ANIMAL BREEDING: THEINDISPENSABLE TOOL FOR ENHANCING LIVESTOCK PRODUCTIVITY EVERYWHERE

ENHANCING FOOD SECURITY: STRATEGIES FOR REDUCING RICE FARM LOSSES IN OIC MEMBER COUNTRIES

SMART FARMING WITH IOT

CLIMATE SMART AGRICULTURE TO ENHANCE SOIL HEALTH THROUGH ORGANIC FERTILIZERS IN WEST AFRICA

المنظمة الإسلامية للأمن الغذائي
Islamic Organization for Food Security
l'Organisation Islamique pour la Sécurité Alimentaire

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CONTENT

Dear Esteemed Readers,

As we present the first edition of the Food Security Hub Bulletin for 2025, we are proud to introduce our readers a collection of insightful articles that explore the pressing challenges and innovative solutions shaping food security across our Member States. For instance, the progress of agro-industrial sector in Central Asia faces several challenges like water shortages for agriculture, high food prices, weak logistics, and food losses. However, the region's vast land resources and skilled human resources present opportunities to ensure food security. Inter-governmental cooperation, modernization in agri-business, and improved logistics can enhance resilience and ensure stable food supply systems.

The integration of IoT technologies in agriculture is revolutionizing food production, as demonstrated through case studies from Malaysia, the UAE, and Nigeria. Our article outlines how smart irrigation, precision farming, and crop monitoring enhance efficiency, productivity, and environmental sustainability. Another article on the OIC Strategic Commodity-Rice Program examines how precision agriculture, IoT technologies, and sustainable practices can mitigate post-harvest losses in rice. Islamic Organization for Food Security (IOFS) initiatives focusing on Smarter Agriculture for Brighter Futures, are advancing these innovations in Central Asia and beyond. In a compelling account of resilience amid conflict, our article on Sudan reveals how community-driven food networks are sustaining millions of displaced and food-insecure individuals. With grassroots initiatives and diaspora-led funding potential, the importance of local capabilities over external aid in achieving lasting food security is highlighted.

Furthermore, the articles highlight the role of organic fertilizers and sustainable soil management techniques. To this end, IOFS has conducted several trainings and workshops in West Africa to empower small-holder farmers. These initiatives address soil degradation issues with sustainable soil management practices, particularly using organic fertilizers, efficient water management, crop rotation, and soil conservation methods by utilizing agricultural and household waste to produce compost, vermicompost, and biochar. Among the featured articles, we explore the potential role of structured breeding programs in improving genetic pool for livestock productivity, where modern genetic techniques are proposed as long-term solutions to optimize performance.

To conclude, food security is a multifaceted challenge requiring innovative, sustainable, and collaborative approaches. As we reflect on the activities and accomplishments of the IOFS during the first quarter of 2025, it is evident that our commitment to enhancing food security across Member States continues to gain momentum. This period has been marked by international missions to Qatar, Türkiye, Jordan, Iraq, Malaysia, Maldives, Saudi Arabia and Iran, new partnerships, and humanitarian efforts aimed at addressing urgent food security challenges. By fostering partnerships, supporting sustainable agricultural practices, and prioritizing local resilience, we continue to build a future where food security is not just a goal but a reality for all.

Sincerely,

Ambassador Berik Aryn
Director General
Islamic Organization for Food Security

ANIMAL BREEDING: THE INDISPENSABLE TOOL FOR ENHANCING LIVESTOCK PRODUCTIVITY EVERYWHERE

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Introduction

Livestock productivity serves as a key indicator of how farm animals are raised, managed, and selected across different regions and countries. When productivity is low, the blame is often placed on factors such as climate change, poor nutrition, high feed costs, and the lack of knowledge among smallholder and family farmers. While these challenges are real [1], they are not the primary limiting factors affecting livestock productivity in most cases. The true key lies in the genetic makeup of the animals and the way we harness genetic potential through strategic selection and culling [2]. This article highlights the crucial role of animal breeding as a fundamental tool for sustainable livestock improvement.

The Role of Genetic Variation in Livestock Productivity

Livestock populations are inherently dynamic, with constant turnover due to culling and replacement by younger, selected animals. This natural selection process ensures continual genetic evolution within herds and flocks. However, productivity is highly variable even within the same breed, as animals have unique genetic compositions influencing their performance and adaptability. Effective animal breeding relies on understanding and utilizing genetic diversity. Instead of selecting animals solely based on observed performance (phenotype), breeders use scientific tools to estimate their genetic potential (breeding value). Since an animal's performance is influenced by environmental factors such as age, sex, season of birth, and management conditions, proper genetic evaluation requires adjusting for these factors to make accurate selection decisions.

By leveraging genetic knowledge and systematic selection, livestock managers can enhance productivity and sustainability, ensuring that future generations of animals are better adapted, more efficient, and capable of thriving in diverse production environments. Unfortunately, this understanding is largely lacking in most OIC countries, where genetic potential is often underestimated as a limiting factor. Instead, low productivity is primarily attributed to feeding constraints, with the widespread belief that improving nutrition alone will resolve the issue. This misconception has even shaped policymaking. However, despite significant investments in feed and subsidies, livestock productivity in these countries remains low compared to advanced nations.

Nevertheless, the collective share of OIC countries in global livestock production has improved. In 2021, these countries accounted for 11% of total worldwide meat production, 17.5% of global milk production, and 15.5% of total egg production [3]. Yet, a key difference between OIC countries and leading livestock-producing nations is the recognition and application of animal breeding as a powerful tool for driving genetic progress and productivity.

A well-documented example is the genetic improvement of dairy cattle in the United States, which has led to remarkable advancements in efficiency and production. The success of U.S. dairy breeding programs can be attributed to five key factors [4]:

1. Permanent unique identification (ID) for each animal, ensuring accurate record-keeping.

2. Parentage recording and Systematic recording of milk yield and other economically important traits, enabling informed selection decisions.

3. Widespread use of artificial insemination (AI) to accelerate genetic progress.

4. Reliable and accurate genetic evaluation systems to assess breeding values and rank animals based on their true genetic potential.

5. Breed Association to promote and protect the breed.

Failure to implement any one of these factors significantly limits genetic progress. By applying all five, the U.S. dairy industry has achieved extraordinary results: the national dairy cattle population decreased from 25 million cows in the 1940s to just 9 million in 2010, while milk yield per cow increased four to five times (figure 1) [4, 5]. This remarkable efficiency has made the U.S. the world's leading exporter of dairy genetics.

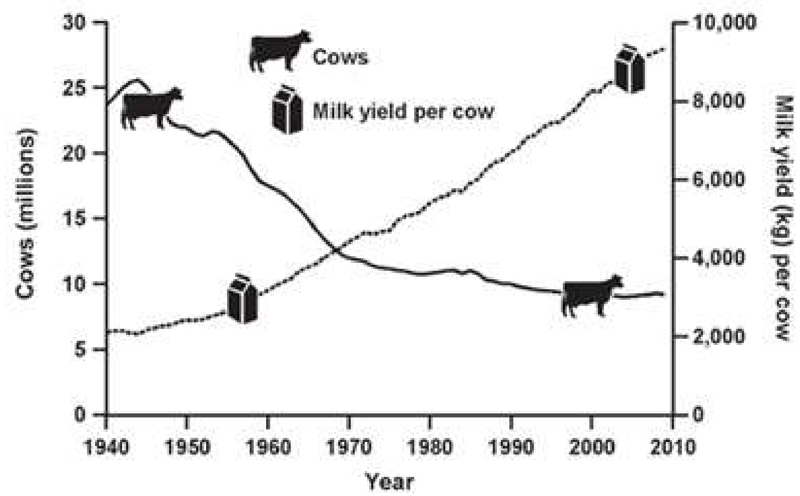

Figure 1. *Number of US Dairy cows and mean milk yields by year [4].*

Beyond economic gains, these genetic advancements have resulted in significant savings in feed costs, improved animal health, and reduced environmental impact by lowering greenhouse gas emissions per unit of milk produced. This demonstrates how a well-structured breeding program can drive both economic and environmental sustainability in livestock production.

On the other hand, dairy cattle productivity remains the lowest in Africa, where production is driven primarily by herd size rather than efficiency and productivity gains, similar to many OIC member countries (Figure 2) [6]. Evident example on the India milk production is contributed to the following factors: high milk production comes largely from small-scale farmers, but their yields per animal remain low due to several challenges. Many farmers rely on low-quality feed, outdated breeding methods, and inadequate veterinary care, which limit productivity. A large portion of the dairy herd consists of indigenous cattle and buffalo breeds that, while resilient, produce less milk compared to crossbred or improved varieties. Additionally, poor farm management, a lack of proper cold storage facilities, and inefficient supply chains further reduce overall milk yield per animal, despite the country's impressive total milk output.

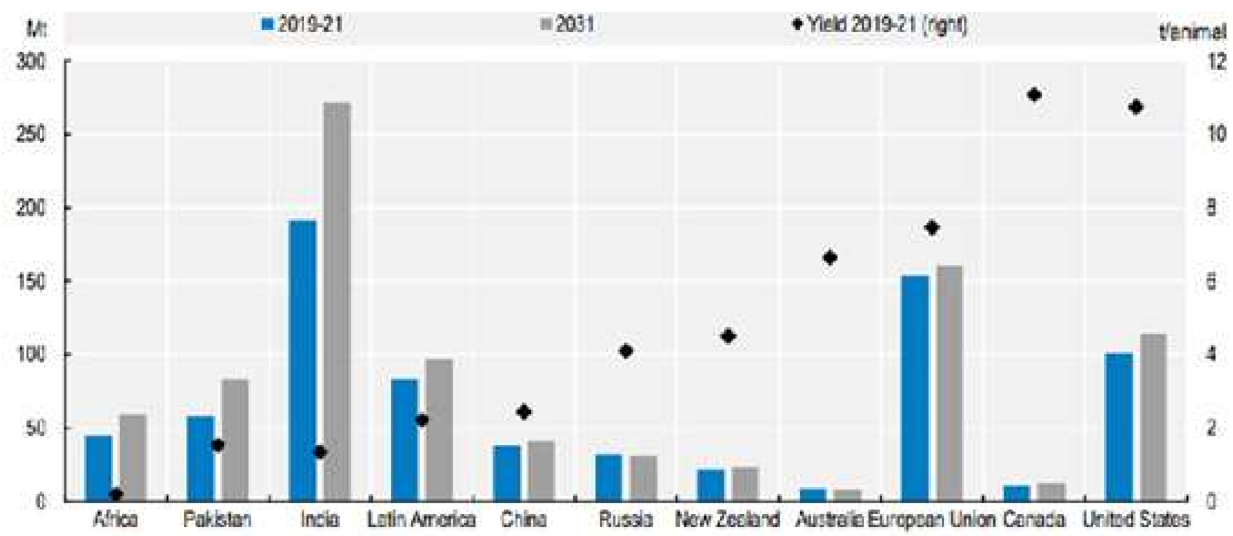

Figure 2. Milk production and milk yield in selected regions

Instead of focusing on genetic improvement and optimized management practices, the prevailing approach relies on increasing the number of animals to sustain production levels. This contrasts sharply with more advanced livestock systems that prioritize productivity per animal, leading to higher efficiency and sustainability.

Strengthening the Livestock Sector for Food Security in OIC Countries

There is no doubt that the livestock sector is a vital pillar of agriculture and food security in OIC countries. The industry involves a diverse range of stakeholders, from producers and processors to distributors and consumers. Ensuring a sustainable and efficient livestock sector requires a collective effort across the entire value chain. Recognizing this, it is time to rethink livestock sector strategies, with a focus on improving productivity while ensuring consumers have access to healthy and diverse food at an affordable price with the key recommendations:

1. Organizing Small and Medium Producers: Given that small and medium-scale farmers represent over 80% of livestock producers, they must be supported and structured into organized frameworks. This will enhance breed promotion, provide effective training and extension services, strengthen their negotiating power, and position them as key players in the value chain.

2. Breed-Specific Genetic Improvement Programs: Each breed should have a dedicated genetic improvement strategy based on five essential components: clear selection objectives, proper animal identification and performance recording, genetic evaluation systems, dissemination of superior genes through artificial insemination, and strengthened breed associations.

3. Fodder Production and Rangeland Improvement: A national program should be implemented to enhance fodder production and rehabilitate rangelands, ensuring sustainable feed resources for livestock.

4. Extension Services for Feed Optimization: Farmers should receive training on appropriate feeding strategies and the efficient use of agricultural by-products to reduce feed costs and enhance productivity.

5. National Livestock Health and Quality Standards: A comprehensive program should be established to ensure livestock health care and the implementation of strict quality standards for animal products.

6. Value Chain Optimization: The livestock value chain should be restructured to enhance transparency, shorten supply chains by reducing intermediaries, and create market opportunities for diverse animal products.

Implementing these recommendations will contribute to a more efficient, resilient, and productive livestock sector, benefiting both producers and consumers while strengthening national food security.

This mindset and approach have been actively promoted by the IOFS Animal Division through its regional training program, which focuses on narrowing the gap in animal breeding between OIC countries and leading nations in the field of animal genetics. The first workshop was successfully held in Morocco in December of 2024 in collaboration with ANOC (Association Nationale Ovine et Caprine), providing a platform for knowledge exchange and capacity building. The workshop was designed for the ANOC field practitioners to build their capacity on the merits of science based genetic approaches in the farm animals' selection. The program is designed to extend across all regions of OIC countries, ensuring that livestock professionals gain the necessary expertise to enhance genetic improvement, optimize breeding strategies, and strengthen national breeding programs.

Conclusion

Animal breeding is a fundamental tool for enhancing livestock productivity and ensuring food security. While nutrition and management are important, genetic improvement remains the most powerful lever for sustainable progress. By adopting structured breeding programs, investing in genetic evaluation, and integrating modern genomic technologies, OIC countries can achieve substantial advancements in livestock performance. Collaborative efforts among policymakers, researchers, and farmers are essential to unlocking the full potential of animal breeding for a resilient and productive livestock sector.

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En Abstract:

The improvement of livestock productivity relies heavily on genetic potential, with animal breeding serving as a key tool for sustainable advancements. While factors such as climate change, nutrition, and feed costs are frequently blamed for low productivity, genetic selection remains the most effective long-term solution. This paper emphasizes the role of genetic variation and structured breeding programs in optimizing livestock performance. A comparative analysis highlights the success of the U.S. dairy breeding program, which has significantly increased efficiency through systematic selection, artificial insemination, embryo transplantation and genetic evaluation. In contrast, many OIC countries continue to prioritize herd expansion over genetic progress, resulting in stagnant productivity levels. To address this issue, the paper outlines essential strategies, including targeted breed improvement programs, better farmer organization, enhanced fodder production, optimized feeding practices, and strengthened livestock health standards. By integrating modern breeding techniques and fostering knowledge-sharing initiatives, OIC countries can enhance productivity, ensure food security, and build a more resilient livestock sector.

Fr Résumé:

L'amélioration de la productivité du bétail repose en grande partie sur le potentiel génétique, l'élevage sélectif étant un outil clé pour des progrès durables. Si des facteurs tels que le changement climatique, la nutrition et le coût des aliments sont souvent cités comme responsables de la faible productivité, la sélection génétique demeure la solution la plus efficace à long terme. Cet article met en avant le rôle de la variation génétique et des programmes d'élevage structurés dans l'optimisation des performances du bétail. Une analyse comparative illustre le succès du programme d'élevage laitier des États-Unis, qui a considérablement amélioré l'efficacité grâce à une sélection systématique, l'insémination artificielle, la transplantation embryonnaire et l'évaluation génétique. En revanche, de nombreux pays de l'OCI continuent de privilégier l'expansion des troupeaux au détriment du progrès génétique, entraînant une stagnation de la productivité. Pour remédier à cette situation, l'article propose des stratégies essentielles, notamment des programmes ciblés d'amélioration des races, une meilleure organisation des éleveurs, une augmentation de la production de fourrage, l'optimisation des pratiques d'alimentation et le renforcement des normes sanitaires du bétail. En intégrant des techniques modernes de sélection et en favorisant le partage des connaissances, les pays de l'OCI peuvent améliorer la productivité, garantir la sécurité alimentaire et renforcer la résilience du secteur de l'élevage.

Ar ملخص:

يعتمد تحسين إنتاجية الثروة الحيوانية بشكل كبير على الإمكانات الوراثية، وتُعدّ تربية الحيوانات أداة رئيسية للتقدم المستدام. وبينما تُعزى الإنتاجية المنخفضة غالباً إلى عوامل مثل تغير المناخ والتغذية وتكاليف الأعلاف، يبقى الانتقاء الوراثي الحل الأمثل على المدى الطويل. تُركز هذه الورقة البحثية على دور التنوع الوراثي وبرامج التربية المهيكلة في تحسين أداء الثروة الحيوانية. وتوضح المقارنة التحليلية نجاح برنامج تربية الأبقار الحلوب في الولايات المتحدة الأمريكية، والذي تمكن من تحسين الكفاءة بشكل كبير من خلال الانتقاء المنهجي، والتلقيح الاصطناعي، ونقل الأجنة، والتقييم الوراثي.

في المقابل، لا تزال العديد من دول منظمة التعاون الإسلامي تُعطي الأولوية لتوسيع القطعان على حساب التقدم الوراثي، مما يُؤدي إلى ركود مستويات الإنتاجية. ولمعالجة هذه المشكلة، تُحدد الورقة استراتيجياتٍ أساسية، تشمل برامج تحسين السلالات المستهدفة، وتنظيماً أفضل للمزارعين، وتحسين إنتاج الأعلاف، وتحسين ممارسات التغذية، وتعزيز معايير صحة الماشية. ومن خلال دمج تقنيات التربية الحديثة وتعزيز مبادرات تبادل المعرفة، يُمكن لدول منظمة التعاون الإسلامي تعزيز الإنتاجية، وضمان الأمن الغذائي، وبناء قطاعٍ حيوانيٍّ أكثر مرونة.

