Cairo University Faculty of Engineering Credit Hour System





Zero Hunger

Bridging Global Strategies & Local Realities in Egypt GENS002 – Societal Issues

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Introduction

In 2015, the United Nations launched the Sustainable Development Goals (SDGs), a global plan made up of 17 goals to help solve the world's biggest challenges. These goals aim to reduce poverty, protect the environment, improve education and health, and ensure a better future for everyone by the year 2030.

One of the most important of these goals is **SDG 2**: **Zero Hunger**. While progress has been made in some areas, millions of people still suffer from hunger and malnutrition around the world. SDG 2 focuses on making sure everyone has enough safe, nutritious food and encourages better farming methods that protect the environment and support farmers.

Ending hunger is essential for building a healthy and fair world. Without enough food, people cannot grow, learn, or work properly. Hunger also causes many problems in health, education, and the economy. It is closely connected to other goals like:

- No Poverty (SDG 1)
- Good Health and Well-being (SDG 3)
- Quality Education (SDG 4)
- Climate Action (SDG 13)

The Importance of SDG 2: Zero Hunger

Food is a basic human need, yet many people do not have regular access to enough nutritious food. SDG 2 is important because hunger affects:

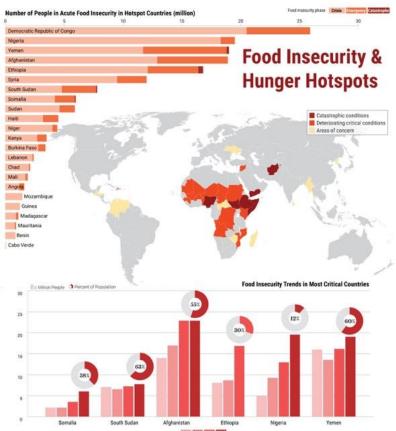
- Health Hunger weakens the body and makes people more likely to get sick.
- Education Hungry children can't concentrate in school and may drop out.
- Work and the Economy People who are undernourished cannot work as effectively, which slows down the economy.
- Peace and Stability Lack of food can lead to conflicts and social unrest.



Figure 1

According to the FAO (Food and Agriculture Organization), around 735 million people around the world were suffering from chronic hunger in 2022. Many of these people live in developing countries, especially in rural and lowincome areas.

Hunger is also connected to the way we farm and produce food. Sustainable farming—using less water, reducing waste, and protecting soil—is a big part of the solution. This is why SDG 2 doesn't only aim to feed people, but also to improve the entire food system.



Achieving Zero Hunger will help countries become healthier, stronger, and more peaceful.

Figure 2

How SDG 2 Helps the Bigger Picture

SDG 2, or "Zero Hunger," is important for fixing the world's hunger and poor nutrition problems. It doesn't just aim to stop hunger—it also wants to make sure:

- Everyone has enough food
- · People eat healthy and nutritious food
- Farming methods are safe for the environment

This goal is closely connected to many other areas like society, the economy, and the environment. That makes SDG 2 a key part of the bigger plan for a better world—called the Sustainable Development Goals. If we succeed with SDG 2, it will support other goals too, because food systems affect so many areas of life.

The Four Pillars of Food Security

To fight hunger in the right way, SDG 2 focuses on four key areas that help achieve food security:

- Availability Making sure there is enough food for everyone.
- Access Making sure people can get and afford the food they need.
- Utilization Making sure people eat food that is safe, nutritious, and culturally appropriate.
- Stability Making sure food is available consistently over time and during crises.

These four pillars help us understand the deeper problems behind hunger and guide us in creating better solutions.



Figure 3

Understanding SDG 2: Zero Hunger

SDG 2, also called Zero Hunger, is the second goal of the United Nations Sustainable Development Goals (SDGs). It focuses on ending hunger, improving nutrition, and promoting sustainable agriculture by the year 2030.

This goal is not just about making sure people have enough food. It's also about:

- Making food healthy and safe
- Supporting local farmers
- Protecting the environment
- Making sure everyone has access to food, no matter where they live or how much money they have

Despite progress in some areas, millions of people around the world still go hungry every day. That's why SDG 2 is one of the most important goals of all.

