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SECTOR UPDATES

U.A.E.
**AGTECH
SECTOR**

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BUSINESS COUNCIL REPORT

The United Arab Emirates has embraced cutting-edge agricultural technology as both a key pillar of its food security agenda and an important component of its economic diversification strategy. Located in a harsh desert region, the U.A.E. faces a scarcity of water, making traditional agriculture inefficient and often unproductive. Given these challenges, the U.A.E. is turning to an innovation-driven food security strategy that enables it to be more self-sufficient in feeding its population. In doing so, the U.A.E. is helping to advance technologies and practices that will be immediately applicable to other countries facing similar environmental and logistical challenges.

Partnerships with agtech companies and research institutions from around the world, including the U.S., are central to the U.A.E.'s food security strategy. So, too, are investments in innovative agtech solutions. With its forward-looking approach and openness to global collaboration, the U.A.E. is fast becoming a regional and even global hub for agtech.

This report, the fourth in an ongoing series about the impact of advanced technology on the U.A.E. economy, details the U.A.E.'s work to enhance food security through the adoption of innovative agricultural practices and partnerships with U.S. leaders in agtech. This study also examines the promising future of the sector in the U.A.E. and highlights areas of opportunity for other potential partners.

Background



In 2017, the U.A.E. appointed the world's first-ever Minister of State for Food Security, Her Excellency Mariam Almheiri, with the goal of implementing a food security program as part of broader economic diversification efforts. Since then, H.E. Almheiri has worked to advance the adoption of agricultural technology across the U.A.E. by encouraging investment into technology-enabled food production, furthering research and development initiatives, and spurring innovation through global partnerships.

الأمن الغذائي والمائي
FOOD & WATER SECURITY



مجلس الإمارات للأمن الغذائي
EMIRATES FOOD SECURITY COUNCIL



The U.A.E. has also established an Emirates Food Security Council to coordinate and lead the implementation of the U.A.E.'s National Food

THE U.A.E. FOOD SECURITY STRATEGY HAS FIVE PILLARS



Facilitating Agribusiness
Trade



Boosting Technology-Enabled
Food Production



Reducing Food Loss &
Waste



Support Structures to Mitigate
Food Risks & Manage Crises



Improving Food Safety &
Nutrition

Image source: [grovtech.com](https://www.grovtech.com)

Security Strategy. The Council, which includes leaders from relevant ministries, such as the Ministry of Climate Change and Environment, allows for a whole-of-government approach to the modernization of the country's food security ecosystem.

Just a few years after introducing the National Food Security Strategy, the U.A.E. has already seen improvement in its ability to ensure a safe and steady supply of food. Since 2017, the U.A.E. has jumped from 33rd to 21st in the global food security index. And, perhaps most significantly, the mechanisms put in place by this strategy have enabled the U.A.E. to mitigate some of the worst effects of the coronavirus pandemic. While the coronavirus caused food shortages around much of the world, the U.A.E. was spared from the worst effects, thanks in part to emergency food stockpiles put in place as part of the National Food Security Strategy. Indeed, the coronavirus pandemic has only renewed the country's focus on boosting local production capacity by adopting advanced cultivation methods. Agtech solutions will play a major role in these efforts.

Public-Private Sector Partnerships

Private sector involvement is critical to the success of the U.A.E.'s food security strategy.



In this regard, the importance of ADQ, one of the region's largest holding companies based in Abu Dhabi, in the U.A.E.'s food ecosystem cannot be overstated. In September 2020, ADQ created a new company called Silal to boost local production and diversify food sources, underscoring its commitment to securing food supply chains and ensuring the distribution of essential foods. In addition to Silal, ADQ owns a majority of Agthia, a leading U.A.E. food and beverage company.

