

INDUSTRY FINDINGS REPORT

Investing in food security

The opportunities for ensuring sustainable food supply in the UAE and GCC

JUNE 2021





*The GCC's food industry
is undergoing radical
transformation.*

Achieving the goals



The Food and Agriculture Organisation summarises the following dimensions of food security

Food availability

Food access

Utilisation

Stability

Food security has long been a priority issue in the Gulf. Faced with a hot, arid climate and limited groundwater, the conditions for large-scale agriculture could hardly be more challenging. As the region's economy has expanded and the population has grown, so have the challenges of ensuring food security.

In response, the region's governments, supported by local investors, have financed investments in international food production and logistics, as well as in domestic warehousing and storage capacity. As a result, the UAE, in common with the rest of the GCC, is officially classified by the United Nations as 'food secure'.

But as global food suppliers become increasingly stretched by rising demand, the focus has shifted from capacity, to achieving greater efficiency and self sufficiency.

Even before Covid-19, the region's food and beverages (F&B) industry was undergoing radical transformation as governments implemented new strategies in response to population growth and climate change, while producers were reacting to rapidly changing consumer behaviour, and the need for greater efficiency and sustainability.

To boost local production and minimise environmental impact, the UAE, along with other governments in the region, has invested in cutting-edge food production techniques such as hydroponics and vertical farming, smart irrigation and aquaponics. And it is clear that advanced technologies such as robotics and AI offer exciting new opportunities for the F&B sector. These initiatives have taken on greater meaning in the wake of the Covid-19 pandemic, which has highlighted the need for a local, self-sufficient and robust food supply chain.

Most recently, Dubai unveiled plans for the first phase of the Food Tech Valley, an integrated city that will serve as a global hub for startups and firms to develop and implement agritech solutions.

This is creating new opportunities. The UAE's ambition to be the leading nation in terms of innovation now extends to agriculture as well. *'Investing in Food Security'*, the first MEED-Mashreq Services & Manufacturing Roundtable, brought together leading industry experts from the GCC's F&B sector, to discuss opportunities for building a more resilient food ecosystem.

The experts also discussed the future of the industry in the context of innovation and nutritional improvements, to build a better landscape for all stakeholders involved in the food supply chain.

Call to action

Recommendations for change from the first MEED-Mashreq Services & Manufacturing Roundtable

-  Protect local food producers from the unfair practices of some importers by implementing common guidelines and standards for all
-  Encourage greater participation of the private sector in national-level food security initiatives, particularly in areas such as public nutrition and environmental sustainability
-  Improve consumer awareness of nutrition and purchasing behaviours, through targeted campaigns by government and retailers
-  Campaigns to promote good nutrition and dietary intakes, focusing on foods that are healthy and have a lower negative impact on the environment
-  Provide detailed calorific information on packaged products to ensure consumers have the ability to make informed consumption decisions
-  Encourage the adoption of innovative processes and technology in agricultural practices (vertical farming, predictive data, sensors, seed modifications) to improve crop yield and to overcome difficult weather conditions
-  Create resilient, local food supply chains supported by all stakeholders
-  Encourage the recycling of food, water and packaging waste to enable a circular economy
-  Encourage greater collaboration and alignment of interests among retailers and manufacturers with greater focus on reducing waste and avoiding dumping of excess products

Addressing the challenge



Faced with the twin issues of rapid population growth and an arid desert environment, the UAE, and the wider GCC region, must overcome significant structural challenges to maintain an efficient and sustainable supply of food.

After decades of investment in local desalination capacity, combined with food production, logistics and storage, the UAE is recognised by the United Nations as 'food secure'. Despite this, the country and the region remains hugely dependent on imports.

BUILDING BLOCKS

The biggest obstacle to food self-sufficiency in the region is an environment that lacks the basic ingredients needed to build an agriculture system: healthy soil, suitable temperatures, and water.

In the UAE, only 0.6 per cent of the total land area is arable. The soil composition is largely sandy, requiring large amounts of irrigation water, and the high salinity of the groundwater affects nutrient uptake in crops.

The hot climate across the GCC, particularly in the summer, cannot sustain natural crop growth. The region is classified as one of the most susceptible to the effects of climate change.

The region also faces severe groundwater scarcity issues. In

2016, Saudi Arabia cut domestic wheat production because of the impact of high water demand on the country's diminishing groundwater supplies.

With very little rainfall and depleting groundwater supplies, the GCC nations meet their water needs through desalination and water recycling methods.

The International Energy Agency (IEA) estimates that water desalination in the Middle East will increase fourteen-fold by 2040, which is energy intensive and expensive, pushing up the cost of local agriculture.

According to IEA, desalination's share of energy consumption in the Middle East is set to increase from 5 per cent in 2020 to almost 15 per cent by 2040.