The Global Targets of SDG 2

To reach the goal of Zero Hunger, the UN has set several targets that countries around the world are working toward. These include:

- End hunger and ensure access to food: Make sure that all people, especially poor and vulnerable groups like infants and children, have access to safe, nutritious, and sufficient food all year round.
- End all forms of malnutrition: Focus on helping children under five, teenage girls, pregnant women, and older people get the right nutrition they need to grow and stay healthy.
- Double the productivity and incomes of small-scale farmers: Especially women, indigenous people, and family farmers who are often the most food insecure.
- Ensure sustainable food production systems: Use farming practices that protect the land, adapt to climate change, and reduce waste.
- *Maintain the genetic diversity of food:* Protect local plants and animals that are important for farming and food production.

Why Zero Hunger Matters

Ending hunger is not just about food—it affects every part of our lives. Here's why SDG 2 is so important:

Health

Without enough food, people can become weak and sick. Hunger and malnutrition can cause serious health problems, especially in young children and pregnant women. Ending hunger can improve immune systems, reduce child mortality, and help people live longer, healthier lives.

Education

Hungry children can't focus on school. Many drop out or fall behind because of lack of energy and concentration. By reducing hunger, we can help more children stay in school and learn better, which improves their future opportunities.

• Economic Development

When people are well-fed and healthy, they can work more productively. This means higher incomes for families and stronger economies for countries. On the other hand, hunger reduces productivity and slows down development.

Peace and Stability

In places where food is scarce, conflict and migration often increase. Food insecurity can lead to social unrest and violence. Ensuring that everyone has enough to eat helps create a more peaceful and stable world.

Environmental Protection

SDG 2 encourages sustainable agriculture, which protects our land, water, and climate. This helps fight climate change and keeps food systems strong for the future.

In Summary

SDG 2: Zero Hunger is about much more than just food. It's about giving every person a fair chance at life. By ending hunger, we also improve health, education, equality, and peace. That's why it's one of the most powerful goals in the 2030 Agenda for Sustainable Development.

Global Application: Brazil's "Fome Zero" Program



Figure 4

Brazil's "Fome Zero" (Zero Hunger) program stands out as one of the most ambitious and comprehensive national strategies to combat hunger and malnutrition. Launched in 2003 under President Luiz Inácio Lula da Silva, the program aimed to ensure that all Brazilians could access sufficient and nutritious food as a basic human right. What makes Fome Zero exceptional is its multi-

sectoral approach, combining social protection, agricultural support, nutrition education, and infrastructure development to create an integrated system targeting food insecurity from multiple angles.

Key Policies and Strategies

Several coordinated policies formed the backbone of the Fome Zero program:

 Bolsa Família (Family Allowance): A conditional cash transfer program aimed at low-income families. By providing monthly payments conditional on school attendance and health checkups, Bolsa Família not only



Figure 5

- reduced poverty but also improved health and education outcomes.
- National School Feeding Program (PNAE): Ensured that all children in public schools received at least one nutritious meal per day, sourced in part from local family farms. This supported both child nutrition and small-scale agriculture.
- Food Acquisition Program (PAA): The PAA purchases food directly from small farmers at guaranteed prices and distributes it to public institutions such as food banks, community restaurants, hospitals, and schools. This system both strengthens local economies and enhances dietary diversity.
- Support for Family Farming: Microcredit, technical assistance, insurance schemes, and price supports enabled small farmers to diversify crops, invest in infrastructure, and expand production.
- Nutrition Education and Social Mobilization: Public campaigns raised awareness about healthy eating habits and nutritional needs.

Results and Impact

Brazil's holistic approach led to remarkable outcomes:

- Reduction in Malnutrition: Stunting among children under five decreased by 50% between 1996 and 2007.
- Poverty Reduction: Between 2003 and 2014, extreme poverty in Brazil fell by over 75%.
- *Increased Food Security*: Millions of families gained access to regular meals, especially in rural and urban low-income communities.
- *Improved Farmer Livelihoods*: The guaranteed pricing and market access helped 15 million people annually, many of them smallholder farmers.

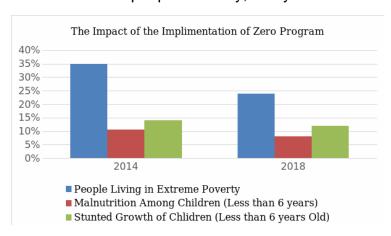


Figure 6

These results were recognized internationally, with Brazil emerging as a global leader in food security policy.

Challenges and Lessons Learned

Despite its success, Fome Zero faced several challenges:

- Sustainability and Budget Dependence: The program required continuous government funding and political commitment.
- Bureaucracy and Coordination: Integrating multiple ministries and agencies under a unified framework proved complex.
- Regional Disparities: Some remote areas continued to struggle with food access and infrastructure.