Enhancing Food Security: Strategies for Reducing Rice Farm Losses in OIC Member Countries Through Innovative Technologies and Sustainable Practices

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Key words:

OIC, rice security, post-harvest losses, sustainable agriculture, climate resilience, circular economy

The OIC Strategic Commodity- Rice Program is a strategic initiative aimed at addressing food security, poverty alleviation, and sustainable agricultural development among member countries. Its goals and objectives are designed to improve rice production, enhance economic opportunities for farmers, and promote environmental sustainability while fostering collaboration among nations in the Islamic world. One of the objectives of the program is to improve inter-OIC trade collaboration and self-sufficiency in the OIC geography.

Globally, rice losses can vary between 10% to 30% of total production, depending on the region and specific circumstances. Some estimates suggest that post-harvest losses alone can account for up to 15% of total rice production on a global scale. On an average, rice losses amount to approximately 4%. However, more than 35% of these losses occur during the harvesting and post-harvesting stages, as confirmed by observations made by IOFS staff during their field visit to Bangladesh. The main causes of these losses are soil degradation, climate change, access to finance for adequate storage and harvesting facilities, technologies, policy stability, and market access.

Despite the advancements in rice production in many OIC member states (OIC-MS), rice shortages remain a pressing concern due to the growing population. The issue revolves around the self-sufficiency of individual states and their capacity to fulfill domestic demands. It is noteworthy that most OIC member states continue to rely on rice imports, and many are actively working to reduce their dependence on such imports through policy initiatives. For example, the deficit in 2021 in all OIC-MS was 168 million tons.

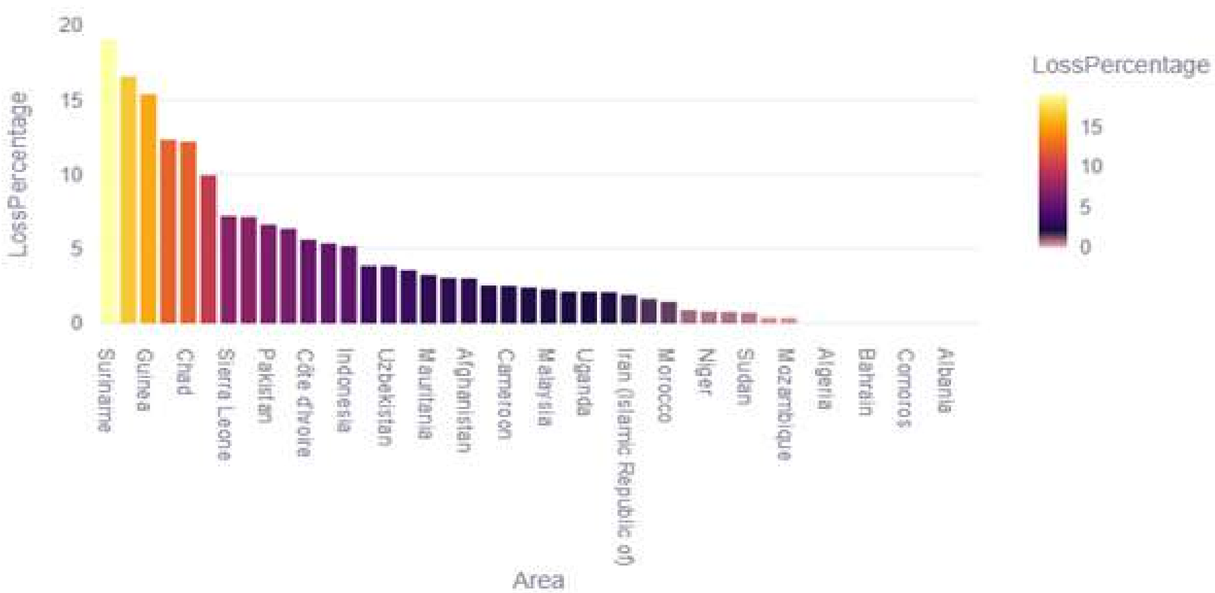

Figure 1. *Rice losses in OIC MS, 2025 (IOFSDB)*

The imperative to analyze and implement strategies to reduce agricultural losses in the production of rice within the OIC member countries cannot be overrated, given the economic importance of rice as basic food for millions. Innovative technologies that improve productivity and minimize losses are necessary not only for the sustainability of the agricultural sector, but also to improve food safety and local subsistence means (Taşdoğan and Damar, 2024). These technologies include precision agriculture techniques, which use data analysis devices and IoT (Internet of Things) to optimize the use of resources (Nicastro and Carillo, 2021). By using these methods, farmers in OIC countries can improve their crops, while reducing waste and losses during production. The integration of these strategies helps to mitigate the adverse effects of climate change, thus facing urgent concern for food safety in the region (Sarwar, 2024).

A core strategy emphasizes the integration of advanced agricultural technologies and practices. The findings highlight the urgent need for a technological transformation, particularly as developing nations remain highly susceptible to environmental shifts. (Cheng et al., 2024).

In addition, sustainable practices, such as the integrated management of parasites and conservation agriculture, offer double benefits to reduce the costs of input and protection of the environment. Conversion to organic agriculture and agroecological practices strengthens resilience against pests and diseases while guaranteeing long -term soil health (Stathers et al., 2018). For small farmers, these practices not only produce more resilient crops, but also guarantee a more stable flow of income, thus stabilizing local economies (Salleh et al., 2023). Additionally, the establishment of crop insurance schemes can significantly alleviate the financial risks associated with agricultural losses. By drawing on success models in countries such as Thailand, the adaptation of the mechanisms of insurance of crops in the OIC-MS promises to safeguard farmers against the unpredictability of natural catastrophes, which are becoming increasingly frequent due to climate change (Duangmanee, 2015; Win, 2016). These financial instruments encourage investments in better agricultural practices, thus directly influencing the economy of rice breeding and improving food safety (Akpa et al., 2023).

Another critical focus area should be the reduction of post-harvested losses, which remain alarming in different regions. Research indicates that effective interventions can lead to a significant reduction in waste, directly affecting the availability and accessibility of food (Khan et al., 2024). Strategies such as improved storage systems, efficient transport networks, and crops management education are essential to minimize fork-field losses (Ali et al., 2021). The economic advantages of reducing food loss are substantial, since they not only increase the efficiency of overall production, but also contribute to better nutrition and greater access to the market for farmers (Torok et al., 2021).

Economic policies aimed at improving agricultural infrastructures are equally essential. Investments in rural infrastructures can facilitate better access to markets, reliable road networks and channels for the dissemination of information to the farmers (Febriyanti et al., 2022). By improving these elements within the chain of agricultural value, the OIC countries can promote more robust local economies, raise rural communities and, finally, improve food safety (Muchtar et al., 2025).

Tackling the huge scale of food waste linked to agricultural practices requires a movement of the paradigm towards a circular economy. The integration of the principles of circular economy in food production can guarantee sustainability by maximizing the efficiency of resources (Almulchim, 2024). This strategy not only minimizes waste, but also supports local economies by creating new job opportunities in recycling and sustainable practices.

In addition, regional cooperation between the OIC countries can amplify the impact of these strategies through the sharing of knowledge and the pool of resources. Collaborative research on agricultural practices and technologies can lead to innovative tailor-made solutions for specific local challenges (Rochadi et al., 2022). By exploiting the skills of various members, the OIC can encourage collective progress in agricultural resilience, thus improving food safety throughout the region (YudhataM et al., 2021).

In conclusion, the integration of innovative technologies and sustainable practices is vital to reduce agricultural losses in the production of rice within the OIC member countries. Tackling the faceted challenges posed by climate change, economic instability, and food insecurity requires a global approach that includes technological progress, efficient management of resources and cooperative paintings. While we try to relieve food insecurity and support local subsistence means, the implementation of these strategies will play a crucial role in achieving a sustainable and prosperous future for the agricultural sector in the OIC nations.

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En

Abstract:

The OIC Strategic Commodity-Rice Program aims to bolster food security and sustainable agriculture across member states, yet challenges persist: average rice losses of 4% (with post-harvest losses exceeding 35% in regions like Bangladesh), heavy import reliance, and a 2021 OIC-wide deficit of 168,358 thousand tons. Drivers include climate change, infrastructure gaps, and policy instability. This article advocates for integrated solutions: adoption of precision agriculture, IoT technologies, and sustainable practices (e.g., conservation agriculture) to optimize yields; crop insurance schemes to mitigate financial risks; and post-harvest loss reduction through improved storage and education. Regional cooperation and circular economy principles are emphasized to enhance resource efficiency and resilience. By prioritizing technological innovation, policy alignment, and cross-border collaboration, OIC nations can reduce import dependency, strengthen food systems, and safeguard livelihoods for millions reliant on rice.

Fr

Résumé:

Le Programme stratégique des produits de base (riz) de l'OCI vise à renforcer la sécurité alimentaire et l'agriculture durable dans les États membres. Cependant, des défis persistent : pertes moyennes en riz atteignant 4 % (avec des pertes post-récolte dépassant 35 % dans certaines régions comme le Bangladesh), forte dépendance aux importations, et un déficit global au sein de l'OCI de 168 358 milliers de tonnes en 2021. Les principaux facteurs incluent le changement climatique, des lacunes en matière d'infrastructures et l'instabilité des politiques agricoles. Cet article plaide en faveur de solutions intégrées : adoption d'une agriculture de précision, utilisation des technologies IoT et de pratiques agricoles durables (par exemple, l'agriculture de conservation) afin d'optimiser les rendements ; mise en place de systèmes d'assurance-récolte pour atténuer les risques financiers ; et réduction des pertes post-récolte grâce à de meilleures infrastructures de stockage et à des programmes éducatifs. La coopération régionale et l'application des principes de l'économie circulaire sont soulignées afin d'améliorer l'efficacité des ressources et la résilience agricole. En privilégiant l'innovation technologique, l'alignement des politiques agricoles et la collaboration transfrontalière, les pays de l'OCI peuvent réduire leur dépendance aux importations, renforcer leurs systèmes alimentaires, et préserver les moyens de subsistance de millions de personnes dépendantes de la culture du riz.

Ar

ملخص:

يهدف البرنامج الاستراتيجي لمنظمة التعاون الإسلامي حول السلع الأساسية (الأرز) إلى تعزيز الأمن الغذائي وتحقيق الاستدامة الزراعية في الدول الأعضاء. ومع ذلك، تظل هناك تحديات قائمة، أبرزها: متوسط خسائر الأرز البالغ حوالي 4٪ (مع تجاوز الخسائر ما بعد الحصاد نسبة 35٪ في مناطق مثل بنغلاديش)، والاعتماد الكبير على الاستيراد، والعجز في إنتاج الأرز الذي بلغ 168,358 ألف طن على مستوى منظمة التعاون الإسلامي عام 2021. ومن أبرز الأسباب المؤدية لذلك التغير المناخي، وضعف البنى التحتية، وعدم استقرار السياسات الزراعية.

يدعو هذا المقال إلى تبنّي حلول متكاملة تشمل: تطبيق الزراعة الدقيقة، والاستفادة من تقنيات إنترنت الأشياء، (IoT) واعتماد ممارسات زراعية مستدامة (مثل الزراعة المحافظة على الموارد) لتحسين الإنتاجية؛ وإنشاء نظم تأمين زراعي للتخفيف من المخاطر المالية؛ وخفض خسائر ما بعد الحصاد عبر تطوير مرافق التخزين وبرامج التوعية والتدريب. كما يركز المقال على أهمية التعاون الإقليمي وتطبيق مبادئ الاقتصاد الدائري لرفع كفاءة استخدام الموارد وتعزيز القدرة على مواجهة التحديات. من خلال إعطاء الأولوية للابتكار التكنولوجي وتوحيد السياسات الزراعية وتعزيز التعاون بين الدول الأعضاء، تستطيع دول منظمة التعاون الإسلامي تقليل الاعتماد على الاستيراد، وتقوية النظم الغذائية، وتأمين مصادر الرزق لملايين الأشخاص الذين يعتمدون على إنتاج الأرز.

Smart Farming with IoT: Case Studies and Innovations in Sustainable Agriculture

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Project Manager
Islamic Organization for Food Security

Key words:

IoT in agriculture, smart farming, precision agriculture, sustainable agriculture, crop monitoring, food security, resource optimization, and climate resilience

Introduction:

The integration of IoT-based technologies in agriculture is transforming traditional farming methods, enabling more precise, efficient, and sustainable practices. As global challenges like climate change, resource scarcity, and population growth increasingly impact food production, adopting IoT technologies in agriculture is not merely an option—it is becoming essential. By leveraging IoT-powered sensors, data analytics, and network systems, farmers can monitor soil conditions, manage resources more efficiently, and make data-driven decisions that ultimately improve yields and reduce waste.

In recent years, several OIC (Organization of Islamic Cooperation) countries have taken pioneering steps in IoT-based agricultural technologies, creating models that could serve as blueprints for other nations seeking to modernize their agricultural sectors.

Importance of IoT based Technologies

IoT technologies can reshape agriculture by collecting real-time data on various environmental factors such as soil moisture, temperature, and weather conditions. This data empowers farmers with insights that help them optimize irrigation, schedule planting and harvesting more effectively, and make other critical decisions to maximize output. For countries that rely heavily on agriculture as a key economic sector, adopting these technologies can ensure food security, improve competitiveness, and foster sustainable practices.

Key benefits of IoT in agriculture include:

- **Increased productivity:** By optimizing farming operations and reducing input wastage.
- **Reduced environmental impact:** Through precise resource management, leading to efficient water and fertilizer usage.
- **Cost savings:** By minimizing labor and operational costs associated with traditional farming.

Case Studies of Existing Good Practices in OIC Countries

Here, we highlight three examples from OIC countries—one from Asia, one from the Arab region, and one from Africa—to showcase the application and impact of IoT-based technologies in agriculture.

1. Asia: Smart Irrigation in Malaysia

In Malaysia, the adoption of IoT-based irrigation systems has notably benefited rice farmers. By implementing automated irrigation solutions, some farms have achieved three harvests per year instead of the typical two, potentially increasing overall rice production by 20%. This method allows for precise water management, leading to higher yields and reduced water usage ().

Additionally, the use of IoT sensors in alternate wetting and drying (AWD) irrigation techniques has resulted in water savings of up to 30%, a 25% reduction in irrigation energy costs, and yield enhancements ranging from 2% to 11%.

2. Arab Region: Precision Farming in the United Arab Emirates

The UAE has embraced precision agriculture through collaborations with agritech companies, leading to sustainable farming practices that enhance crop yields while minimizing resource use. For instance, the integration of IoT sensors and AI analytics has enabled real-time monitoring of soil moisture, temperature, and nutrient levels, optimizing irrigation and fertilization processes. This approach has resulted in water usage reductions of up to 30% and yield increases of approximately 25%.

Notable agritech initiatives in the UAE include:

- **FoodTech Valley, Dubai:** An 18 million square feet facility showcasing advanced, sustainable agriculture practices such as vertical farming and hydroponics. The city aims to bolster the UAE's fresh produce exports with over 300 crop varieties grown using modern techniques.
- **Badia Farms, Dubai:** A pioneer in vertical farming, utilizing hydroponic systems to grow leafy greens and herbs, reducing water usage by 90% compared to traditional farming methods.

3. Africa: Precision Agriculture in Nigeria

In Nigeria, where agriculture faces challenges such as irregular rainfall and limited access to irrigation, IoT technologies have made a difference in improving productivity and sustainability. Through partnerships with agritech companies, Nigerian farmers now use IoT-based soil sensors and weather stations to monitor crop health and water requirements. The sensors provide real-time data on soil moisture and temperature, allowing farmers to make informed decisions about irrigation and planting. Some farms in regions like Ogun State report yield improvements of up to 20%, particularly in staple crops like maize and cassava. These results demonstrate IoT's potential to transform agriculture in Africa, promoting resilience and sustainable resource use.

Source: *DUQE (2024), «The Growth of Agritech in the UAE.»*

IOFS Initiative: Smart Agri in Central Asia

Recognizing the importance of IoT in modern agriculture, the Islamic Organization for Food Security (IOFS) has launched a project titled «Smarter Agriculture, Brighter Futures: Implementing Intelligent Agriculture» in collaboration with ICESCO and Kazakh National Agrarian Research University (KazNARU). This initiative aims to introduce IoT-based technologies across Central Asia to foster more productive and resilient agricultural practices. The project, initiated in August 2024, is structured into two stages:

Stage I: Regional Conference The first stage took place on September 26-27, 2024, in Almaty, Kazakhstan. This conference, hosted by KazNARU, marked the formal launch of the Smarter Agriculture, Brighter Futures project. Attended by experts, agricultural professionals, and policymakers from across the region, the conference focused on sharing knowledge about IoT applications and discussing practical challenges and opportunities in Central Asian agriculture.

Stage II: Research and Implementation In the second stage, IOFS and ICESCO plan to conduct research into IoT technology applications within Central Asian agricultural contexts. The findings will be disseminated among the agricultural community in Kazakhstan and other Central Asian countries through the 2025 Summer School, promoting knowledge transfer and regional collaboration.

Through this initiative, IOFS aims to foster innovation, enhance data-driven decision-making in farming, and build the capacity of local farmers and institutions to adopt IoT technologies. The long-term goal is to create a more sustainable and resilient agricultural sector in Central Asia, helping to secure food supplies in the face of environmental and economic challenges.

Conclusion:

The implementation of IoT technologies in agriculture presents a powerful opportunity to improve productivity, reduce environmental impact, and create a more resilient food system. As shown in the examples from Malaysia, Saudi Arabia, and Morocco, IoT-driven agricultural practices are proving effective across diverse climates and crops. Through initiatives like Smarter Agriculture, Brighter Futures, IOFS and its partners are paving the way for a sustainable and innovative future in agriculture for Central Asia. Moving forward, continued investment in IoT-based agriculture can be instrumental in addressing the food security challenges faced by OIC countries and beyond.

