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Knowledge for All

# GCC and Türkiye AGRICULTURE SECTOR OUTLOOK

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**GCC and Türkiye**  
**AGRICULTURE SECTOR OUTLOOK**

# TABLE OF CONTENTS

<b>1. Executive Summary</b>	<b>8</b>
1.1 Türkiye	8
1.2 Gulf Cooperation Council	8
1.3 Potential Future Outlook	9
<b>2. Türkiye</b>	<b>10</b>
2.1 Introduction to Agriculture Sector	10
2.1.1 Overview and Key Industry Trends	10
2.1.2 Forecast of Agriculture's Contribution to GDP	10
2.2 Agriculture Sector in Details	11
2.2.1 Type of Agriculture	11
2.2.1.1 Plant-Based	11
2.2.1.2 Animal Farming	13
2.2.1.3 Fishery	14
2.2.2 Economic Contribution	15
2.2.2.1 Government Initiatives and Programs	15
2.2.3 Agricultural Crops	16
2.2.4 Labor Outlook for Agricultural Sector	18
2.2.5 Agricultural Products – Import & Export Analysis of Türkiye	18
2.2.6 Capital Investments and Major Investors – Türkiye	19
2.2.7 Ongoing and Upcoming Agriculture Projects – Türkiye	20
2.3 Industry Dynamics	20
2.3.1 Driver	20
2.3.1.1 Increasing Export of Agri-Food Products	20
2.3.1.2 Growing Retail Food Sector and Demand for Agri-Food Products	21
2.3.2 Challenge	21
2.3.2.1 Declining Apparel Demand from Russia and Ukraine	21
2.3.2.2 Disruptions from Earthquake	21
2.3.2.3 Land Usage and Planning Issues	23
2.3.3 Opportunities	24
2.3.3.1 Strawberry Farming	24
2.3.3.2 Organic Farming	24
2.3.3.3 Growth of Exports	25
2.3.3.4 Rising Importance of Agritech	26
2.3.4 Macroeconomic Factors Impacting the Sector	27

## 3. GCC

28

3.1	Introduction to Agriculture Sector	28
3.1.1	Overview and Key Industry Trends	28
3.1.2	Forecast of Agriculture's Contribution to GDP	28
3.1.2.1	Saudi Arabia	28
3.1.2.2	Qatar	29
3.1.2.3	Kuwait	30
3.1.2.4	UAE	30
3.1.2.5	Oman	31
3.1.2.6	Bahrain	32
3.2	Agricultural Sector in Details – GCC	32
3.2.1	Type of Agriculture	32
3.2.1.1	Plant Based	32
3.2.1.2	Animal Farming	33
3.2.1.3	Fishery	35
3.2.2	Economic Contribution	36
3.2.2.1	Government Initiatives and Programs	36
3.2.3	Agricultural Crops	38
3.2.4	Labor Outlook	39
3.2.5	Agricultural Products – Import & Export Analysis of GCC	39
3.2.6	Capital Investments and Major Investors	40
3.2.7	Ongoing and Upcoming Agriculture Projects	40
3.2.8	Industry Dynamics	42
3.2.8.1	Focus on Food Securities	42
3.2.8.2	Rising Population and Urbanization	43
3.2.9	Challenges	43
3.2.9.1	Need for Climate-Independent Farming Techniques	43
3.2.9.2	Water Scarcity	43
3.2.10	Opportunities	44
3.2.10.1	Developments in Vertical Farming	44
3.2.10.2	Date Palm Farming	44
3.2.11	Macroeconomic Factors Impacting the Sector	45

<b>4. Country-Level Impact of COVID-19 on the Agriculture Sector</b>	<b>46</b>
4.1 Country-Level Implications of the COVID-19 Pandemic on Agriculture Sectors:	48
<b>5. GCC and Türkiye Agriculture Outlook</b>	<b>49</b>
5.1 GCC Vs Türkiye Comparison	49
5.1.1 Agricultural Land	49
5.1.2 Livestock	49
5.1.3 Labor in Agricultural Sector	50
5.1.4 Import & Export Comparison – GCC Vs Türkiye	50
5.1.5 Comparison of FDI in the Agricultural Sector	51
5.2 Opportunities for Cooperation and Investment Between GCC Countries and Türkiye	52
5.3 Challenges and Possible Solutions	53
5.3.1 Challenges	53
5.3.2 Possible Solutions	53
5.4 The Top Existing Cooperation Projects	54





# 1. Executive Summary

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## 1.1 Türkiye

Türkiye is a leading agricultural producer in the world, and its major agricultural products include wheat, beet, cotton, sugar, poultry, milk, vegetables, and fruits. The country is one of the world's largest growers of apricots, hazelnuts, and oregano. In its five-yearly Development Plan for 2019–2023, the country set development targets for agriculture, among other sectors. The plan targeted strengthening the sector's capacity to adapt to climate change and increasing irrigation rates across the country.

