

AgriTech in the UAE Industry Landscape Q3 2022



July 2022



# AgriTech in the UAE Industry Landscape Q3 2022

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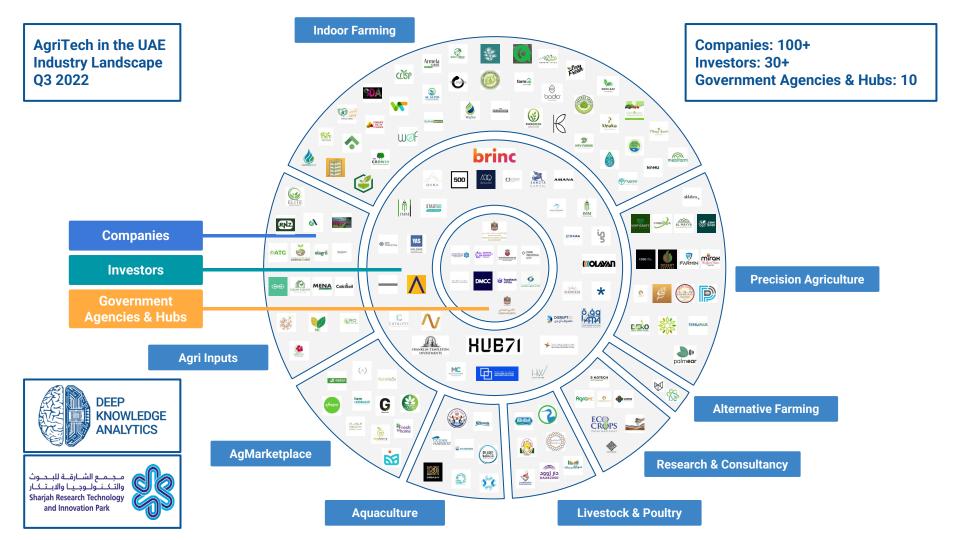
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#### Introduction

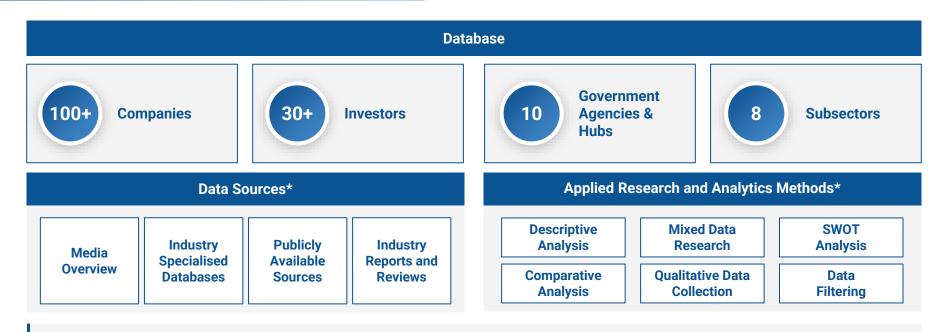
AgriTech in the UAE Industry Landscape Q3 2022 summarises vital observations in the AgriTech ecosystem of the UAE, a rapidly evolving and growing industry. Based on the assembled and analysed data, the report reveals vital features, trends, innovations, technologies, and market size, among other perspectives. The analytics of the report are based on information about 150+ organisations, including 100+ companies selected by sector, 30+ investors, 10 Government Agencies & Hubs.

Our report offers a wealth of valuable information and analysis on the major opportunities, challenges, and trends that are currently shaping the AgriTech sector. Drawing on extensive research across a variety of primary and secondary sources, this comprehensive report provides unique insights into topics investments in the UAE's AgriTech sector, product innovations, automation, food security initiatives, and much more.

Why is AgriTech crucial for the UAE? The UAE currently imports more than 85% of its food, and events such as the pandemic have demonstrated that improving food security is a priority. The country's government has been quick to recognise its importance and has acted decisively to push towards more self-sustaining practices. Now, the UAE aims to harness the innovation and export it to the world.