This hasn't meant a complete absence of local food production. With specialised techniques and controlled farming, the GCC maintains a steady supply of items including dates, tomatoes, cucumbers, as well as livestock and fish. However, it remains dependent on imports to meet majority of its food needs.

IMPORTS

Data from consultants Strategy& shows that GCC countries import about 85 per cent of their food. Virtually all of the rice consumed, around 93 per cent of cereals,



62 per cent of meat and 56 per cent of vegetables are imported.

The dependency on imports leaves the region vulnerable to risks posed by global supply chain disruptions, such as those seen during the early stages of the Covid-19 pandemic in 2020, when travel restrictions and border controls disrupted supply lines, impacting trade and logistics.

Prompt action by the GCC governments ensured that there was never a shortage of food in the region, even as countries around the world imposed laws to curb hoarding.

Despite this, the pandemic highlighted national vulnerabilities that could become major problems in a deeper, more prolonged crisis.

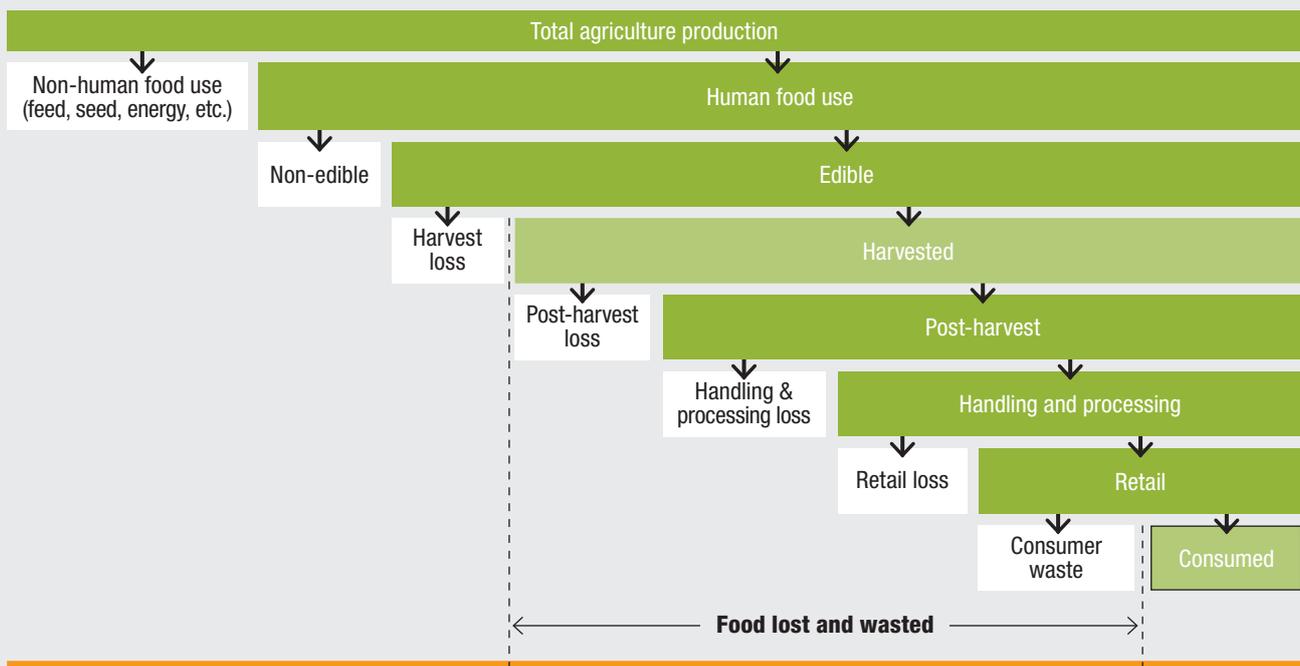
The GCC is also dependent on maritime routes to meet its import needs. A report published by Chatham House in 2017, titled *Chokepoints and Vulnerabilities in Global Food Trade*, highlights that annual throughput of food shipments via the Arabian chokepoints of the Suez Canal, Strait of Bab al-Mandab and Strait

20 MOST EXPOSED COUNTRIES TO MARITIME CHOKEPOINT DISRUPTION

Domain	CHOKEPOINT EXPOSURE	
	Trade dependence	Chokepoint reliance
Indicator	Cereal import dependency ratio (%)	Aggregate maize, wheat, rice and soybean imports passing through at least one maritime chokepoint (%)
Djibouti	100	79
Brunei Darussalam	98	60
Kuwait	98	95
Jordan	96	93
United Arab Emirates	95	94
Oman	93	53
Israel	93	67
Libya	92	91
Cyprus	89	73
Lebanon	88	93
Saudi Arabia	88	99
Yemen	81	54
Japan	80	71
Malaysia	76	79
South Korea	74	83
Algeria	68	69
Iraq	57	52
Tunisia	55	79
Eritrea	51	99
Angola	51	58

Chatham House Food Security Dashboard; FAO

FOOD LOSS AND WASTE ALONG THE SUPPLY CHAIN



Source: FAO adaptation of a 2014 report by the High-level Panel of Experts on Food Security and Nutrition.



