

## POLICY BRIEF



# Strengthening Egypt's Cereal Sector: Policies for Food Security and Sustainable Development

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## Background

Cereals are fundamental to Egypt's diet and economy, serving as dietary staples, key agricultural products, and essential trade commodities. Wheat and rice, particularly wheat, are vital to Egyptian diets, with subsidized baladi bread being a cornerstone of food security for most of the population. Cereals contribute significantly to daily caloric intake, providing an affordable food source crucial for social stability. They occupy nearly 46% of Egypt's cropped area, including wheat, maize, sorghum, barley and rice, while supporting millions of smallholder farmers and workers in the cereal sector. However, Egypt faces challenges in cereal production due to limited arable land, water scarcity, climate change impacts, and soil degradation, with salt-affected areas accounting for 25-30% of older agricultural lands. Additionally, reliance on traditional practices, insufficient agricultural extension services, and the high cost of modern technologies hinder productivity. Despite domestic efforts, Egypt remains heavily dependent on cereal imports, especially wheat and yellow corn, making the economy vulnerable to global price shocks and emphasizing the need for policies that enhance local production, food security, and economic development.

### Box 1: Key Challenges

- Despite domestic efforts, Egypt remains one of the largest global wheat importers, sourcing about 50% of its wheat and 75% of its yellow corn. This dependence on imports exposes the economy to vulnerabilities, particularly during global market shocks, which strain resources and highlight the need for policy-driven local production improvements.
- Climate change, water scarcity, and soil degradation, particularly in salt-affected areas covering 25-30% of older agricultural lands, pose significant threats to cereal production. These environmental constraints require sustainable agricultural practices and innovative solutions.

## What this Policy Brief is about

To address the issues of Egypt's Cereal Sector, the policy brief outlines several strategic objectives to enhance Egypt's food security and reduce reliance on imports. This policy brief presents key recommendations to (1) ensure a steady, affordable cereal supply for domestic consumption, (2) reduce dependency on imports by increasing domestic production, (3) promote sustainable agricultural practices to preserve natural resources and (4) strengthen resilience against market shocks and climate change

## Key Policy Recommendations

### Boost Domestic Production

#### *Expand use of high-yield, drought-tolerant cereal varieties*

Egypt faces significant challenges in its agricultural policy for basic grains like wheat and corn, despite having no issues with rice due to government-controlled planting areas. Limited land availability (210,000 hectares) for expanding wheat and corn cultivation necessitates a focus on vertical expansion to improve productivity. This involves enhancing crop varieties, educating farmers on best practices, and using modern technology.

Key strategies to address these challenges include:

- Implementing crop rotation to maintain soil quality.
- Adhering to a variety map that aligns crops with producers' needs.
- Increasing the use of certified seeds to 100% coverage by next year.
- Providing certified seeds to farmers free of charge to support them.
- Introduce hybrid crops that potentially can increase yields by 20%.

#### *Enhance extension services to disseminate modern farming practices*

- A significant gap exists between the potential yield of wheat varieties in pilot plots and the average yields at the national level, with some farms already surpassing pilot plot performance.
- The severe shortage of agricultural extension workers necessitates expanding national campaigns for grain crops. Allocating pilot plots in each village could achieve a 25% vertical increase in wheat productivity with minimal additional efforts.
- With increased efforts and dedicated funding for research, wheat production could rise by more than 40%, demonstrating the value of investment in agricultural innovation.
- The adoption of technical recommendation packages in major national projects, such as the "Egypt's Future for Sustainable Agriculture" initiative, has significantly improved wheat productivity, achieving yields of 7.86–8.57 tons per hectare in some areas and up to 9.64 tons per

### Box 2: Policy Brief Objectives

- Ensure a steady, affordable cereal supply for domestic consumption.
- Reduce dependency on imports by increasing domestic production.
- Promote sustainable agricultural practices to preserve natural resources.
- Strengthen resilience against market shocks and climate change.

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### Modernize Irrigation Systems

Modernizing irrigation systems in Egypt is essential for sustainable water management and increased agricultural productivity. With growing pressure on water resources from population growth, climate change, and outdated practices, modern irrigation can save water, boost crop yields, lower farmers' operating costs, and enhance irrigation efficiency.