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En Abstract:

The integration of IoT technologies in agriculture enhances efficiency, productivity, and sustainability. This paper explores successful case studies from Malaysia, the UAE, and Nigeria, showcasing IoT applications in smart irrigation, precision farming, and crop monitoring. Key benefits include optimized resource use, increased yields, and reduced environmental impact. The Islamic Organization for Food Security (IOFS) is advancing IoT adoption in Central Asia through its «Smarter Agriculture, Brighter Futures» initiative. These innovations demonstrate IoT's potential to strengthen food security and resilience in OIC countries.

Fr Résumé:

L'intégration des technologies IoT dans l'agriculture améliore l'efficacité, la productivité et la durabilité. Cet article explore des études de cas réussies en Malaisie, aux Émirats arabes unis et au Nigeria, mettant en avant les applications de l'IoT dans l'irrigation intelligente, l'agriculture de précision et la surveillance des cultures. Les principaux avantages incluent une utilisation optimisée des ressources, une augmentation des rendements et une réduction de l'impact environnemental. L'Organisation Islamique pour la Sécurité Alimentaire (IOFS) encourage l'adoption de l'IoT en Asie centrale à travers son initiative « Une agriculture plus intelligente, un avenir plus prometteur ». Ces innovations illustrent le potentiel de l'IoT pour renforcer la sécurité alimentaire et la résilience dans les pays de l'OCI.

Ar ملخص:

يعزز دمج تقنيات إنترنت الأشياء (IoT) في المجال الزراعي من الكفاءة والإنتاجية والاستدامة. يستعرض هذا البحث دراسات حالة ناجحة من ماليزيا والإمارات العربية المتحدة ونيجيريا، تُظهر تطبيقات إنترنت الأشياء في مجالات الري الذكي، والزراعة الدقيقة، ومراقبة المحاصيل. ومن أبرز الفوائد تحسين استخدام الموارد، وزيادة الإنتاجية، وخفض التأثيرات البيئية السلبية. تعمل المنظمة الإسلامية للأمن الغذائي (IOFS) على تعزيز تبني تقنيات إنترنت الأشياء في آسيا الوسطى عبر مبادرة «زراعة أكثر ذكاءً لمستقبل أكثر إشراقا». تؤكد هذه الابتكارات على الإمكانيات الكبيرة لإنترنت الأشياء في دعم الأمن الغذائي وتعزيز مرونة القطاع الزراعي في دول منظمة التعاون الإسلامي.

Climate Smart Agriculture to Enhance Soil Health through Organic Fertilizers in West Africa

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Introduction:

West Africa faces significant agricultural challenges exacerbated by climate change, rapid population growth, and extensive soil degradation. With over 70% of the region's population dependent on agriculture as a primary income and food source, the health and productivity of soils are essential for economic stability, food security, and environmental sustainability. However, years of intensive farming, deforestation, and inadequate land management practices have severely impacted soil fertility, leading to nutrient depletion, erosion, and the loss of organic matter. As a result, smallholder farmers, who constitute the backbone of agricultural production in the region, experience declining yields and increasing vulnerability to climate variability.

While synthetic fertilizers have boosted productivity in some cases, they bring long-term ecological risks. The excessive use of chemical fertilizers can result in soil acidification, reduced biodiversity, and increased dependence on costly inputs that many smallholders cannot afford. Furthermore, runoff from synthetic fertilizers contributes to water pollution, affecting downstream ecosystems. To address these challenges, Climate Smart Agriculture (CSA) practices have emerged as a sustainable framework for maintaining productivity while enhancing climate resilience.

CSA practices, particularly organic fertilizers, contribute to soil health by improving nutrient cycling, increasing carbon sequestration, and fostering a balanced microbial ecosystem. Organic fertilizers, including compost, vermicompost, and biochar, provide sustainable alternatives to synthetic inputs, enhancing the soil's physical, chemical, and biological properties. The Islamic Organization for Food Security (IOFS) has been instrumental in advancing CSA in West Africa, providing technical support and training to enable farmers to adopt these organic fertilization practices effectively.

This article explores the critical role of organic fertilizers in CSA, focusing on scientific insights and IOFS initiatives across West Africa, examines organic fertilizers' impact on soil carbon, nutrient availability, and resilience, along with recommendations for policymakers, agricultural organizations, and farmers.

Soil Degradation and the Role of Organic Fertilizers

Soil degradation in West Africa is primarily driven by nutrient depletion, erosion, and loss of organic matter due to unsustainable land use practices. These factors result in soil compaction, reduced water-holding capacity, and decreased crop productivity, making agricultural systems increasingly vulnerable to climate fluctuations. Traditional reliance on synthetic fertilizers has provided short-term benefits but often exacerbates long-term soil degradation by failing to replenish organic matter.

Organic fertilizers provide a viable solution by increasing soil organic matter, enhancing nutrient availability, and fostering a diverse microbial community. This combination strengthens soil resilience against drought, erosion, and temperature extremes, addressing both immediate and long-term needs for soil fertility and stability.

The role of Organic Fertilizers in Climate Smart Agriculture

Climate change poses significant challenges to agricultural production, including distorted precipitation patterns, increased temperatures, and more frequent extreme weather events. In response, there is a growing need for climate-smart agricultural practices that promote resilience, mitigate greenhouse gas emissions, and enhance productivity. Composting, the biological decomposition of organic materials, offers a promising solution by improving soil health, sequestering carbon, and reducing reliance on synthetic fertilizers. This lecture explores the use of compost as a climate-smart strategy in agricultural production, highlighting its benefits, implementation methods, and potential challenges.

1. Climate-Smart aspects of compost use

1.1. Carbon Sequestration

Composting facilitates the conversion of organic waste into stable organic matter, effectively sequestering carbon and mitigating greenhouse gas emissions:

— ***Carbon Capture:*** Composting diverts organic waste from landfills, where it would decompose anaerobically, producing methane, a potent greenhouse gas.

— ***Soil Carbon Storage:*** Adding compost to soil increases soil organic carbon content, enhancing soil fertility and resilience while sequestering carbon for extended periods.

1.2. Reduced synthetic fertilizer dependency

The use of compost reduces reliance on synthetic fertilizers, which are energy-intensive to produce and contribute to greenhouse gas emissions:

— ***Nutrient Recycling:*** Compost recycles nutrients from organic waste back into the soil, reducing the need for synthetic fertilizers.

— ***Energy Savings:*** By substituting compost for synthetic fertilizers, agricultural energy inputs and associated emissions are reduced.

1.3. Enhanced soil resilience

Compost improves soil health and resilience to climate variability and extreme weather events:

— ***Water Retention:*** Compost increases soil water-holding capacity, reducing drought stress and improving plant resilience during dry periods.

— ***Erosion Control:*** Improved soil structure and aggregation provided by compost mitigate soil erosion, preserving soil fertility and reducing sediment runoff.

1.4. Adaptation to climate change

Compost enhances agricultural resilience to climate change by promoting adaptive practices and reducing vulnerability:

— ***Diverse Soil Microbiome:*** Compost fosters diverse microbial communities that enhance soil resilience to environmental stressors, such as temperature fluctuations and disease pressure.

— ***Crop Diversity Support:*** Healthy soils amended with compost support diverse plant communities, which are more resilient to climate variability and pest outbreaks.

2. Implementation of compost in agricultural production

2.1. On-Farm composting

On-farm composting involves the decentralized production of compost using locally available organic materials:

— ***Small-Scale Systems:*** Farmers can implement small-scale composting systems, such as windrows, static piles, or vermicomposting, to recycle on-farm organic waste.

— ***Resource Optimization:*** On-farm composting optimizes resource utilization by converting agricultural residues, crop residues, and animal manure into valuable soil amendments.

— ***Cost Savings:*** Producing compost on-farm reduces input costs associated with synthetic fertilizers and commercial soil amendments, improving economic viability.

2.2. Community-Based composting

Community-based composting initiatives involve collaboration among multiple stakeholders to produce compost at a larger scale:

— ***Waste Management Solutions:*** Community composting addresses organic waste management challenges by diverting food scraps, yard waste, and other organic materials from landfills.

— ***Social Benefits:*** Community composting fosters social cohesion, education, and job creation, engaging community members in sustainable waste management practices.

— ***Local Resource Circularity:*** Compost produced through community-based initiatives can be distributed to local farmers, closing the nutrient loop and promoting agricultural sustainability.

2.3. Industrial-Scale composting

Industrial-scale composting facilities process large volumes of organic waste to produce compost for agricultural and horticultural use:

— ***Efficiency and Scale:*** Industrial composting facilities efficiently process large quantities of organic waste using controlled methods, including aerated static pile or in-vessel composting.

— ***Regulatory Compliance:*** Compliance with environmental regulations ensures that industrial composting operations minimize odor, pathogens, and greenhouse gas emissions, maximizing environmental benefits.

— ***Market Accessibility:*** Industrial-scale composting facilities supply compost to commercial growers, landscapers, and municipalities, expanding market access for sustainable soil amendments.

3. Impact of compost on plant pests, diseases, and nematodes in the soil

Composting is widely recognized not only for its ability to improve soil fertility and structure but also for its significant role in managing plant pests, diseases, and nematodes. The application of compost can lead to healthier soils, which are more resilient to pest, disease, and nematode pressures. This section will explore how compost influences soil health and its implications for pest, disease, and nematode management in agricultural systems.

3.1. Suppression of soil-borne diseases

Compost has been shown to suppress a range of soil-borne diseases caused by pathogens such as Pythium, Fusarium, and Rhizoctonia. This suppression is largely due to the enhancement of beneficial microbial communities in the soil, which can outcompete and inhibit the growth of harmful pathogens. Compost provides a habitat for these beneficial organisms, including bacteria, fungi, and actinomycetes, which produce antibiotics and other compounds that suppress disease-causing organisms.

3.2. Enhancement of beneficial microbial communities

The addition of compost to soil introduces and supports a diverse microbial population that plays a crucial role in disease and pest suppression. These microorganisms can enhance plant health by promoting stronger root systems and producing natural biocontrol agents that protect plants from pathogens and pests. For example, compost-rich soils often have higher populations of beneficial organisms such as Trichoderma spp., which are known to antagonize plant pathogens.

3.3. Improved soil structure and pest management

Compost improves soil structure, leading to better aeration and water retention. Healthy soil structure reduces the likelihood of conditions that favor the development of certain pests and nematodes. Furthermore, the enhanced organic matter content in compost provides a more stable environment for plants, reducing stress and susceptibility to pests.

3.4. Impact on nematode populations

Nematodes, particularly plant-parasitic nematodes, can cause significant damage to crops by feeding on plant roots, leading to reduced growth and yields. Compost has been shown to influence nematode populations in several ways:

— ***Biological Control:*** The diverse microbial community in compost-amended soils includes natural enemies of nematodes, such as predatory nematodes, fungi, and bacteria that parasitize or consume plant-parasitic nematodes.

— ***Improved Plant Health:*** Enhance overall soil health and providing nutrients, compost strengthens plant roots, making them more resilient to nematode attacks.

— ***Induced Resistance:*** Compost can induce systemic resistance in plants, making them less susceptible to nematode damage.

3.5. Induction of systemic resistance in plants

One of the less direct, but highly valuable, benefits of compost application is the induction of systemic resistance in plants. Some studies suggest that plants grown in compost-amended soils are better able to resist attacks from a variety of pests, including nematodes, insects, and fungi. This resistance is thought to be due to the complex interactions between the plant roots, soil microorganisms, and the organic compounds present in compost.

4. IOFS Initiatives in West Africa

The Islamic Organization for Food Security (IOFS) has implemented multiple trainings in West Africa to address soil fertility degradation, improve sustainable agriculture, and enhance resilience to climate change. The focus is on empowering smallholder farmers with sustainable soil management practices, particularly through the use of organic fertilizers derived from locally available resources. These initiatives help farmers utilize agricultural and household waste to produce compost, vermicompost, and biochar, contributing to both soil restoration and climate resilience.

Training on Organic Fertilizer Production in Benin

The capacity-building session in Cotonou further expanded on climate-smart agricultural practices. Participants learned about sustainable soil management techniques, including the integration of organic fertilizers to enhance soil fertility and resilience. The program covered topics such as efficient water management, crop rotation, and soil conservation methods.

A practical training session conducted at the Songhaï Center in Porto-Novo brought together over 50 farmers and agricultural professionals to learn essential techniques for producing enriched organic fertilizers. This training introduced participants to various composting methods, including aerobic composting using organic waste materials such as animal manure, crop residues, and food processing byproducts. Detailed guidance was provided on compost pile construction, emphasizing the use of diluted nutrient solutions like rabbit urine, which is rich in microorganisms and nitrogen, to speed up decomposition. In addition to composting, the program covered the production of biogas and biofertilizers, showcasing how waste materials can be transformed into energy and nutrient-dense products. Participants were taught how to prepare Effective Microorganism Solutions (EMAS) and biofertilizers, crucial for improving soil health and enhancing crop productivity in Benin.

Nigeria Program on Organo-Mineral Fertilizers

The capacity-building program in Zaria focused on training of participants in climate-smart agriculture practices aimed at improving soil health through the application of organic fertilizers by «Converting Agricultural Wastes to Organo-Mineral Fertilizers through Composting.». The training included theoretical sessions on the principles of climate-smart agriculture, soil health management, and the benefits of organic fertilizers. Practical demonstrations on composting agricultural waste and producing organo-mineral fertilizers were conducted, emphasizing their role in improving soil structure, reducing chemical fertilizer dependency, and mitigating the effects of climate change on agriculture.

The program brought together 40 farmers and agricultural professionals, providing them with hands-on training in transforming agricultural waste into organo-mineral fertilizers. The sessions emphasized the benefits of using organic fertilizers as sustainable alternatives to chemical fertilizers, which can contribute to soil degradation and environmental harm. Through this practical training, participants gained essential skills to improve soil fertility, enhance crop yields, and reduce dependency on chemical inputs, fostering more sustainable agricultural practices in Nigeria.

5. Recommendations for Enhancing Organic Fertilizer Adoption in West Africa

- ✓ To promote organic fertilizer use in West Africa, the following strategic recommendations are proposed:
- ✓ Align organic fertilizer initiatives with climate adaptation policies, integrating them into broader Climate Smart Agriculture strategies that build resilience against climate-related risks like drought and soil erosion.
- ✓ Encourage the use of technology, such as mobile soil testing kits and GPS-enabled devices, to help farmers apply fertilizers more precisely.
- ✓ Collaborate with the private sector, NGOs, and international organizations to pool resources, expertise, and technologies for promoting organic fertilization.
- ✓ Develop strong distribution networks for organic fertilizers, especially in remote areas, ensuring consistent availability. Partnering with local cooperatives can enhance market reach and make organic fertilizers more widely accessible.
- ✓ Develop microcredit programs and financial assistance initiatives for smallholder farmers to help them invest in organic fertilizers and related equipment.
- ✓ Implement regular soil testing, nutrient assessments, and impact evaluations to maintain soil nutrient balance, prevent overuse or underuse, and ensure long-term effectiveness

- ✓ Integrate organic fertilizers with sustainable soil management techniques, including mulching, crop rotation, terracing, and controlled irrigation. These combined practices improve soil moisture retention, reduce erosion, and increase nutrient uptake.
- ✓ Support the establishment of local production facilities to reduce reliance on imports.
- ✓ Invest in R&D to develop organic fertilizer formulations optimized for the region's varied soil types and climatic conditions, focusing on enhancing soil productivity and resilience.
- ✓ Policies should encourage both production and use, with priority given to supporting smallholder farmers.

Conclusion

Climate-smart agriculture practices focused on enhancing soil health through organic fertilizers offer a sustainable path for productivity and resilience in West Africa. Through training and technical support, IOFS has promoted composting, vermicomposting, and biochar production to restore soil health and increase resilience to climate change. However, for sustained impact, governments, NGOs, and international bodies must support policies, awareness, R&D, and market development, fostering an environment conducive to organic fertilization, West Africa can build a productive, resilient, and sustainable agricultural sector, addressing food security and climate goals.

En Abstract:

Soil degradation in West Africa significantly impacts agricultural productivity, food security, and resilience to climate change. Climate Smart Agriculture (CSA) provides a sustainable solution to these issues by focusing on soil health, with organic fertilizers playing a central role. This article explores the benefits of organic fertilizers, detailing the biological and environmental impacts on soil health. It highlights the efforts of the Islamic Organization for Food Security (IOFS) in promoting organic fertilization as a climate-resilient solution in West Africa and providing strategic recommendations for stakeholders.

Fr Résumé:

La dégradation des sols en Afrique de l'Ouest a des répercussions considérables sur la productivité agricole, la sécurité alimentaire et la résilience au changement climatique. L'agriculture intelligente face au climat (AIC) apporte une solution durable à ces problèmes en mettant l'accent sur la santé des sols, les engrais organiques jouant un rôle central. Cet article explore les avantages des engrais organiques, en détaillant les impacts biologiques et environnementaux sur la santé des sols. Il met en évidence les efforts de l'Organisation islamique pour la sécurité alimentaire (IOFS) pour promouvoir la fertilisation organique comme solution résiliente au changement climatique en Afrique de l'Ouest et fournit des recommandations stratégiques aux parties prenantes.

Ar ملخص:

يؤثر تدهور التربة في غرب أفريقيا بشكل كبير على الإنتاجية الزراعية والأمن الغذائي والقدرة على الصمود في مواجهة تغير المناخ. توفر الزراعة الذكية مناخياً حلاً مستداماً لهذه القضايا من خلال التركيز على صحة التربة، حيث تلعب الأسمدة العضوية دوراً محورياً. تستكشف هذه المقالة فوائد الأسمدة العضوية، وتوضح بالتفصيل التأثيرات البيولوجية والبيئية على صحة التربة. وتسلط الضوء على جهود المنظمة الإسلامية للأمن الغذائي في تعزيز التسميد العضوي كحل مقاوم للمناخ في غرب أفريقيا وتقديم توصيات استراتيجية لأصحاب المصلحة.