## **Report Methodology and Approach**



Containing a comprehensive overview of the AgriTech Industry in the UAE, the report relies on various research methods and analytics techniques. Deep Knowledge Analytics is not responsible for the quality of the secondary data presented herein; however, we do our best to minimise possible risks by cross-checking data and using different analytics techniques. Please note that we did not deliberately exclude certain companies from our analysis due to the data-filtering method used or difficulties encountered. In fact, the main reason for their absence was incomplete or missing information in the available sources.

### **The Global Challenges**

#### **Increased Food Consumption**

The world's population is expected to grow to almost 10 billion by 2050, boosting agricultural demand by 50% compared to 2013<sup>1</sup>.

Rising living standards are also resulting in increased consumption of meat, fruits, and vegetables, which are more costly to produce than cereals and grains.

#### **Climate Change**

Agriculture both contributes to, and is affected by, climate change.

Agriculture currently accounts for 70%<sup>2</sup> of water use and the world's food systems are responsible for more than one-third of global anthropogenic greenhouse gas emissions<sup>3</sup>.

#### Food Waste

1/3 of food produced globally is either lost or wasted.

This amounts to about 1.3 billion tons per year, worth approximately \$1 trillion.

In developing countries, 40% of losses occur at post-harvest and processing levels.<sup>4</sup>

Without expanding agricultural frontiers at the expense of technology it is impossible to meet the future demand for food. The UAE's AgriTech plans help meet the global food challenge, driving down costs and showing which technologies work.

### **Executive Summary**

The AgriTech market has developed into a robust ecosystem in recent years. The start-up developed solar, cooling, and Alled monitoring technologies, enabling them to grow food using saltwater, rather than freshwater, as the primary input.

The UAE considers food security to be essential to the security and wellbeing of its citizens and residents. In 2018, the UAE launched its National Food Security Strategy to increase production by 30-40% in 10 years.

In the UAE, about 36% of the AgriTech market belongs to the Indoor Farming subsector. The second and the third biggest types are Precision Agriculture and Agri Inputs, with a 15.9% and 15.0% share, respectively. 65% of AgriTech companies are micro-sized enterprises with fewer than 50 employees.

The UAE's plan is for half the food consumed in the Emirates to be produced locally by 2051, compared to 20% today. While the UAE's production might account for a tiny percentage of global agricultural production, the implications of this plan go well beyond national borders. The transference of technologies from temperate regions to regions closer to the equator has historically been limited due to the drastic differences in agro-climatic conditions.

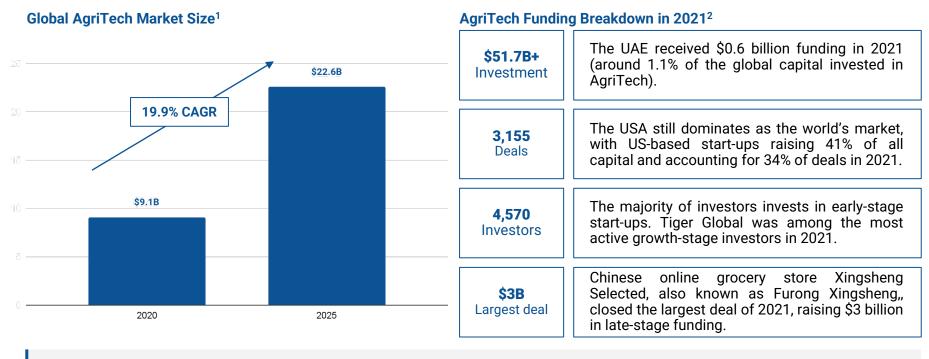




# AgriTech Industry Overview and Investment Landscape



# **Global AgriTech Industry Overview**

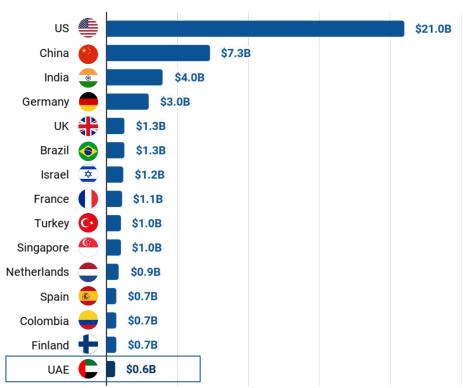


The global AgriTech market is projected to reach \$22.6 billion by 2025, driven by the adoption of advanced technologies and demand for food traceability and security. Venture capital investors pumped \$51.7 billion into AgriTech start-ups in 2021 (+85% compared to 2020). Funding to e-grocery ventures grew an astounding 188% over 2020 and claimed more than a third of all AgriTech investments.