The steps and strategies to modernize irrigation systems in Egypt are as follows:

- **Adopting Modern Irrigation Techniques:** Implementing advanced methods such as drip irrigation, sprinkler systems, and precision irrigation using sensors and data analytics to optimize water use.
- **Leveraging Smart Technologies:** Utilizing sensors and mobile applications to provide farmers with real-time data on water requirements and irrigation schedules.
- **Rehabilitating and Developing Infrastructure:** Upgrading existing systems by lining canals, replacing old pipes, and installing energy-efficient pumps.
- **Enhancing Water Governance:** Establishing regulatory frameworks that encourage water-saving practices and supporting water user associations to empower local communities in managing and maintaining irrigation systems.
- **Promoting Water Recycling and Reuse:** Treating wastewater for reuse in irrigating non-food crops.
- **Raising Awareness and Training Farmers:** Educating farmers about the importance of modernizing irrigation, along with the benefits and technologies of advanced systems.
- **Integrating Renewable Energy:** Encouraging the use of renewable energy in irrigation technologies to improve sustainability.

## ■ **Fostering Public-Private Partnerships:**

Promoting collaboration between public and private sectors to invest in irrigation technology and infrastructure.

## Promote Agricultural Innovation

The agricultural sector, particularly the grains sector, has faced external shocks such as the COVID-19 crisis, the Russo-Ukrainian war, and the US dollar crunch, negatively affecting food crop production. In response, the government implemented policy measures to mitigate these impacts.

### *Encourage public-private partnerships for research and development*

- **State Intervention in Seed Production:** The government should consider competing with private sector companies in seed production to prevent undesired price increases and ensure a stable seed supply.
- **Focus on genome editing:** Emphasizing genome editing to develop crop varieties that are more resilient to water scarcity, require less fertilizer, and can be more resistant to pests like armyworms.
- **Addressing Seed Production Challenges:** Due to external crises (e.g., Russo-Ukrainian war, Kakhovka Dam collapse, Sudanese crisis), the government should focus on securing suitable locations for seed production and addressing the high cost of maize seeds.
- **Developing High-Yielding Varieties:** Continued development of high-yielding varieties, including five new wheat varieties designed to increase yields per acre beyond 20 ardebs.
- Introducing and testing hybrid wheat that have the potential to increase yields by 20%.
- **Incentivizing Maize Seed Production:** Setting an incentive purchase price for maize seeds, no less than EGP 40,000 per ton, to ensure farmers produce and deliver high-quality maize seeds.
- **Improving Seed Production Processes:** Addressing the complexities of seed production, such as maintaining variety purity, proper tillage, irrigation, pest and disease control, and managing pre-harvest and post-harvest activities.

### *Invest in precision agriculture and smart farming technologies*

Investing in precision agriculture and smart farming technologies in Egypt can greatly enhance agricultural productivity, resource efficiency, and food security. Key technologies include soil and weather sensors, water-efficient drip and sprinkler systems, GPS-enabled tractors and robotics, and predictive analytics for crop management. While precision agriculture offers benefits such as increased yields, cost efficiency, sustainability, and climate resilience, challenges like high technology costs, infrastructure limitations, lack of farmer education, and insufficient government policies must be addressed.

Key strategies to address these challenges include:

- **Partnerships with Local Stakeholders:** Collaborating with the government, agricultural cooperatives, and

research institutions to create tailored solutions for the adoption of precision agriculture technologies.

- **Pilot Projects:** Implementing pilot projects in specific regions to demonstrate the effectiveness of precision agriculture technologies and collect data for scaling up.
- **Localization of Technology:** Adapting precision agriculture solutions to suit the specific needs of Egyptian crops, soil, and climate conditions.
- **Funding Models:** Exploring innovative funding options such as leasing, microfinancing, or government-backed initiatives to make precision agriculture technologies more accessible to farmers

## Optimize Subsidy Programs

Five key messages are identified to optimize subsidy programs for Egypt's cereal sector:

- **Need for Subsidies in Agriculture:** The government should provide subsidies to farmers, similar to other countries like the EU, US, Japan, and Brazil, to boost agricultural production, reduce consumer prices, and alleviate burdens on consumers.
- **Support for Fertilizers and Seeds:** Over the past four years, the government has distributed over 9 million tons of subsidized fertilizers and ensured 100% coverage of certified seeds for corn and wheat.
- **Targeted Support for Small Farmers:** Subsidy policies focus on small farmers, the most vulnerable group, providing assistance for agricultural production needs (seeds, fertilizers, pesticides), pest control, seed price reduction, and access to financing loans.
- **Digital Transformation in Agriculture:** Significant progress in digital services for farmers, including the issuance of 4.2 million smart farmer cards, electronic disbursement of fertilizers to 2.7 million farmers, automation of 20 agricultural services, and providing tablets and POS devices to 5,830 agricultural associations.
- **Smart Farming Technologies:** Nearly two million farmers benefit from the "AI-Hudhud" smart assistant application, which is regularly updated with the latest artificial intelligence systems.

## Diversifying Import Sources

Egypt heavily relies on Russia and Ukraine for its wheat and corn imports, with approximately 8 million tons of wheat from Russia and 3 million tons from Ukraine in 2020. This dependence, especially amid the ongoing Russian-Ukrainian war, poses a significant challenge to the country's food security. In response, Egypt has focused on diversifying its grain import sources and investing in major agricultural projects. This strategy aims to address the economic and logistical challenges of securing essential commodities, as Egypt is one of the world's largest grain importers, particularly for subsidized bread production.

Key strategic actions to diversify import sources:

- **Sourcing from Multiple Countries:** Egypt has expanded its import sources to include Russia (its primary supplier), as well as Ukraine, Romania, Latvia,

Moldova, and others. This diversification reduces dependence on a single supplier and helps mitigate risks associated with geopolitical crises or price fluctuations.

- **Capitalizing on Price Drops:** Taking advantage of declining global wheat prices, Egypt has significantly increased its wheat imports. In the first eight months of 2024, wheat imports totaled approximately \$3 billion, reflecting a \$650 million increase compared to the same period in 2023.
- **Introducing New Grains:** In addition to wheat, Egypt has broadened its imports to include yellow maize (corn), which is essential for livestock feed and supports both the agricultural and animal farming sectors.

### Box 3: Imports Sources in 2024

As of 2024, Russia leads the list of wheat-exporting countries to Egypt, accounting for 72% of total imports from January to September, with slightly over 8 million tons. It is followed by Ukraine with 1.5 million tons, Romania with approximately 837,000 tons, Bulgaria with 296,000 tons, and France with 179,000 tons. Brazil has regained its position as the top supplier of yellow corn to Egypt in the first nine months of 2024, after losing this position to Ukraine in the same period last year. Brazil supplied more than 2.5 million tons, representing 43.8% of total imports, compared to just 924,000 tons in 2023. However, despite this diversification of import sources, Egypt faces significant challenges, including foreign currency shortages that limit the ability to make large-scale purchases and disruptions in shipments due to political instability in exporting countries. The measures mentioned above aim to stabilize Egypt's food supply and meet domestic demand efficiently, underscoring the importance of a multi-source import strategy.

### Enhancing strategic reserves in Egypt

Enhancing strategic reserves in Egypt is a key pillar for ensuring both food and economic security, particularly in the face of global challenges such as natural disasters and fluctuations in international grain markets. Strategic actions are identified to reach this objective.

#### *Expand grain storage capacity to safeguard against supply disruptions*

- Increase the strategic stock of key grain crops, particularly wheat, corn, and rice.
- Develop storage infrastructure by building modern silos and warehouses capable of accommodating growing quantities.
- Improve inventory management by tracking reserve quantities, shelf life, and distribution, ensuring quality preservation and minimizing losses.
- Enhance local self-sufficiency by promoting agricultural technologies and encouraging farmers to adopt them,

boosting local production and reducing reliance on imports.

- Engage the private sector by offering incentives for companies to invest in storage and agricultural projects.