85%

**domestic food
needs met
through imports
in GCC states**

Source: Strategy&

of Hormuz, en route to markets in the Middle East and North Africa (Mena), has grown rapidly over the years. And in a region blighted by geo-political tensions and war, these chokepoints represent particular vulnerabilities to regional food security.

FOOD WASTE

Food wastage is a major barrier to achieving food security in the region. Constantly changing consumer behaviours and shifting demand make it hard to forecast and efficiently stock goods.

The norm in the retail sector is to stockpile shelves in order to maximise sales. This contributes to high levels of waste as consumers select the freshest products and older goods are sent back to the manufacturer, who is forced to dump the dated products.

In September 2020, UAE Minister of State for Food and Water Security, Mariam bint Mohammed Almheiri, said that reducing waste in the food supply chain is a strategic objective that will strengthen the UAE's food security. The UAE is prioritising

the issue of food loss and waste, said Almheiri, noting that the development of a comprehensive food waste reduction system is a key objective of the National Food Security Strategy 2051.

GCC COOPERATION

After Covid-19 disrupted food supply chains around the world, GCC governments were quick to launch immediate measures, including financial relief and credits for agri-businesses, and granted movement permissions for essential workers in the food manufacturing and distribution sectors to minimise disruption to local supplies.

The establishment of a short-term GCC-wide joint food supply network also facilitated cross-border movement of basic food and medical supplies.

While the region was well-placed to offset the food supply impacts of Covid, the pandemic has provided a wake-up call for many consumers about how their food reaches them, perhaps making them more conscious about their consumption levels.

Tackling insecurity

The issue of food security ranked high on the agendas of GCC governments even before the Covid-19 pandemic.

Although the region has never been self-sufficient in terms of food supplies, the issue was highlighted in 2007-2008 when rising oil prices and demand for biofuels coupled with trade shocks in the food market caused a spike in food and commodity prices, raising serious concerns about food security.

Today, all GCC states have national food security agendas and targets in place, with common goals of improving self-sufficiency, sustainability and efficiency, and reducing supply chain vulnerabilities. This is being pursued in a variety of ways:

GLOBAL INVESTMENTS

Gulf investment vehicles have been acquiring and investing in international companies and farmlands overseas, to diversify food import sources.

For example, the Saudi Agricultural and Livestock Investment Company (Salic), an arm of the Public Investment Fund, owns a 30 per cent stake in India's leading rice producer Daawat Foods to strengthen its own rice supply chain.

In February 2021, Salic signed an agreement with Brazil's Minerva

Foods to establish a joint venture in Australia for the processing and export of red meat. Saudi Arabia consumes nearly 550,000 tonnes of red meat annually, of which 70 per cent is imported.

BUILDING RESERVES

Given the challenges associated with domestic production, the GCC states have been focusing on building strategic grain reserves to ensure enough supply of essentials for their population.

In August 2020, Salic and Saudi Arabia's National Shipping Company jointly established the National Grain Company, which includes a grain-handling terminal at Yanbu Commercial Port. The terminal will start with a capacity of about 3 million tonnes (MT) per year by 2022, and will gradually increase to 5MT per year.

In 2016, the UAE's Al Dhafra Holding company launched 20 grain siloes alongside the port of Fujairah, with a combined capacity of 300,000 tonnes, sufficient to feed the entire population for six months.

Al Dhafra also opened a 10ha rice factory in December 2016, at Khalifa Industrial Zone in Abu Dhabi. Owned by Al Dahra Kohinoor, the AED140m (\$38.1m) factory produces up to 120,000 tonnes of rice annually, with 40 siloes of 750-tonne capacity each.



#1

The position UAE is aiming to secure in the Global Food Security Index by 2051



FINDING THE SOLUTION TO FOOD SECURITY

- Use technology to produce more food
- Use technology to produce food that is more nutritious
- Increase the shelf life of food during the transportation, in storage and retail stores, and in households
- Improve dietary habits and calorific intakes – there are reductions of up to 50 per cent to be made in many intakes.
- Create a circular food economy, by turning food waste into fertilisers, recycling packaging and reusing water resources

Source: MEED-Mashreq Manufacturing Roundtable



The Gulf states have also been increasing water storage infrastructure, building mega reservoirs to ensure sufficient clean drinking water supplies.

In 2016, the states jointly approved a Unified Water Strategy, aiming to improve the management of future water resource and with tentative plans to form a GCC water grid.

Across the region, governments have set their sights on localising

food production where possible, especially in dairy, livestock, poultry and fisheries. They are also encouraging international firms to establish manufacturing and processing plants locally, with incentives including custom duty exemptions and subsidies.