The main lesson is that political will, inclusive policy design, and cross-sector collaboration are crucial for success. Brazil's experience shows that food security policies

must be adaptable, context-specific, and integrated into broader social and economic frameworks.

Applicability to Other Developing Nations

Brazil's Fome Zero offers a strong model that can be adapted by other countries, especially those with high rural poverty rates and agricultural potential:

- Integrated Multi-Sectoral Approach: Addressing hunger through agriculture, education, health, and social protection simultaneously increases impact.
- Support to Smallholder Farmers: Programs like PAA help build resilient local food systems.
- Conditional Cash Transfers: Targeted financial aid boosts household food access and encourages school and healthcare attendance.
- Institutional Meals Linked to Local Farming: Public food procurement creates guaranteed markets for small farmers.

Several African countries, with Brazil's support, have already begun adapting similar models. The emphasis on political commitment, community participation, and local production makes Fome Zero a powerful blueprint for achieving SDG 2: Zero Hunger.

Hunger in Egypt: A National Overview Hunger and Food Insecurity in Egypt

Egypt faces significant challenges related to hunger and food insecurity. According to the 2022 Global Hunger Index, Egypt sustains a moderate level of hunger, ranking 57 out of 121 countries. Food affordability, quality, and safety remain concerns, as Egypt continues to rely on global markets for more than half of its staple foods.

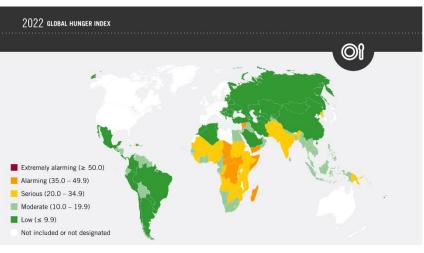


Figure 7

Malnutrition is another public health concern. Data from the World Food Programme shows that stunting affects 13 percent of children under five, and 4 percent of them are underweight, indicating chronic undernourishment and poor access to nutritious food.

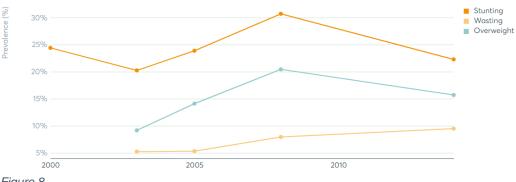


Figure 8

Nutritional Deficiencies, Poverty, and Agricultural Challenges

Poverty plays a major role in food insecurity in Egypt. Approximately 30% of the population lives below the national poverty line, while another 30% lives just above it. For poor households, more than 30% of their monthly income is spent on food. This makes them extremely vulnerable to price shocks and food inflation.

Egypt also faces agricultural challenges that strain its food system. Limited arable land, heavy dependence on irrigation from the Nile River, and the growing impacts of climate change—such as rising temperatures, water scarcity, and erratic weather patterns—pose

serious threats to domestic food production. These environmental challenges lower yields, increase reliance on imports, and disrupt local food markets.

Government Programs: Food Subsidy System

The Egyptian government has long maintained one of the most extensive food subsidy programs in the world. These programs aim to provide affordable staple foods to vulnerable populations through two main systems:

- Bread Subsidy Program: Approximately 70 million Egyptians receive subsidized bread, with each citizen entitled to 150 loaves per month. In May 2024, the government raised the subsidized bread price from 5 piasters to 20 piasters per loaf—the first increase in 36 years. Despite the rise, the subsidy remains a lifeline for many.
- Ration Card (Tamween) Program: This system provides monthly cash benefits (EGP 50 per person) that citizens can use to purchase a limited basket of basic food items like rice, pasta, sugar, and cooking oil at reduced prices from designated outlets.

While these programs have helped improve food access for millions, they also pose a heavy fiscal burden. In the 2023/2024 budget, Egypt allocated EGP 127.7 billion (around USD 4.1 billion) to food subsidies.

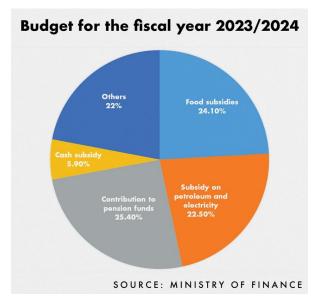


Figure 9

Local Case Study: Hunger in Assiut

Assiut, located in Upper Egypt, is one of the poorest governorates in the country, with over 66% of its population living below the poverty line. Agriculture plays a key role in the local economy, but the region faces significant challenges that exacerbate food insecurity.