Food Security in Central Asia: Key Challenges, Resources, and Regional Cooperation Prospects

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Key words:

Central Asia, Kazakhstan, Uzbekistan, Tajikistan, Kyrgyzstan, Turkmenistan, food security, agricultural development, climate change, water scarcity, logistics infrastructure, import dependence, regional cooperation, technological modernization

The agro-industrial sector plays a vital role in the socio-economic development of Central Asia, contributing significantly to national economies and providing livelihoods for a substantial portion of the population. The agricultural sector, excluding food processing, accounts for 4% of GDP in Kazakhstan to 23% in Uzbekistan. However, ensuring stable food security remains a complex challenge due to economic, environmental, and geopolitical factors.

International experts predict a prolonged period of high food prices, driven by several factors: global population growth, persistently high energy costs and their derivatives, a shortage of skilled labor, rising per capita food consumption in rapidly developing countries, limited opportunities for agricultural land expansion, and the anticipated adverse effects of climate change. The decreasing availability of food resources underscores their growing strategic importance.

Global challenges and trends, besides creating new difficulties, open up additional opportunities, especially for countries with abundant resources and untapped potential. Central Asia is one such region with significant agricultural potential. Its effective utilization could enable the region to play a key role not only at the regional level but also in ensuring food security for the member states of the Organization of Islamic Cooperation (OIC).

As a starting point, it is worth noting that the level of self-sufficiency in staple food products exceeds 80% in most Central Asian countries. This demonstrates the region's strong ability to meet domestic demand and reduce dependence on imports.

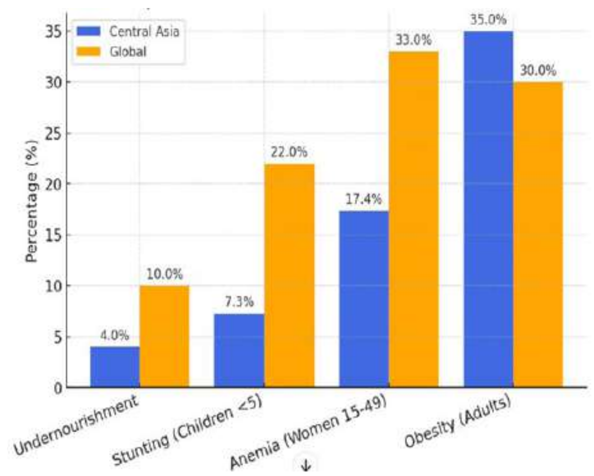
Beyond its current achievements, Central Asia holds significant potential for further agricultural development. Although, the region has vast agricultural land, but, crop yields in many areas still lag significantly behind global standards. Yields can be substantially improved through the adoption of modern agro-technologies. Additional advantages of the region include a substantial labor force supporting the agro-industrial sector and a strategic geographic location. This enables Central Asia to actively integrate into global food supply chains and expand its access to major international markets. However, unlocking this potential requires addressing a number of constraints that extend beyond national borders, making their effective resolution dependent on coordinated efforts across the entire Central Asian region.

First and foremost, fundamental reforms in regional coordination and cooperation are needed. This includes establishing a shared strategic vision, developing common policy frameworks, and building a complementary value chain for export-oriented food production.

Additionally, key priorities include the development of a balanced and well-coordinated regional trade policy, as well as the rapid expansion of logistics and transport infrastructure. These efforts will not only enhance regional connectivity but also facilitate Central Asia's integration into global value chains and international supply networks.

1. Current state of food security in central asia

According to the UN reports, global hunger affected approximately 733 million people in 2023, with varying regional trends. While food insecurity in Central Asia remains lower than the global average, disparities persist due to income levels, socio-economic conditions, and national policies. On average, 4% of the population in the region experiences undernourishment, with childhood stunting (7.3%) and anemia among women (17.4%) being lower than global figures. However, rising obesity rates and food costs indicate structural dietary challenges. Economic access to nutritious food remains a pressing issue. In Central Asia, healthy diets are, on average, five times more expensive than standard diets, making them unaffordable for a significant portion of the population. Factors exacerbating food insecurity include geopolitical tensions, rising energy prices, supply chain disruptions, and the lingering effects of the COVID-19 pandemic.



Comparison of Key Nutrition Indicators: Central Asia vs. Global

2. Key challenges affecting food security

High food prices, especially for healthy diet options

Global food prices are expected to remain high due to population growth, energy costs, skilled labor shortages, and climate change. According to expert estimates, an average of 21.5% of the population in Central Asia lacks the economic means to ensure a nutritious and healthy diet, which is significantly lower than the global average. However, the situation varies considerably across the region, with some countries facing critically high levels of food insecurity.

In certain Central Asian countries, nearly half of the population (up to 49.6%) struggles to access adequate nutrition due to financial constraints. This prevents them from maintaining a balanced diet and highlights deep-rooted challenges related to food affordability and accessibility.

The high level of food insecurity in these countries is driven by multiple factors, including low household incomes, limited employment opportunities, and fluctuations in food prices. Additionally, structural challenges - such as underdeveloped agricultural markets, weak social protection mechanisms, and a high reliance on food imports - further exacerbate the situation.

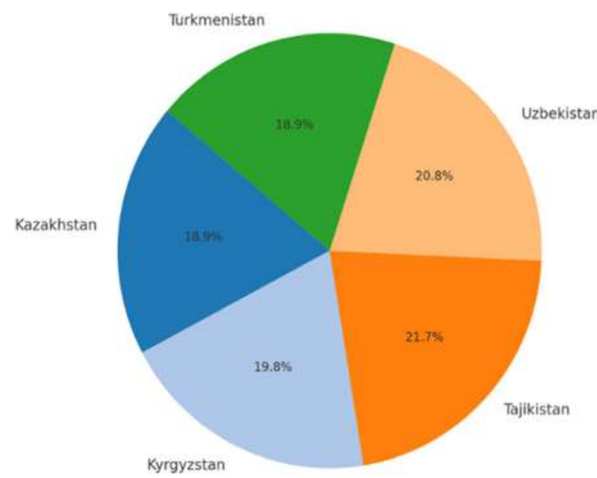
Underdevelopment of transport and logistics infrastructure

The underdevelopment of transport and logistics infrastructure reduces the competitiveness of the region's agro-industrial sector and limits export opportunities. The lack of modern storage and processing systems leads to losses of up to 40% of the harvest before it reaches the market.

A weak transport network slows down the delivery of products from farmers to processors and consumers. In several countries, there is a shortage of refrigerated warehouses, processing facilities, and logistics hubs, making market access particularly challenging for small and medium-sized producers.

The low efficiency of logistics is reflected in international rankings: according to the World Bank's Logistics Performance Index (LPI), the region's countries lag behind many developing economies. This indicates problems with transport infrastructure, customs procedures, and the availability of logistics services.

Food Loss and Waste



The prevalence of calorie losses in the Central Asian region

A significant factor in ensuring food security is the management of food losses and waste. It reduces food availability and decreases farmers' incomes. Main causes of food wastage vary depending on technological, economic, and social factors, such as the availability of post-harvest processing equipment, the quality of logistics infrastructure, and consumer habits. In middle- and low-income countries, losses are more common at the production, processing, and storage stages. According to estimates, global food losses at various stages from harvest to retail account 14% of total food production, and even higher in the Central Asian region. Water Scarcity and Climate Vulnerability.

Another key challenge for Central Asian countries is water scarcity, which is expected to worsen in the region's arid climate, restricting opportunities for expanding agricultural land. Dependence on irrigation is a major factor contributing to the vulnerability of agriculture. Countries such as Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan rely heavily on irrigation for agricultural production. This dependence, combined with rapid urbanization and population growth, is driving up water demand and exacerbating food insecurity. The share of irrigated land within total arable land highlights the sector's vulnerability to water stress and climate shocks.

To mitigate risks, comprehensive disaster management and climate adaptation strategies are essential, considering their impact on agriculture. Sustainable management of natural resources and strengthening food systems are key factors in ensuring stable production and food security.

Dependence on External Inputs and Agricultural Trade Imbalances

The analysis of resource balances and the use of food products that form the basis of the food security basket shows that Central Asian countries ensure the physical availability of essential food products primarily through domestic production. However, a comparison of the average level of food and agricultural trade indicates a noticeable shift towards food imports. This reliance on imports highlights the need to strengthen domestic production capacities.

The region also remains highly dependent on imports of investment and intermediate goods. Dependence on the supply of agricultural machinery, seeds, breeding livestock, and veterinary medicines creates vulnerabilities for the agro-industrial sector, particularly in the event of supply disruptions or price increases.

This issue is especially pronounced in countries where local agricultural resource production is underdeveloped and unable to substitute imported alternatives. Limited access to modern machinery and high-quality seeds slows the adoption of innovative agrotechnology, reduces the competitiveness of agricultural products, and increases the sector's reliance on external factors.

Moreover, high transportation costs, exchange rate fluctuations, and potential trade restrictions could further aggravate the situation, making the import of critical goods even more expensive and unstable.

3. Agricultural potential and regional strengths

An analysis of resource balances and food consumption patterns reveals that Central Asian countries have largely addressed the issue of physical availability of staple food products through domestic production. In 2020, self-sufficiency levels for most food items exceeded 80% — the threshold set by regional countries to define «food independence.» The highest self-sufficiency levels were observed for grains, potatoes, vegetables, and melons, while the lowest were recorded for sugar and vegetable oils.

Over the past years, Central Asian countries have made significant progress in agricultural production. Kazakhstan has demonstrated success in producing vegetables, grains, dairy, and oilseeds, though it faces a sugar deficit. Uzbekistan leads in fruit, berry, and vegetable production, but rapid population growth has increased its dependence on imports, raising net food imports significantly.

Kyrgyzstan and Tajikistan have made strides in food security but remain net food importers, making them vulnerable to global supply chain disruptions.

The key factors ensuring the region's long-term development potential are as follows:

• Historical Role of Agriculture: Agriculture has traditionally played a central role in the region's economy. Over centuries, an effective system of production resources, socio-economic linkages, and key sectoral components has been established, supporting the agrarian sector's functioning.

Self-Sufficiency Levels of Key Agricultural Products in Central Asia (CA) in 2021 (%)

Product	Kazakhstan	Kyrgyzstan	Tajikistan	Uzbekistan	CA Average
Grains	125	62	61	73	80
Potatoes	104	99	96	88	97
Vegetables & melons	108	96	102	129	109
Fruits & berries	38	111	96	122	92
Meat (all types)	82	87	92	96	89
Milk & dairy products	93	110	99	99	100
Eggs	100	90	98	100	97
Sugar	8	68	0	0	19
Vegetable oils	91	11	24	44	43

• Availability of Agricultural Land: The region has 28.2 million hectares of agricultural land. However, the utilization of arable land remains low, creating opportunities for the restoration of previously abandoned lands. Kazakhstan possesses significant agricultural resources and has the potential to expand its farmland by 12.26 million hectares, while Uzbekistan 1.1 million hectares of new agricultural land.

• Potential to Increase Crop Yields: The region has the potential to increase the yields of key crops by 1.5–2 times. Low levels of technological advancement, insufficient use of fertilizers, and inadequate agricultural machinery contribute to the current productivity gap. Crop yields in the region are 1.5–2 times lower than in developed countries. However, over the past 10–15 years, there has been a positive trend in the expansion of cultivated areas and yield growth, supported by technology transfer from Western countries. In arid climate regions, irrigation development is crucial. Uzbekistan, Tajikistan, and Kyrgyzstan, despite having a high share of irrigated land, still have significant potential to improve its efficiency. However, water use efficiency remains extremely low, limiting economic benefits. Expanding domestic production of mineral fertilizers and increasing their application could boost yields and reduce import dependence.

• Large Labor Force: The region has a workforce of over 80 million people, with about 60% residing in rural areas.

• Proximity to Key Markets: The Central Asia region is adjacent to major markets with a combined population of over 3.5 billion, including Russia, China, India, Africa, and the Middle East. In the medium term, China is expected to account for 41% of the additional global demand for fish and 34% for meat, while India is projected to drive 50% of the growth in global demand for fresh dairy products.

4. Key policy actions for strengthening central asia's agro-industrial sector

To ensure sustainable agricultural growth and food security in Central Asia, targeted policy measures and strengthened regional cooperation are essential. Addressing infrastructure gaps, enhancing resource management, and fostering innovation will help the region unlock its full agro-industrial potential.

The following key areas require strategic attention:

• Food Security and Climate Change: Central Asia largely ensures its own food security through domestic resources. However, climate change poses serious risks to agriculture. Rising temperatures and declining river flow may lead to a 30–50% loss in yields. Population growth and limited water resources further highlight the need for water-saving technologies and optimized water use. Soil fertility preservation measures are also essential for adaptation.

• Import Substitution & Technological Modernization: High dependence on imports of agricultural machinery, seeds, breeding livestock, and fertilizers threatens production stability. The solution lies in accelerated technological modernization, including the development of domestic production of agricultural machinery, breeding, livestock, and fertilizers.

• Agricultural Intensification: Yields in Central Asia are often 1.5–2 times lower than in developed countries, indicating significant growth potential. The adoption of precision farming, organic agriculture, and water-saving technologies will enhance resource efficiency.

• Transport and Logistics Infrastructure: Weak transport and logistics infrastructure leads to significant agricultural product losses. The solution is to create an integrated transport network, including roads, railways, seaports, border crossings, wholesale distribution centers, and agro-logistics facilities. Export logistics should also be improved, with a focus on southern and eastern trade routes connecting the region to key markets such as the Middle East, India, and China. Specialized transport, including refrigerated and insulated containers, is needed for food shipments.

• Favorable Regulatory Environment: To stimulate domestic demand and support national producers, intra-regional barriers must be eliminated. Large markets like Kazakhstan and Uzbekistan can ease import restrictions and develop export sectors.

• Digitalization of Agri-Food Trade: Digitalization offers new opportunities to enhance the resilience of agri-food chains and logistics. This requires long-term investment in ICT infrastructure, attracting foreign direct investment, and developing national digital policies.

• Strengthening Financial Infrastructure: Establishing an insurance system to support exports and developing regional commodity exchanges will be crucial for trade stimulation.

• Cooperation and Support for Small Farms: To address the issue of small-scale farming, cooperation should be promoted among procurement systems, machine and tractor stations, and service-collection centers.

• Export Prospects: Growth in domestic production and moderate consumption increases create favorable conditions for expanding export potential. To achieve this, large players covering the entire production and export cycle - from processing and storage to logistics and retail - should be developed. This will enhance productivity, competitiveness, and reduce losses through improved logistics.

5. Conclusion

The development of the agrifood sector in Central Asia requires a comprehensive approach that includes policy support, infrastructure, investment, and regional cooperation. The region faces two major challenges: first, its vulnerability to geopolitical and economic disruptions in neighboring areas, which directly impact trade flows, supply chains, and food security; and second, the need for deeper integration into global value chains and supply networks, which demands significant collective efforts. Strengthening production and distribution networks, enhancing technological capabilities, and promoting sustainable agricultural practices will be key factors in ensuring food security and economic resilience. By fostering partnerships between governments, the private sector, and international organizations, the region can unlock new opportunities for trade and innovation. Moving forward, coordinated efforts will be essential to overcome existing challenges and build a more competitive and sustainable agrifood system in Central Asia.

En Abstract:

The agro-industrial sector is crucial to Central Asia's socio-economic development, yet the region faces key challenges in ensuring stable food security. High food prices, weak logistics, food losses, and water shortages hinder progress. However, the region's vast land resources, growing labor force, and strategic location offer significant agricultural potential. Strengthening food security requires modernization, improved logistics, regional cooperation, and the adoption of advanced technologies in agribusiness.

Fr Résumé:

Le secteur agro-industriel est essentiel au développement socio-économique de l'Asie centrale, mais la région doit relever d'importants défis pour assurer une sécurité alimentaire stable. La cherté des denrées alimentaires, la faiblesse des infrastructures logistiques, les pertes alimentaires et la pénurie d'eau freinent les progrès. Toutefois, les vastes ressources foncières, la main-d'œuvre croissante et la position stratégique de la région offrent un potentiel agricole considérable. Renforcer la sécurité alimentaire nécessite une modernisation du secteur, une amélioration de la logistique, une coopération régionale accrue et l'adoption de technologies avancées dans l'agribusiness.

Ar ملخص:

يُعد القطاع الزراعي الصناعي بالغ الأهمية لتحقيق التنمية الاقتصادية والاجتماعية في آسيا الوسطى، إلا أن المنطقة تواجه تحديات أساسية تحول دون تحقيق أمن غذائي مستقر، تتمثل في ارتفاع أسعار الغذاء، وضعف البنية التحتية اللوجستية، والخسائر الغذائية، وشُح الموارد المائية. ورغم ذلك، فإن المنطقة تمتلك إمكانات زراعية كبيرة، بفضل مساحاتها الواسعة من الأراضي الزراعية، والقوى العاملة المتنامية، والموقع الجغرافي الاستراتيجي. ويتطلب تعزيز الأمن الغذائي تحديث القطاع الزراعي، وتطوير الخدمات اللوجستية، وتفعيل التعاون الإقليمي، وتبنّي التقنيات الحديثة في الصناعات الزراعية.

From the People, For the People: Sudan's Fight for Food Security

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Key words:

Sudan food security, community-led food initiatives, Emergency Response Rooms (ERRs), localized aid effectiveness, Sudanese diaspora remittances, grassroots humanitarian response, conflict and food insecurity, agricultural resilience, humanitarian localization, and self-sufficiency in crisis response.