#### *Establish mechanisms to stabilize domestic cereal prices*

Establishing mechanisms to stabilize local grain prices in Egypt requires the development of well-researched strategies to ensure price stability while safeguarding both farmers and consumers. Below are some proposed strategic actions:

- **Setting a Guarantee Price:** The government should annually announce a guaranteed price for wheat and purchase it from farmers, while only announcing indicative prices for corn and rice.
- **Regulating the Market:** Implement a contract farming system and encourage long-term contracts between farmers and manufacturers or the government to ensure price stability.
- **Diversifying Financing Sources:** Provide low-interest loans to farmers and support agricultural insurance to protect against losses from natural disasters or price fluctuations.
- **Developing Data Tracking Systems:** Create systems to track production and price data and use smart applications to provide farmers with up-to-date market information.
- **Coordinating Agricultural and Trade Policies:** Impose restrictions on grain imports during peak domestic production seasons to avoid market flooding and promote exports by opening new markets for Egyptian grains, ensuring sustainable external demand.
- **Raising Awareness:** Implement training programs to educate farmers on sustainable agricultural practices and offer reliable price information to both farmers and consumers via electronic platforms.

### Conclusion and lessons learned

To strengthen Egypt's cereal sector, it is essential to reaffirm the importance of an integrated cereal policy that prioritizes food security, fiscal balance, and sustainable development. This policy should align with long-term national goals by ensuring consistent production and distribution of cereals, particularly wheat, corn, and rice, while mitigating the effects of global price fluctuations and climate change.

A key step in achieving this is fostering collaborative efforts between government bodies, farmers, the private sector, and research institutions. By working together, stakeholders can implement the recommended policies effectively, ensuring that resources, technologies, and knowledge are mobilized to optimize productivity, improve storage and distribution systems, and reduce Egypt's dependency on global markets. This collective approach will help build a resilient, sustainable cereal sector that supports both national food security and economic stability.

The main lessons learned are presented in Box 4

#### Box 4: Lessons learned

Key lessons learned have emerged from the policy brief to strengthen the Egypt's cereal sector.

- **Lesson 1. Coordinated Multi-Sector Approach:** Collaboration among the public sector, private sector, and research institutions is necessary to address the grain supply gap and ensure food security in Egypt.
- **Lesson 2. Government Support is Crucial:** The government plays an essential role in supporting farmers, such as providing free seeds, promoting machinery use for new technologies, and expanding seed coverage. However, it is also necessary to continue supporting farmers through education and technical recommendations.
- **Lesson 3. Investment in Research and Innovation:** Increased investment in research is vital for boosting productivity, with potential gains of over 40%. The government should prioritize research and encourage collaboration between public and private sectors, as well as academic institutions, to close the productivity gap.
- **Lesson 4. Need for Integrated Technical Solutions:** A comprehensive package of technical recommendations, including localized advice on fertilizers and climate-responsive practices, is essential to improve national productivity. Widespread distribution through agricultural extension services and field schools is key to success.
- **Lesson 5. Responding to Global Crises:** The impact of global crises, like the Russian Ukrainian war and the COVID-19 pandemic, has led to rising wheat and corn prices. Egypt must adopt policies to mitigate these risks, such as promoting contract farming and fair pricing.
- **Lesson 6. Diversification and Strategic Crop Expansion:** Expanding the cultivation of crops like yellow corn and soybeans can address specific crises, such as the poultry feed shortage. Targeted support for essential crops should be prioritized through strategies inspired by successful international models.
- **Lesson 7. Challenges in Expanding Cultivation Areas:** There is limited potential to expand wheat and corn cultivation, highlighting the importance of improving productivity through other means, such as enhancing crop variety, adopting new technologies, and implementing effective extension services.

- **Lesson 8. Modernizing irrigation systems** in Egypt is essential for sustainable water management and increased agricultural productivity. With growing pressure on water resources from population growth, climate change, and outdated practices, modern irrigation can save water, boost crop yields, lower farmers' operating costs, and enhance irrigation efficiency.
- **Lesson 9. Enhancing strategic reserves** in Egypt is a key pillar for ensuring both food and economic security, particularly in the face of global challenges such as natural disasters and fluctuations in international grain markets
- **Lesson 10. Investing in precision agriculture and smart farming technologies** in Egypt can improve agricultural productivity, resource efficiency, and food security. Key technologies, such as soil and weather sensors, water-efficient irrigation systems, GPS-enabled tractors, and predictive analytics, offer benefits like higher yields, cost savings, sustainability, and climate resilience. However, challenges such as high technology costs, infrastructure limitations, lack of farmer education, and inadequate government policies need to be addressed for successful implementation.

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