Figure 10

Social and Economic Background

- Agricultural Economy: Despite Assiut's agricultural potential, the region suffers from low agricultural productivity due to outdated farming techniques, poor soil quality, and limited irrigation infrastructure.
- Poverty and Unemployment: High poverty rates widespread unemployment 25 contribute to food insecurity. 20 prioritize 15 Many families immediate income over longterm health and education, which leads to poor dietary habits.

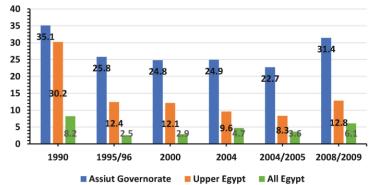


Figure 11

 Education and Healthcare: The lack of access to quality education and healthcare exacerbates the challenges. Poor literacy rates, especially among women, limit awareness of nutrition and healthy eating practices.

Evidence of Food Insecurity

- School Dropout Rates: Many children, particularly girls, drop out of school early to contribute to the family income, leading to long-term social and economic disadvantages.
- Undernutrition and Malnutrition: Studies indicate that a significant portion of the population, especially children, suffers from malnutrition and stunting. Limited access to nutritious food, such as fruits and vegetables, leaves many with vitamin deficiencies.
- Limited Access to Healthy Food: In rural communities, people often rely on staple foods like bread, rice, and potatoes, which do not provide the necessary nutrients. This reliance on low-cost foods contributes to malnutrition.

Root Causes of Hunger in Assiut

The root causes of hunger in Assiut are complex and interwoven, influenced by socioeconomic, agricultural, environmental, and infrastructural factors. Addressing these issues requires a comprehensive understanding of the region's challenges.

Poverty and Unemployment

- Poverty and Food Insecurity: High poverty rates severely limit families' ability to afford nutritious food, leading them to rely on low-cost staples like bread and rice.
 As a result, food security is compromised, and people often face hunger, particularly in rural areas where economic opportunities are scarce.
- Unemployment and Economic Instability: Unemployment in Assiut is another
 critical issue, especially for youth and women. Many families struggle with
 underemployment, relying on seasonal or low-wage work that doesn't provide
 financial stability. Without consistent income, families are vulnerable to economic
 shocks, such as price hikes in food and other essential goods, which further
 worsen food insecurity.

Lack of Sustainable Agricultural Practices

- Traditional Farming Methods: The agricultural economy in Assiut faces challenges
 from traditional farming techniques that are outdated and inefficient. Many farmers
 still use basic tools and lack training in modern agricultural practices, leading to
 low crop yields and inefficient land use.
- Soil Degradation and Poor Irrigation: In addition, soil degradation due to overuse and improper irrigation practices has reduced agricultural productivity. Poor irrigation systems, which are often outdated or poorly maintained, limit access to water and reduce crop yields. This results in less food production, exacerbating food insecurity, especially in rural areas that rely on agriculture for their livelihood.

Poor Infrastructure

 Inadequate Roads and Transportation: Poor infrastructure is another significant issue. Inadequate roads and transportation systems in rural areas hinder the distribution of agricultural products, leading to post-harvest losses. Farmers often struggle to access markets where they could sell their goods, leaving them with unsold produce or reduced prices. Limited Irrigation Systems: The region also suffers from insufficient irrigation infrastructure. While Assiut depends on the Nile River for water, limited and inefficient irrigation systems exacerbate water scarcity and reduce agricultural output.

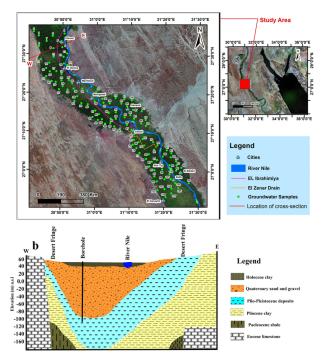


Figure 12

Education and Awareness Gaps

- Low Literacy and Nutrition Knowledge: Low literacy rates in Assiut, particularly
 among women, prevent many people from understanding the importance of proper
 nutrition. A lack of nutritional education leads to poor dietary choices, with families
 relying on cheap, low-nutrient foods like bread and rice. Without access to better
 food choices, malnutrition and stunting are prevalent, especially among children.
- Gender Inequality in Education: Educational disparities between men and women also contribute to the problem. Girls are often pulled out of school to assist with household chores or marry early, leading to lower literacy levels and limited opportunities for women to improve household food security.

