

## Turning sandy-deserts green

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- Nowhere is water scarcity more acute than in the MENA region. This, along with its fast-growing population, has increased the reliance on food imports, increasing food insecurity across the region.
- While we do not expect a food crisis, the current situation requires a new approach of thinking -- one that is regionally appropriate and scalable.
- Qatar offers an example of creating a self-sustained agriculture sector via technology. We expect other MENA countries to follow suit and increase investments in agritech.

### Agriculture in MENA: far from self-sufficiency

The agriculture sector in MENA contributes a relatively small share of the region's total GDP, accounting for around 11% in 2018, albeit taking up 26.8% of the total labour market. The small GDP share is mainly due to the semi-arid climate and water scarcity in most of the region. It has led to the region having a large food import bill for its rapidly growing population -- a recipe for food insecurity in the long-term. This needs to change.

- The sector's contribution to GDP does, of course, vary over the region. Agriculture in Morocco and Egypt, for example, contributes 11.4% and 11%, respectively, in 2019; in the United Arab Emirates it is less than 1%.
  - But much of the region is unfavourable for agriculture and only a small share of land is arable.
  - According to the UN Food and Agriculture Organization (FAO), around 40% of MENA land requires irrigation, with only 4% deemed suitable for rain-fed cereal cultivation.
  - Moreover, across the region, farms are generally small and, hence, inefficient.
- The sector in MENA is also vulnerable to external factors such as drought, floods and locusts. Decades of conflict and negligence have left irrigation methods inefficient, limiting output and wasting labour.
  - For instance, the decline in 25% of rainfall in Morocco last year resulted in more than a 40% decrease in wheat and barley -- the country's key cereals crop.
  - Recently, floods, landslides and locusts are providing existential threats to Somalis.
- The lack of modern irrigation techniques also makes agriculture a major contributor to water scarcity.
  - At around 87% of what is available, agriculture in MENA consumes more water than the 70% global average.
  - Yet of all water used to irrigate crops, less than 1% ends up reaching the final edible product.
  - Although fruits and vegetables tend to consume less water, around 60% of harvested land is used for water-thirsty cereals.
  - Governments in the region have tried banning cereals, mainly wheat and green fodder. But the bans have had to be revoked to reduce the high dependence on food imports.
- This all argues for a government-driven change in the mix of agriculture.

<sup>1</sup> Arabia Monitor; World Bank.

<sup>2</sup> Arabia Monitor; Alpen Capital.

Figure 1 - Agriculture Sector (% of GDP)<sup>1</sup>

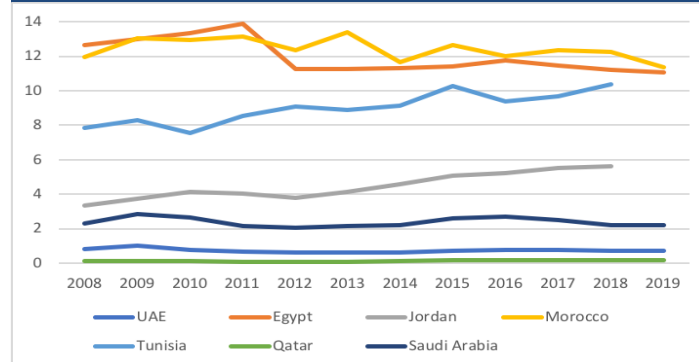
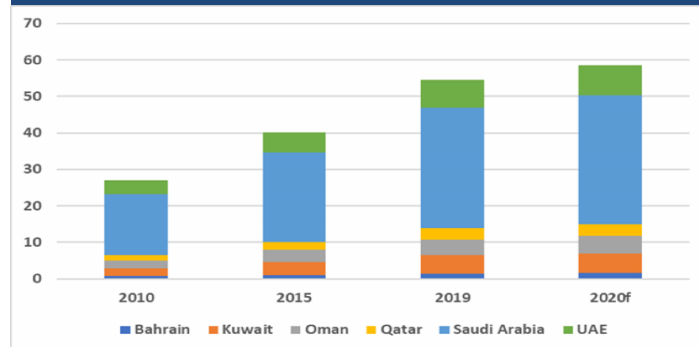


Figure 2 - GCC Food Imports (USD, B)<sup>2</sup>



- The increase in demand for food imports in MENA is in part due to the dramatic growth in population, along with a change in eating habits. In the GCC, this has been exacerbated by higher per capita income and large numbers of expatriates.
  - MENA's food import bill accounts for around 14% of total merchandise imports and is higher than the global average -- for comparison, food imports into Sub-Saharan Africa stand at 12%.
  - Net grain imports into the region during 2011-2016 grew at an average of 5.2% annually, with cereal imports having the lion's share. Food imports are expected to reach around USD 53B this year, an 8% YoY increase from 2019.
  - Saudi Arabia, Kuwait, the UAE and Egypt are the largest importers of fresh produce, with Saudi Arabia and the UAE accounting to over 2% of total global fresh produce imports, compared with a population of 0.45% and 0.13% respectively, to the global population.
    - While the UAE is ranked 21<sup>st</sup> in the latest Economist Intelligence Unit Global Food Security Index (GFSI)<sup>3</sup>, 85% of its food is imported.
    - Similarly, around 75% of domestic food needs in Saudi Arabia are dependent on imports. Food consumption in the kingdom is expected to reach around 40M tonnes this year from the 33M tonnes in 2018.
- High import dependence does not necessarily translate into food insecurity, but the region is highly vulnerable to supply shocks, particularly given its proclivity for political unrest and, currently, the COVID-19 pandemic.