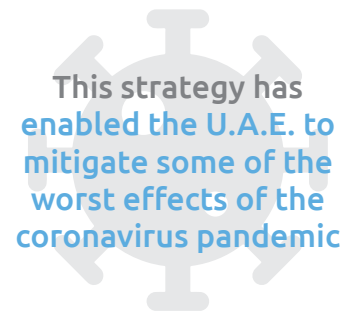


At the same time that the U.A.E. is working with Emirati corporations to achieve food security objectives, the country is also incentivizing and supporting foreign investment and partnerships in the field. In April 2020, the Abu Dhabi Investment Office (ADIO) announced plans to invest \$100 million in four agritech companies – Aerofarms, Madar Farms, RNZ, and Responsive Drip Irrigation – as part of its \$272 million (1 billion AED) AgTech Incentive Program. The incentive program seeks to promote innovation that is "locally relevant and globally exportable" as part of the government's Ghadan21 Accelerator Program. The country's emphasis on private-public partnerships demonstrates its commitment to building and nurturing a comprehensive food security ecosystem that will propel innovation for decades to come.

NATIONAL FOOD SECURITY STRATEGY PROVED A SUCCESS



Since 2017, the U.A.E. has jumped from 33rd to 21st in the global food security index



ADQ underscores its commitment to securing food supply chains & ensuring distribution of essential foods by establishing Silal



ADIO announced plans to invest \$100 million in four agritech companies

Recognizing the importance of tapping into global talent in the field to its overall strategy, the U.A.E. has also initiated a number of programs designed to support and nurture innovative agtech startups. For example, the U.A.E. Office of Food Security partnered with Tamkeen, an Abu Dhabi-based company, to create the Food Tech Challenge. This annual global competition seeks to develop innovative solutions for food production and management in the U.A.E. and attracts start-ups and university students with experience in urban farming from around the world. Additionally, the Office of Food Security collaborates with the U.A.E. Government Accelerators program on 10 initiatives that make entering into the agriculture sector easier through cost reductions on the U.A.E.'s agricultural license, loan guarantees, and guidance on best agricultural practices.

Dubai Multi Commodities Center Supports U.A.E. Agriculture Industry & Emerging AgTech

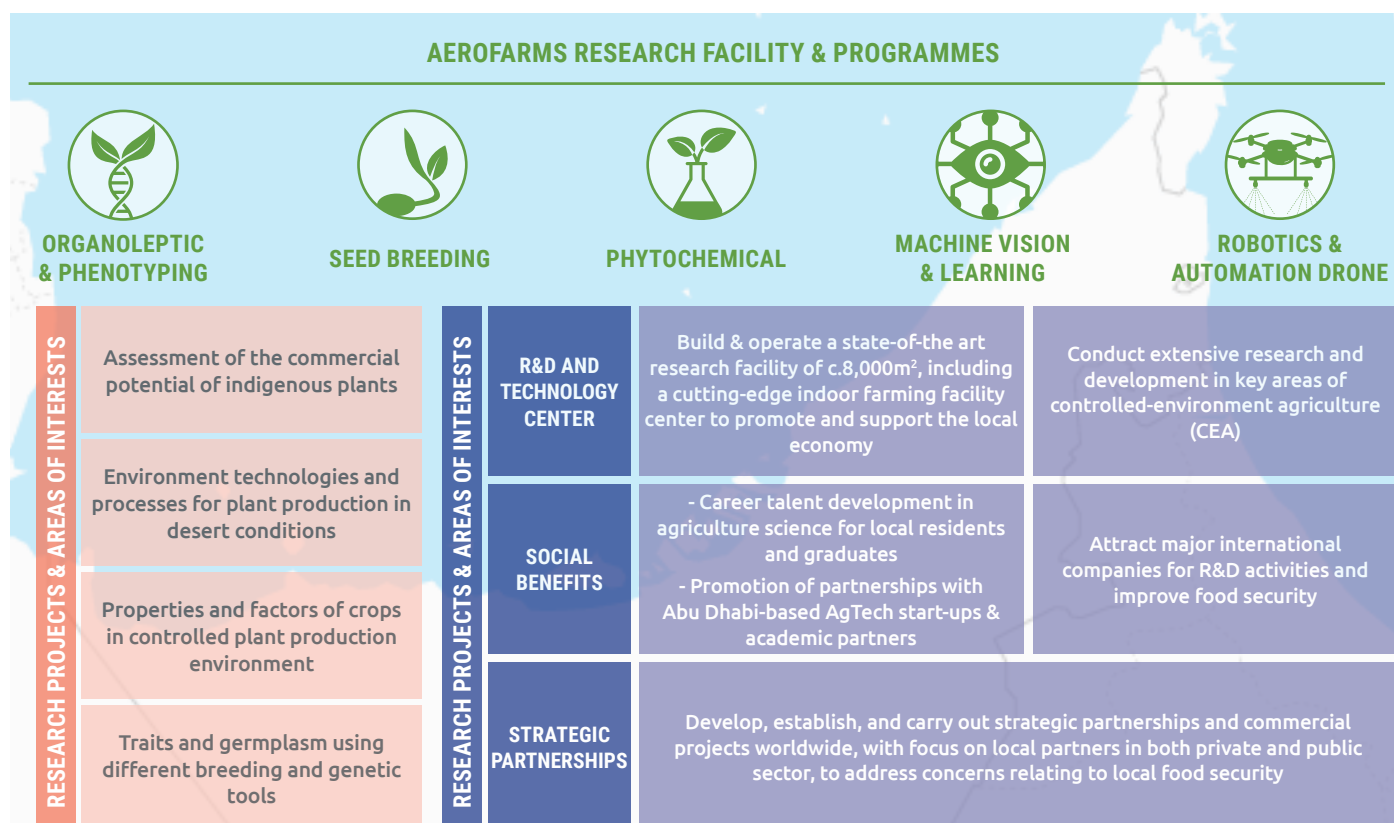
Leading free zone, Dubai Multi Commodities Center (DMCC) has played a critical role in supporting a sustainable agriculture and agtech sector in the U.A.E. Through a centralized marketplace, DMCC facilitates trade in agricultural products ranging from coffee to grains and spices while also welcoming innovative agtech companies to set up businesses within its thriving free zone. DMCC supports agtech companies by offering flexible financing options, convening meaningful discussions through its Food Trade Group, and, in partnership with Dubai Customs, sharing data about the prospects of different commodity sectors. Such private sector support will continue to play a key role in the U.A.E.'s food security initiatives.