Introduction

Since the conflict erupted in April 2023, Sudan has been grappling with a worsening food security crisis. The Integrated Food Security Phase Classification (IPC, 2024) reports that over 25.6 million Sudanese people—more than half the population—are suffering from acute food insecurity at IPC Phase 3 (Crisis) levels or worse. Currently, more than 750,000 individuals face conditions akin to famine (World Food Programme, 2024). With limited access to international humanitarian aid, grassroots initiatives within Sudan and from the diaspora have become essential lifelines for survival.

The scale of the crisis has reached catastrophic levels, particularly in urban areas where communities face compounding challenges of displacement, market disruptions, and economic collapse. According to IFPRI-UNDP (2024), 46% of urban households in Sudan are currently experiencing moderate to severe food insecurity, while 8% are in severe food insecurity, unable to meet basic nutritional needs. The situation is particularly dire in North Darfur, South Darfur, and East Darfur, where over 57% of households struggle with food access, and more than 10% face extreme hunger. The crisis has hit female-headed households disproportionately, as many women lack access to markets or stable sources of income, further deepening the struggle within the most vulnerable communities. As access to food markets diminishes, these families have increasingly relied on community-led food initiatives, emergency response kitchens, and remittances from the Sudanese diaspora to survive (IFPRI-UNDP, 2024).

Rooted Resilience: The Legacy Behind Sudan's Community Food Networks

According to the Food and Agriculture Organization (FAO, 2024), over 70% of urban households in North and East Darfur are experiencing severe to moderate food insecurity. Yet, despite these challenges, the local community initiatives have become the cornerstone of survival. These initiatives trace their lineage to the historic *Takaya* (التكايا)—charitable kitchens established within Sufism practices and zawiyas as early as the Funj Sultanate in the 16th century, where food and shelter were offered to the poor, orphans, travelers, and seekers of knowledge (Trimingham 1949). Today's community kitchens continue this legacy, embodying the same values of generosity and communal responsibility, currently adapting to confront the realities of today's war, displacement, and economic collapse.

One of the most significant responses has been the establishment of *Community Central Kitchens (المطابخ المجتمعية)*, which have played a critical role in providing daily meals to displaced families. In Sururab, a local kitchen 25 miles north of Sudan's capital, Khartoum, feeds approximately 350 families daily, offering a lifeline to residents who have been cut off from all sources of markets (The Guardian, 2024). In Omdurman, a growing community kitchen supplies meals to more than 5,000 people daily, mainly supported by financial donations from Sudanese expatriates. In areas experiencing active combats between the RSF and the Sudanese military, more than 1,460 kitchens have been set up, providing thousands of meals each week (WFP, 2024). These kitchens are mainly run by volunteers and rely on assistance from the diaspora, highlighting the solidarity and resilience within Sudanese society.

Hadreen Initiative (مبادرة حاضرين) stands as one of the largest and first-born grassroots movements focusing on food security and emergency response. Established in 2021, Hadreen has grown into a nationwide network of volunteers providing food, medical supplies, and shelter to the displaced. Since April 2023, Hadreen has distributed over 5 million meals and now supports more than 1 million people monthly through food parcels and community kitchens. Its reach has expanded to 20 states, making it one of Sudan's most extensive grassroots relief networks (IFPRI, 2024). During the first half of Ramadan 2025, Hadreen Central Kitchens received over 600 million Sudanese Pounds, supporting 90 kitchens across four states, with 38 kitchens serving over 50,000 beneficiaries, while estimating the total of people receiving warm meals to exceed 150,000 people. What is remarkable about this initiative is that it has expanded its financial resources to receive, in addition to donations, Fidyah (فدية) and Zakat Al-Fitr, which are fully allocated for purchasing essential food supplies for the central kitchens.

Another successful community-led model is *Zero Waste Sudan,* originally an environmental awareness initiative. In response to the crisis, it shifted its response toward food redistribution, collecting surplus food from markets, bakeries, and local businesses and delivering it to displaced people and low-income families. Since April 2023, Zero Waste Sudan has redistributed food to more than 400,000 displaced individuals across Gezira, Khartoum, and White Nile States and has established food banks in three major cities, helping over 150,000 families (IFPRI, 2024).

Beyond meal distribution, *Emergency Response Rooms (ERRs) (غرف الطوارئ المجتمعية)* have emerged as a critical pillar of Sudan's localized aid response, addressing food insecurity, medical needs, clean water access, and emergency evacuations. Since the onset of the conflict, ERRs have provided direct food assistance to over 11.5 million people, including 2.3 million meals in just six months in Khartoum State alone (FAO, 2024). Unlike international agencies, which face bureaucratic delays, high costs, and security restrictions, ERRs operate swiftly and efficiently, leveraging local networks and deep community trust to deliver aid in high-risk areas.

Some researchers emphasize on the effectiveness of locally led responses, with humanitarian studies showing that localized aid is 32% more cost-effective per beneficiary than international programs (ODI, 2022). Globally, similar models have outperformed foreign-led interventions: local NGOs in Yemen reached 65% more beneficiaries at lower costs than international organizations (ODI, 2023); community-led Ebola response succeeded where foreign agencies failed due to mistrust (WHO, 2017); and Philippine responders provided post-disaster aid weeks ahead of international organizations following Typhoon Haiyan (IFRC, 2018). Sudan's ERRs exemplify this same agile, community-driven relief model, yet they remain severely underfunded and lack formal international support. If Sudan's food security crisis is to be meaningfully addressed, the focus must shift from externally dictated interventions to empowering and financing locally-led aid networks that have already proven their effectiveness.

Comparative Perspective: Lessons from Other Community-Led Food Responses

Yemen:
Yemen has endured prolonged conflict and economic collapse, leading to one of the worst food crises in modern history. Similar to Sudan, Yemeni grassroots initiatives continue to play a fundamental role in sustaining the needs of local populations by organizing community central kitchens and direct food distribution networks. However, one key difference is that some of these Yemeni-led initiatives have been successful in scaling up through structured collaborations with NGOs and securing institutional support (IFPRI, 2023). Sudanese initiatives could benefit from formalizing partnerships with humanitarian agencies to ensure international recognition, advocacy, and a much more consistent funding flow.

South Sudan:
In South Sudan, women's organizations have been instrumental in stabilizing food supply chains in some of the conflict zones. These initiatives managed to create a module that combines traditional farming methods with modern agricultural techniques to increase food production capacity, particularly in regions affected by displacement (FAO, 2023). Sudanese agrarian activities like the ones initiated by Sudan AGWA follow that path, integrating community-based farming solutions to ensure long-term food security despite ongoing displacement.

Syria:
Syria's prolonged conflict has forced communities to develop hyper-local food distribution networks that bypass bureaucratic and security hurdles faced by international aid agencies. By creating localized hubs, Syrian relief networks have improved food distribution efficiency and adapted to changing conflict conditions. Sudan's Emergency Response Rooms (ERRs) already mirror some of these strategies; however, they could be further institutionalized to improve efficiency and resource allocation (IOM, 2023).

Transforming Challenges into Opportunities: Enhancing Sudanese-Led Food Security Initiatives

Sudan's economic collapse has amplified food insecurity, making even the most basic commodities financially out of reach for millions. Over the past two years, Sudan's GDP has contracted by 35%, with a staggering 20% drop in 2023 alone (IFPRI-UNDP, 2024). Inflation surged from 67% in 2023 to 137% in 2024, driving food prices to levels that urban households simply cannot afford. The Sudanese pound has also suffered unprecedented devaluation, with currency depreciation exceeding 300% since the conflict began, further eroding purchasing power and pushing imported food and agricultural inputs beyond affordability. As wages remain stagnant and employment opportunities shrink, more than 81% of urban households now rely on remittances or humanitarian aid to survive—an alarming increase from just 5% before the war. The combination of economic instability and disrupted supply chains has forced Sudanese communities to adopt extreme coping mechanisms, including skipping meals daily (55%), reducing food portions (62%), and selling off assets to afford food (33%) (IFPRI-UNDP, 2024).

Opportunity 1: Enhancing Volunteer Engagement Through Skills Development

Without structured support, it becomes difficult to retain skilled individuals who can keep operations running. Almost all the initiatives rely entirely on volunteer labor, leading to burnout and fatigue (IFAD, 2024). Shifting from short-term volunteering to skills-based engagement can improve retention and sustainability. Establishing training programs for community leaders, food distributors, and local farmers can refine skills and efforts for efficiency improvement. The Sudanese initiatives can also partner with diaspora agriculture, logistics, and finance experts to transfer knowledge and create long-term capacity building. This has been a proven model in South Sudan and Syria, where community-run training programs helped stabilize local food systems (IFPRI, 2023).

Opportunity 2: Transforming Displacement into an Agricultural Opportunity

Mass displacement has disrupted traditional farming and food-sharing practices, forcing communities to rely on aid rather than producing their own food (FAO, 2024). Displaced populations can become key drivers of agricultural resilience if given access to land, seeds, and water management training. Sudan AGWA and similar initiatives could expand their donor profiles and networks to provide more agricultural and farming training in displacement zones, allowing IDPs to cultivate and produce crops to reach self-sufficiency and contribute to local markets rather than relying solely on aid distributions. Similar models have successfully reduced food dependency in Uganda's refugee settlements, where displaced farmers have become self-sufficient producers (FAO, 2023).

Opportunity 3: Digital Solutions for Financial Sustainability

As Sudan's formal economy continues to deteriorate, the Sudanese diaspora has become an indispensable force in sustaining food security, directly funding many grassroots initiatives that have kept communities fed. With 81% of urban households now depending on remittances, the financial contributions of Sudanese abroad have become more critical than ever (IFPRI-UNDP, 2024). Unlike institutional humanitarian aid, which is often delayed by bureaucratic and logistical obstacles, diaspora support flows directly to food security initiatives, enabling the rapid mobilization of funds for emergency response kitchens, and Emergency Response Rooms (ERRs). Platforms such as بنكك (Bankak) have allowed Sudanese abroad to bypass conventional banking restrictions, ensuring immediate access to financial resources for food networks on the ground. The growing reliance on diaspora-led financial infrastructure highlights an important shift: Sudan's food security is increasingly being driven by Sudanese people themselves, both at home and abroad, reinforcing the urgent need to prioritize, protect, and expand these local funding mechanisms.

Integrating microfinance models into these systems could allow grassroots initiatives to offer small loans to local farmers and food vendors, boosting local economies. Somalia's mobile money ecosystem examples show how fintech solutions have supported food security even in conflict zones—Sudan's initiatives could follow suit (Dahabshiil, 2024).

Conclusion:

The list of challenges facing Sudan in combating food insecurity is long, yet each challenge presents an opportunity to build resilient, self-sustaining, and locally driven food systems. By strengthening food supply chains, investing in community-led initiatives, and expanding digital financial tools, Sudanese-led efforts can move beyond emergency response and lay the groundwork for long-term food security and economic recovery.

Sudan's food security crisis has revealed a fundamental truth: while international aid plays a role, Sudanese communities, grassroots movements, and the diaspora are leading the most effective response. Despite underfunding, logistical challenges, and political constraints, these initiatives continue to feed hundreds of thousands daily, proving their efficiency, adaptability, and resilience where traditional humanitarian efforts have fallen short.

Yet, these efforts risk collapsing under overwhelming demand without deliberate investment and sustained support. The international community must shift its perspective—not by implementing foreign solutions, but by empowering, funding, and protecting Sudanese-led food security models.

For nearly 70 years, Sudan has hosted international humanitarian actors, yet the country remains in crisis. How much longer will the world overlook the power of Sudanese-made solutions? The future of Sudan's food security does not lie in imported aid—it lies in the hands of its people. It is time to recognize, invest in, and amplify their efforts.

IOFS aspires to achieve food security among OIC member states, IOFS also recognizes the necessity of supporting locally driven solutions. Strengthening these initiatives through strategic investment, capacity-building, and technical assistance is essential to ensuring sustainable food security in Sudan. Rather than relying solely on externally structured interventions, the future must be shaped by empowering Sudanese-led efforts, reinforcing resilience, and integrating them into broader regional food security strategies.

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En Abstract:

Since the outbreak of conflict in April 2023, Sudan has faced an unparalleled food security crisis, affecting over 25.6 million individuals facing severe food shortages (IPC, 2024). As conventional humanitarian assistance struggles to reach those in need, grassroots initiatives within Sudan and diaspora-led funding networks have become critical for survival. These efforts, from community kitchens serving hundreds of thousands daily to Emergency Response Rooms organizing large-scale aid distribution, have presented heroic adaptability, efficiency, and responsiveness than international relief efforts. Despite the financial limitations, political instability, and logistical obstructions, Sudanese community-led food networks continue defending millions of displaced and food-insecure people. This article explores the strength of community-driven food security initiatives, and its historical roots, emphasizing local resilience over externally imposed solutions. It also examines the growing reliance on remittances and digital financial services, now supporting 81% of urban households, highlighting the diaspora's crucial role in Sudan's survival (IFPRI-UNDP, 2024). Sudanese grassroots initiatives are creating local food supply networks, reintegrating displaced populations into farming, and utilizing financial technology for sustainable development. The results indicate a significant shift: Sudan's food security depends on its citizens' capabilities rather than international assistance. This article argues that investing in local initiatives is crucial, serving as the primary path to achieving lasting food security rather than conventional humanitarian aid systems.

Fr Résumé:

Depuis le début du conflit en avril 2023, le Soudan fait face à une crise alimentaire sans précédent, affectant plus de 25,6 millions de personnes souffrant de graves pénuries alimentaires (IPC, 2024). Alors que l'aide humanitaire conventionnelle peine à atteindre les populations dans le besoin, les initiatives locales au Soudan et les réseaux de financement dirigés par la diaspora sont devenus essentiels à la survie. Ces efforts, allant des cuisines communautaires nourrissant quotidiennement des centaines de milliers de personnes aux salles de réponse d'urgence organisant des distributions d'aide à grande échelle, ont démontré une adaptabilité, une efficacité et une réactivité héroïques, surpassant parfois les efforts des secours internationaux. Malgré les contraintes financières, l'instabilité politique et les obstacles logistiques, les réseaux alimentaires dirigés par les communautés soudanaises continuent de protéger des millions de personnes déplacées et en insécurité alimentaire. Cet article explore la force des initiatives communautaires pour la sécurité alimentaire et leurs racines historiques, mettant en avant la résilience locale plutôt que des solutions imposées de l'extérieur. Il examine également la dépendance croissante aux envois de fonds et aux services financiers numériques, qui soutiennent désormais 81 % des ménages urbains, soulignant le rôle crucial de la diaspora dans la survie du Soudan (IFPRI-UNDP, 2024). Les initiatives locales soudanaises créent des réseaux d'approvisionnement alimentaire, réintègrent les populations déplacées dans l'agriculture et utilisent la technologie financière pour un développement durable. Les résultats indiquent un changement significatif : la sécurité alimentaire du Soudan dépend des capacités de ses citoyens plutôt que de l'aide internationale. Cet article soutient que l'investissement dans les initiatives locales est crucial et représente la voie principale pour parvenir à une sécurité alimentaire durable, plutôt que de compter sur les systèmes d'aide humanitaire conventionnels.

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ملخص:

منذ اندلاع النزاع في أبريل ٢٠٢٣، دخل السودان في أزمة غذاء غير مسبوقة، أثّرت على أكثر من ٢٥,٦ مليون شخص (التصنيف المرحلي المتكامل، ٢٠٢٤). وبينما تعطّلت استجابات الإغاثة التقليدية بفعل النزاع والعوائق اللوجستية، ظهرت المبادرات الشعبية كاستجابة حيوية تقودها المجتمعات داخل السودان والجاليات في الخارج.

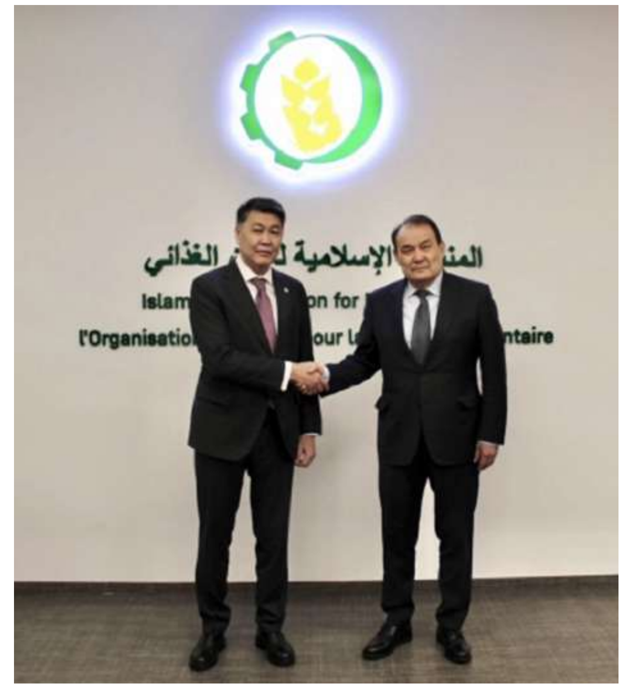
من المطابخ المجتمعية التي تُطعم مئات الآلاف، إلى غرف تنسيق الإغاثة، أظهرت هذه الجهود فعالية وتنظيماً تفوّق في بعض الحالات على المساعدات الأممية. وتلعب التحويلات المالية دوراً محورياً، إذ تشكّل مصدر دخل رئيسي لنحو ٨١٪ من الأسر الحضرية، وفقاً لتقرير المعهد الدولي لبحوث السياسات الغذائية وبرنامج الأمم المتحدة الإنمائي (٢٠٢٤).

المشهد اليوم يشير إلى تحوّل لافت: الأمن الغذائي في السودان لم يعد رهيناً بالمساعدات الخارجية، بل بات يقوم على قدرات المجتمع المحلي ومصادره الذاتية. الاستثمار في هذه المبادرات لم يعد خياراً ثانوياً، بل ضرورة استراتيجية لبناء استجابة مستدامة تنبع من الداخل.