# **Global AgriTech Industry Overview**



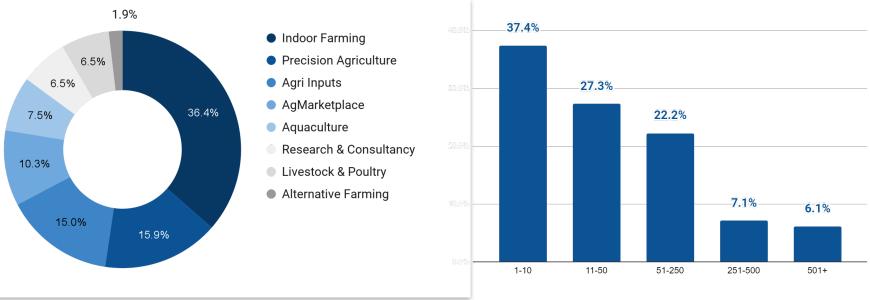


- The UAE closed 22 investment deals in 2021 with a total value of \$0.6 billion, which ranks 15th of all countries worldwide.
- US-based companies accounted for 41% of investment capital and 34% of deals.
- Of the \$7.3 billion raised by Chinese AgriTech ventures,
  75% went to the e-grocery category.
- India is home to more than 450 AgriTech start-ups, growing at a 25% CAGR, with FarmTech having emerged as vital to the future of Indian agriculture and food systems.
- Israel's cultivated meat start-ups were particularly successful in raising capital, attracting the highest amount of funds.
- Germany overtook the UK as the top AgriFood investment market in Europe. Some 70% of the \$3.3 billion raised went to just two companies: instantgrocery delivery start-ups Flink and Gorillas.

Deep Knowledge Analytics Sources: (1) AgFunder

# The State of the UAE's AgriTech in 2022





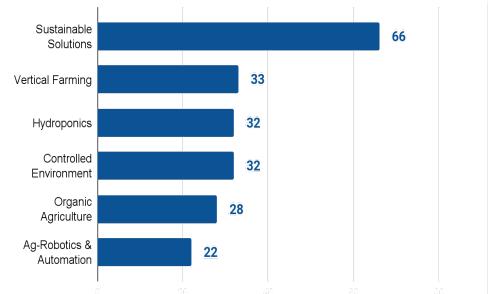
Indoor Farming is the largest category, comprising 36.4% of all analysed companies. This subsector includes such companies as <u>Aranya Farms</u> and <u>Merlin Farms</u> aiming to produce agricultural products indoors. The second and the third biggest types are Precision Agriculture (e.g. <u>Verticroft and Silal</u>) and Agri Inputs (e.g. <u>RNZ International</u> and <u>MENA Agro and Feed</u>), with a 15.9% and 15.0% share, respectively. According to research, 65% of AgriTech companies are micro-sized enterprises with fewer than 50 employees.

Deep Knowledge Analytics Sources: (1) DKA Database



# The State of the UAE's AgriTech in 2022





Technologies and Solutions Used in AgriTech

Vertical Farming	Hydroponics	Ag-Robotics & Automation
Artificial Intelligence	Blockchain	Remote Sensing
Intelligent Data Analysis	Internet of Things	Machine Learning
BioTech	Real-Time Cameras	Hydro Membrane Film
Fogponics	Audio Engineering	Satellite Imagery

Sustainability is under the spotlight for UAE start-ups: 66 companies address technologies to reduce food waste and greenhouse gas emissions. The UAE has the potential to be a major player in the vertical farming space because of its climate and the government support for such AgriTech innovations.

