

Agri-tech & Food Security in the GCC

Covid-19 Response Report

In collaboration with



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Global Challenges

The availability, sufficiency and nutritional value of food supplies are the main pillars of food security. The concept is linked to the second of the 17 UN Sustainable Development Goals, which seeks to end hunger by 2030 by improving agricultural productivity and fostering sustainable food production systems. According to the US-based World Resources Institute, by 2050 the demand for food will be 56% higher than it was in 2010 as a result of population growth and changes in diets and income. The world will need to feed an estimated 2bn more people by that year, a 25% increase from today's global population.

The challenges of addressing rising food demand globally have been evidenced by the supply uncertainties of recent years linked to unpredictable economic, geopolitical and climatic events. This underlines the need for accelerated agricultural production in many countries to ensure supply closer to home.

When looking to emerging markets, GCC countries are considered among the most food secure in the Global Food Security Index 2021, compiled by Economist Impact. However, the region lacks direct control over the majority of its food supply and remains dependent on imports.

GCC members imported about 85% of their food prior to the Covid-19 pandemic. Indeed, almost all rice consumed in the region was imported, as well as around 93% of cereals, 62% of meat and 56% of vegetables, according to consultancy strategy&. When international supply chains are severely disrupted – as was the case during the pandemic – this reliance on imports leaves countries vulnerable to shortages.

What is more, climatic conditions create significant food security challenges for the Gulf, which is characterised by water scarcity and a lack of arable land. Food security

is under additional pressure due to the adverse impacts of climate change on crop, livestock and fisheries production worldwide, reducing food availability and access. The agriculture sector is already dealing with the impacts of climate change in the form of greater variations in rainfall, drought and other extreme events that make life more unpredictable for farmers and impact agricultural production and quality.

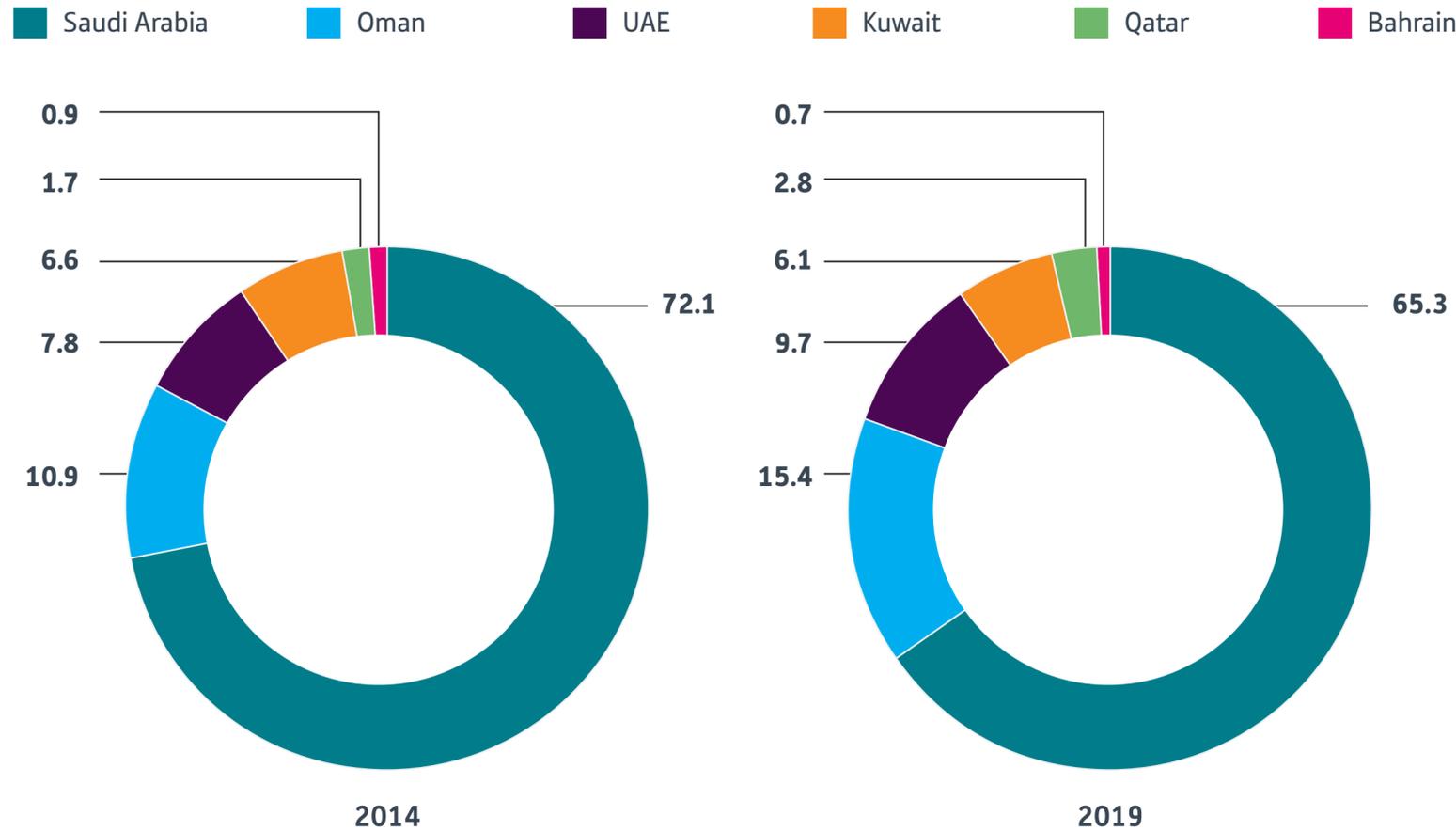
At the same time, food production is contributing significantly to harmful emissions. Agricultural output and food processing are responsible for approximately 11% of global greenhouse gas emissions. This rises to 30% when food distribution and land use are included. An effective approach to food security therefore requires not only adapting to climate change, but also devising sustainable methods of production and stored supply that do not exacerbate the climate challenge over the long term.

Global Food Security Index 2021

Country	Global ranking (out of 113)	Overall score (out of 100)
Qatar	24	73.6
Kuwait	30	72.2
UAE	35	71
Oman	40	70
Saudi Arabia	43	68.5
Bahrain	44	68.1

Regional Strategies

Distribution of food produced in the GCC (%)



GCC countries have adopted several strategies in recent years to increase domestic agricultural production and hedge against disruptions to imports. A common component of these strategies has been water management, with all GCC members developing their capacity for desalination. In 2018 the UAE inaugurated the world's largest reserve of desalinated water to bolster domestic water resources. The man-made aquifer buried under the Liwa Desert holds about 26bn litres of water and can supply residents with around 100m litres of water per day. Elsewhere, treated wastewater is used to irrigate certain crops. Kuwait and Saudi Arabia reuse about 50% of their wastewater, and Bahrain and Qatar reuse 10-15%, according to RAND Corporation.

When it comes to boosting agricultural output in the harsh climatic conditions of the Gulf, alternative crop varieties are being adopted. For example, the Kuwait Institute for Scientific

Research and the International Centre for Biosaline Agriculture in Dubai conduct advanced research to develop drought- and saline-tolerant crop varieties. Direct support for farmers is another common feature of food security plans. In 2019 Saudi Arabia initiated a programme to help small farmers switch to organic farming as part of a goal to bolster organic output by 300% by 2030. The Saudi authorities also inaugurated the Sustainable Agricultural Rural Development Programme in 2019 to boost the production, processing and marketing of fruit, fish, livestock and Arabic coffee, as well as the systematic cultivation of rain-fed crops.

Other GCC members have similar programmes. In Qatar the State Food Security Projects 2019-23 plan aims to make the country 70% self-sufficient in eggs and greenhouse-produced vegetables, 95% self-sufficient in fresh fish, and 100% self-sufficient in fresh dairy products, poultry and shrimp by 2023.

Pre-Pandemic Progress

In 2019 the GCC consumed some 42.9m tonnes of food, with the two largest countries by population – Saudi Arabia and the UAE – accounting for a combined 75% of food consumption. While food imports are high to cover needs due to limited water and arable land, the GCC countries’ relatively robust fiscal positions derived from hydrocarbons wealth make them less vulnerable to price risks and food shortages than other net food importers.

