

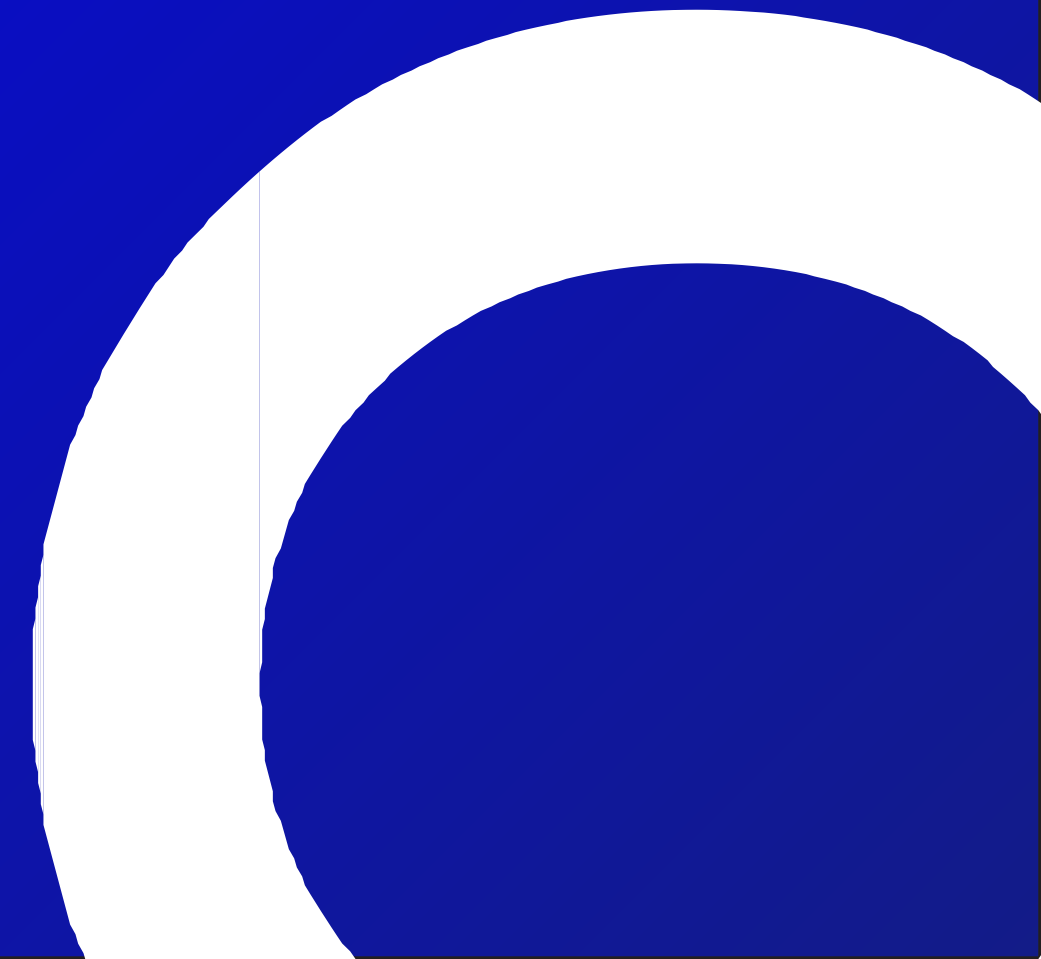


Agritech Startups Transforming Agriculture in MENA

A whitepaper by  investopia

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INTRODUCTION

The MENA region is a difficult environment for agriculture. In the MENA region, only one-third of the total land area is agricultural land (comprising cropland and pastures), with a mere 5% classified as arable cropland. The remaining land is predominantly urban or arid desert. Due to the dry climate, approximately 40% of the cropped area in the region necessitates irrigation.

A major concern in the MENA region is its increasing reliance on international markets for essential staple food products, as arable land and water resources become more scarce. Overall, the region exhibits the lowest level of food self-sufficiency, is the world's largest food importer, and faces the most significant water deficit. In the 2022 Global Food Security Index (GFSI), Syria and Yemen ranked among the bottom three countries globally. Excluding Gulf Cooperation Council (GCC) countries, year-over-year trends up to 2020 indicate a deteriorating situation.

In response, governments have implemented measures to conserve water, including banning the cultivation of water-intensive crops like wheat and green fodder. The demand for food in the MENA region is rising, driven primarily by population growth and increasing incomes.

As the UAE and other countries within the MENA region focus on strengthening their agricultural ecosystems, agritech, the fusion of technology with agriculture, is revolutionizing how farming is approached in the region. Agritech startups are rising to prominence as they focus on making food production more efficient and sustainable in the wider region. This is bringing a wide range of technologies and novel farming systems into the limelight. These range from indoor and precision farming to insect and microalgae production.



Recognizing the importance of agritech in addressing the challenges around food security and sustainable farming, governments are focusing on directing increased investment toward the sector. The potential for breakthroughs in how food crops are produced and marketed can dramatically improve crop yields and food nutrition values.