Climate and Environmental Challenges

Water Scarcity and Climate Change: Assiut faces growing water scarcity, as its agricultural systems are heavily reliant on the Nile River. However, climate reducing change is water availability due to erratic rainfall and rising temperatures. These exacerbate changes crop

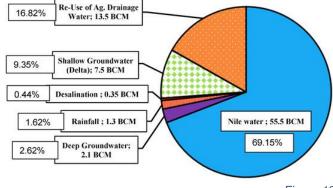


Figure 13

failures and food shortages, particularly during dry seasons or periods of reduced river flow.

• Soil Erosion and Crop Failure: In addition to water issues, soil erosion and irregular weather patterns make it harder for farmers to predict and adapt to changing growing conditions. This vulnerability to environmental stressors significantly lowers agricultural yields, further contributing to food insecurity.

Current Efforts and Gaps in Assiut

Assiut has seen various efforts from both the government and non-governmental organizations (NGOs) aimed at addressing food insecurity. While these programs have had some success, challenges in outreach, funding, and sustainability still exist.

Government Programs

Takaful and Karama Cash Assistance Programs

The Takaful and Karama programs provide cash transfers low-income families. particularly those with children, the elderly. or the disabled. These help payments improve food access, but coverage limited, especially in remote areas. The

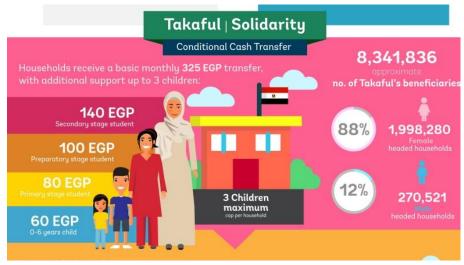


Figure 14

amount provided is often insufficient to meet rising living costs, limiting the program's effectiveness.

Ministry of Agriculture's Irrigation Projects

The Ministry of Agriculture has initiated small-scale irrigation improvement projects in Assiut to address water scarcity. However, these projects have been limited in scope and face funding shortages, preventing them from addressing broader agricultural challenges. The region's irrigation systems are still outdated, which limits agricultural productivity and exacerbates food insecurity.

NGO and Charitable Efforts

Egyptian Food Bank

The Egyptian Food Bank provides food packages to vulnerable families, particularly during Ramadan. While the Food Bank helps many people, its reach is limited, especially in remote villages. The lack of infrastructure and funding constraints prevent the organization from expanding its efforts to meet the growing need for food assistance.

Local Charities

Local charities play an important role by distributing food and offering nutritional education to vulnerable families. However, their efforts are often small-scale and not well-coordinated, limiting their overall impact. These organizations lack sufficient resources to implement large-scale or long-term programs that address the root causes of food insecurity.

Gaps in Current Efforts

- Limited Outreach: Many government and NGO programs fail to reach the most remote areas of Assiut, leaving many vulnerable families without support.
- Funding and Sustainability: Both government and NGO-led initiatives are hampered by insufficient funding, which makes it difficult to sustain and scale efforts.
- Short-Term Focus: The focus of current programs is often on short-term relief, such as food distribution, rather than addressing long-term agricultural development and systemic issues.
- Lack of Coordination: There is limited collaboration between government agencies, NGOs, and local organizations, which results in inefficiencies and missed opportunities for joint efforts.

Proposed Solutions and Recommendations

To address the root causes of hunger in Assiut, both short-term and long-term solutions must be implemented. These solutions should focus on immediate relief for the most vulnerable populations while also addressing systemic issues that perpetuate hunger and food insecurity.

Short-Term Solutions

- School Meal Programs:
 - Expanding school meal programs to ensure that children in Assiut receive at least one nutritious meal daily.
 - Example: A pilot program in rural areas could start with providing meals sourced from local farms, promoting



both nutrition and supporting local agriculture.

Figure 15

- Food Banks and Community Kitchens:
 - Establishing community food banks and kitchens in Assiut to provide vulnerable families with access to food during times of need.
 - Example: Partnering with local NGOs and international organizations like the World Food Programme (WFP) to establish sustainable food distribution networks.
- Nutrition Education Campaigns:
 - Conducting nutrition education campaigns through local schools, mosques, and media channels to raise awareness about healthy eating habits.
 - Example: Organizing workshops for women and youth on the benefits of a balanced diet and practical ways to incorporate nutritious foods.
- Expanding Government Subsidies:
 - Increasing the financial support for families at risk of food insecurity through enhanced subsidy programs.
 - Example: Expanding the ration card system to include a wider range of food items, particularly vegetables, fruits, and protein-rich foods.

