100,000. The cost of maintenance would be approximately \$10,000 per year.

Materials



The materials that would be needed for my proposal include the high-production greenhouse's control systems and lighting, as well as the materials needed to build and maintain the greenhouses. The high-production greenhouses are made up of a steel frame, a plastic covering, and a solar heating system. The materials needed to build and maintain the greenhouses include concrete, steel, plastic, glass, LED lighting, solar cells, batteries, and solar heating equipment.

Personnel

The personnel needed for my proposal would include engineers to build the greenhouses, technicians to maintain the greenhouses, and farmers to operate the greenhouses. The engineers would be responsible for designing and building the greenhouses. The technicians would be responsible for maintaining the greenhouses and ensuring that they are functioning properly. The farmers would be responsible for operating the greenhouses and growing food.

References

Gross National Happiness USA. *Gross National Happiness - Measure What Matters*.

<https://gnhusa.org/gross-national-happiness/>

National Geographic. *The High-Tech Greenhouses of the Netherlands*.

<https://www.nationalgeographic.com/magazine/article/holland-agriculture-sustainable-farming>

Nation Master. *Geography Stats: compare key data on Netherlands & United States*.

<https://www.nationmaster.com/country-info/compare/Netherlands/United-States/Geography>