# **Notable UAE AgriTech Start-Ups**











	Pure Harvest Smart Farms	Madar Farms	Farmin	The Platform	Palmear
	Producer and supplier of farm produce using hydroponic techniques	Manufactures and operates shipping container-based indoor hydroponic farms	Provider of Al-based farm monitoring solutions	Provider of IoT-based precision farming services to farmers	Provides technology solutions using AI and acoustics to detect pests in agriculture
Founded Year	2016	2017	2019	2017	2019
Location	Abu Dhabi	Dubai	Masdar City	Dubai	Abu Dhabi
Funding	\$272M	n/a	n/a	n/a	n/a

# **Notable UAE AgriTech Start-ups**









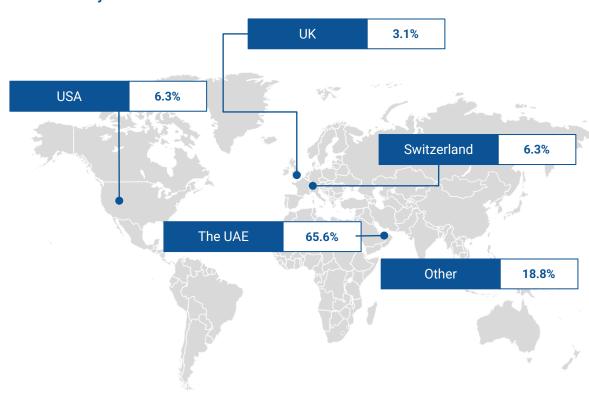


	Hat Bazar Apps	Globalfandb	FarmUnboxed	Right Farm	Krispr Farms
	App-based marketplace platform offering agricultural products	Platform offering B2B grocery supplies	Digital marketplace connecting sellers and buyers dealing in agricultural commodities	B2B ecommerce and supply-chain company, sourcing food directly from farmers for foodservice businesses	Operators of vertical aeroponic farming systems sustainable production of leafy greens
Founded Year	2020	2020	2020	2021	2017
Location	Dubai	Dubai	Dubai	Dubai	Dubai
Funding	n/a	n/a	n/a	\$2.8M	n/a



# **AgriTech Investors in the UAE**

#### Investors by Countries<sup>1</sup>



The UAE's favourable climate and infrastructure make it an ideal location for AgriTech companies, and the government is supportive of the sector through initiatives such as the Dubai Industrial Strategy 2030. With a strong foundation in place, the AgriTech sector is poised for continued growth in the coming years.

The AgriTech sectors show the inherent prevalence of the UAE investors' share in terms of investor representation. Currently approximately 66% of investment into the UAE AgriTech companies comes from UAE-based investors. The three other significant investor counties are the USA, Switzerland, and the UK.

The rest of the investment comes from Kuwait, Saudi Arabia, and the Asia and Pacific (APAC) region.

Deep Knowledge Analytics Sources: (1) DKA Database



### **Remarkable Investment Deals in 2022**



\$180 million, the smart farming solution



\$2.8 million, agriculture technology start-up

UAE start-ups accounted for 26% of all deals closed across the MENA region and 45% of all funding raised in  $2021^{1}$ .

In June 2022, UAE-based <u>Pure Harvest Smart Farms</u> raised \$180.5 million in its biggest ever fundraising. The firm, which already has farms in the UAE and Saudi Arabia, will use the funds to expand in the Middle East and enter new markets in Asia<sup>2</sup>. It already has farms in the UAE and Saudi Arabia, and will use the funds to expand in the Middle East and enter new markets in Asia.

In April 2022, Right Farm, a UAE agriculture technology start-up that sources fresh produce for the food and retail sector, raised \$2.8 million in a seed funding round led by DisruptAD, the venture capital platform of Abu Dhabi's holding company ADQ, and Enhance Ventures, a VC studio for Middle East, North Africa, Pakistan and Turkey (MENAPT)<sup>1</sup>.