Governments, semi-government entities and private businesses are also investing in innovative, tech-led agricultural solutions such as indoor vertical farms, to cultivate

greater varieties of fresh produce within controlled conditions.

But domestic food production does not equate to food security, and the GCC states recognise the fundamental challenges that hold them back. They also recognise the role that efficient supply chain management and technology can play in helping them get a step closer to food security, with national level strategies highlighting the path ahead.

Supporting local industry



At the first MEED-Mashreq Manufacturing Roundtable, leading figures from across the UAE's food and beverage (F&B) sector discussed the challenges and opportunities facing the industry in supporting and achieving the country's food security agenda.

And high on the list of priorities, was a call to protect local producers from unfairly discounted imports.

"If we want to encourage the local industry, we need to support local food more," says Willem van Walt Meijer, CEO, Al Ain Farms.

"The UAE government is strict when it comes to best-before dates – but imported food is given more leeway than local products. If you come from outside, the rules should be the same as those for local players. Otherwise, this is unfair to local producers of fresh products," he says.

Van Walt Meijer says that if an importer cannot credibly show certified tracking and tracing of a

product, demonstrating its origin and age, it should not be allowed to enter the market.

"A level playing field needs to exist not just between the imported and locally produced food, but also for the national producers to give everyone access to the same business environment."

CLEAR VISION

One attendee at the roundtable recommends greater alignment between the government's vision for food security and that of the private sector.

"Everybody has a different definition of food security, what commodities it encapsulates and what is the threshold. Does it mean no imports? Some imports? We're not sure," says Djamal Djouhri, CEO, Al Ghurair Resources Oils & Proteins and Al Ghurair Foods.

"We need to better understand what is the regulator's vision for food security. And we need clearer definitions on what is the private sector's role and how we can



The UAE's food and beverage sector is calling for greater support of local players.

CATALYST FOR CHANGE

The Catalyst is the Middle East's first clean technology startup accelerator based in Abu Dhabi's Masdar City. Jointly supported by energy firms Masdar and BP, Catalyst helps startups accelerate their business through funding, training and mentorship. One of the verticals that Catalyst supports is food security. Startups in this space include:



QS MONITOR is an online platform for the optimisation of food import licensing and timelines. The platform eliminates

paperwork, testing and inspection, streamlining the process to reduce import time by 13-23 days. QS Monitor is working with 1200 UAE importers and over 1,000 exporters.



BYALINEPATE

is developing a smart-home, app-controlled indoor garden system called the HydroArtPod.

The system enables users to grow fruit and vegetables at home with minimal maintenance and efficient resource utilisation, allowing consumers to be more self-sufficient.



invest in and support this change as well.”

Local sourcing also supports the sustainability agenda, reducing waste and supply chain pressure.

Shifting preference, rising incomes and easy access to food from around the world has meant that consumers now expect the freshest and best food items at all times. This has encouraged retailers to expand their product ranges, replenishing items daily and overstocking to ensure they never fall short of items.

The rising competition for shelf space has given retailers dominance in their relationship with producers and manufacturers.

On the retailers' side, meanwhile, there is pressure to sell more and meet monthly targets set by manufacturers and distributors.

“This is forcing retailers to take the stance where they accept the products, but if it remains

unsold, it is given back to the manufacturers,” says Ben George, executive director and CEO, Mohebi Logistics. This, he says, ultimately leads to wastage.

“Always remember the principle – never dump a product,” emphasises George. “We need to improve consumer behaviours – nobody wants to buy anything unless it is on sale, which sets a dangerous precedent for the industry. [And] where until a few years ago regulations were leading, today it is the consumers and suppliers that are setting the preferences.”

INDUSTRY PARTNERSHIPS

There is scope for partnerships between the public and private sector, particularly in the area of healthy eating and waste reduction. In line with directives and regulatory standards, producers, distributors and

retailers can help improve consumer awareness.

Meanwhile, universities and research bodies can provide insights necessary to support improved agricultural practices, nutritional advice and technological advancements.

Emerging startups and young businesses are playing an increasingly important role in supporting the national food security agenda.

It is critical for the government and established industry players to support these companies, scaling innovations at a level that benefits the entire sector.

“The biggest challenge for these startups right now is getting the right mentorship or support to expand,” says Cinar Kurra, CEO, Catalyst. “There are always new ideas coming up and we want more food producers to be aware and supportive of this.”

Sustainable supply

As international initiatives aimed at tackling climate change, water shortages and access to food become increasingly stringent, governments and industries around the world are increasing their focus on optimising food supply.

In order to improve distribution and reduce waste, food logistics must become smart, viable and inclusive, said attendees at the MEED Mashreq Manufacturing Roundtable. Supply chains must support sustainable local agricultural and food production through constant interaction between producers, businesses and consumers, to create more robust communities.

“As a business rooted in nature, we’re keen to advance initiatives that have a favourable impact on the planet’s health,” says Balki Radhakrishnan, VP and managing director AMEA, General Mills.