IOFS NEWS OVER
JANUARY – FEBRUARY – MARCH

Director General of IOFS receives President of the Turkic Investment Fund at IOFS Headquarters

On 5 January 2025, the Director General of the Islamic Organization for Food Security (IOFS) H.E. Ambassador Berik Aryn met with H.E. Ambassador Baghdad Amreyev, President of the Turkic Investment Fund (TIF), to strengthen cooperation between IOFS and TIF in advancing joint initiatives across Organization of Islamic Cooperation (OIC) and Organization of Turkic States (OTS) Member States. They discussed collaboration in agriculture, water management, and food processing, with a focus on fostering entrepreneurship, supporting Small and Medium Enterprises (SMEs), and enhancing regional trade integration. Given the alignment of both organizations' priorities, this partnership aims to drive socioeconomic development, promote food security, and unlock economic opportunities in member countries. Both leaders expressed optimism about the future collaboration, emphasizing its potential to create a lasting impact.



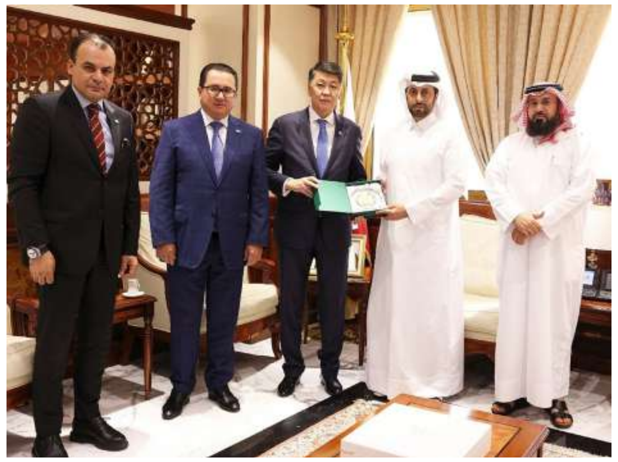
Director General of IOFS Meets with Kazakhstan's Newly Appointed Ambassador to Egypt

On 9 January 2025, IOFS Director General H.E. Ambassador Berik Aryn welcomed H.E. Askar Zhenis, the newly appointed Ambassador of Kazakhstan to Egypt, at the IOFS Headquarters in Astana. They discussed strengthening cooperation between Kazakhstan and IOFS within the OIC region, focusing on food security and sustainable development. Ambassador Aryn congratulated Ambassador Zhenis on his appointment, expressing confidence in his role in enhancing bilateral and multilateral collaboration. Ambassador Zhenis reaffirmed his commitment to fostering stronger ties between Kazakhstan and Egypt while supporting IOFS initiatives. Both sides reiterated their dedication to advancing regional partnerships and addressing global food security challenges together.

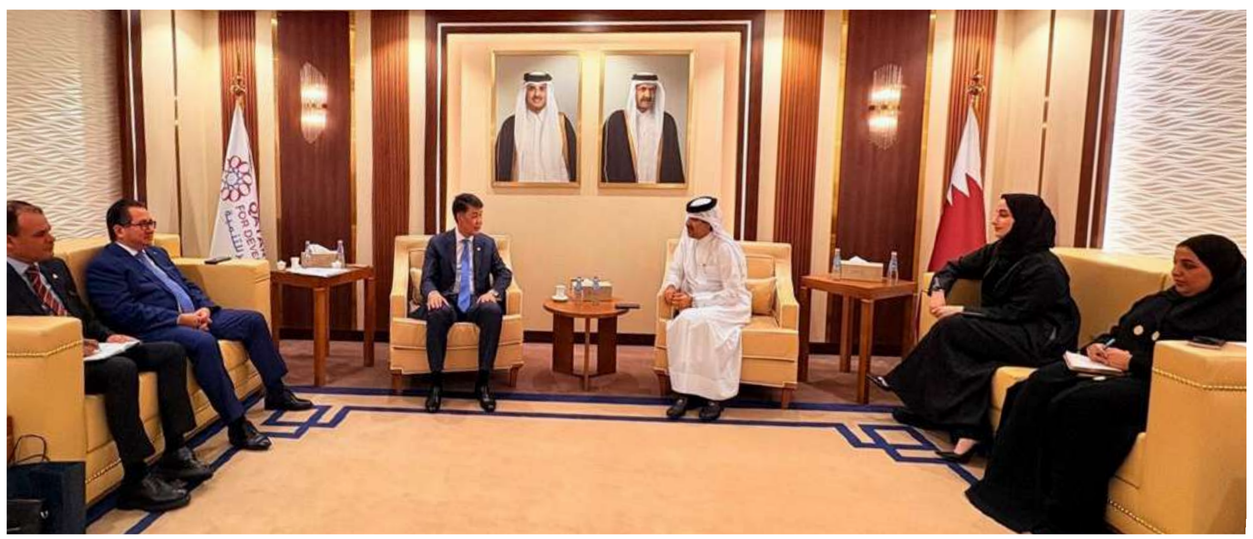
IOFS Director General Welcomes Egyptian Ambassador to Strengthen Food Security Cooperation

On 9 January 2025, IOFS Director General H.E. Ambassador Berik Aryn welcomed H.E. Ambassador Ibtissam Rakha Ahmed Hassan of Egypt to the IOFS headquarters in Astana. The meeting underscored Egypt's pivotal role in advancing IOFS initiatives and strengthening food security across OIC Member States. Ambassador Aryn expressed appreciation for Egypt's active engagement in IOFS programs, including its contributions to food security in the Sahel, climate-resilient agriculture, and food banking systems. Both sides emphasized the importance of continued collaboration in humanitarian efforts and capacity-building programs, reaffirming their commitment to fostering sustainable agriculture and regional food security.

Director General of IOFS Strengthens Strategic Cooperation with Qatar on Food Security and Climate Resilience



During his official visit to Qatar, on 14 January 2025, IOFS Director General H.E. Ambassador Berik Aryn engaged in high-level discussions on food security, sustainable agriculture, and climate resilience across OIC Member States. Accompanied by H.E. Ambassador Arman Issagaliyev of Kazakhstan, Ambassador Aryn met with key Qatari officials, including H.E. Dr. Abdullah bin Abdulaziz bin Turki Al Subaie, Minister of Environment and Climate Change, to explore climate-smart agricultural solutions and joint initiatives for COP30 and COP17. He also held talks with H.E. Mr. Abdullah bin Hamad bin Abdullah Al Attiyah, Minister of Municipality, on enhancing food systems and strategic commodities development. Additionally, discussions with H.E. Mr. Fahad bin Hamad Al Sulaiti, Director General of Qatar Fund for Development (QFFD), focused on strengthening partnerships, with IOFS expressing gratitude for Qatar's $2 million contribution to food security initiatives. The meetings underscored Qatar's proactive role in regional cooperation and IOFS's commitment to advancing sustainable agriculture in OIC nations.



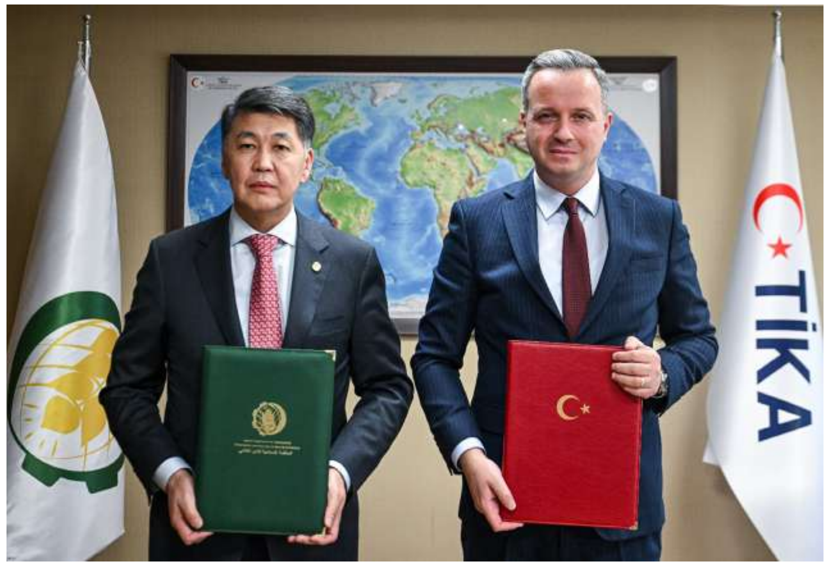
Director General of IOFS Concludes Productive Visit to Qatar with Strategic Partnership Discussions

The Director General of the Islamic Organization for Food Security, H.E. Ambassador Berik Aryn, concluded his official visit to Qatar with a productive meeting with H.E. Mr. Yousef bin Ahmed Al Kuwari, CEO of Qatar Charity. The discussions centered on strengthening cooperation in humanitarian and development initiatives across OIC Member States, particularly in Afghanistan, Gaza, and Africa. Qatar Charity expressed its commitment to supporting targeted food security projects, and both parties agreed to formalize their partnership through a Memorandum of Understanding (MoU) and initiate consultations on concrete joint actions. This engagement marks a significant milestone in advancing food security and sustainable development efforts. IOFS extended its appreciation to H.E. Ambassador Arman Issagaliyev of Kazakhstan for his instrumental support in facilitating the visit.

IOFS Embarks on High-Level Mission to Türkiye: Strategic Engagements with Ministry of Agriculture and Forestry and SESRIC

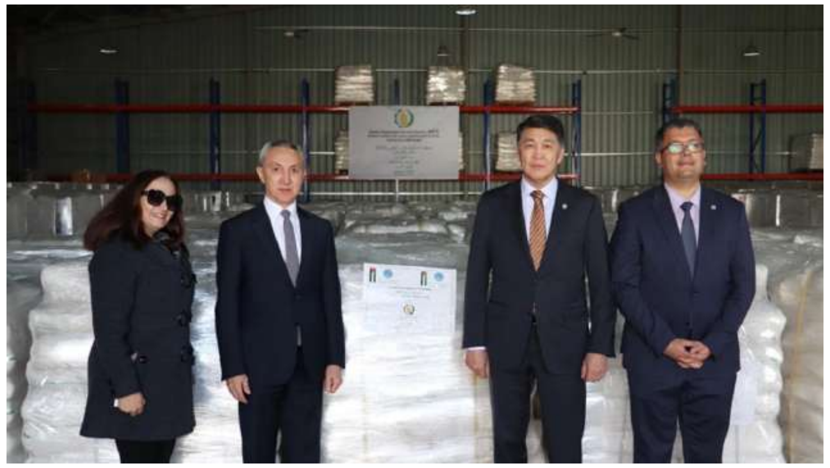
H.E. Ambassador Berik Aryn, Director General of IOFS, commenced his official visit to Türkiye on 17 January 2025, with high-level discussions on food security, sustainable agriculture, and climate resilience across OIC Member States. He met with Dr. Ahmet Bağcı, Deputy Minister of Agriculture and Forestry, to explore cooperation in seed technology, mechanization, and climate adaptation. At General Directorate of Agricultural Research and Policies (TAGEM), Türkiye's leading agricultural research institution, he discussed collaboration under IOFS's "Strategic Commodities" Program and invited participation in the Global Food Security Summit 2025. During talks with SESRIC's H.E. Mrs. Zehra Zümrüt Selçuk, both sides emphasized the role of data-driven policies and joint initiatives to strengthen agricultural resilience. H.E. Yerkebulan Sapiyev, Ambassador of Kazakhstan to Türkiye, reaffirmed Kazakhstan's support for IOFS-led efforts, highlighting Türkiye's key role in advancing regional food security initiatives.

IOFS Director General's Official Visit to Türkiye Yields Strategic Partnerships and TİKA MoU



H.E. Ambassador Berik Aryn, Director General of IOFS, concluded his official visit to Türkiye on 18 January 2025 with high-level discussions on strengthening food security collaboration among OIC Member States. He met with COMCEC Director General Selçuk Koç to explore project funding opportunities for smallholder farmers. During a courtesy call with H.E. Yerkebulan Sapiyev, Kazakhstan's Ambassador to Türkiye, he expressed appreciation for Kazakhstan's ongoing support. The visit culminated in the signing of an MoU with TİKA President Serkan Kayalar, reinforcing joint initiatives in food security, agriculture, and sustainable development. Both sides emphasized leveraging innovative technologies and capacity-building programs to enhance agricultural resilience and food security across OIC nations.

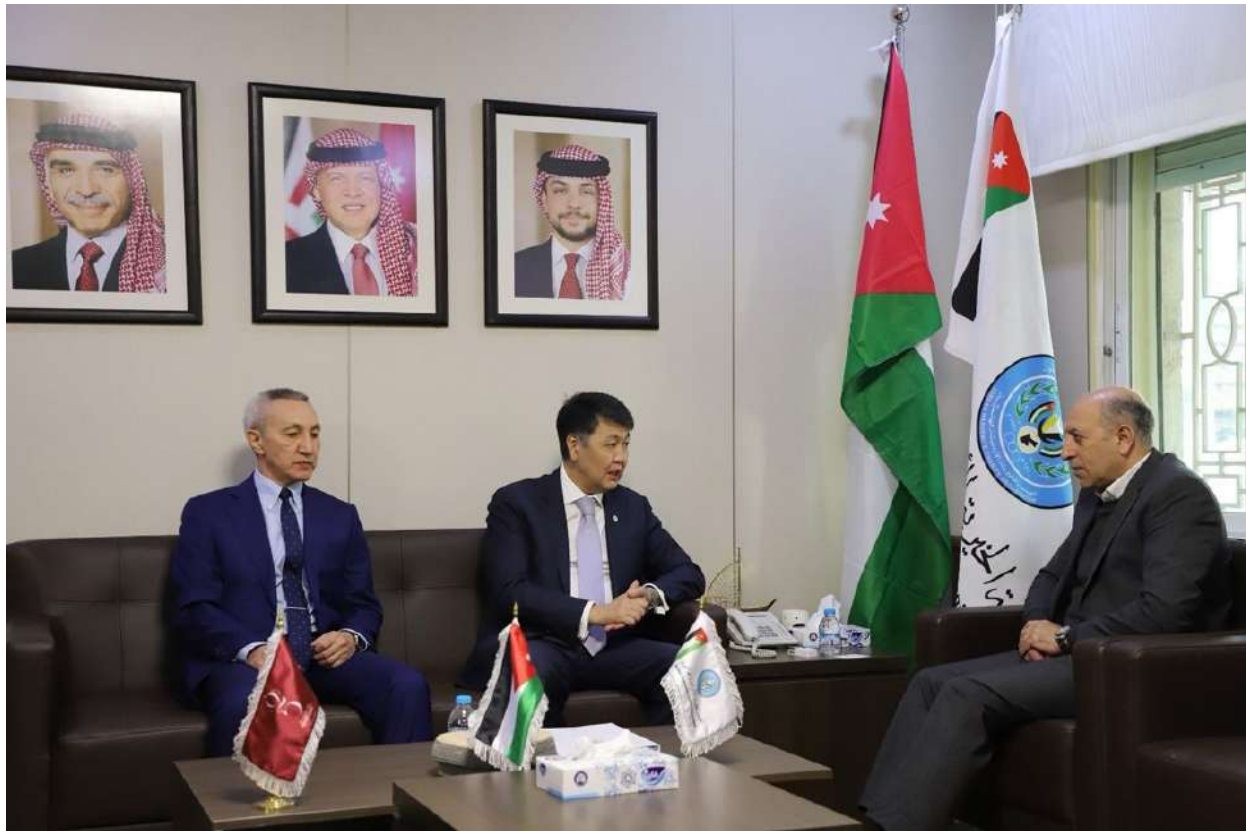
IOFS Dispatches First Humanitarian Convoy to Gaza under Flour for Humanity Program on the First Day of Ceasefire



On 20 January 2025, H.E. Ambassador Berik Aryn, Director General of IOFS, attended the dispatchment ceremony of the first "Flour for Humanity Program – Gaza Emergency Appeal" convoy from Jordan to Gaza, delivering 200 tonnes of wheat flour to alleviate severe food shortages. The initiative, supported by Kazakhstan, Tajikistan, Bangladesh, and Azerbaijan, responds to the humanitarian crisis caused by ongoing conflict. Conducted in partnership with Jordan Hashemite Charity Organization (JHCO), the aid will reach approximately 8,000 households through UN coordination. Ambassador Aryn emphasized IOFS's commitment to humanitarian principles and called for continued support to sustain relief efforts and aid Gaza's long-term recovery.