Policy interventions by GCC governments, such as diversifying import sources, enhancing efficiencies in logistics and distribution, building adequate food reserves, and offering incentives to food investors to scale up production and supplies, were having a positive impact prior to the Covid-19 pandemic. The public and private sectors strove to optimise production capabilities by adopting agricultural practices such as greenhouse cultivation, aquaponics,

hydroponics, seawater farming and vertical farming, as well as deploying solutions related to remote sensing, data analytics and artificial intelligence to bolster efficiency.

Efforts to increase domestic agricultural and livestock production have seen GCC countries reach food security but not yet food self-sufficiency. Domestic food production in the GCC met 31.3% of regional demand in 2019, up from 24.9% in 2014, according to Dubai-based investment bank Alpen Capital. Between 2014 and 2019 the region’s domestic food production grew at a compound annual growth rate (CAGR) of 4.3%, exports increased by a CAGR of 4.8% and net imports fell by a CAGR of 2.1%, illustrating the progress GCC countries have made towards their food security and production goals. Prior to the pandemic the region had a collective self-sufficiency rate of 94% for fish, 79.8% for dairy products, 70% for eggs, 42.9% for fruits, 42.2% for vegetables, 41.1% for meat and 6.3% for cereals.

Cereals continue to be the most consumed food category in the GCC. The cereal import dependency ratio – the ratio of imported to domestically consumed cereal – was over 90% in Oman and more than 95% in Kuwait, Saudi Arabia and the UAE. Nevertheless, net imports of cereals across the region decreased by a CAGR of 4.8% between 2014 and 2019. The vulnerabilities inherent in the Gulf’s continued reliance on imported cereals were underlined in early 2022 after the Russian invasion of Ukraine led to severe disruptions to global supplies. Combined, those two countries account for 29% of the world’s wheat supply, with Russia alone responsible for 47% of the UAE’s wheat imports in 2019.

Conversely, fruit production has been a top-performing category in recent years, increasing by a CAGR of 10% between 2014 and 2019. This was driven by higher productivity among farmers and more harvesting and marketing of newer varieties, including organic fruit.

Distribution of food produced in the GCC (%)



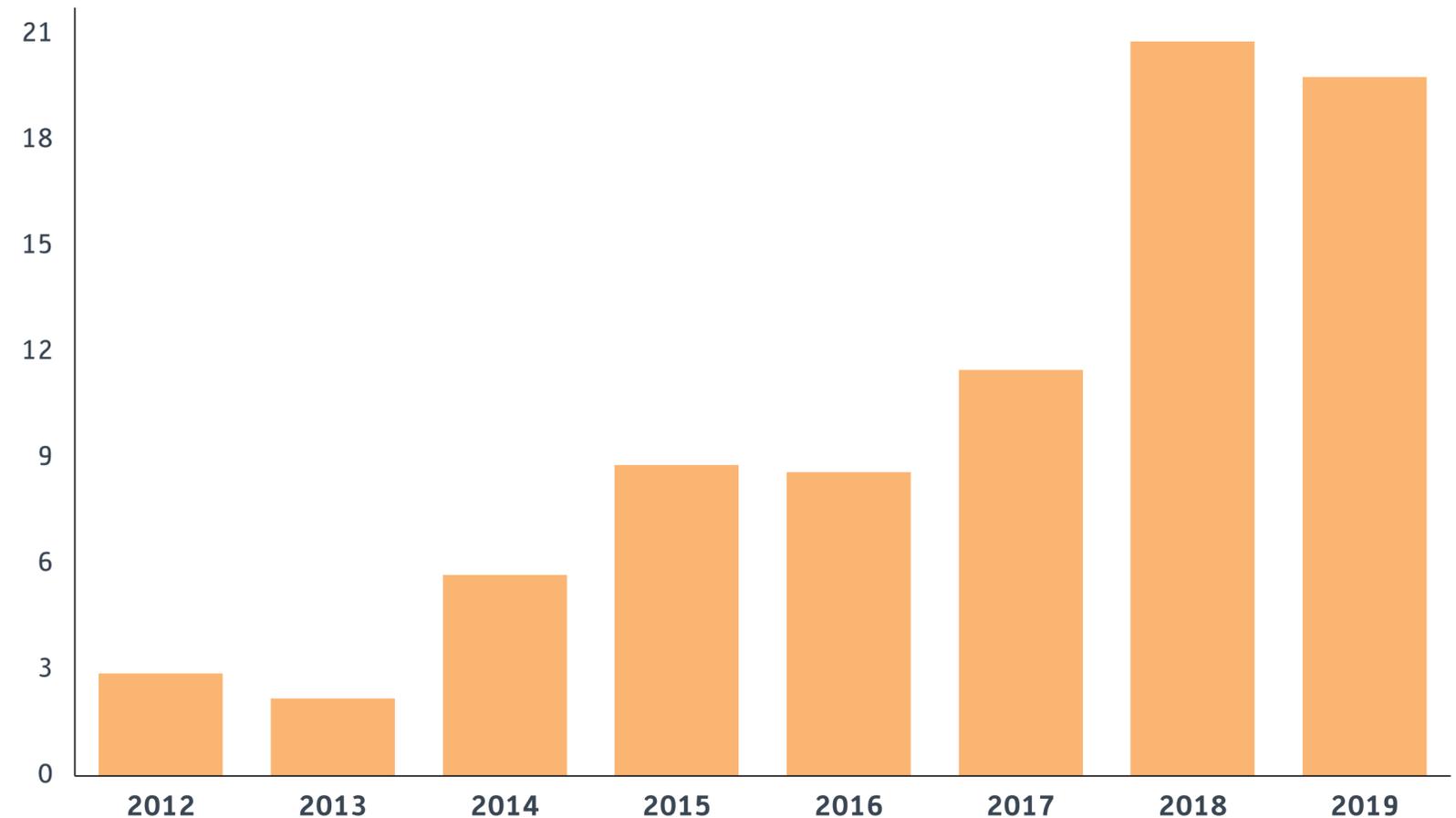
Innovation Ecosystem

Technological innovation has been central to boosting the output of vegetables, cereals and fruits in desert conditions. Supported by enabling ecosystems, a number of agri-tech start-ups have emerged in recent years to address regional food production challenges. Such start-ups are increasingly able to access large pools of capital channelled into incubators and accelerators by Gulf governments seeking to stimulate growth in the agri-tech segment and devise domestic solutions to food security through public-private partnerships. From 2014 to 2020, 33 deals related to agri-tech start-ups in the wider MENA region attracted some \$250m in investment; a large portion of this was raised in 2020 as policymakers accelerated efforts to boost domestic resiliency in the face of global supply chain disruptions. One notable pre-pandemic example of agri-tech innovation is Dubai-based Badia Farms. Since its inception in 2016 the firm has raised more than \$5m to establish the first

high-tech indoor vertical farm in the Gulf that produces fruits and vegetables year-round using hydroponic growing techniques. Another notable company is Saudi Arabia's Red Sea Farms, which optimised venture capital from the King Abdullah University for Science and Technology Innovation Fund in 2017 and 2019, before tapping more diverse public and private funding from the Gulf and beyond in 2021 to scale up its saltwater- and sunlight-farming technology.

Efforts have also been made to promote institutional research and development. For example, the International Centre for Biosaline Agriculture in Dubai conducts applied research to improve agricultural productivity in marginal and saline environments. The centre has already introduced climate-smart and resource-efficient crops such as quinoa, pearl millet, sorghum and salicornia in several countries across Central Asia and MENA.