“We are especially thinking about regeneration and soil health and are leading with science at the front-end of our strategies.”

Radhakrishnan emphasises that current agricultural practices are not sustainable in the long term.”

To drive this level of change, he says, the entire industry needs to come together.

“The government alone cannot create this kind of impact, and you require partnerships with global corporations.”

Limited supply of fresh water and the expense associated with desalinating water is a big cause of worry for local manufacturers.

Experts in the region are turning to innovation to counter these challenges, especially by recycling water in industrial processes where possible, and tracking water usage to ensure no drop goes to waste.

“We have important KPIs for the use of water,” explains Tarek EISakka, general manager, Dubai Refreshments. “There is a ratio of water used in producing each litre of beverage, and we try to manage this ratio as low as possible. Factories in the Middle East should be very cautious with water, but are not always efficient. We are trying to become more efficient in the ratio of water used, and are also using wasted by-product water in tasks such as landscaping.”

REDUCING WASTE

“There needs to be a reduction in waste not just from the production perspective, but also the consumer consumption side,” says Edward Hamod, CCO, Emirates Food Industries (EFI).

Mike Cheetham, group business development director, Hotpack Packaging Industries, stresses the importance of better packaging materials to improve shelf life of products and thus ensure better



CAUSES OF WASTE

POST-HARVEST

- Improper storage (temperature, humidity, vermin)
- Spillage
- Grading

PRODUCTION & DISTRIBUTION

- Disposal of product not meeting quality/cosmetic standards
- Overproduction
- Malfunctions
- Spillage
- Damaged or improper packaging

RETAILER SUPPLY CHAIN

- Improper sales/demand forecasts
- Overstocking ultra-fresh products
- Improper storage
- Improper handling (e.g., temperature)

RETAILER STORES

- Improper sales/demand forecasts
- Improper storage/presentation
- Improper handling
- Quality/cosmetic standards of products without best-before date
- Nearing of best-before date
- Visual stocking criteria (full shelves)

HOUSEHOLDS

- Overstocking
- Not consuming in first-in, first-out order
- Improper storage
- Misinterpretation of best-before dates
- Elevated quality/cosmetic standards
- Misjudged preparation volumes
- Preparation mistakes

Educating the entire value chain, from manufacturers to consumers, is critical to ensure sustainability of the food industry

food security through less waste.

“We also see a lot of food packaging products brought here in smaller quantities,” he adds. “There is great scope to bring the products here in bulk and to package them regionally, creating not just to better food security but to create stronger local industries.”

The retail sector also generates an unsavoury amount of waste. Al Ain Farms’ Van Walt Meijer says that nearly 20,000 tonnes of dairy products are returned unsold by retailers in the UAE annually, which is then dumped.

He recommends an action similar to a ‘sugar tax’, in order to tackle this issue of waste, with excise charges imposed on returned goods.

“It should be forbidden [for retailers] to return what they’ve taken,” he says. “I know many people in the industry won’t agree to it. But we need legislation that holds the parties involved responsible for the waste.”

Retail players are in an influential position to address food waste in the supply chain.

Through the use of forecasting models to predict demand and better discipline in stocking regimes, retailers can enforce a reduction in food waste.

Consumer behaviour also influences the waste produced. Most consumers prefer same-day products when it comes to dairy or poultry items.

“Education is a major part we need to focus on,” says EFI’s Hamod. “It is something retailers can enforce through the way they promote and stock products.”

Packaging is another area that generates enormous amounts of waste in the F&B industry.

“We have only 5-7 basic types

of plastic packaging that are used commonly in the food sector, all of which have to be identified and sorted separately,” explains Hotpack’s Cheetham.

“How easy would it be to specify certain base colours for specific plastic types that would allow immediate sorting visually?”

“For design, paper labels or sleeves that can be washed away during the reclamation process – and be recycled themselves – could be applied to the plastic packaging externally to preserve brand identities as needed.”

CIRCULAR ECONOMY

There is also a call for greater transparency of the food production, processing and distribution processes, to reduce the amount of food that is lost as a result of bureaucratic red tape.

This can be achieved through solutions such as centralised cloud operations and blockchain that unites all stakeholders on a common platform.

According to the UK-registered charity Ellen MacArthur Foundation, a circular food economy produces organic, healthy food using natural, regenerative, soil-supporting growing practices.

Any byproducts or waste can create additional new food, fabrics or bioenergy inputs. The resources of local ecosystems can be used to feed their communities.

In January 2021, the UAE launched its Circular Economy Policy to promote a better approach to the use of natural resources. Priority sectors include green infrastructure, sustainable manufacturing, sustainable transportation, and sustainable food production and consumption.

Source: Oliver Wyman; Reducing Food Waste

Changing the way we eat

The GCC has seen rapid changes in food consumption patterns and lifestyle over the last two decades as a result of rising disposable incomes. But easier access to food has come at a price.