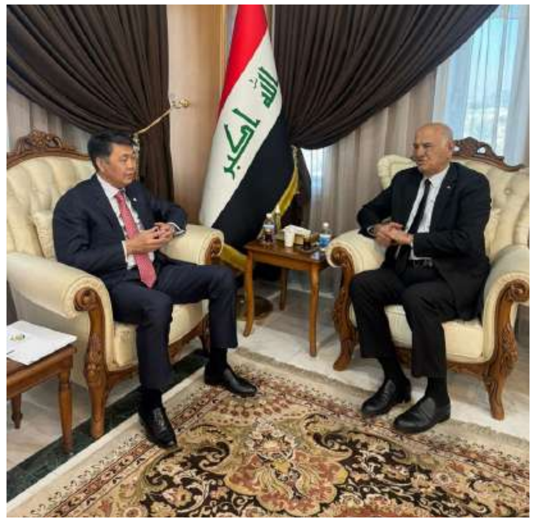
IOFS Director General Concludes Productive Visit to Jordan, Fostering Strategic Food Security Partnerships

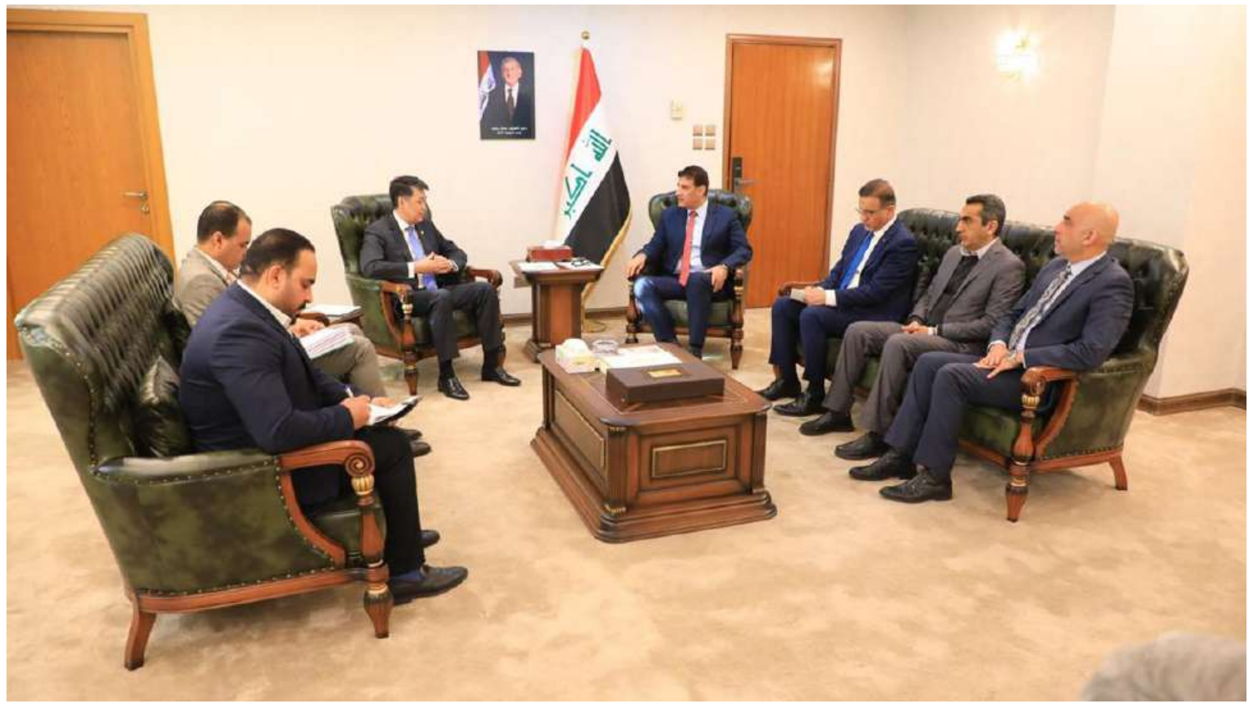
H.E. Ambassador Berik Aryn, Director General of IOFS, concluded a successful visit to Jordan on 20 January 2025, strengthening cooperation on food security and sustainable agriculture among OIC Member States. Meeting with H.E. Khaled Hunaifat, Minister of Agriculture, discussions focused on enhancing supply chains, empowering smallholder farmers, and supporting Jordan's National Plan for Sustainable Agriculture. IOFS announced programs in wheat, olive, and palm cultivation, as well as water management. Ambassador Aryn also oversaw the "Gaza Flour for Humanity" convoy dispatch and met with JHCO to coordinate further relief efforts and climate-smart initiatives. Both sides committed to expanding cooperation in livestock and climate-resilient farming.

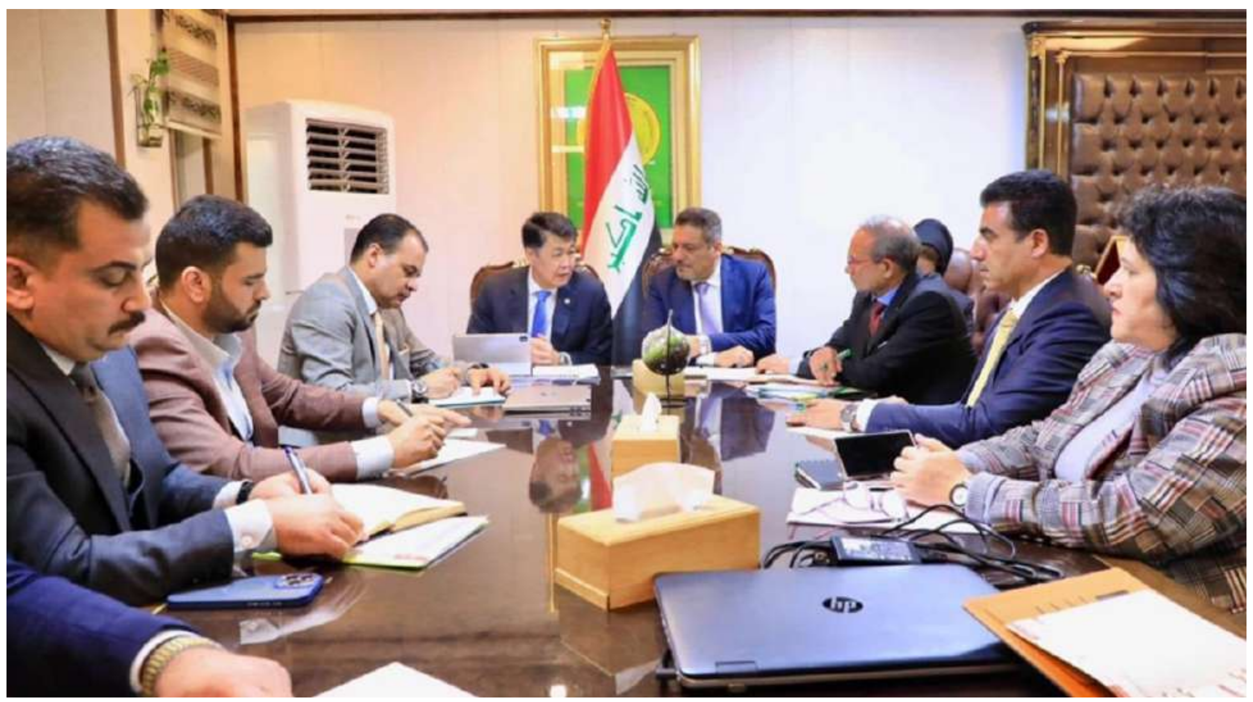


Director General of IOFS Concludes High-Level Discussions During Official Visit to Iraq

H.E. Ambassador Berik Aryn, Director General of IOFS, concluded a successful two-day visit to Iraq on 22 January 2025, strengthening collaboration on food security, sustainable agriculture, and climate resilience. He held high-level discussions with H.E. Ambassador Shorsh Khalid Said, Undersecretary of the Ministry of Foreign Affairs, who reaffirmed Iraq's commitment to IOFS after joining in 2023. Meetings with Dr. Mithaq Abdul Hussein Al-Khafaji, Undersecretary of the Ministry of Agriculture, and H.E. Aoun Diab, Minister of Water Resources, focused on enhancing agricultural sustainability, addressing climate challenges, and modernizing irrigation. The visit marked a key step in fostering impactful partnerships for Iraq and OIC Member States.







IOFS Director General receives Ambassador of Benin

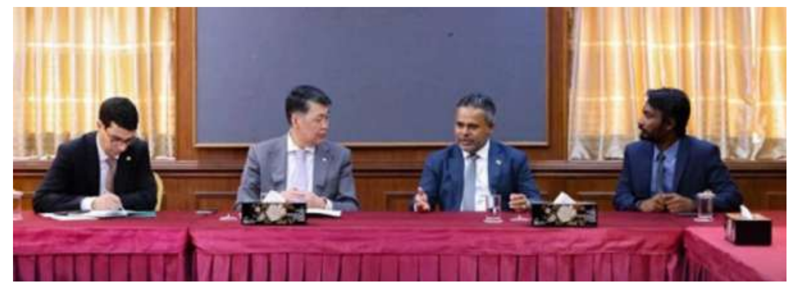
H.E. Ambassador Berik Aryn, Director General of IOFS, welcomed H.E. Akambi Andre Okounlola-Biaou, Ambassador of Benin to Russia and Kazakhstan, at the IOFS headquarters in Astana on 29 January 2025. They discussed IOFS-Benin cooperation, highlighting the cassava value chain project with UNDP and training on agricultural waste processing at the Songhai Center. Plans for rice production, livestock farming, and irrigation were also reviewed. Ambassador Okounlola-Biaou emphasized the importance of addressing land degradation and adopting climate-resilient crops. The meeting covered hybrid wheat initiatives, technology transfer, and Benin's participation in upcoming IOFS events, reaffirming commitment to agricultural development and food security.

IOFS Director General Meets with the Ambassador of the Bolivarian Republic of Venezuela

H.E. Ambassador Berik Aryn, Director-General of IOFS, met with H.E. Rosalba Lo Bue Antico, Ambassador of Venezuela to Kazakhstan, at the IOFS headquarters in Astana on 30 January 2025 to discuss potential bilateral cooperation in food security and agricultural development. Ambassador Aryn highlighted IOFS's commitment to supporting OIC member states and its openness to engaging with non-OIC countries. Ambassador Lo Bue Antico expressed Venezuela's interest in collaborating with IOFS, particularly in the agro-industrial sector, through initiatives such as AgroAlba and investment programs. Both parties agreed to explore future joint initiatives to enhance global food security and sustainable agriculture.

IOFS Director General Holds High-Level Bilateral Meetings with Maldivian Ministers on Strengthening Climate-Resilient Agriculture and Food Security

On 3-4 February 2025, H.E. Ambassador Berik Aryn, Director-General of IOFS, conducted high-level meetings in Malé with Maldivian ministers to advance food security, sustainable agriculture, fisheries management, and climate resilience. Discussions with H.E. Dr. Maryam Mariya, Minister of Agriculture and Animal Welfare, focused on climate-smart agriculture, horticulture expansion, and food waste reduction, with the Maldives expressing strong interest in joining IOFS. Meetings with H.E. Mr. Ahmed Shiyam, Minister of Fisheries and Ocean Resources, explored sustainable fisheries management, climate-resilient aquaculture, and digitalization in fisheries governance. Talks with H.E. Mr. Thoriq Ibrahim, Minister of Tourism and Environment, emphasized water management, sustainable land use, and ecosystem-based climate adaptation. These engagements reaffirm IOFS's commitment to supporting the Maldives in food security and climate resilience initiatives.

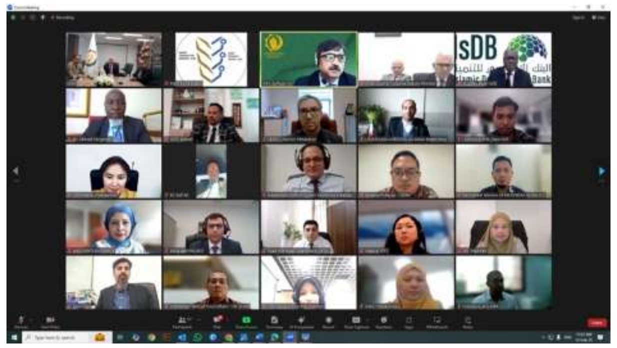


IOFS and Maldives National University Inaugurate Conference on Climate Resilient Agriculture for Food Security

On 3 February 2025, IOFS and The Maldives National University (MNU) inaugurated the Conference on Climate Resilient Agriculture for Food Security in Malé, bringing together experts and policymakers to address food security challenges in small island developing states. The opening ceremony featured Her Excellency First Lady Madam Sajida Mohammed and key ministers. Ambassador Berik Aryn highlighted the importance of climate-smart agriculture, sustainable fisheries, and innovative farming practices. IOFS reaffirmed its commitment to supporting agricultural resilience through vertical farming, hydroponics, and soil and water management initiatives.

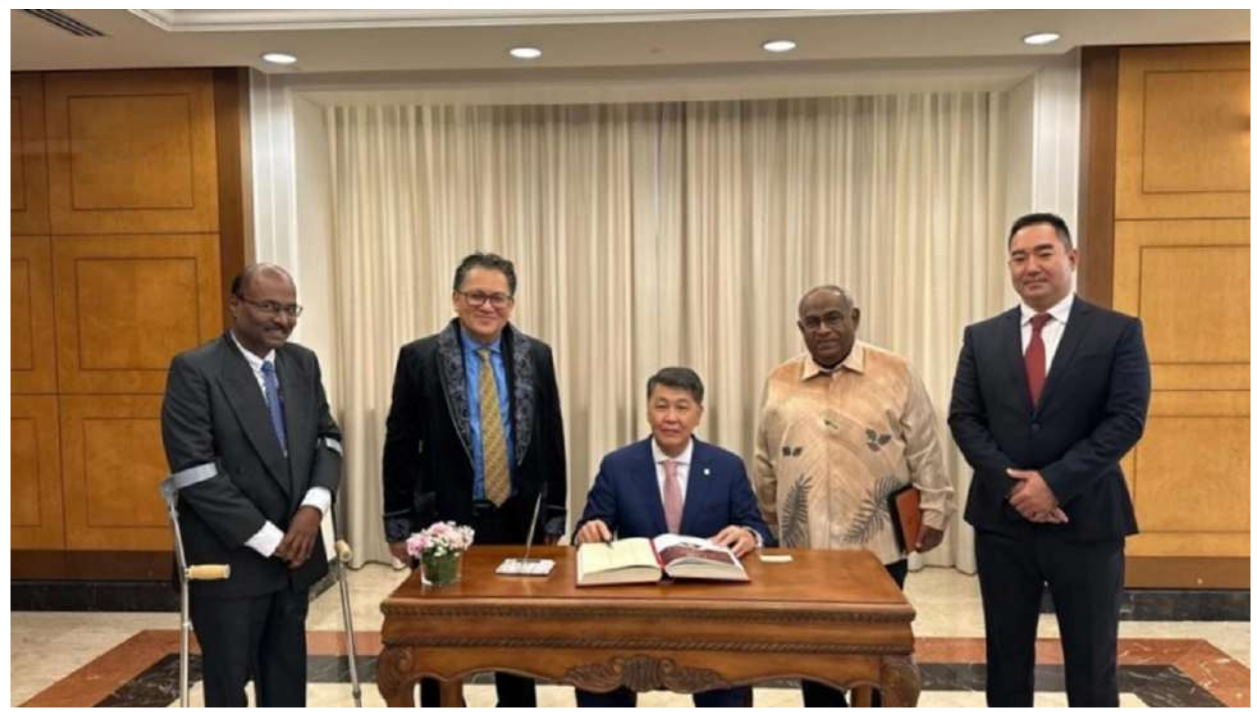
IOFS Hosts Regional Consultations to Advance OIC Strategic Plan for Food Security

The Islamic Organization for Food Security successfully hosted a series of virtual Regional Consultations for the OIC Member States, engaging with the African (11 February), Arab (12 February), and Asian (13 February) groups to refine the draft for the OIC Strategic Plan for Food Security (2026-2035). These consultations gathered senior officials and representatives from key OIC institutions, including the Islamic Development Bank (IsDB) and SESRIC, to align national priorities with regional food security goals. Discussions emphasized sustainable agricultural policies, climate adaptation, supply chain resilience, and data-driven solutions to enhance food security across OIC Member States. The sessions featured expert presentations, interactive discussions, and a collective commitment to finalizing the strategy ahead of its adoption at the 10th Ministerial Conference on Food Security and Agricultural Development in Chad later in 2025.



IOFS Director General Strengthens Agricultural and Food Security Cooperation in Malaysia

From 11–13 February 2025, H.E. Ambassador Berik Aryn, IOFS Director General visited Malaysia to strengthen collaboration in agricultural research, food security, and sustainable development. He engaged in high-level meetings with officials, including the Minister of Agriculture and Food Security, the Deputy President of the Senate, and representatives from the Ministry of Foreign Affairs and JAKIM, discussing technical cooperation, policy support, and capacity-building initiatives. A key highlight was his visit to MARDI, where he explored scientific partnerships in gene banks, climate-smart agriculture, and sustainable farming technologies. The visit reinforced Malaysia's commitment to multilateral food security initiatives and laid the groundwork for future cooperation.