Annual global funding for agri-tech, 2012-19 (\$ bn)



Part 1: Resilience

Case Study



The Arab Organisation for Agricultural Development (AOAD) was established in 1970 by the Arab League as a regional organisation based in Khartoum, Sudan. It seeks to support the development and enhancement of each of the 22 member states' agriculture sectors, as well as promote coordination in matters relating to agriculture and food security. The AOAD has closely monitored the impact of the Covid-19 pandemic on agricultural production, access to essential food commodities and the overall socio-economic well-

being of rural communities. It has also advised on international measures to limit the effects of the crisis on the agriculture sector, with special consideration to disruptions to shipping and transport, and the risks posed to food exports by trade restrictions. With strategic food stocks across the Arab region ranging from three to 12 months, any long-term disruption to critical food trade flows would have serious consequences for the region: the basic food gap amounts to approximately \$32bn, with 50% of the gap concentrated in cereal crops.

Beyond short-term risks, the AOAD states that the combined effect of the economic slowdown and the pandemic – which has negatively impacted the income of farmers due to movement restrictions and disruptions to the procurement of inputs – will lead to a rise in poverty and undernourishment of about 8.3m and 2m people, respectively, in the Arab region. With food security coming to the fore, the AOAD is currently working on the implementation of the third phase of the Emergency Programme for

Arab Food Security, which began in 2011. Efforts are aimed at increasing Arab self-sufficiency ratios in major food products to hedge against risks stemming from climate change and natural disasters, as well as disruptive political and economic events. The AOAD has transformed the programme into a sustainable one for Arab food security, and it will be presented at the Arab summit for approval. Through the Arab Sustainable Agricultural Development Strategy 2020-30, the AOAD aims to foster a competitive, sustainable and resilient agriculture sector capable of covering food needs and supporting economic growth and social development in rural communities. This will require a multi-pronged approach to tackle the following objectives: transforming and adapting agricultural and food systems; applying comprehensive sustainability governance schemes to safeguard resources and ecosystems; improving infrastructure and living standards in rural areas to retain population; strengthening frameworks for agricultural trade and investment; and deepening knowledge- and technical expertise-sharing to support decision-making.

“
The basic food gap in the Arab region amounts to approximately \$32bn, with around half of that figure concentrated in cereal crops
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Maintaining Supply

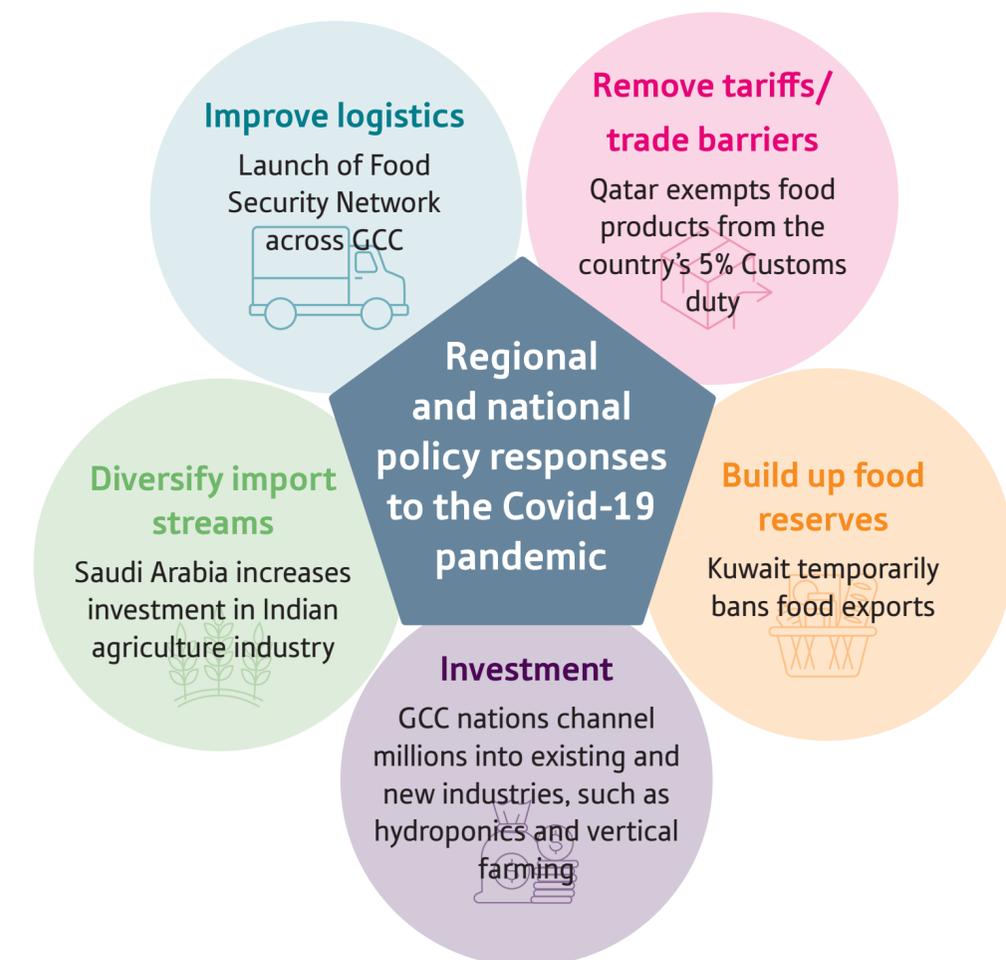
In a region that has historically imported up to 90% of its food, the GCC was aware of the possibility food shortages as the Covid-19 pandemic restricted trade and put pressure on global supply chains. In response to the crisis, GCC countries applied lessons learnt from past challenges, including the 2007-08 global food price crisis driven by the combination of rising oil prices, increased demand for biofuels and trade shocks in the food market. The rapid response to the pandemic was aided by the fact that GCC countries had been actively tackling the issue of food insecurity as part of their respective national development strategies.

The approach of GCC members to the challenge was multi-faceted: they diversified import sources; streamlined logistics and distribution networks; and focused on bolstering food reserves. For countries with an especially high import dependency, steps were taken either to eliminate tariffs on certain goods, or in extreme cases, to ban the export of certain categories. Qatar, for example, exempted all food products from the country's 5% Customs duty for six months, while signing deals with 14 major companies to increase stocks of strategic commodities like wheat, rice, cooking oils, sugar, frozen

red meat and milk. Kuwait, meanwhile, took a different approach by temporarily banning all food exports.