The agricultural sector in Türkiye is undergoing a series of reforms that can further boost sustainable agriculture in the next few years. The Turkish government has been conducting training programs to create awareness of sustainable agriculture and spreading new rural techniques to help farmers improve productivity. An upsurge in the use of mineral fertilizers and pesticides has been contributing to sustainability goals within the rural economic sector. Sustainable agriculture would immensely improve farmers' productivity and soil quality and contribute to food security in Türkiye over the next decade.

Droughts are common in many regions in Türkiye, and their severity and frequency are expected to rise because of climate change. The country government is taking initiatives for drought and crisis management, including setting up drought action plans, and basin-based drought and water management plans. The government is also investing in enhancing the data infrastructure and supporting research for utilizing the generated data for devising and enhancing above mentioned plans. Moreover, several regulations have been framed to protect wetlands, and control soil and water pollution. Land conservation funds have been designed to maintain the quality of land and ensure the sustainability of natural resources in agricultural lands.

The Turkish government is prioritizing policy development to improve farmers' capacity to produce and participate in farm programs that encourage commodity output. The government also supports the development of new irrigation infrastructures and the production of strategic crops and encourages farmers to buy agriculture insurance plans. Further, the Ziraat Bank (TCZB) and Agricultural Credit Co-operatives (ACC) offer farmers interest rate concessions and concessional loans to mitigate their financial challenges. The interest rates differ based on the loan's intended usage, such as irrigation, livestock breeding, organic agriculture, or good farming practices.

## 1.2 Gulf Cooperation Council

The Gulf Cooperation Council (GCC) was formed in 1981 between Qatar, Saudi Arabia, Bahrain, Kuwait, Oman, and the UAE to enhance their integration, coordination, and interconnection. Over the last few decades, GCC countries have had unmatched economic growth, enabling them to rank among the leading nations based on per capita income. However, fluctuations in oil prices have been the major factors impeding the progress of these oil-dependent economies. Reliance solely on oil & gas sector for economic prosperity is not a sustainable option and hence there is a shift towards economic diversification. It has notably benefited agriculture sector, which is a key pillar of any economy.

Farmers in GCC nations find farming crops challenging as these countries are characterized by an arid climate. Similarly, the lack of fresh water and pasture challenges the rearing of animals and the development of inland fishery. Hence, although the nations have been leaders in food security globally, it is mainly achieved through the import of agricultural products. With the disruptions caused by the COVID-19 pandemic and subsequent economic downturn, and conflicts among European countries, GCC countries have shifted their focus toward achieving food security