# Initiatives and Incentives in the UAE

#### **Government Initiatives**

# Appointment of the Minister of State for Food Security



with the aim of increasing domestic food production by 30% and giving the local food processing industry the ability to triple output.

#### \$100 Million Investment by Abu Dhabi Investment Office<sup>2</sup>



to bring four agriculture technology companies to the Emirates (AeroFarms, Madar Farms, RNZ, and RDI).

# Launch of the National Food Security Strategy 2051<sup>1</sup>



to achieve zero hunger by ensuring access to safe, nutritious, and sufficient food all year round throughout the world and implement resilient agricultural practices that increase productivity and production.

# **Establishment of the AgriTech Sector Development Team**



public and private sector stakeholders from the agricultural technology sector. The team's vision is to see the success of groundbreaking AgriTech projects, one example being growing rice in the Sharjah desert.



# **National Food Security Strategy**

#### **National Food Security Strategy**

Launched in 2018 to increase production by 30-40% in 10 years.

#### Vision

Becoming a world-leading hub in innovation-driven food security by 2051.

#### **Strategic Directions**



Facilitate global agribusiness trade and diversify international food sources;



Reduce food loss and waste;



Enhance sustainable technology-enabled domestic food supply across the value chain;



Enhance capacity to respond to food security risks and crises;



Sustain food safety and improve nutritional intake.

#### **Key Objectives to Achieve Food Security:**

- Make the UAE the world's best in the Global Food Security Index by 2051.
- Develop a comprehensive national system based on enabling sustainable food production through the use of modern technologies.
- Enhance local production: The UAE's plan is to have half of the food consumed in the Emirates produced locally by 2051, compared to 20% today<sup>1</sup>.
- Develop international partnerships to diversify food sources.
- Activate legislation and policies that contribute to improving nutrition.
- Activate legislation and policies to reduce waste.

The Russian invasion of Ukraine and almost 4 months of war have disrupted global food supplies, exposing the fragile state of food security across much of the Middle East and North Africa. Thanks to this strategy, the UAE still imports 80% to 90%<sup>2</sup> of its food.



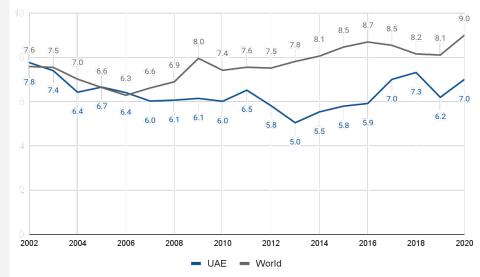
# National Food Security Strategy Driving the UAE's AgriTech Revolution

**UAE reduces food imports below global average.** The country is making progress towards greater food security. Over the past 20 years, it has reduced food imports as a proportion of total merchandise imports, remaining below the global average since 2006.

**Embracing and nurturing AgTech is a priority for the Abu Dhabi government.** Last year, ADIO announced more than AED500m in incentives to bring global AgTech pioneers to Abu Dhabi, as part of its overall AED2bn Innovation Programme under Ghadan 21.

Technology will be fundamental to finding a new way forward for agriculture. Agricultural organisations report a range of advantages that come from using IoT (e.g. improved operational efficiencies, enhanced insight and decision-making, cost reduction). With efficiency being top of Abu Dhabi's objectives for agriculture, the value of this technology is unmatched.<sup>1</sup>

#### Food Imports (% of merchandise imports), 2002–2020<sup>2</sup>





# **Smart Farming to Achieve Food Security**

UAE, as a country that imports 85% of its food, focuses on interventions to improve the efficiency of its farms to achieve self-sufficiency.



'Smart farming is the way forward to achieving food security', said Mariam Al Mheiri, the UAE Minister of Climate Change and Environment and Minister of State for Food Security.<sup>1</sup>

#### Smart Farming in the UAE<sup>2</sup>

177

advanced farms that use modern agricultural technologies and hydroponics.

1,000

hydroponic farms, up from 50 in 2009.

100

entities that are focused on organic farming.