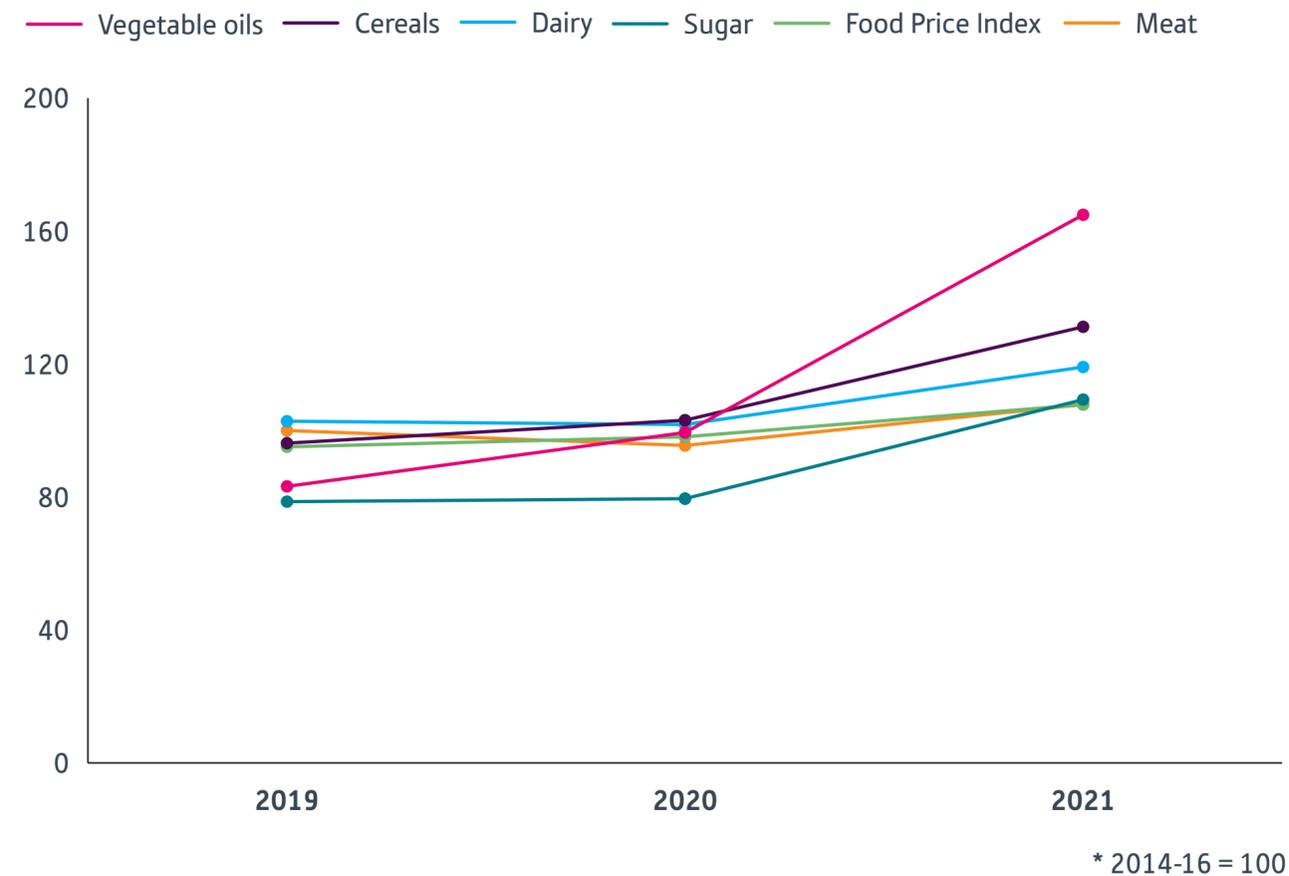
Saudi Arabia, the GCC's largest food importer, took a two-pronged approach to the challenge. It set up two funds worth a combined SR2.5bn – one focused on providing loan guarantees for exporters of key goods and the other directed towards local farmers. In addition, the state-owned Saudi Agricultural and Livestock Investment Company (SALIC) increased its investments in the Indian agriculture industry and launched the National Grain Company, which oversees the trade, handling and storage of grains between the Black Sea, Europe, South America and the Red Sea.

Across the GCC region there was a strong emphasis on working collectively to ease the impact of the crisis, as demonstrated by the unanimous decision to approve Kuwait's proposal to establish a cross-region Food Security Network in April 2020 to aid the rapid distribution of supplies. The Covid-19 pandemic also spurred domestic and foreign investment in agri-tech businesses to diversify imports and boost productive capacity among local firms and international partners.



Impact on Imports

Global food price indices, 2019-21*



As the Covid-19 pandemic struck there were fears that a disruption to global supply chains could heavily impact the food trade in parts of the world that are heavily dependent on imports, such as the GCC. Global food imports dropped by 5% in April 2020 and 10% the following month, but by June of that year global food trade flows had returned to pre-pandemic levels. This trend was seen in the GCC, facilitated by cross-regional efforts to diversify import destinations.

It is worth noting that over the five years leading up to the pandemic, food imports and import dependency in the GCC had been declining as Gulf nations worked to tackle the issue of food insecurity. As a result, net imports for the GCC declined at an annual rate of 2.1% from 2014 to reach 29.5m tonnes in 2019.

Similarly, the proportion of net imports to total consumption also fell in the region, from 75.1% in 2014 to 68.7% in 2019. Import dependency only increased in Qatar – although import sources had changed significantly because of the trade embargo imposed by Saudi Arabia, the UAE, Bahrain and Egypt from 2017 to early 2021.

Saudi Arabia, for its part, managed to buck the overall trend at the start of the pandemic. Although the Kingdom's exports were hit heavily in the three months from March to May 2020, its imports fell less than the global average. Notably, throughout the first six months of 2020 Saudi Arabia's imports remained higher than in the same period in 2019. To head off any import shortfalls, the Kingdom took steps such as increasing its investment in the Indian agriculture industry, with state-owned SALIC buying a 29.9% stake in Daawat Foods in May 2020.

Despite the initial shortfalls in imports in the Gulf overall, the Covid-19 pandemic was not marked by a flurry of protectionist trade measures on foodstuffs, unlike in the 2008-09 food crisis. However, one of the big challenges faced by import-dependent GCC nations was that of food price inflation, as the increased freight and shipping charges began to impact the price of imported goods. In total, food prices rose by 24% from the beginning of 2020 to June 2021, reflecting the impact of pandemic-induced supply chain disruptions. In terms of individual commodities, cereals contributed the most to inflation, while there was no major change in meat prices.

Domestic Production

As part of efforts to boost food security in the region, food production in GCC countries had been on the rise before the onset of the pandemic. Between 2014 and 2019 domestic food production across the GCC expanded at a compound annual growth rate (CAGR) of 4.3% to reach 13.4m tonnes at the end of the period. Saudi Arabia was responsible for 65.3% of the region's total production during that period. However, Qatar recorded the fastest growth rate, with production increasing by a CAGR of 15.2% over the five years. This was mainly driven by the need to enhance self-sufficiency as a result of the regional trade embargo imposed in 2017.

The increase in domestic production was one of the central reasons why certain GCC countries showed significant improvements in food security in the years leading up to the pandemic. For example, the Global Food Security Index by the Economist Group ranked the UAE and Qatar 21st and 13th, respectively, out of 113 countries in 2019, an improvement on 30th and 20th places in 2016. However, the UAE dropped to 35th and Qatar to 24th in the 2021 rankings, largely as a result of the temporary shocks to supply chains in the initial months of the pandemic.

Although GCC countries have attempted to reduce their reliance on cereal farming due to the water-intensive nature of production, it remains an important food category in the region, accounting for 41.1% of total consumption. Data from the UN Food and Agriculture Organisation, however, shows a marked contrast in the Covid-19 pandemic's impact on cereal production in the Gulf. Due to its large land mass, Saudi Arabia is the region's main grain farming country, with production volumes remaining largely consistent between 2019 and 2020. However, in the UAE and Kuwait cereal production dropped significantly over the same period, while, conversely, production levels nearly tripled in Oman.

Poultry production is another important segment of the regional food trade. In this segment a clear trend has emerged in recent years, with various countries looking to increase production and decrease imports. Poultry production in Saudi Arabia, for example, was forecast in December 2021 to increase from 900,000 tonnes in 2020 to 920,000 tonnes in 2021, while imports were estimated to drop from 640,000 tonnes to 547,000 tonnes. Similar trajectories were recorded in Kuwait and the UAE.

GCC cereals production, 2015-20 (000 tonnes)



Investment Inflows

The onset of the pandemic triggered a flurry of investments in agriculture, agri-tech and food manufacturing across the region as GCC countries sought to head off a potential food shortage while accelerating plans to improve food security, primarily led by their respective sovereign investment funds.

Abu Dhabi led the way in the early stages of the pandemic, accelerating pre-existing plans to develop an agri-tech ecosystem. In April 2020 the Abu Dhabi Investment Office invested \$100m into four agri-tech companies to develop their presence in the region, including US-based firm AeroFarms, which plans to build a 8400-sq-metre indoor vertical farm in the UAE. Sovereign wealth fund ADQ, meanwhile, signed a number of deals to boost food security in the country, including the purchase of a 50% stake in regional agri-business giant Al Dahra and a 45% stake in merchant firm Louis Dreyfus, which comprises a long-term agreement to sell agricultural commodities to the UAE.

Other GCC members were also quick to make new funding available. For example, Saudi Arabia increased funding to the national \$5bn Agriculture Development Fund by \$666m to support local farmers and facilitate imports, while in May 2020 state-owned SALIC acquired a 29.9% stake in Indian group Daawat Foods for \$17m. SALIC subsequently said that it would continue to invest in the Indian agricultural ecosystem.

Meanwhile, Kuwaiti sovereign investment fund Wafra made \$100m available for food-tech investments. It pumped an initial \$10m into Abu Dhabi-based vertical farming venture Pure Harvest Smart Farm's \$20.6m Series A funding round, and has plans to invest up to a total of \$100m to support the expansion of the company's farms.