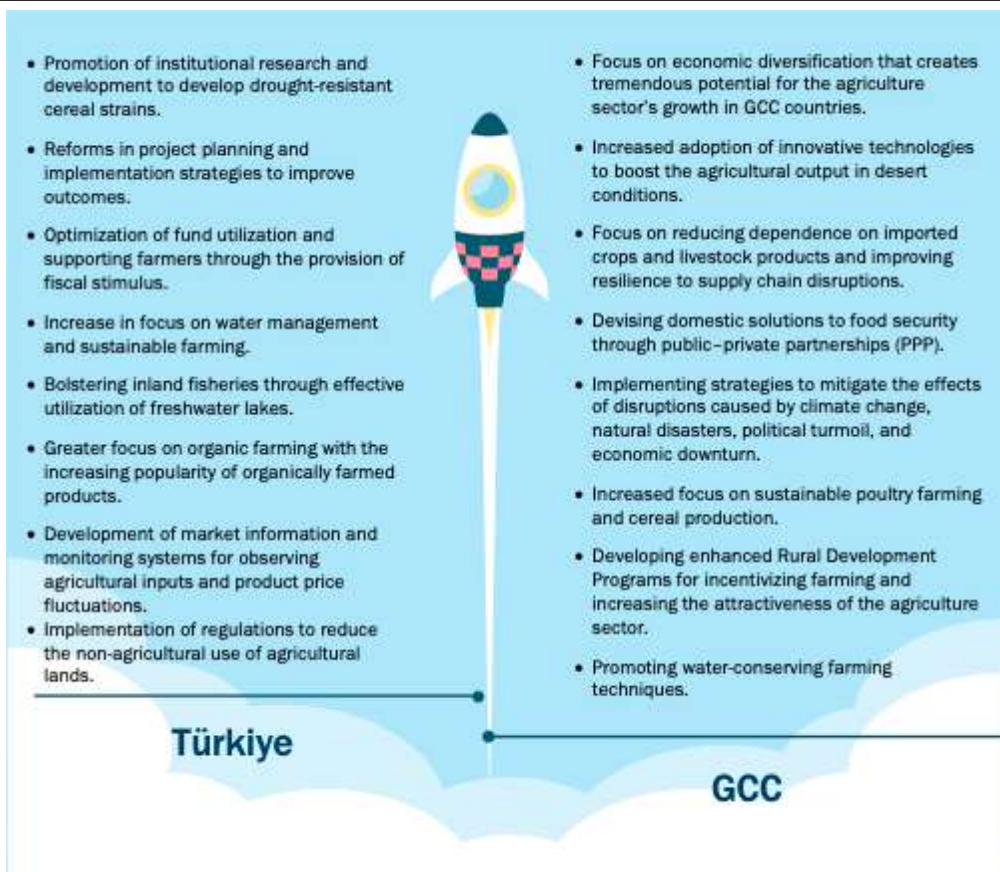




through home-grown products. Imported food accounted for ~85% of their food demand before the pandemic; this included almost all of the rice, ~93% of cereals, 62% of meat, and 56% of vegetables consumed in the region. Thus, the agriculture sector in most GCC nations is being overhauled and is witnessing drastic positive changes.

The changes range from policy reforms to technology integration, aiming to increase domestic agricultural production and hedge against import disruptions. Policy reforms by GCC governments include expanding import sources, enhancing logistics and distribution efficiency, developing adequate food reserves, and offering incentives for scaling up production and supplies. Further, water management has been a common component of strategies planned by GCC countries to boost the agriculture sector, with all GCC members enhancing their desalination capacity. Additionally, they have been emphasizing on using treated wastewater for irrigation. Research on developing drought - and saline-tolerant crop varieties, and direct financial support for farmers are a few other steps that are being taken to promote the agricultural sector's growth. The vision documents of GCC nations have also been stressing on development of the agricultural sector, as a measure of food security. Saudi Arabia's Vision 2030 focuses on reducing food wastage and promoting resource efficient farming. Oman's Vision 2040 strives to diversify agricultural production, make agriculture more productive and sustainable in the country, and promote usage of treated wastewater for irrigation. Economic Vision 2030 of Bahrain aims to make the agriculture sector more sustainable and increase export of goods manufactured by the sector. Similarly, Kuwait Vision 2035 development strategy aims to promote the agriculture, livestock, and fishery sector's production, while utilizing sustainable energy and water resources. Saudi Arabia's Sustainable Agricultural Rural Development Programme and Qatar's State Food Security Project are notable programs designed to promote growth of the agricultural sector.

### 1.3 Potential Future Outlook





## 2. Türkiye

### 2.1 Introduction to Agriculture Sector

#### 2.1.1 Overview and Key Industry Trends

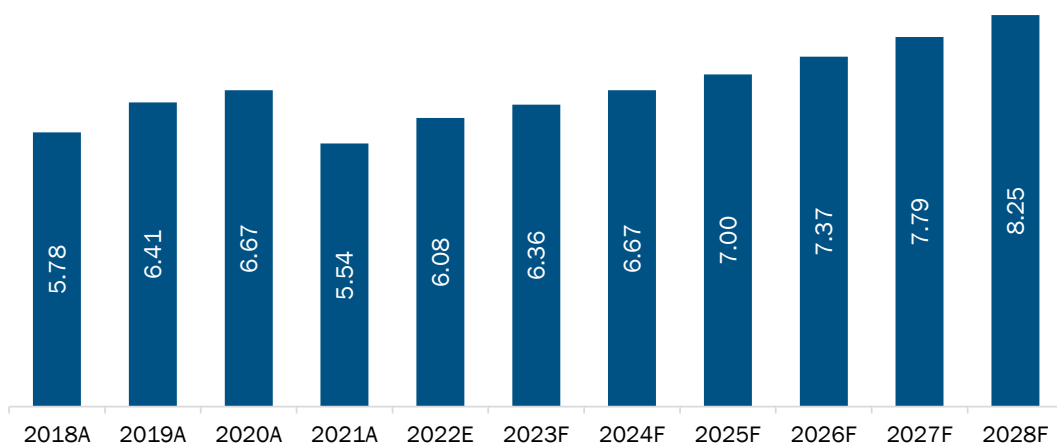
Türkiye is a dynamic and complex market for food and agricultural products and is a pioneer in terms of food self-sufficiency. Crop farming is a leading occupation of Turkish people, despite the rising share of industrial and service sectors. Fertile soil, favorable climate, and ample rainfall support the growth of most crop types in the country. With 49.1% of the total agricultural land area, Türkiye was one of the countries with the largest share of agricultural land in the world. As per the 2021 data from Turkish Statistical Institute, Türkiye had nearly 380,890 sq. km. of cultivated land, compared to ~377,160 sq. km. in 2019. Further, it is taking several steps to adopt sustainable agricultural practices and ensure food security.