Even as health and food standards across the region have improved, diet-related chronic health issues have become primary health problems, including diabetes, obesity, hypertension and high-blood pressure.

According to 2019 data from the International Diabetes Federation (IDF), 55 million adults in the Mena region between the ages of 20-70 were living with diabetes. This figure is estimated to increase to 108 million by 2045.

Meanwhile, the prevalence of diabetes in the IDF Mena region is 12.8 per cent.

There is a need for deeper scientific research on issues related to food, nutrition and lifestyle in the GCC. Government authorities, academia and the private sector need to collaborate on strategies to alleviate or prevent non-communicable disease.

“There needs to be better guidelines on food consumption,” says Al Ghurair Foods’ Djouhri.

“We’ve always followed what is known as ‘the food pyramid’. But we are seeing, even in the US, the concept of MyPlate, which is more balanced. The government needs to design a better model for food consumption, something the private sector is more than happy to support.”

Caloric intake and nutritional education is seen as one of the biggest challenges by the sector.

“The base metabolic rate of most people in this region is 1,900-2,000 calories a day,” says Hotpack’s Cheetham. “And it would be so easy for all products to carry calorific information, even in restaurants. We have nearly 50 per cent

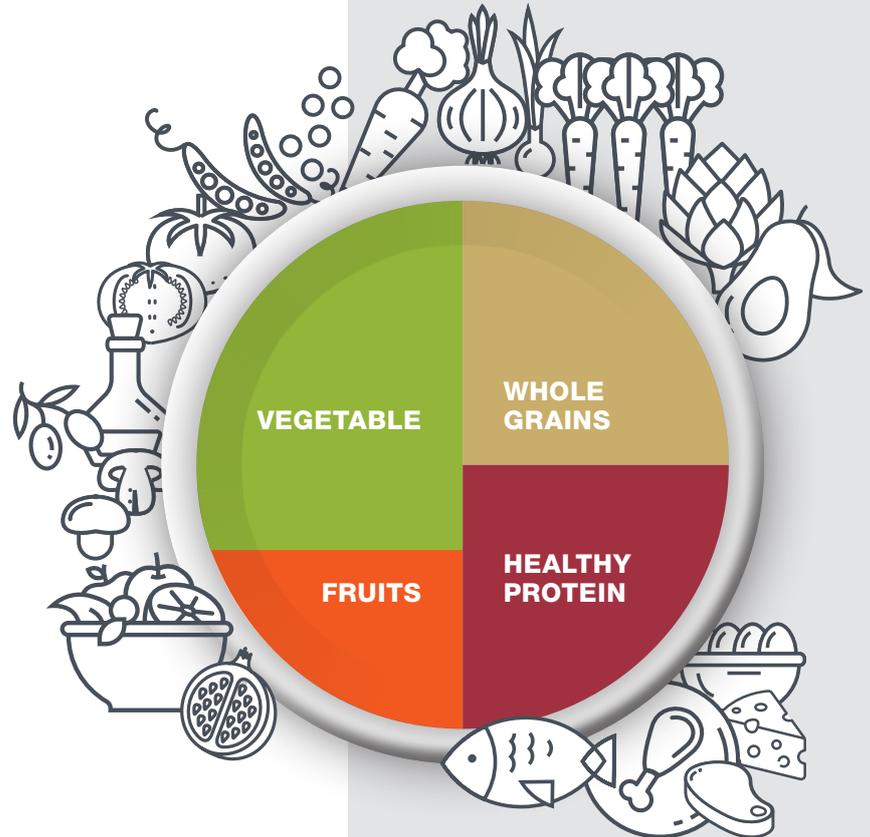
THE HEALTHY EATING PLATE

VEGETABLES

The more veggies – and the greater the variety – the better. Potatoes and French fries don’t count.

WHOLE GRAINS

Eat a variety of whole grains (whole-wheat bread, whole-grain pasta, and brown rice). Limit refined grains (white rice and white bread).



HEALTHY PROTEIN

Choose fish, poultry, beans, and nuts; limit red meat and cheese; avoid bacon, cold cuts, and other processed meats.

FRUITS

Eat plenty of fruits of all colours.

HEALTHY OILS

Use healthy oils (like olive and canola oil) for cooking, on salad, and at the table. Limit butter. Avoid trans fat.

WATER

Drink water, tea, or coffee (with little or no sugar). Limit milk/dairy (1-2 servings/day) and juice (1 small glass/day). Avoid sugary drinks.

Source: Harvard School of Public Health

To inspire a more sustainable food future, Knorr (a subsidiary of Unilever) and the World Wildlife Fund have selected 50 Future Foods based on their taste, nutritional value and low environmental impact



CEREALS, GRAINS, TUBERS

For both environmental and health reasons, there is a pressing need to vary the types of grains and cereals grown and eaten. The inclusion of a variety of sources of carbohydrates supports the ambition to enable a shift towards a greater variety of nutritious foods.