Oman was also highly active, with a range of investments made in the agriculture sector over the course of 2020. Most of these deals were carried out through the state-owned

Acquirer's country	Acquirer	Target	Target's country	Value (\$ m)	Stake (%)	Year
Bahrain	Investorp	Fortune International	US	105	NA	2020
	Investorp	Viz Branz	Singapore	NA	NA	2020
Germany	Delivery Hero	InstaShop	UAE	360	100	2020
Saudi Arabia	Savola Group	Bayara Holding	UAE	260	100	2021
	Almarai	Binghatti Beverages Manufacturing's production unit	UAE	58,5	NA	2021
	Almarai	Modern Food Industry	Saudi Arabia	39,9	15	2021
	Almarai	Bakemart	Bahrain, UAE	25,5	100	2021
UAE	Abu Dhabi Development Holding Company	Louis Dreyfus	Netherlands	NA	45	2020
	Al Ghurair Investment, Al Rajhi Holding Group, Masaf	Saudi Grain Organisation's Third Milling Company	Saudi Arabia	200	100	2021
	Al Ghurair Investment	Edible Oil Company	UAE	NA	100	2021
	Agthia Group	Al Faysal	Kuwait	NA	100	2021
	Agthia Group	Ismalia Agricultural and Industrial Investment	Egypt	NA	75	2021
	Agthia Group	Nabil Foods	Jordan	NA	80	2021
	Agthia Group	Al Foah	UAE	NA	NA	2021

Oman Food Investment Holding Company. For example, a \$100m agreement seeks to increase domestic capacity of edible oils by establishing the sultanate's first integrated oilseeds crushing and extraction plant at Sohar Port and Freezone. Following this, in January 2021 the government

signed a \$16.5m deal with Agricultural and Fisheries Development Company to develop a smart agriculture project in the province of Al Kamil W'al Wafi, which aims to increase the productivity of various vegetables, extend the length of production seasons, and raise the quality and safety standards of local food production.

Part 2: Response

Case Study



Tanmiah Food Company is a manufacturer and distributor of food and agricultural products, a distributor of animal feed and health products, and food brand franchise operator. Established in 1962 and headquartered in Saudi Arabia, the company employed over 2000 people as of end-2021. Tanmiah's products are primarily sold in Saudi Arabia, the UAE, Bahrain, Lebanon, Oman, Jordan and Kuwait. The company operates 91 farms as well as two feed mills, three food-processing plants, four slaughterhouses, six hatcheries, and 20 sales branches across Saudi Arabia, Bahrain and the UAE.

With a wide network of food service operators, wholesalers and retailers, as well as a direct-to-consumer online platform, Tanmiah has steadily captured a growing share of Saudi Arabia's poultry market. It increased its local sales of fresh chicken by 23% over the 2018-20 period, and by December 2021 had increased its retail market share by volume to 20.8%, up from 18.5% the year prior, according to NielsenIQ data. Although an increase

“ **From 2022 onwards Tanmiah plans to expand its business in line with the Kingdom's food security goals, which target 80% self-sufficiency in chicken** ”

in the price of grain used for chicken led to a squeeze on margins in 2021, the company's revenue expanded by 27% to SAR1.54bn that year, driven by continued growth in both the fresh poultry and further processing segments.

The higher input prices seen in the poultry industry during the Covid-19 pandemic coincided with a drop in demand from the hotels, restaurants and catering segment. However, Tanmiah's vertically integrated business model helped to mitigate the

effect of increased costs during this time. Prior to the health crisis, the company had enhanced its retail business by rolling out online distribution and expanding its line of chilled and frozen pre-cooked meats. When hotel, restaurant and catering sales decreased, Tanmiah capitalised on rising retail demand by shifting resources to its branded products and co-packing opportunities.

At the same time, having production facilities in both Saudi Arabia and the UAE allowed Tanmiah to react promptly to trade challenges. With food security a priority, governments in the GCC have accelerated local food production efforts. From 2022 onwards Tanmiah plans to expand its business in line with Saudi Arabia's food security goals, which target 80% self-sufficiency in chicken by 2025.

In August 2021 Tanmiah became the first poultry-focused producer to be listed on the Saudi Stock Exchange after a heavily oversubscribed initial public offering (IPO) that raised SAR402m.



Part 2: Response

Case Study



Demand for the shares from institutional investors totalled SAR38.3bn. This amounted to a coverage ratio of 9534%, which is higher than that of any IPO launched in Saudi Arabia prior to 2021. The capital will support capacity expansion in feed milling, and primary and further processing. “Tanmiah has a capacity to process some 370,000 chickens per day. Building on the momentum of recent years, the company targets upwards of 1m chickens per day in the medium term through effective cost-management practices and expanding our expertise of doing business in a harsh desert environment,” Zulfiqar Hamadani, CEO of Tanmiah, told OBG.

Tanmiah is also seeking to achieve greater economies of scale to ensure that poultry self-sufficiency does not depend on government subsidies in the medium to long term.

In 2020-21 Tanmiah received a total of 37 awards for attaining a high European Production Efficiency Factor score in the production of the

Ross chicken breed: 24 of the company’s breeder farms received the Ross 140 Club Achievement award, while 13 broiler farms received the Ross 400 Club Achievement certificate – with Tanmiah being the first company in Saudi Arabia to hold the latter. Tanmiah’s farm in Shaqra achieved a record production of 171.2 Ross 308 chicks per hen housed in 60 weeks, making it the most productive breeder farm in the world.

Together with boosting production, broadening the offer of processed meat would help Tanmiah tap into new revenue streams arising from consumer demand for healthier products. “Across our existing products, we will improve labelling, reduce salt content and boost nutritional value, while also expanding healthy options to ensure our product range matches the various budgets of GCC markets,” Steve Ross, director of value-added products at Tanmiah, told OBG. “Building on our experience in processing animal protein, we are also looking to expand in the ready-to-eat market.”



In line with Saudi Arabia’s climate targets, Tanmiah has developed an ambitious target to become carbon neutral in the medium term. As part of the Omnipreneurship sustainability initiative in September 2020, the company awarded \$1m for an innovative solution to transform chicken manure – of which it produces 51,000 tonnes per year – into a renewable source of added value for the company.

“Broadening the offer of processed meat would help the company tap into new revenue streams arising from consumer demand for healthier products”