Long-Term Solutions

- Support for Small Farmers:
 - Providing farmers in Assiut with training in sustainable agricultural practices, access to microloans, and modern irrigation systems.
 - Example: Setting up agricultural cooperatives where farmers can share resources, such as water, tools, and transportation, to increase efficiency and productivity.
- Food Storage and Transportation Infrastructure:
 - Building local food storage facilities to reduce post-harvest loss and improving rural roads to enhance food distribution.
 - Example: Constructing small-scale cold storage facilities near farms to preserve perishable items, helping farmers reach wider markets and reduce waste.
- Encouraging Women's Participation in Agriculture:
 - Empowering women in Assiut to engage in farming through access to credit, training, and land ownership.
 - Example: Offering financial literacy programs and land rights workshops to ensure women have equal opportunities to contribute to the agricultural sector.
- Promoting Sustainable Farming Practices:
 - Introducing drought-resistant crops and organic farming practices to help farmers adapt to climate change.
 - Example: Partnering with agricultural research institutions to develop climate-resilient crops and techniques suited for Assiut's environment.
- University Partnerships for Agricultural Innovation:
 - Collaborating with Assiut University and other academic institutions to conduct research and development on innovative farming practices.
 - Example: Launching joint research projects focused on improving local agricultural methods and creating more sustainable food systems in the region.

Partnerships and Stakeholders

A coordinated effort from multiple stakeholders is essential for tackling hunger and food insecurity in Assiut. The involvement of government entities, international organizations, local NGOs, and the private sector ensures a comprehensive approach to addressing these challenges.

- Ministry of Agriculture: The Ministry of Agriculture provides technical support and implements rural development projects, helping farmers adopt modern farming practices and improve productivity. The Ministry also focuses on improving irrigation systems, ensuring reliable access to water, which is crucial for agricultural success.
- Ministry of Social Solidarity: The Ministry of Social Solidarity manages cash transfer programs, like Takaful and Karama, which provide financial assistance to vulnerable households. Additionally, the Ministry oversees various food security initiatives, ensuring that families in need have access to basic food items.
- World Food Programme (WFP): The World Food Programme (WFP) brings expertise to large-scale food assistance programs. WFP helps scale food distribution efforts and supports local food systems, enhancing their ability to withstand crises and improve long-term food security.
- FAO and UNICEF: FAO and UNICEF focus on capacity-building and improving agricultural resilience. FAO promotes sustainable agricultural practices, while UNICEF works to improve child nutrition and food security for vulnerable groups, ensuring healthier outcomes for families in Assiut.
- Local NGOs and Universities: Local NGOs and universities, such as Assiut University, play a vital role in grassroots mobilization and knowledge transfer. They provide food assistance, conduct research on agricultural innovation, and promote nutrition education to empower communities with sustainable solutions.
- Private Sector and Agribusiness Startups: The private sector and agribusiness startups help improve food production and supply chain systems. Their investment in rural food production and agricultural infrastructure supports farmers, reduces food waste, and ensures better food access across Assiut.

Conclusion

Brazil's "Fome Zero" initiative offers a powerful model of how a coordinated, multi-sectoral approach can successfully combat hunger and malnutrition. By applying these lessons to Egypt's context, particularly in vulnerable regions like Assiut, we see a clear path forward—one that demands an integrated strategy combining agriculture, education, social protection, and infrastructure development.

However, the challenges ahead are significant, and they cannot be overcome without sustained political commitment and coordinated efforts from all sectors. Egypt already possesses strong foundations, with food subsidy programs and social safety nets, but these alone are not enough. Assiut—and other regions facing similar issues—need more than just emergency relief; they need long-term solutions that empower communities, improve agricultural productivity, and ensure that every person has access to nutritious food.

The time for action is now. Assiut has the potential to make substantial progress toward achieving SDG 2: Zero Hunger—but it requires a collective commitment from government, NGOs, the private sector, and local communities. By coming together and implementing targeted interventions, we can create a future where hunger is no longer a barrier to health, education, and prosperity. Ending hunger is not just a humanitarian imperative; it is a cornerstone for national development, stability, and sustainable growth for Egypt.

Now is the moment to turn these solutions into action. The world is watching—and the people of Assiut are waiting for us to act.

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