VEGETABLES

With very few exceptions, most people around the world do not get the recommended amount of at least 200 grams (or three servings) of vegetables per day. Vegetables are nutrient packed and can easily and affordably be added to commonly consumed meals.

Source: Unilever and World Wildlife Fund

of the adult population in the UAE diabetic or pre-diabetic, consuming 3,500-4,000 calories a day. So, if we want food security, we need to provide tools to control calorific intake and improve nutritional health.”

Cheetham recommends clearly visible QR codes that could contain nutritional information and

THE LIST OF FUTURE 50 FOODS

INCLUDES:



BEANS, LEGUMES, SPROUTS

Plant-based protein sources are included to support a shift towards eating more plants and fewer animals. Beans and legumes also enrich the soil in which they are grown and support the recovery of land as part of crop rotation.

help reduce various diet-related diseases in the region.

“Simple apps could perform calorific intake calculations,” he says. “Each time you eat, you scan the packaging and across the day you will understand that you are probably consuming 4,000 calories when you should be limiting yourself to 2,000 per day.”

Focus on savoury foods

Most calories consumed are from savoury meals. To make the greatest impact on global food choices, the foods in this list can all be used in savoury meals.

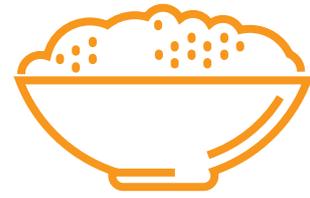
MUSHROOMS

Mushrooms are included because of their nutritional benefits and unique ability to grow in areas unsuitable for other edible plants. Their texture and umami flavour enable them to be adequate meat alternatives.

NUTS AND SEEDS

Nuts and seeds serve as plant-based sources of protein and fatty acids (omega 3 and 6) which can support a transition away from meat-based diets while ensuring optimum nutrition. They can be added to a wide variety of dishes for extra crunch and a nutrient boost.

In the UAE, the first version of National Nutrition Guidelines was published in 2019, with the aim of revising these regularly, to improve the nutritional status of the community, reduce the prevalence of chronic and malnutrition diseases, reducing non-communicable disease mortality, and encouraging individuals to



55 million

The number of adults (ages 20-70) living with diabetes in the Mena region



12.8%

Prevalence of diabetes in the Mena region



16.3%

Prevalence of diabetes in the UAE

Source: International Diabetes Federation Atlas 2019

engage in physical activities to step up the food safety efforts.

In September 2019, the UAE cabinet approved a Nutrition Labelling Policy under which food items will have colour coded labels on their packaging based on a 'traffic light' system to indicate the amount of fats, sugar and salt in the product - high (red), medium (amber) and low (green) percentages.

The policy will be mandated from January 2022 onwards and will cover canned, solid and liquid foods, but exclude fresh foods such as fruits, vegetables, meat and fish.

"There is no such thing as unhealthy food, there's an unhealthy diet," says Remco Bol, managing director Middle East, Pakistan and Sri Lanka, Unilever Food Solutions. "There is definitely evidence of detailing calorie information on food labels improving the way people perceive and consume food."

Bol adds that 75 per cent of all global food comes from only 12 species of plants and only five species of animals. According to FAO, there are between 20,000 and 50,000 discovered edible

plant species, of which only 150 to 200 are regularly consumed by humans.

Farming a limited range of crops using intensive methods can have serious repercussions on fragile natural ecosystems, already under pressure.

Moreover, delivering animal-based proteins exerts an immense amount of pressure on global food systems, driving up greenhouse gas emissions.

A 2019 report by global consulting firm AT Kearney states that by 2040, conventional meat supply is expected to drop by more than 33 per cent, driven by concerns about the environmental impact of traditional livestock production methods.

"We need to transform the global food system and also here in the UAE from the way we farm the way we fish to what we choose to eat," says Bol.

Animal-based protein alternatives are emerging in the UAE. In December 2020, Abu Dhabi launched a four-year project with a \$15m prize, challenging teams to develop alternatives to fish and chicken.

Innovation drives change

THE CASE FOR VERTICAL FARMS:

- Reduced land use and deforestation
- Carbon sequestration
- Limited impact of weather events, such as drought or other natural disasters
- Little to no use of pesticides or fertilisers
- Zero water or land pollution
- Uses 70 per cent less water than traditional farming methods

Source: Barclays Research

The UAE is leveraging agricultural technology (agritech) where possible to make up for the shortfalls in local production capabilities. The innovations being adopted include modernising irrigation systems and developing resilient strains of crops, to improve the efficiency and productivity of the sector.

For instance, the International Centre for Biosaline Agriculture (ICBA) in the UAE has worked on several projects aimed at improving food security in the country. Its ongoing projects include testing a number of salt-tolerant crops that allow the use of saline water for agriculture.