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Self-Sufficiency Outlook

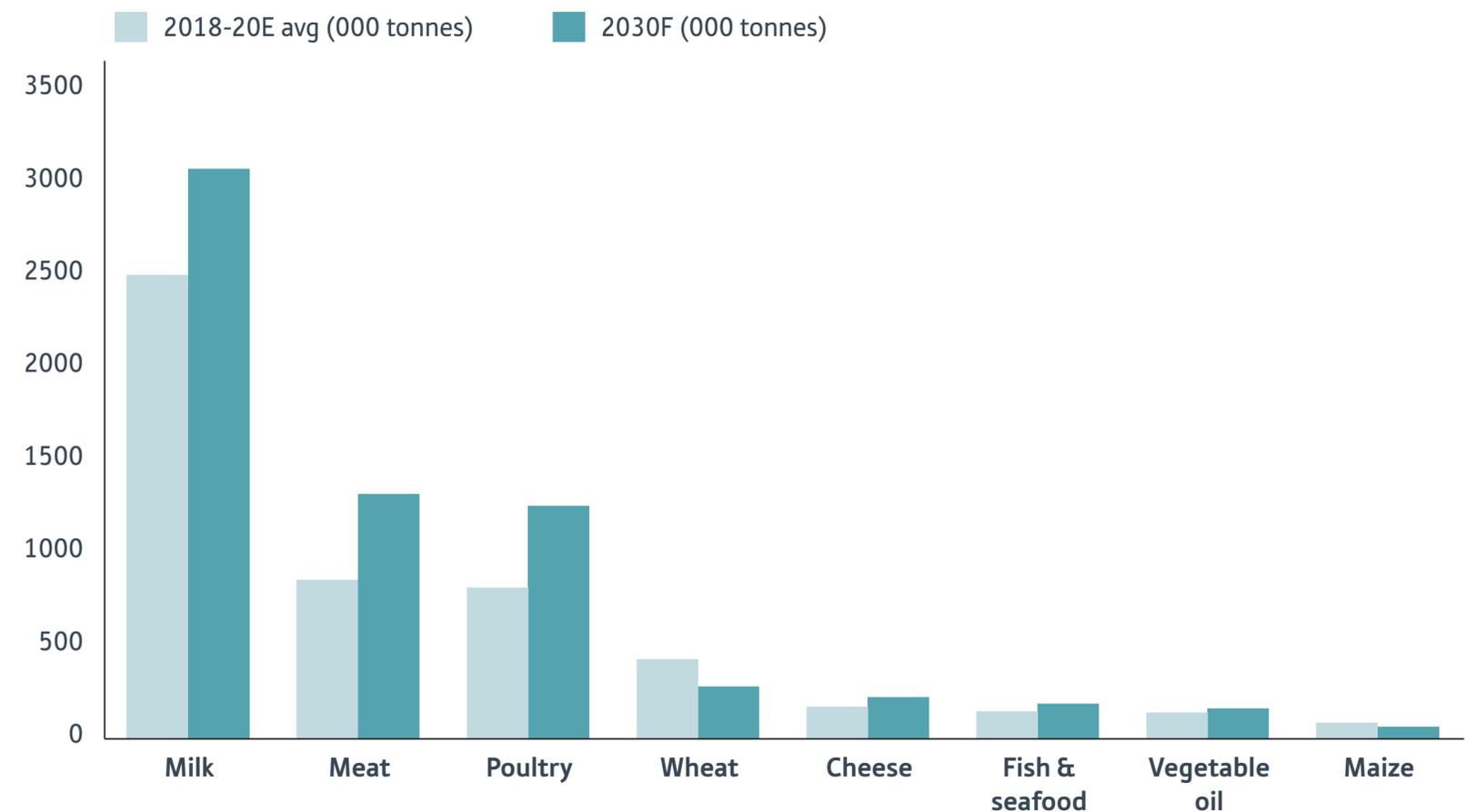
Even before the pandemic, the GCC had begun planning for a future in which more food was produced inside the region, in a bid to reduce reliance on foreign imports. These plans align with wider efforts by Gulf countries to diversify their economies away from hydrocarbons.

Saudi Arabia has set some of the most ambitious targets for domestic production over the medium term, having committed \$3.2bn to its Rural Development Programme through to 2025. By 2026 the Kingdom plans to raise coffee production from 300 to 2500 tonnes per year, quadruple rose stem output from 500m to 2bn, and produce 5 tonnes of caviar annually. Programme funds will also go to segments such as beekeeping and honey production, fruit production, and small-scale fish and livestock farming. The programme aligns with government-owned Saudi Agriculture and Livestock Investment's target to provide 30% of the Kingdom's food requirements from overseas investment by the end of the decade.

In Bahrain, meanwhile, focus has shifted from ensuring sufficient food reserves to increasing in-country production. For example, in 2021 the government earmarked 20 locations for the implementation of food security projects using hydroponics and aquaculture. The current proposals by the Ministry of Agriculture are projected to boost domestic production to cover as much as 60% of consumption.

Fisheries offers a case study of an industry undergoing rapid development. According to estimates by US-based Research and Markets, GCC fish production is set to grow at a rate of 7.2% in 2020-25, led primarily by developments in Saudi Arabia, the UAE and Oman. Since 2020 the UAE has invested more than \$50m to develop hatcheries and fish farms, while Oman has injected \$1bn into the sector, with the aim of producing 200,000 tonnes of fish in 2030-40. Saudi Arabia, for its part, plans to produce 600,000 tonnes of fish per year by 2030 – roughly 10 times the amount produced in 2017.

Production of main foodstuffs in Saudi Arabia



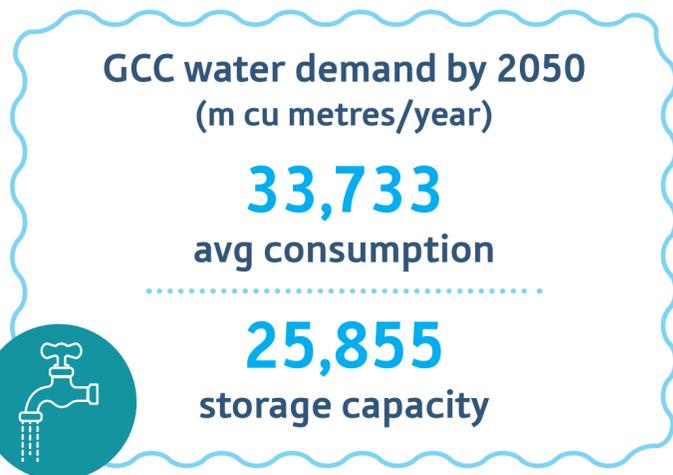
Regional Food Trade

Imports still have a role to play in food security mix due the Gulf’s location, climate and demographics. Food consumption in the GCC is predicted to rise from 46.8m tonnes in 2020 to 52.4m in 2025, for an annual growth rate of 2.3%, according to Dubai-based investment bank Alpen Capital. Water shortages could also become more widespread: by 2050 the population of MENA is expected to reach 700m, halving per capita water availability.

There is growing evidence that GCC members are increasingly working together to improve food

resilience. Traditionally, countries have focused on forming strategic partnerships and investing in the agricultural industries of large food producers in sub-Saharan Africa and the Indian subcontinent. An example of the growing appetite for intraregional investment is Saudi Arabia’s Red Sea Farms, which in June 2021 raised \$10m to develop commercial-scale farming facilities and expansion into the UAE. With GCC countries facing broadly similar challenges, there is hope that agriculture technology (agri-tech) innovations deployed in one country can be easily transferred to others.

Regional food trade will depend, in part, on geopolitical stability – as evidenced by the 6.8% compound annual growth rate in import costs in Qatar in 2014-19, following the economic blockade. Overall, however, the pandemic did not lead to a raft of protectionist trade measures in the region. Indeed, the more relaxed trade environment made necessary by the pandemic, exemplified by the removal of import tariffs on many foodstuffs, could provide a model as the GCC seeks to ensure long-term food security.



Case Study



Responsive Drip Irrigation (RDI) was established in the US in 2013 and now spans 40 countries. RDI has patented the world’s first plant-responsive irrigation and fertigation system, which allows plants to self-regulate water delivery through organic chemical processes centred on signals from a plant’s roots. This technology achieves significant water savings compared to other forms of irrigation, offering a solution for water-scarce regions in desert climates with non-arable land. With decreased water consumption and reductions in fertiliser use, increased crop yields of more than 50% have been achieved in harsh desert climates in outdoor fields and greenhouses.

From a financial perspective, though the tubing material is more expensive per linear metre, the infrastructure and overall system cost is equal to or less than other irrigation systems – notably when it comes to energy consumption,

fertiliser cost, labour and maintenance. This leads to a high return on investment and sustainable long-term efficiency.

Abu Dhabi is central to RDI’s global expansion plans. In 2019 the company participated in the emirate’s Global Forum for Innovations in Agriculture, winning the award for best innovation by a start-up. This facilitated a relationship between the Abu Dhabi Investment Office (ADIO) and RDI, with the latter selected as one of the four initial recipients of ADIO’s AgTech Incentive Programme. In March 2022 RDI opened its Nature and Water Conservancy Centre for Global Sustainability in Abu Dhabi. “As a result of the implementation of this technology in the MENA region, food security and the production of alfalfa and other fodder crops for livestock can be achieved while preserving precious water resources,” Jan Gould, CEO and co-founder of RDI, told OBG.

Part 3: Reinvention

Case Study



Alyasra Foods is a trader, marketer and distributor active across three segments: food service; consumer brands for retailers; and specialty groceries for end consumers. Based in Kuwait, it is present across the region – most notably in Kuwait, Saudi Arabia and Iraq.