#### Growth of Food Trade Thanks to AgriTech Solutions<sup>1</sup>



increase in food trade in 2021, total value reached \$15.9 billion.



growth of exports from the Emirates and reach \$2.9 billion in 2021.



increase of re-exports, \$2.2 billion in 2021.

The steady growth of the UAE's F&B exports is a good sign of the country's maturing food manufacturing sector and achieving self-sufficiency in the agriculture sector.



# **Global FoodTech Challenge Prize to Attract AgriTech Solutions**

\$2M

In April 2022, the UAE announced the \$2 million Global FoodTech Challenge Prize to attract cutting-edge AgriTech companies<sup>1</sup>.

UAE is looking for solutions to revolutionise:



#### **Food production:**

start-ups will be required to showcase solutions for improving food security and developing next-generation nutrient-rich alternatives to imported crops that are no longer sustainable.



#### Food loss and waste:

developing technologies that encourage sustainable agricultural practice within the entire food supply chain.

The challenge is supported by:



UAE Ministry of Climate Change and Environment;



Tamkeen LLC, an Abu Dhabi-based company that develops the area's social, cultural, and educational sectors through partnered projects with regional and global organisations;



The Advanced Technology Research Council that manages R&D funding across the UAE;



Silal, a company improving food distribution models in the UAE;



Emirates Foundation, a charity set up by the government of the Emirate of Abu Dhabi.

# **Upcoming Events 2022-2023**



Global Vertical Farming Show 27-28 Jul 2022, Dubai



20-24 Feb 2023, Dubai

#### **ICABR 2022**

July 28, 2022 Dubai, AE

ICABR

28 Jul 2022, Dubai



Agra Middle East Exhibition 5-26 Oct 2022, Dubai

#### **ICAAS 2022**

August 15, 2022 Dubai, AE

#### ICAAS

15 Aug 2022, Dubai

#### **ICMAT 2022**

November 08, 2022 Dubai, AE

#### ICMAT 8 Nov 2022, Dubai

#### **ICAAIT 2022**

September 29, 2022 Dubai, AE

#### **ICAAIT**

29-30 Sep 2022, Dubai

#### ICRTMDAFA 2022

December 20, 2022 Dubai, AE

#### **ICMAT**

20 Dec 2022, Dubai



# **Key Trends and Innovations**



# Four Trends Shaping AgriTech Growth in 2022

#### **Hydroponics and Vertical Farms**

Minimal water usage is a benefit for this region, along with the ability to control the environment using the right equipment. Hydroponics and vertical farms enable year-round operation.

#### **Alternative Crops**

Sea asparagus, for example, is rich in nutrients and can quite easily be grown here. A couple of companies in Dubai are already starting to explore the potential.

#### **Greening the Desert**

Dubai-based AgriTech start-up Desert Control's revolutionary liquid natural clay technology that transforms deserts into fertile land is set to transform the agriculture sector in the Middle East and beyond.

#### **Alternative Proteins**

The UAE has already made significant progress in this area, with a number of companies working on developing plant-based meat and other alternative proteins. The UAE is also investing in research to develop new methods of producing protein.



# **Hydroponics and Vertical Farming**

#### **Vertical Farming**

**Badia Farms** was the first vertical farm to open its doors in Dubai. The 8,500 sq. ft warehouse uses hydroponic technology to grow in-demand microgreens and herbs for local restaurants. Projects like Badia Farms hope not only to close the gap between the farm and table but also help Dubai become globally recognised as a fruit and vegetable producer.

Dubai Industrial City is home to Badia Farms' new large-scale high-tech vertical farm. Emirates Flight Catering (EKFC) and Crop One are also co-investing \$40 million to build the world's largest vertical farming facility near Al Maktoum International Airport at Dubai World Central. The project is a joint venture with US-based Crop One Holdings, the world's leading vertical farm operator.

#### **Hydroponic Farming**

The UAE has prioritised the use of hydroponic technology among farmers who rely on nutrient-rich water to grow plants with the use of little or no soil. This revolutionary method reduces water usage by up to 70%, while avoiding harmful chemicals and allowing for a longer growing season.