<sup>3</sup> The GFSI ranks a set of 113 countries based on the affordability, availability, quality and safety of food supply, along with their exposure to climate risks.

- The depth of the contraction in global food production remains unclear, but prolonged lockdowns and disruptions in supply chains present a risk of export restrictions, which would affect the food availability and prices in the region (not to mention exacerbating the food crises in Sudan, Syria and Yemen).
- The FAO suggests the global cereal markets will remain balanced this year, with production forecast to remain similar to 2019 levels, which closed at 1,445M tonnes, a 36M tonne YoY growth. Nonetheless, we see the need for MENA to shift towards increasing local production, through leveraging technology to lower the need for imports to meet domestic demand.

With relatively low competition and high demand, agriculture has a large potential for expansion in MENA. In recent years, key players in the region have recognised the importance of agritech and, in turn, are propelling its development and increasing financing in the sector to support food security planning. We expect a continued upward trend in investing and in government involvement as the pandemic eases.

- Across the globe, and more profoundly in China and India, agritech has already proving its potential in improving farming productivity, crop quality, and waste reduction while also meeting food demand in a sustainable way.
  - For instance, hydroponics and vertical farming in high-tech greenhouses, which aim to reduce humidity and heat, provide a solution for water-intensive and transport-sensitive crops, as it uses 20% less water than traditional farming.
  - This should be attractive to the region given its unfavourable weather conditions and large areas of water-scarce land.
- Hydroponics are already gaining some traction in the region, with a market estimated to reach USD 61M in 2021 and USD 85M in 2023, from a market value of just USD 28M in 2016 – a 15.5% compounded annual growth rate. It remains small, however.
  - In 2018, a joint venture by Emirates Flight Catering and California-based vertical farming company Crop One Holdings built the largest vertical farm globally in Dubai, a facility of 130,000 square feet worth USD 40M.
  - Similarly, Egypt and Bahrain have been pioneering hydroponic farming in recent years, attracting large investments. As a result of the rise in agritech investments in Bahrain, the kingdom has witnessed a drop of 25% in its food imports since 2017.
- Governments, likewise, have grown more interested in the relatively untapped market, leading some to relax measures and allow foreign companies in as owners.
  - In an effort to become among the top 10 food secure countries, the UAE in 2018 launched Food Security Strategy 2051 which aims to ensure sustainable food production using tech-driven agriculture processes.
  - Similarly, Saudi Arabia, as part of its 2030 Vision, invested USD 200M to increase organic food production, and USD 400M to expand its seafood sector.
  - More recently, in April 2020, the UAE allowed 100% foreign ownership in mainland agriculture under its FDI law.

Table 1- Qatar Food Consumption compared to GDP & Population<sup>4</sup>

	Unit	2018	2019	2030f
Food Consumption	Million Metric Tonnes	2.2	1.9	1.9
GDP per capita	USD	115,979	117,575	130,295
Population	Million	2.7	2.8	2.8

### Qatar: Leading by Example

Following the 2017 boycott by its neighbours, Qatar pushed for self-sustained agriculture to reduced its reliance on food imports, accelerating the use of advanced technology for food security, in which it now ranks 13th globally (up from 20th in 2016) This move has indeed proved valuable for its neighbours to follow, particularly amidst the pandemic.

- Before the boycott, Qatar imported around 90% of its food supply and was viewed as poorly placed to grow its own given its arid land and being among the highest water-stressed countries globally.
  - It faced an agriculture trade deficit of USD 1.2B in 2018, relying heavily on importing poultry and dairy products. Around 72% of its needs were brought in from abroad. For example, it imported around 400 tonnes of milk and yoghurt daily from Saudi Arabia.
- It has responded by expanding its domestic food industry and adopting cutting-edge technology that meet Qatar's environmental challenges.
  - Qatar imported around 18,000 live dairy cows from the EU and US and set up its first principle local dairy and meat farm, Baladna.
  - In 2018, Qatar met around 110% of its dairy demand, a 300% increase from pre-blockade levels. It covered 100% of its poultry domestic demand within two years. Remarkably, there are now plans to start exporting surplus stock in the near future.
- Likewise, Qatar has developed greenhouse technologies equipped with advanced hydroponic systems to support local farms and protect crops from adverse weather conditions.
  - Since 2016, the number of greenhouse farms has increased to 919 from 471.
  - The country also has a target to produce 60% of its its vegetables locally within the next two year – around a 300% increase since the boycott.
  - With around 1,300 active and productive farms in Qatar currently, we expect overall production and output in fresh food supply to increase.
- While Qatar's economy is grappling with the shocks of the pandemic and low-oil prices, its agriculture sector has not been as impacted. In Q1 2020, the sector still registered 8% YoY growth.
  - The greenhouse market is also expected to reach USD 216M in 2024, a 120% increase from 2018.
  - Looking forward, we expect Qatar's self-sufficiency strategy to continue to grow – providing a positive outlook for meeting its 2030 national food security vision
- This is all the result of a state-run self-sufficiency strategy that could act as an example for others in the region that are becoming concerned about food insecurity.

<sup>4</sup> Arabia Monitor; IMF.

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