Despite the large-scale disruption to global supply chains that was caused by the Covid-19 pandemic, Alyasra Foods did not experience any major business continuity issues thanks to the enhanced supervision of stocks and the reorganisation of procurement channels. While the lockdown restrictions and the resulting closure of restaurants impacted the food service industry, the company improved upon its previously established specialty groceries e-commerce system, which allowed Alyasra Foods to maintain income levels and cope with the increase in online shopping demand. The company considers omnichannel retail – sales through both physical stores and e-commerce – critical for its growth strategy. Beyond the sales weight of each channel, the firm highlights the value of combining both.

Indeed, Alyasra Foods is conscious of the trends set by industry giants, such as when Amazon acquired the supermarket chain Whole Foods in 2017. This hybrid approach is also reflected in debates about the sustainability of e-commerce and same-day delivery systems, since these can cause negative environmental impacts and traffic congestion, as well as generate operational and financial challenges. Therefore, Alyasra Foods favours an approach that emphasises profitable growth over competing for increased market share

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Countries and industry players in the Gulf should seek local competitive advantages that add real value for customers
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based on shorter delivery times only. This involves shaping consumers’ expectations and gauging the extent to which same-day delivery services provide value in each product category against the estimated financial and environmental costs.

Beyond distribution channels, Alyasra Foods understands that maximising the value for consumers through brand differentiation or price competitiveness should be at the core of its growth strategy. In this context, food traders’ competitive strategies require reaching a sufficient scale to negotiate bulk discounts with a diversified network of suppliers, developing a reliable, win-win relationship with each supplier that allows for price stability for all parties involved.

Alyasra Foods plans to continuously innovate and adapt its network of suppliers to the evolving market structure. It believes that, under the current regional drive for food production localisation, Gulf nations and industry players should seek local competitive advantages that add real value for consumers.

Mergers and Acquisitions

The pandemic saw a burst of investment in the food and agri-tech as GCC governments took steps to accelerate development. With several members – most notably the UAE – positioning themselves as potential leaders in agri-tech, the investment environment should remain attractive as countries actively seek to secure international funding.

According to UK viability assessor Agri-EPI Centre, the agri-tech industry will be worth \$170bn globally by 2025. In line with this trend, the Gulf region has



witnessed considerable merger and acquisition activity in the food industry in recent years, with Saudi Arabia, the UAE and Bahrain closing hundreds of millions of dollars in deals.

Saudi dairy giant Almarai made a flurry of acquisitions in 2021 to expand its product range – including Bakemart’s Bahrain and UAE bakery businesses for Dh93.5m, and Binghatti Beverages’ production centre in the UAE for Dh215m – as part of a SR7.1bn expansion plan for 2020-24. Meanwhile, in 2021 the Abu Dhabi Investment Office announced more than Dh500m in incentives to bring global agri-tech pioneers to the emirate, as part of its overall Dh2bn innovation programme under the accelerator initiative, Ghadan 21.

Food consumption in the GCC is shifting away from staple products and towards value-added, convenient and healthier alternatives, with pre-prepared options becoming increasingly popular. Acquisitions or joint ventures with international companies are two of the main options open to investors looking to tap into these trends.

Case Study



Founded in Dubai in 2019, Fresh on Table is committed to meeting the UN Sustainable Development Goals. It is a digital marketplace connecting local farms directly to hotel and hospitality businesses across the UAE. The company offers a streamlined platform that allows access to produce that is geographically close, while embedded monitoring technologies provide guarantees that such produce meets the buyer’s requirements. To ensure uninterrupted supply, the company has developed a resilient network of local farms that have sufficient capacity across product categories. Farmers, for their part, benefit from a larger pool of customers and access to a tech platform for managing their business.

By sourcing local produce, hotel and hospitality businesses lower the carbon footprint of their supply chains. This enhances

product appeal among environmentally conscious consumers, who constitute a growing premium demand segment. Aware of this commercial potential, Fresh on Table partners with well-established businesses such as the Hilton Group in their quest for responsible hospitality.

Initiatives such as Fresh on Table can strengthen food security across the UAE and the wider region. “By opening up the market for local produce, farmers have an incentive to expand operations and leverage technologies to boost volume and efficiency, which in turn supports the nation’s food security mission,” Atul Chopra, CEO and founder of Fresh on Table, told OBG. In the context of the UAE’s pledge to achieve net-zero carbon emissions by 2050, this growth in local food production could be achieved in line with national environmental targets.

ESG Trends

In the past few years GCC countries have set ambitious sustainability goals, dovetailing with plans to diversify away from fossil fuels. ESG considerations are highly relevant for agriculture given the threat posed by climate change. Indeed, in an area where water scarcity is a growing concern, finding ways to produce food at scale and in a sustainable fashion is one of the greatest challenges the GCC will face.

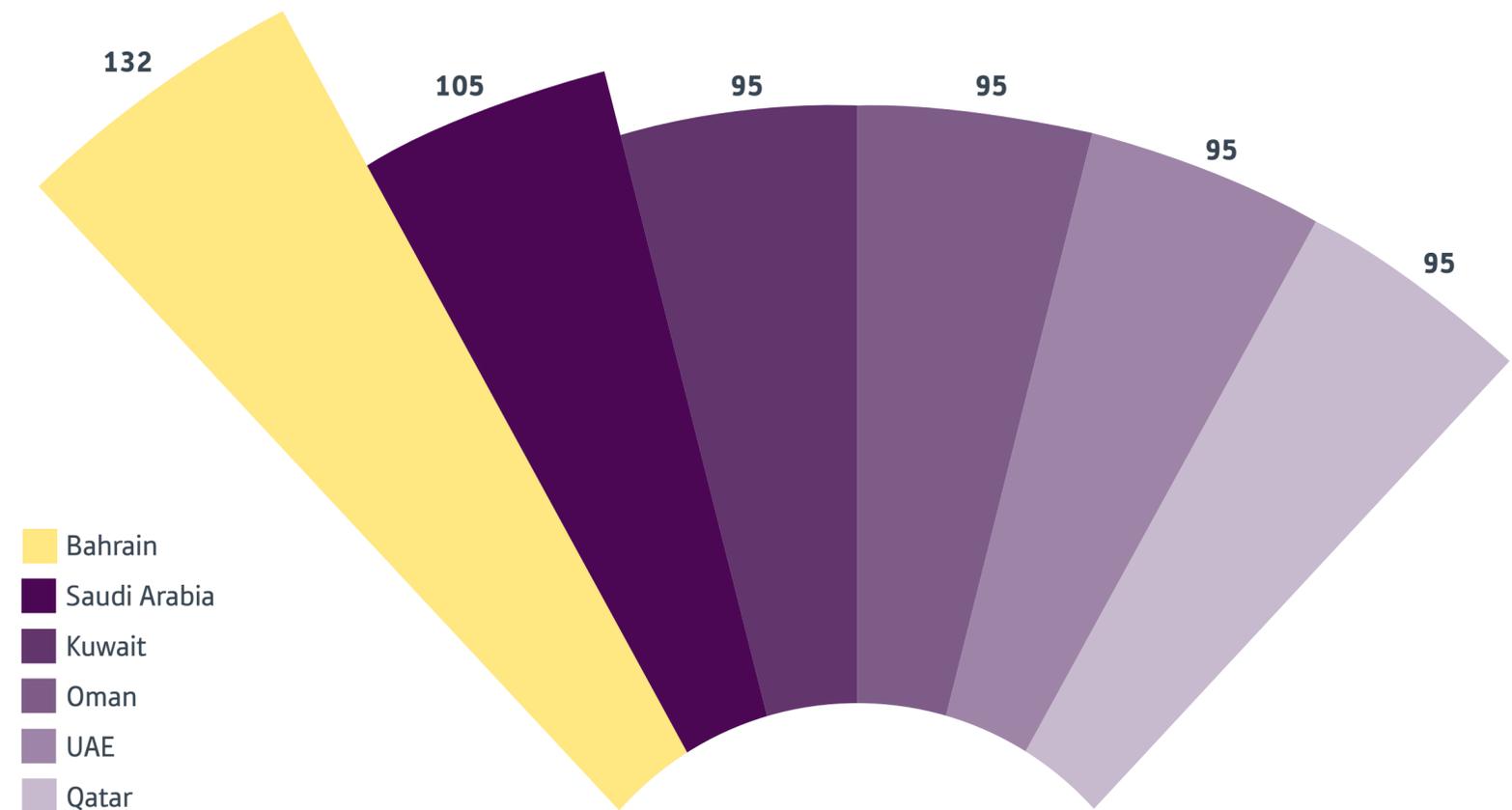
On the Economist's Food Security Index 2021, both Saudi Arabia and the UAE scored in the low category for sustainable agriculture performance. Encouragingly, however, much of the investment that governments have already committed to agriculture has been put towards sustainable solutions, with hydroponics, vertical farming and desert farming technologies all receiving funding. For example, along with its investment in conventional agricultural business Al Dahra in August 2021, UAE sovereign wealth fund ADQ announced plans for the region's first fresh produce AgTech Park in Al Ain to

accelerate sustainable and innovative food production and distribution.