IOFS Director General Participates in the 4th Riyadh International Humanitarian Forum and Strengthens Food Security Cooperation in Saudi Arabia

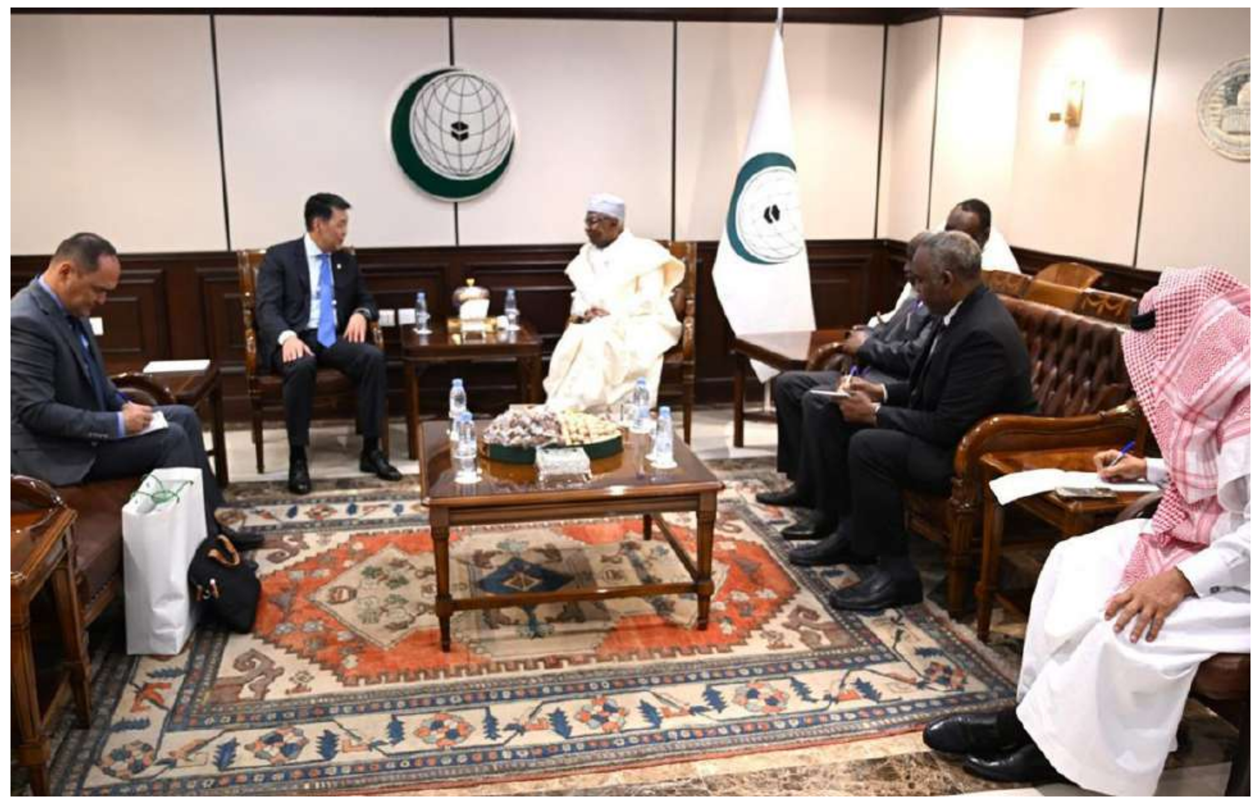
H.E. Ambassador Berik Aryn, Director General of IOFS, attended the 4th Riyadh International Humanitarian Forum (RIHF 2025) on 24-25 February, engaging with high-level officials and humanitarian leaders to advance food security and agricultural resilience. He held discussions with H.E. Dr. Ahmed Al-Baiz, Vice Supervisor General of KSrelief, on aligning IOFS's agricultural programs with humanitarian interventions, and with H.E. Dr. Tedros Adhanom Ghebreyesus, Director-General of WHO, on sustainable agriculture and food security. Meetings with H.E. Dyaddin Said Bamakhrama, Dean of the Diplomatic Corps & Ambassador of Djibouti, and H.E. Ulukbek Maripov, Ambassador of Kyrgyzstan, focused on regional cooperation. Additionally, discussions with H.E. Abdulhakim Elwaer, FAO Assistant Director-General, and H.E. Eng. Abdulaziz Al-Howaish, Advisor to the Minister of Environment, Water, and Agriculture (MEWA), emphasized Saudi Arabia's support for food security policies and agricultural sustainability. The visit reaffirmed IOFS's commitment to strengthening partnerships for food security solutions across the OIC region.

Importance of Media in tackling food security challenges highlighted at Meeting of IOFS and OIC UNA Leadership

H.E. Ambassador Berik Aryn, Director General of the Islamic Organization for Food Security (IOFS), met with H.E. Mohammed bin Abdul Rabbo Al-Yami, Director General of the Union of OIC News Agencies (OIC UNA), on 25 February 2025 to discuss enhancing media collaboration in support of food security efforts across OIC Member States. Both leaders emphasized the crucial role of media in raising awareness and agreed to strengthen cooperation in promoting IOFS initiatives, including the upcoming 7th IOFS General Assembly in Astana. They also reviewed the implementation of their 2022 Memorandum of Understanding, focusing on updated communication strategies and improved program visibility. The meeting reaffirmed their commitment to leveraging media as a key tool for advancing food security solutions across the OIC region.

IOFS and OIC Leadership Discuss Key Initiatives to Strengthen Food Security

On 25 February 2025, H.E. Ambassador Berik Aryn, Director General of the Islamic Organization for Food Security, met with H.E. Mr. Hissein Brahim Taha, Secretary General of the Organization of Islamic Cooperation (OIC) in Jeddah, to discuss key IOFS initiatives aimed at strengthening food security across OIC Member States. Their discussions focused on the establishment of the first IOFS Gene Bank in Kazakhstan, the Afghanistan Food Security Program (AFSP) in partnership with TIKA, and the Africa Food Security Initiative (AFSI) to support vulnerable regions, particularly the Sahel. Ambassador Aryn also updated the Secretary General on the finalization of the Strategic Plan for Ensuring Food Security (SPEFS), highlighting upcoming consultations in Doha. He extended an invitation for the Secretary General to attend the 7th IOFS General Assembly in Astana. In response, Mr. Taha commended IOFS's growing role and emphasized the strategic significance of the proposed Dakar–Port Sudan transport corridor for regional food security. Both sides reaffirmed their commitment to collaborative efforts in tackling food security challenges across the OIC region.

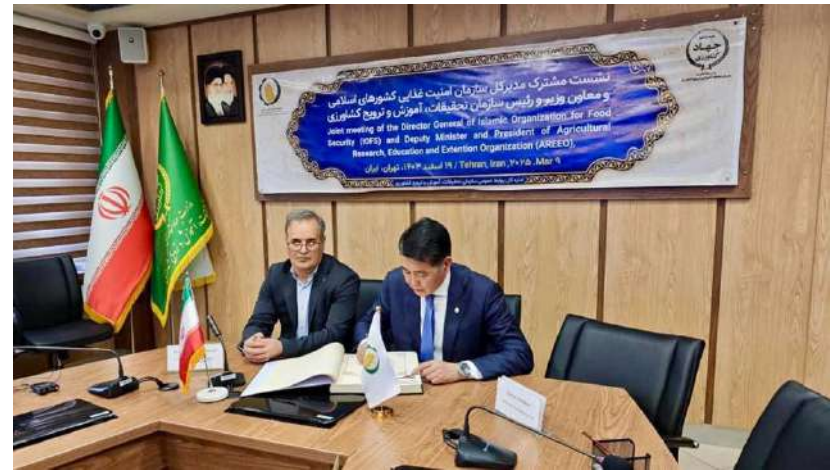


Advancing Wheat Cultivation for Sustainable Development in Central Afghanistan

On 6 March 2025, the Islamic Organization for Food Security, in collaboration with the Turkish Cooperation and Coordination Agency Kabul Office, officially launched the "Advancing Wheat Cultivation for Sustainable Development in Central Afghanistan" project to bolster agricultural productivity and food security. As part of the Afghanistan Food Security Program (AFSP), the initiative distributed 15 metric tons of improved wheat seeds, 15 metric tons of DAP fertilizer, and 30 metric tons of Urea fertilizer to 300 farmers across Logar Province. The project also includes comprehensive training sessions on seed-saving techniques to ensure long-term sustainability. At the inauguration ceremony, key officials—including Deputy Minister of Agriculture Mawlana Sadrazam, Mr. Gaziz Akbassov (Charge d'Affaires of Kazakhstan to Kabul), and Mr. Bilal Emre Biral (Deputy Head of Mission of Türkiye to Kabul)—highlighted the importance of collaborative efforts in strengthening food security and rural resilience. Co-financed by IOFS, TIKA, and the Conference on Interaction and Confidence-Building Measures in Asia (CICA), this project builds on previous AFSP initiatives, reinforcing IOFS's long-term commitment to sustainable agricultural development in Afghanistan.

IOFS Director General Consults with Leadership of ECO and AREEO in Tehran

On 9 March 2025, as part of an official visit to Iran, H.E. Ambassador Berik Aryn, Director General IOFS, engaged in high-level discussions with the Economic Cooperation Organization (ECO) and the Agricultural Research, Education, and Extension Organization (AREEO) to enhance bilateral cooperation on food security and agricultural development. At the ECO Secretariat, Ambassador Aryn and Secretary General H.E. Ambassador Dr. Asad M. Khan signed a Memorandum of Understanding to institutionalize collaboration, focusing on climate resilience, water management, and sustainable agriculture in shared Member States. Meanwhile, at AREEO, Deputy Minister of Agriculture H.E. Mr. Golamreza Golmohammadi and senior researchers expressed strong support for IOFS initiatives, including the establishment of the IOFS Gene Bank in Kazakhstan and the proposed Association of Agriculture Academies (AAA). Ambassador Aryn also provided updates on the preparations for the IOFS 7th General Assembly, scheduled for 1–2 July 2025 in Astana, Kazakhstan, inviting all Member States and partners to contribute to its success.

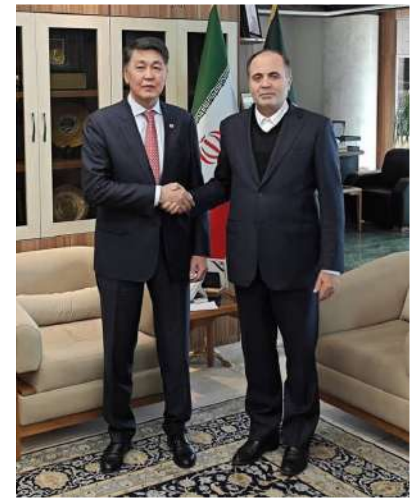


IOFS Delegation Concludes Visit to Afghanistan with Strategic Meetings and a Special Ramadan Iftar for Orphans

On 10 March 2025, the Islamic Organization for Food Security successfully concluded an official mission to Afghanistan under its «Advancing Wheat Cultivation for Sustainable Development in Central Afghanistan» project, reinforcing agricultural livelihoods and international partnerships. The delegation held key bilateral meetings, including discussions with Mr. René Taus Hansen, Head of Sector for Economics and Livelihoods at the European Commission in Kabul, exploring cooperation in horticulture and livestock initiatives. Additionally, Ambassador Cenk Ünal, Head of Mission at the Embassy of Türkiye, reaffirmed Türkiye's commitment to agricultural development efforts in Afghanistan. The visit culminated in IOFS's annual Ramadan Iftar, attended by diplomatic representatives, OIC officials, and Afghan government leaders, where 70 orphans from the Ehsas Welfare and Social Services Organization were honored guests. The event underscored IOFS's dedication to humanitarian support, food security, and fostering resilience in Afghanistan's vulnerable communities.

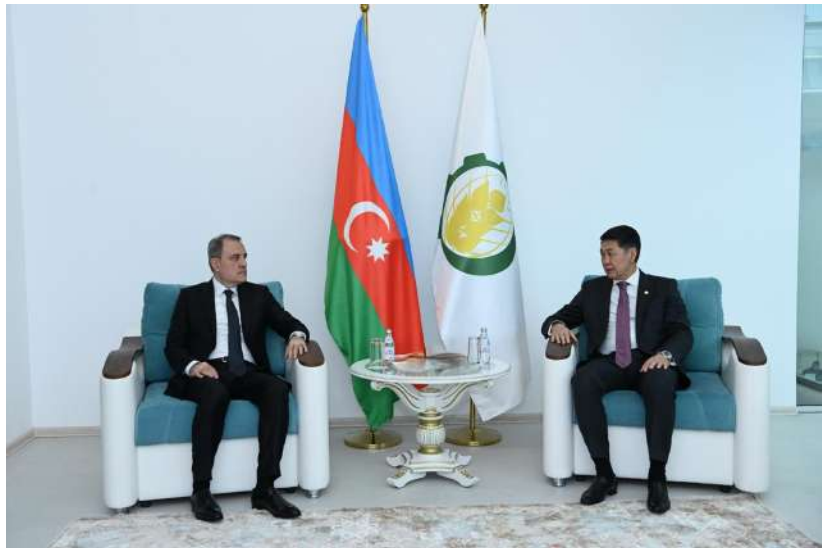
Iran Ready to Strengthen its Cooperation with IOFS towards Increased Support in Addressing Regional Food Security Challenges

On 10 March 2025, the Director General of the Islamic Organization for Food Security, H.E. Ambassador Berik Aryn, met with Iran's Minister of Agriculture Jihad, H.E. Mr. Gholamreza Nouri Ghezelcheh, to enhance regional collaboration on food security. The meeting, attended by H.E. Mr. Ontalap Onalbayev, Ambassador of Kazakhstan to Iran, and Mr. Human Fathi, Director General of Bureau of International Affairs & Specialized Organizations (BIASO), focused on Iran's commitment to sharing its expertise in agricultural research and technology. Discussions covered technology transfer, research collaboration, capacity building, and knowledge exchange to support IOFS Member States. The officials agreed to establish a Joint Technical Working Group to develop a Joint Plan of Action for implementing science-based solutions and innovation-driven agricultural strategies. Additionally, Ambassador Aryn invited Minister Ghezelcheh to the 7th IOFS General Assembly in Astana (July 2025) and an official visit to the IOFS Headquarters in May, both of which were warmly accepted.



Strengthening Ties for Food Security: IOFS Hosts Azerbaijan's Foreign Minister in Astana

On 11 March 2025, the Director General of IOFS, H.E. Ambassador Berik Aryn welcomed H.E. Mr. Jeyhun Aziz oglu Bayramov, Minister of Foreign Affairs of Azerbaijan, at the IOFS headquarters in Astana. The visit, held during Ramadan, reinforced Azerbaijan's commitment to food security and sustainable agriculture within the OIC framework. H.E. Ambassador Berik Aryn, Director General of IOFS, praised Azerbaijan's leadership in climate action, especially its successful hosting of UNFCCC COP29. He acknowledged Azerbaijan's humanitarian contribution to Gaza and its collaboration with the IOFS Gene Bank and Wheat Development program. Minister Bayramov reaffirmed Azerbaijan's support for IOFS and emphasized COP29's role in advancing climate-smart agriculture. He confirmed Azerbaijan's ongoing process to formalize IOFS membership, aiming to contribute expertise in sustainable agriculture and digital innovation. Both sides committed to strengthening cooperation in food security and agricultural development, with discussions extending to Azerbaijan's potential signing of the IOFS Statute at the 7th IOFS General Assembly in July 2025.

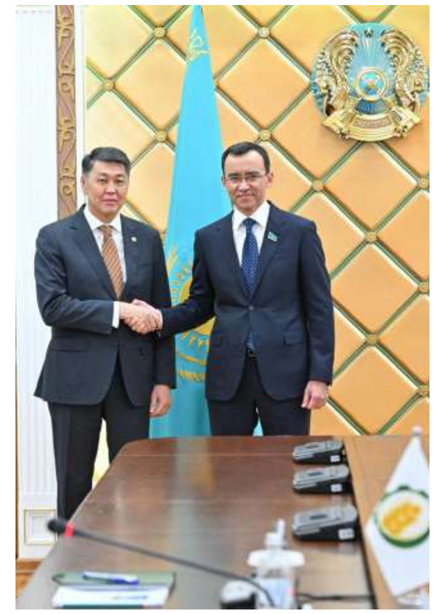


IOFS Hosts Iftar Dinner Promoting Unity and Cooperation

On 17 March 2025, the Islamic Organization for Food Security hosted an Iftar Dinner, bringing together distinguished guests from diplomatic missions, international organizations, and the government of Kazakhstan in observance of Ramadan. The event was honored by the presence of H.E. Dr. Kunsulu Zakariya, Adviser to the President of Kazakhstan on Science and Innovation, First Deputy Minister of Foreign Affairs Akan Rakhmetullin, and other high-level officials, alongside ambassadors and OIC representatives. H.E. Ambassador Berik Aryn, Director General of IOFS, emphasized the spirit of Ramadan and IOFS's commitment to food security and sustainable agriculture, announcing Kazakhstan's hosting of the 7th IOFS General Assembly in July 2025 while highlighting key initiatives, including programs in Afghanistan, Africa, and the humanitarian «Flour for Humanity» initiative for Gaza. A traditional dombra performance honored Kazakhstan's cultural heritage ahead of Nauryz, symbolizing unity and renewal, as the Iftar Dinner served as a platform to strengthen diplomatic ties and reinforce IOFS's mission to promote food security across its 41 Member States.

Meeting of IOFS Director General with the Chairman of the Senate of the Parliament of the Republic of Kazakhstan

On 19 March 2025, the Director General of the Islamic Organization for Food Security, H.E. Ambassador Berik Aryn, met with the Chairman of the Senate of the Parliament of Kazakhstan, H.E. Maulen Ashimbayev, to discuss strengthening food security in Kazakhstan and Central Asia. H.E. Ashimbayev emphasized food shortages as a global crisis and reaffirmed President H.E. Kassym-Jomart Tokayev's prioritization of food security as a strategic national goal. He highlighted Kazakhstan's commitment to supporting IOFS-led initiatives, including humanitarian aid for Afghanistan, and invited IOFS to the VIII Congress of Leaders of World and Traditional Religions in September 2025. In response, H.E. Ambassador Aryn expressed gratitude to President Tokayev and the Government of Kazakhstan for their steadfast support of IOFS and reaffirmed the Organization's commitment to enhancing sustainable agriculture and food security. He outlined IOFS's strategic vision, highlighting initiatives in livestock development, wheat production, agricultural innovation, and the establishment of a genetic bank to preserve regional crop diversity. He also provided updates on the upcoming 7th General Assembly of IOFS in Astana, which will serve as a key platform for fostering international cooperation on food security. The meeting concluded with Ambassador Aryn extending his best wishes for the upcoming Nauryz holiday, underscoring its significance as a celebration of renewal, unity, and shared aspirations for a prosperous future.



Director General of IOFS Meets with Chairman of the Mazhilis of the Parliament of Kazakhstan

On 20 March 2025, IOFS Director General H.E. Ambassador Berik Aryn met with H.E. Mr. Yerlan Koshanov, Chairman of the Mazhilis of the Parliament of Kazakhstan, to discuss strengthening food security and sustainable agriculture across the OIC region. H.E. Mr. Koshanov emphasized Kazakhstan's commitment to global food security through strategic initiatives in digitalization, infrastructure, and nuclear energy, in line with President Tokayev's vision. Ambassador Aryn outlined IOFS's key programs, highlighting regional cooperation, agricultural modernization, and supply chain resilience. Both parties expressed support for the upcoming 7th IOFS General Assembly in Astana and agreed on deepening collaboration with Kazakhstan's Ministry of Agriculture, academia, and research institutions to enhance project implementation and address climate, water, and biodiversity challenges.

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