Vertical Farming

In the U.A.E.'s efforts to adopt cutting-edge growing solutions, vertical farming features prominently. The U.A.E.'s dry, arid climate makes traditional growing a challenge; however, indoor growing protects crops from extreme climate conditions while reducing up to 95% water use. Moreover, indoor vertical farms can provide communities with direct access to food – an important consideration given the widespread supply chain disruptions caused by the coronavirus pandemic.

The aforementioned AeroFarms, a world-leading New Jersey-based indoor vertical farming company, is set to play an important role in the U.A.E.'s food security plans. In partnership with the Abu Dhabi Investment Office, AeroFarms will build a state-of-the-art 8,200 square meter R&D center in Abu Dhabi to explore innovative growing technologies and applications and develop strategic partnerships with major players in both private and public sectors in the region. AeroFarms will also play a key role in developing Abu Dhabi's agtech ecosystem by training aspiring engineers and scientists through partnerships with the country's leading institutions of higher education.



In Dubai, Crop One's partnership with Emirates Airline serves as another example of the U.A.E.'s investment in vertical farming technologies. In 2018, Crop One, a California-based company, formed a joint venture with Emirates Flight Catering (part of Emirates Airline) to build a large controlled environment facility for the production of herbicide and pesticide-free leafy greens.

More U.S. vertical farming companies are likely to enter the U.A.E. market in the near future. Perhaps one of the most promising is Grov, a Utah-based company that uses Controlled Environment Agriculture (CEA) to optimize plant growth, plant quality, and production efficiency. Grov grows both feed for the world's leading dairy and beef innovators and fresh produce for human consumption through the use of semi-automated indoor growing systems.



Mubadala Investment in Plenty

The U.A.E. is actively investing in the vertical farming industry. For instance, Mubadala Investment Company, Abu Dhabi's \$232 billion sovereign wealth fund, made a major investment in California-based Plenty, a vertical farm company. Such investments are sure to continue as the U.A.E. aims to not only boost local production, but also support innovation in the field of vertical farming globally.

Food Safety

The U.A.E. has designated food safety and nutrition as another key pillar of its overall food security strategy. Government entities like the Abu Dhabi Agriculture & Food Safety Authority (ADAFSA) are exploring new ways to ensure food safety, food security, and biosecurity in the U.A.E.