The Covid-19 pandemic accelerated the adoption of digital technologies and innovative models across all industries, giving rise to new agritech models. Innovations like biotechnology, the Internet of Things (IoT), e-commerce, precision farming, and climate-smart agriculture have shown significant potential to enhance the sector's overall sustainability and resilience to external shocks. These advancements also contribute to reducing food loss and waste (FLW) and greenhouse gas (GHG) emissions.

Investopia aims to encourage and accelerate investments in the agriculture sector by fostering collaborations and amplifying the MENA region's commitment to investing in agritech.

CURRENT STATE OF AGRITECH STARTUPS

The global agritech market is expected to reach \$22.6 billion by 2025, fueled by the adoption of advanced technologies and the increasing demand for food traceability and security. In 2021, venture capital investors injected \$51.7 billion into AgriTech start-ups, an 85% increase compared to 2020.

The MENA region's quest for food self-sufficiency has acted as a stimulus for regional production and, in turn, the development of the regional agritech market. MENA governments recognize the critical importance of food security for long-term stability and prosperity. Egypt's Vision 2030, launched in 2016, outlines the country's goals to strengthen its agricultural sector—employing nearly 20% of the workforce—by integrating more advanced technologies. In Qatar, the Qatar Environment and Energy Research Institute (QEERI) leverages the research-policy nexus to develop solutions for food security. Working in conjunction with the Ministry of Environment and Climate Change, QEERI provides access to locally developed technologies in line with Qatar's National Vision 2030.

Agritech companies have experienced significant global growth and are gaining traction in the MENA region. Between 2018 and 2021, agritech investments in MENA achieved a compound annual growth rate of 122%, with funding surging since 2020. The sector is poised for continued steady growth, with aggregated funding in the MENA region rising to \$250 million in 2022 from \$97 million in 2021. Although agritech venture capital in MENA is still relatively small compared to other regions, the region's share of global agritech investments increased to 4% in 2022 from 1% in 2021.

Saudi Arabia and the UAE have prioritized improving food security in their national strategies, and are at the forefront of agritech development in the region. In Riyadh, the government leverages private and public partnerships to invest in agritech innovations, aligning with the Kingdom's Vision 2030 plan. For example, Wa'ed, the venture capital arm of Saudi Aramco, invested \$18.5 million in Saudi agritech startup Red Sea Farms, which employs technology to cultivate produce in harsh, water-scarce environments. Additionally, Natufia Labs, which created the world's first "smart" indoor garden, relocated from Estonia to Saudi Arabia in 2021, attracted by the Kingdom's emphasis on science and technology and its commitment to investing in innovative technologies. In the UAE, the government is heavily investing in agritech companies to reduce imports through vertical farming, hydroponics, and patented technology that monitors harvests. The Abu Dhabi Investment Office (ADIO) established a \$200 million fund to support a range of early-stage companies over the coming years, significantly increasing its investment in 2022.



OPPORTUNITIES FOR INVESTMENT

Within the MENA region, the Middle East has become a hotbed of agritech innovation. The emphasis on sustainability and reducing water usage has driven the adoption of advanced technologies such as drip irrigation, hydroponics, and vertical farming. This shift towards high-tech and innovative solutions has created an ideal environment for agritech products.

The MENA region boasts some of the highest mobile penetration rates globally, creating a fertile environment for applying mobile technology in agriculture. By 2025, smartphone connections are projected to exceed 500 million, driven by the adoption of more affordable devices. As smartphones become more accessible to smallholder farmers, smart farming applications will no longer be confined to large agricultural enterprises.

The UAE has been making significant investments in developing its agriculture sector, particularly in vertical farming and hydroponics. To support the country's food security goals, the UAE government has introduced several initiatives aimed at promoting the import of advanced technologies, including agritech. One such initiative is the Dubai Future Accelerators (DFA) program, an innovation platform that connects government entities with global technology startups to develop and implement innovative solutions, with the aim of becoming a regional food hub.

Of the agritech startups that have succeeded in the MENA region, Pure Harvest, a leading sustainable technology-enabled agritech business, is a prominent one. It recently raised \$180.5 million in its latest funding round. While it operates in the Middle East at present, it has plans to establish new markets across Asia soon.

Another successful startup has been Red Sea Farms, which allows farmers to crop using primarily salt water. In April 2022, the company raised its most recent funding of \$ 18.5 million. Egypt-based Mozare3, which was founded in 2020, is another example. It aims to provide over 20 million farmers in Egypt with access to credit and market solutions. In 2021, Mozare3 managed to attract \$ 1 million in a pre-seeding round.



Mozare3
Farmers' Partner



**RED SEA
FARMS**



مؤسسة دبي للمستقبل
DUBAI FUTURE FOUNDATION

KEY SECTORS FOR INVESTMENT

A key area for investment within agritech is precision farming, particularly drones, sensors and data analytics. The agriculture sector is being revolutionized by the use of drones for crop monitoring, with farmers being able to increase productivity and yield by using advanced sensors and monitoring. According to Goldman Sachs, the agriculture sector is projected to become the world's second-largest user of drones within five years. The MENA region is expected to lead in agricultural drone adoption, and for good reason. In MENA countries, drones have become an invaluable tool for precise data capture in soil testing, crop counting, and irrigation management. This is due to the low percentage of arable land and the fact that many countries in the region still use groundwater at rates that exceed their renewable internal freshwater resources. The region requires a rainfall of 400-600 mm annually for crop cultivation, but irrigation is required to sustain yields. In this context, by utilizing the latest mapping accuracy techniques and advancements in automation, farmers can accurately evaluate their land and its needs with the assistance of drones. Specifically, drones can be used to monitor and manage irrigation systems, allowing farmers to ensure their crops receive the appropriate amount of water at the right time, thus optimizing irrigation systems.