Emirates Hydroponics Farms (EHF) between Abu Dhabi and Dubai is among the country's largest hydroponic agricultural producers, and their hydroponic experts include Pegasus AgriTech in Dubai.









# **Food Tech Valley — A Smart Food City**

The UAE s is building a new smart city focused on agriculture and food production for its desert climate.1





The project is being developed by Wasl Properties

The project was launched in May 2021, 18 million square

#### The Food Tech Valley will be:



Advanced smart food logistics hub

**R&D** facility

**Agricultural technology** and engineering

Food innovation centre



An integrated modern city that develops alternative proteins, creates drought-resistant crops, and uses 3D technology and robots.



A producer of over 300 varieties of crops, using modern farming techniques and the latest agri-technologies.



A global destination for start-ups and industry experts to four main clusters.

# **Cutting-Edge Technologies in the AgriTech Industry**

#### **Robotics**

The global Food Robotics market was valued at \$1.5 billion in 2019 and is expected to reach \$3.2 billion by the year 2027, at a CAGR of 11.5%1.

In modern competitive business, the role of robots is becoming significant for industrial applications. Two important motivators for using robots in the industry are the reduction of human interference and the increase of productivity.

Shortages in manpower led the global industry to use more robots and enhanced the annual growth rate of robots globally.

#### Al

The Artificial Intelligence component of the food and beverage market was valued at \$3.07 billion in 2020 and is expected to reach \$29.94 billion by 2026, at a CAGR of over 45.77% during the forecast period (2021-2026)<sup>2</sup>.

One great example of AI in the AgriTech sector is project 'GAIA', designed to be a bold example of harnessing technology to make the desert green again. 'GAIA' is an AI-driven AgriTech incubator that can improve productivity yields up to 30% — using self-sustaining automated technology, without using hazardous chemicals, in a controlled indoor environment without the need for electricity and water.

#### Blockchain

The global blockchain in agriculture and food supply chain market size was estimated at \$133 million in 2020; it is projected to grow at a CAGR of 48.1% to reach \$948 million by 2025<sup>3</sup>.

Blockchain technology is expected to bring multiple benefits to the multiple players in the food industry. First, supply chains can revitalise their management and handling as they will have detailed information on member profiles, which provides a higher level of certainty over the safety of food. Proof of this is delivered to the consumer by implementing QR codes and product labelling.



# **Growth Outlook and Key Takeaways**

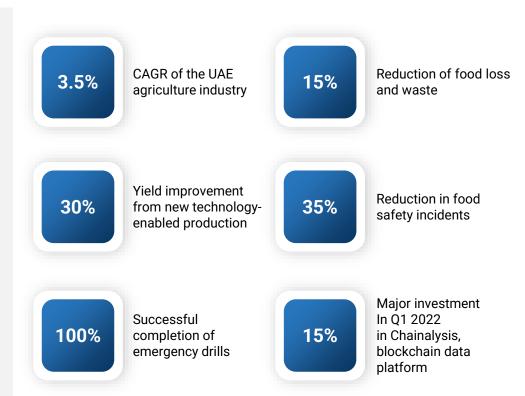
# **Looking Ahead: AgriTech in the UAE**

Agriculture in the UAE is projected to register a CAGR of 3.5% during the forecast period of 2022-2027.<sup>1</sup>

Abu Dhabi agricultural technology company Silal is upgrading 80 farms with new smart monitoring and irrigation technology and training farmers on how to use them amid a broader push for food security in the UAE. Silal plans to invest \$54 million in the programme over 2 years and is aiming to improve sustainable agriculture across local farms, boost crop yields, and contribute to the national AgTech strategy.<sup>2</sup>

The National Food Security Strategy 2051 drives further technological improvements to achieve strategic goals:<sup>3</sup>

- 15% reduction of food loss and waste;
- 35% reduction in food safety incidents;
- 100% successful completion of emergency drills;
- 15% increase in production of select strategic food items;
- 30% yield improvement from new technologyenabled production.