Emerging technologies, such as the blockchain solutions introduced by HerdX, have the potential to revolutionize food safety. HerdX uses connected tags, readers, and verified data to help farmers and ranchers monitor animal movement, identify health anomalies, and increase operational efficiencies. The HerdX system then provides grocers and restaurants the traceability information they need to ensure safe, verified products, and connect customers with the story behind their food. HerdX is also expanding its technological reach to include commodities like coffee. The U.A.E. is exploring solutions like these to boost safety.



QS Monitor, another U.S. company and a finalist in the 2020 U.A.E. FoodTech Challenge, will "help with the digitization of the food supply chain." The company's food inspection and traceability models can reportedly help remove inefficiencies between traders, government, and service providers and thereby improve access to high quality, safe, and nutritional food supply. In the coming years, the U.A.E. will continue to explore these food safety agtech solutions as part of its overall food security agenda.



U.S.-U.A.E. Business Council Partnership

In partnership with the U.A.E. Minister of State for Food Security, the U.S.-U.A.E. Business Council led a delegation of ten innovative U.S. companies on a five-day food security trade mission to the U.A.E. in February 2020. This mission connected leading U.S. agtech developers, including AeroFarms, CropBox, CropOne, and HerdX, with major U.A.E. private and public sector stakeholders. Delegates learned about the U.A.E.'s priorities in developing a sustainable food security ecosystem and explored partnership opportunities.



Irrigation

Given its arid climate and scarcity of water, the U.A.E. is also interested in irrigation solutions that minimize water waste and ensure efficiency. As such, the government has explored desalinization technologies and smart irrigation systems in partnership with companies from around the world.

In April of 2020, the Abu Dhabi Investment Office announced a partnership with Responsive Drip Irrigation (RDI), a company that creates plant-responsive technology for hyper-arid climates. FoodTech finalist Red Sea Farms also holds promise in this regard, as it enables use of saltwater for irrigation. Notably, the U.A.E. will also look to collaborate with Israel, a leader in arid climate irrigation, following the signing of the Abraham Accords normalization agreement between the two countries.



PepsiCo Leads Industry in Water Conservation

PepsiCo, a food and beverage industry leader, has taken critical steps to advance sustainability through water conservation, water-use efficiency measures, clean transportation, and the procurement of recycled plastic for beverage packaging. In a 2018 sustainability report, PepsiCo outlined several specific and measurable goals to increase the sustainability of its operations. Among these goals, PepsiCo aims to "replenish 100% of the water it consumes in its manufacturing operations and improve its operational water-use efficiency," through "water recycling and reuse, alternative crop rotation/tree planting, and providing smallholder farmers with access to drip irrigation and other water saving technologies." In October 2019, PepsiCo issued a Green Bond in line with its sustainability agenda and has since put billions towards such initiatives.

Looking Ahead

In the coming years, the U.A.E. will continue to support the development of innovative agtech in pursuit of greater self-sufficiency and overall security. The coronavirus pandemic and the effects of climate change make these goals critical to the success of the U.A.E. as a nation as it looks to provide for not only its own inhabitants but also its neighbors and global partners. Food security is poised to remain at the top of the U.A.E.'s national agenda.

Partnerships with U.S. companies are key to this effort and will support the U.A.E. as it works to achieve its ambitious goals. In a seminar that the Business Council hosted for its members with Her Excellency Mariam Almhairi, the U.A.E. Minister of State for Food Security noted that the U.A.E. turns to the U.S. for its expertise, experience, and innovation in the field. Moreover, she specified future areas of cooperation including joint ventures in the agricultural/water sectors, R&D in areas suitable to the U.A.E.'s climate of "sea, sand, and sun," and collaboration in capacity building and development of local expertise.

Given the extensive opportunities for U.S.-U.A.E. agtech collaboration, the topic made its way on the agenda for both the 2019 and 2020 U.S.-U.A.E. Economic Policy Dialogues. Moreover, it is part of the U.S.-U.A.E. Strategic Dialogue that was launched by the two governments in October 2020. Drawing on this framework, the Business Council stands ready to help U.S. and U.A.E. companies identify opportunities for deeper and broader bilateral collaboration in the agtech sector.



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