Another important area for investment is smart irrigation systems that encourage the efficient use of water. With climate change exacerbating the MENA region's water scarcity issue, there are increasing challenges and opportunities for agritech to provide effective solutions. The challenges are particularly pronounced in the MENA region, which has 7 percent of the world's population but only 1 percent of its freshwater resources. In this region, across 25 countries, approximately 83 percent of the 500 million people utilize more than 80 percent of the renewable water supply.

For agritech innovators and startups, the challenge ahead is daunting yet potentially highly rewarding. According to a World Bank report, by the end of this decade, the annual per capita water availability in the MENA region will fall below the absolute water scarcity threshold of 500 cubic meters per person. The report estimates that by 2050, an additional 25 billion cubic meters of water per year will be required to meet the region's needs. This is equivalent to constructing 65 desalination plants the size of Saudi Arabia's Ras Al Khair plant, the largest in the world.

AI-powered smart irrigation systems will advance to become more sophisticated, adapting in real-time to changing environmental conditions to ensure precise water usage in agriculture. Moreover, AI-driven predictive models will facilitate proactive measures to address water quality issues and detect potential infrastructure vulnerabilities.

The third area for investment in agritech is supply chain and logistics, where innovations can promote farm-to-market efficiency and create sustainable agri-food supply chains. As agrifood value chains evolve, investments in small-scale farmers, climate-crisis adaptation and access to technology are necessary to meet food demands in both rural and urban areas and develop resilient agrifood systems. This includes addressing spatial inequalities and ensuring equitable access to food and nutrition resources.



STRATEGIC RECOMMENDATIONS FOR INVESTORS

Current investment trends in agritech demonstrate a strong interest in technologies such as artificial intelligence, IoT for precision farming, and biotechnologies aimed at crop enhancement and protection. Investors are particularly focused on solutions that promote sustainable farming practices, data-driven decision-making tools, and supply chain innovations. These areas are attracting substantial capital due to their potential to deliver high returns by boosting agricultural productivity and improving resource management through technological advancements.

A review of growth areas in the agritech industry reveals that precision agriculture and sustainable practices are particularly appealing to ag tech investors. These sub-sectors provide environmental advantages, cost reductions, and enhanced yields for farmers, making them highly attractive investment opportunities. With the rising global demand for food and the increasing necessity for sustainable agricultural practices, these trends are likely to persist, encouraging additional investment in the sector.

In 2019, the UAE introduced the \$272 million AgTech Incentive Programme via the Abu Dhabi Investment Office, providing a three-year incentive package for agritech companies developing solutions in desert agriculture. The programme focuses primarily on indoor farming technology, precision agriculture, agricultural robotics, and algae-based biofuels. Given that government support is available in these areas, they may be areas of interest for investors too.

Private investors must also look to nurture partnerships with public organizations in order to bring down costs so that agritech technologies are financially attractive at scale. Within a public private partnership (PPP) model for agriculture, a startup ecosystem can drive emerging tech innovations and agile business models, while universities and research institutions can contribute domain-specific agricultural expertise and validate solutions for large-scale deployment.

The PPP model will help startups that lack scale due to the significant costs associated with serving small farmers and allow them to build financially feasible distribution systems. These partnerships encourage innovative financial models, such as green bonds and sustainable sukuk, to fund sustainable agritech products.



CONCLUSION

Food security is integral to the global pursuit of increased productivity, reduced waste, and sustainable production practices. The impacts of climate change, supply chain disruptions, and shifts in land usage and agricultural outputs have intensified the demand for innovative techniques and solutions. Propelled by private investments and technological advancements as part of the Fourth Industrial Revolution (Industry 4.0), agritech has gained significant momentum. It is a critical sector in the MENA region now given the scarcity of both arable land and water there.

By adopting technology, encouraging innovation, and promoting collaboration, MENA nations can overcome challenges and seize opportunities to create a more prosperous and resilient agricultural sector, ensuring access to sufficient, safe, and nutritious food for all.

IoT connections, water efficiency and reuse technologies, precision farming, and supply chain and logistics are key areas for investment within the agritech industry.

As investors seek to invest in the MENA region's growing agritech industry, they must capitalize upon PPPs and focus on initiatives that are pioneering sustainable and innovative agricultural solutions. These include agritech innovations such as precision agriculture, hydroponics, and AI-driven farming techniques that reduce waste, optimize resource use, and promote sustainable farming practices, ensuring long-term agricultural productivity.

The time to invest in agritech is now. As the global population continues to grow, the demand for food security, sustainable practices, and innovative agricultural solutions is more urgent than ever.



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