The Agricultural Innovation Centre in Sharjah works in tandem with international centers specialising in agritech research. This centre was opened to support the National Innovation Strategy and is currently studying various technologies to overcome the region's environmental challenges, such as greenhouses that are cooled by absorbing water from the plants growing inside them, instead of using fans.

Meanwhile, the UAE Ministry of Climate Change and Environment has several programmes that assist farmers with quality seeds, lab tests, greenhouses, and R&D services in an effort to aid the

shift to modern farming practices.

Most recently, in January 2021, researchers from the Khalifa Centre for Genetic Engineering & Biotechnology (KCGEB), in collaboration with New York University Abu Dhabi, found new genomic information that can contribute to the development of saline agriculture in the UAE.

According to Khaled Amiri, director of KCGEB, the results of the research would contribute to understanding how organisms adapt to salt water, and subsequently help in developing crops capable of growing in saline, drought, and heat conditions.

AGRITECH

Farming techniques such as vertical farming and hydroponics are quickly gaining popularity in the UAE and across the GCC as a possible solution to improve local production capacity.

Vertical farms do not use pesticides, fertilizers or herbicides and operate in sanitary closed environments, resulting in safer produce and creating close to zero water pollution – a key issue with conventional farms.

Abu Dhabi-grown agribusiness venture Pure Harvest supplies tomatoes grown year-round in an enclosed, environment-controlled farm to local supermarkets, hotels and restaurants in the UAE.

VERTICAL FARMS TYPICALLY EMPLOY ONE OF THREE SOIL-FREE GROWING METHODS THAT CAN ALSO BE CLOSED LOOP (ZERO-WASTE) SYSTEMS:

Hydroponics

Plant roots are submerged in a nutrient solution

70% less water

than conventional farms

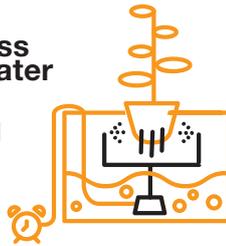


Aeroponics

Nutrient mist is sprayed directly onto plants' hanging roots

90% less water

than conventional farms



Aquaponics

Fish in indoor ponds release nutrient-rich waste into water, feeding plants via hydroponics

Zero waste.

Plant filtered wastewater is recycled back to fish ponds



WHAT IT WILL IT TAKE FOR VERTICAL FARMS TO THRIVE?



BUILDING AN END MARKET

Generate excitement and interest among consumers



EXPANDING BEYOND LEAFY GREENS

Diversify into new produce categories



EDUCATING FARMERS

Foster a new generation of vertical growers



REDUCING THEIR CARBON FOOTPRINT

Use renewable energy sources

Source: Barclays Research

The firm has received sizeable investments from Gulf-based investors and is launching farms in Saudi Arabia and Kuwait.

Another agritech firm, Badia Farms, supplies a variety of fresh microgreens and herbs to restaurants across Dubai.

Challenges including high energy requirements and high upfront costs restrict the large-scale success of vertical farms. However, continued backing by the government and private investors, as well as improved

consumer awareness to build a market can support its success.

E-COMMERCE

“Online platforms and direct to consumer strategies are changing the entire food ecosystem,” says General Mills’ Radhakrishnan.

“The consumer is always the king and we have to make sure that we’re adapting in a way that’s favourable and convenient for them,” he adds.

E-commerce provides greater choice for the consumer and that

has been one of its success points across the globe.

During the pandemic especially, producers and distributors found that the uptake of e-commerce had exceeded expectations, with more customers opting for online.

“I think we did more on the ecommerce side in the past 10 months than we have in the past 10 years,” says Radhakrishnan.

“There is a greater shift towards local produce, and e-commerce provides the easy link between local items and the consumers.”

INDUSTRY CONTRIBUTORS

mashreq  المشرق



الغدير
Al Ghurair 

مزارع العين

Al Ain Farms


CATALYST
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Established in 1967, Mashreq is the oldest bank in the UAE, with award-winning financial solutions and services.

Throughout its 50 years' history, Mashreq has differentiated itself through innovative financial solutions, making it possible for its customers to achieve their aspirations. Today, Mashreq has a significant presence in 11 countries outside the UAE, with 21 overseas branches and offices across Europe, the US, Asia and Africa.

Mashreq launched its new Vision and Mission recently, outlining its commitment towards its clients, colleagues and the community.

In line with its vision to be the region's most progressive bank, Mashreq leverages its leadership position in the banking industry to enable innovative possibilities and solutions for its customers across corporate, retail, international, treasury and Islamic banking.

Mashreq is proud to be the first financial institution in the UAE to be awarded the Gallup Great Workplace Award for four consecutive years from 2014-17. Mashreq also continues to invest in recruiting, training and developing future generations of UAE national bankers.

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MEED has been integral to delivering business information, news, intelligence and analysis on the Middle East economies and activities for over 60 years.

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