# **Key Takeaways**



AgriTech is particularly vital to the UAE's ability to produce food locally, given the region's arid climate. Start-ups within the AgriTech ecosystem are actively developing solutions they hope will be a key part of the country's food security strategy.



The harsh climate of Dubai makes food security a constant concern and a controlled indoor farming system is a solution. In 2018, it launched its National Food Security Strategy 2051, aiming to ensure access to safe, nutritious food through resilient and sustainable agricultural practices. In June 2020, the Cabinet approved the National System for Sustainable Agriculture to improve the efficiency of farms and enhance self-sufficiency, including cutting annual water consumption by irrigation by 15%.



Indoor Farming is the largest category, comprising 36.4% of all analysed companies. The second and the third biggest types are Precision Agriculture and Agri Inputs, with a 15.9% and 15.0% share, respectively. According to research, 65% of AgriTech companies are micro-sized enterprises with fewer than 50 employees.



It is no wonder that Abu Dhabi is increasingly recognised by international investors and innovators as a global AgTech hub: the ideal location from which to help drive forward the future of agriculture and address some of the biggest challenges facing the world's population.



In the coming years, the UAE will continue to support the development of innovative AgriTech 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 UAE as a nation as it looks to provide not only for its own citizen but also for its neighbours and global partners. Food security is poised to remain at the top of the UAE's national agenda.

# FoodTech Dashboard: Dynamic 360° Views of the Industry Ecosystem



# For companies

# Market Research and B2B Matching Tool

- Obtain competitor analysis, product and market research;
- Find partners or service providers that specialise in your niche.





# For investors

# Locate Start-Ups and Take a Closer Look at Them

- Browse FoodTech startups, scale-ups, and public companies to invest in or work with;
- Analyse industries and companies of interest;
- Monitor updates in real time.

# **Deep Knowledge Analytics Dashboards**

#### **Dashboard Overview**

Deep Knowledge Analytics is building a sophisticated cloud-based engine for advanced market and business intelligence in various DeepTech industries. This includes a data-mining engine, infrastructure for expert data curation, and advanced visualisation dashboards, containing mind maps, knowledge graphs, and 3D visualisations. The dashboard can be developed with a varied industrial and regional scope and stands as an interactive tool for advanced data visualisation, which allows for the user-friendly experience.

**Machine Learning for database Dynamic SWOT analysis representing Smart matching tool** extrapolation evolution of a company Machine Learning and deep neural **Interactive industry mind-maps Companies database** networks for companies clusterisation Machine Learning Real-time investments data analytics Investor database for COVID-19 predictions platform for DeepTech corporations **Governmental programmes for digital Longevity Industry financial SWOT** analysis companies database instruments analytics

# **Stay on Top of the Latest Intelligence**



#### **Events**





Panel Discussion 7 June, 2022 3:00 PM BST

# **About Deep Knowledge Analytics**

<u>Deep Knowledge Analytics</u> is a DeepTech-focused agency, an analytical subsidiary of <u>Deep Knowledge Group</u>, that produces advanced analytics on DeepTech and frontier-technology industries. It uses sophisticated multidimensional frameworks and algorithmic methods that combine hundreds of specially designed and specifically weighted metrics and parameters to deliver sophisticated market intelligence and pragmatic forecasting and tangible industry benchmarking.



# About Sharjah Research, Technology, and Innovation Park

Established in 2016 by royal decree of H.H. Sheikh Sultan Bin Muhammad Al Qasimi, Ruler of Sharjah, United Arab Emirates, **Sharjah Research**, **Technology and Innovation Park Free Zone** (**SRTIP**) aims to develop and manage an innovation ecosystem that promotes Research and Development and supports enterprise activities and the triple helix collaboration of industry, government and academia.

مـجـمـع الشــارقــة للبــحــوث والتــكـنــولــوجــيـا والابــتــكـار Sharjah Research Technology and Innovation Park







Link to the Report: www.dka.global/agritech-uae-q3-2022

E-mail: <u>info@dka.global</u> Website: <u>www.dka.global</u>

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