Food waste is another major challenge, though member nations are also making progress in this area. The UAE, which wastes an estimated \$3.5bn of food per year, has pledged to reduce wastage by 50% by the end of the decade through projects such as the UAE Food Bank, the country's first, which collaborates with local and international charities to create an ecosystem to store, package and distribute excess food from hotels, restaurants and supermarkets to those in need.

Access to green finance for sustainable food and agriculture projects is also increasing, although further development is needed to accelerate the transition. In December 2021 National Bank of Bahrain extended some \$8.75m in ESG funding to a project that will see Al Amin Gardens build and operate a hydroponic farm in Hoorat A'ali and Diraz.

Household food waste in the GCC, 2021E (kg per capita)



Part 3: Reinvention

Case Study



Set to receive its first residents by 2024, Food Tech Valley (FTV) – a partnership between the Ministry of Climate Change and Environment and wasl properties – seeks to contribute to the development of sustainable and locally driven agricultural technology in the GCC by hosting both high-potential start-ups and well-established companies, as well as facilitating collaboration among businesses, financial institutions, policymakers and academia. On completion, the 18m-sq-ft development in Dubai will feature vertical farms, aeroponic and hydroponic farms, fish farms and algae farms, as well as logistics and storage facilities. It is expected to host over 1150 residents and create more than 14,000 jobs.

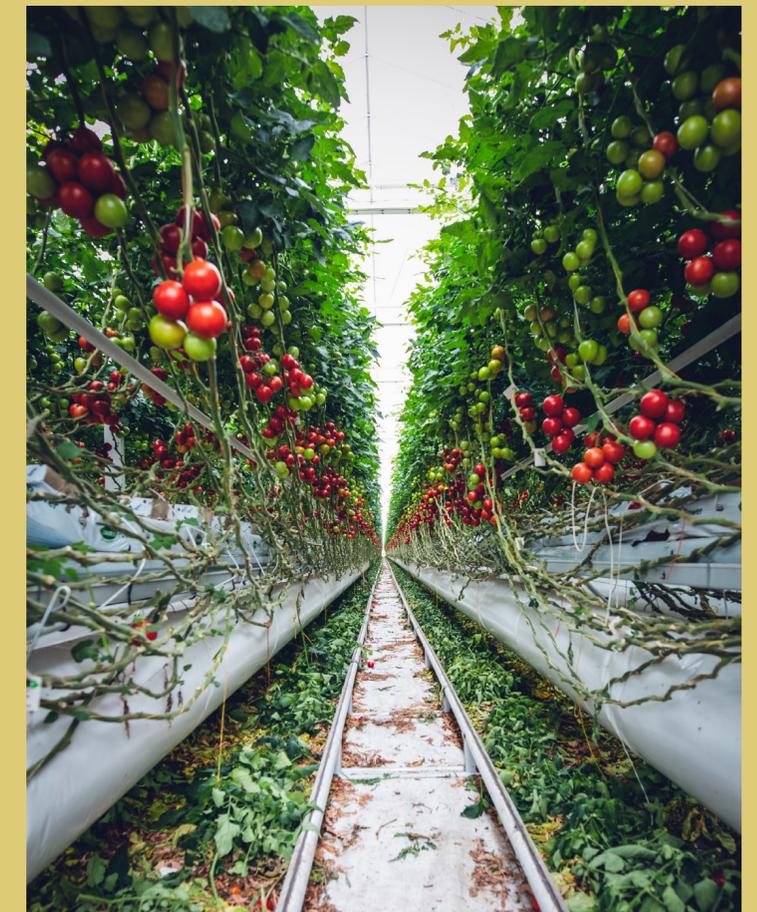
Against the backdrop of increased awareness of the importance of strengthening food security through localisation and innovation, FTV builds on the UAE’s financial strengths and its profile as a magnet for global talent. In line with the gradual shift towards bottom-up models of development, the project aims to deploy a flexible model of engaging with

“ Residents will be integrated into a broad ecosystem of engagement, where they will have access to support suited to their maturity

its tenants. Tenants will be integrated into a broad ecosystem where they have access to support suited to their needs and maturity. All companies are able to benefit from advantageous conditions, including competitive rates and incentives when leasing space, in addition to incubation and acceleration programmes, training, research and development facilities, and services for commercial and administrative functions. These offerings will support firms through the most challenging stages of their initial development while accelerating commercially

driven growth. “FTV is part of the next stage in the UAE’s innovation journey. The project will encourage developments in food distribution and logistics, ensuring that people have access to fresh, healthy and nutritious food,” Ahmed Al Shaibani, head of design strategy and innovation at FTV, told OBG.

wasl properties was established in 2008 to manage a real estate portfolio of over 50,000 residential and commercial properties within the emirate of Dubai. A fundamental pillar of its strategy is the careful vetting of residents. From early 2021 to early 2022 it reached out to around 150 companies to understand their specific needs, and gauge the extent to which their solutions could be successfully adapted to the environmental and socio-economic conditions of GCC markets. This type of due diligence increases the financial predictability of projects such as FTV at the intersection of investment in food innovation, which often involves venture capital and high risk, and real estate, where long-term return on investment requires residents with predictable cash flow.



6 Key Takeaways

1

By 2050 global demand for food will be 56% higher than it was in 2010, and the world will need to feed an estimated 2bn more people. As global food systems come under pressure, GCC countries are increasingly aware of the need to develop local production capacity to enhance food security and meet the evolving dietary needs of their relatively young populations.

2

Domestic food production in the GCC has historically been hampered by water scarcity and a lack of arable land – challenges that are exacerbated by climate change resulting from greenhouse gas emissions. However, the fiscal positions of GCC countries are providing space for them to invest in innovative agri-tech solutions to overcome these hurdles.

3

GCC countries are dependent on food imports, which accounted for 85% of the region's food needs prior to the Covid-19 pandemic. The disruption to global supply chains precipitated by the pandemic, as well as the more recent invasion of Ukraine by Russia, has underlined the need to invest in domestic production capacity and supportive technological solutions.

4

Although imports will remain essential, GCC members have articulated ambitious and wide-ranging strategies to enhance self-sufficiency in staple food items over the medium term. The regional self-sufficiency rates for fish, dairy and eggs were already above 70% prior to the pandemic, and fruit and vegetable rates continue to rise with productivity-enhancing technologies.

5

Climatic and geopolitical risks to supply chains have spurred regional policymakers to channel more money towards enhancing the innovation ecosystem for agri-tech and food production. At the same time, well-established food companies are increasingly open to mergers, acquisitions and partnership opportunities to boost their production capabilities and expand market share.

6

While the investment potential in agri-tech in the GCC is considerable, investors must be mindful of the inherent risks. With climate change worsening an already difficult environment for agriculture and the food industry contributing around 30% of global carbon emissions, it is vital that new solutions not only mitigate existing climate challenges, but help to ameliorate them.

In collaboration with