The Turkish government imposed several restrictions on the export of agricultural products after the earthquake in early 2023 to ensure food availability and alleviate food inflation throughout the nation. It included an export ban on several agricultural products (vegetable oils, meat, and pulses) and certain dairy products. However, these restrictions were lifted periodically during February 2023. In March 2023, the government of Türkiye issued a notice to lift the remaining restrictions on exporting agricultural products, such as tomatoes, red meat, sunflower oil, and some pulses.

#### 2.1.2 Forecast of Agriculture's Contribution to GDP

The below graphs showcase the actual and forecasted contribution of the agriculture sector to the Türkiye's GDP. The forecasted values were calculated based on various parameters such as current GDP growth rate, agriculture's historic share in GDP, inflation rate, expected investment in the agriculture sector, vision document of respective countries, import & export analysis, and others.

**Figure 1. Agriculture, Forestry, and Fishing, Value Added (% of GDP), Forecast to 2028**



A - Actual, E - Estimated, and F - Forecasted; Source: A - World Bank; E, F - Analyst Team

Note: The market numbers have been forecasted based on various parameters such as current GDP growth rate, share in GDP, inflation rate, sector growth, investment in sector, Government's vision, export, and others



The above bar graphs are an indication towards how the industrial sector is expected to increase its contribution to Türkiye's GDP over the forecast period. Availability of skilled workforce is a prime advantage for the country. Additionally, rising focus of the government towards development of the industrial sector is expected to promote growth of the industrial sector.

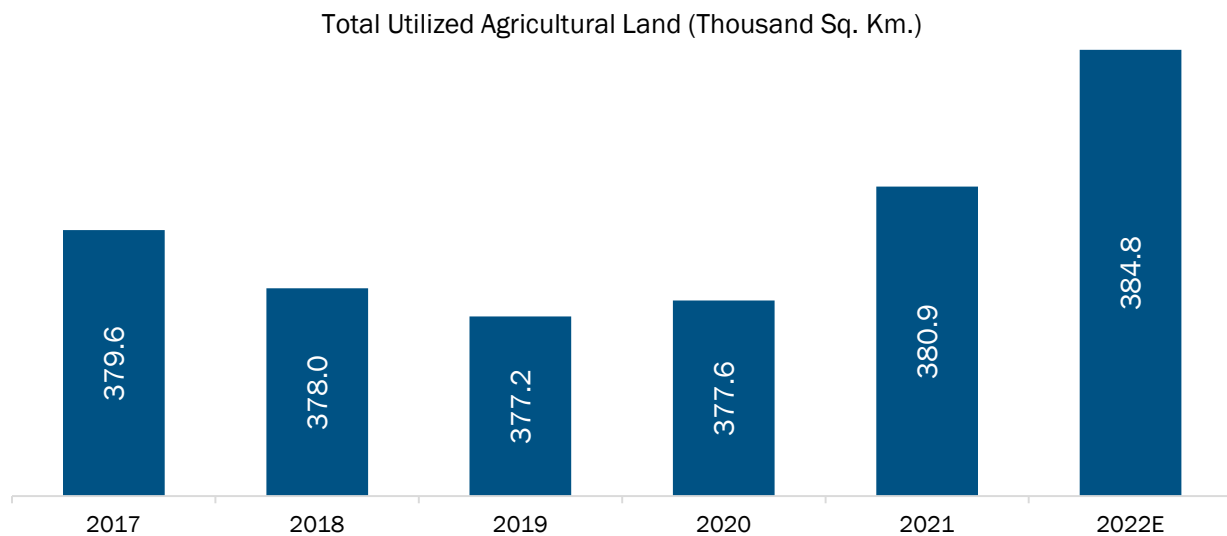
## 2.2 Agriculture Sector in Details

### 2.2.1 Type of Agriculture

#### 2.2.1.1 Plant-Based

Türkiye produces a variety of cereals, vegetables, fruits, and nuts. Despite being a large wheat producer, the country imports substantial volumes of wheat from Russia and Ukraine.

**Figure 2. Agricultural Land in Türkiye**

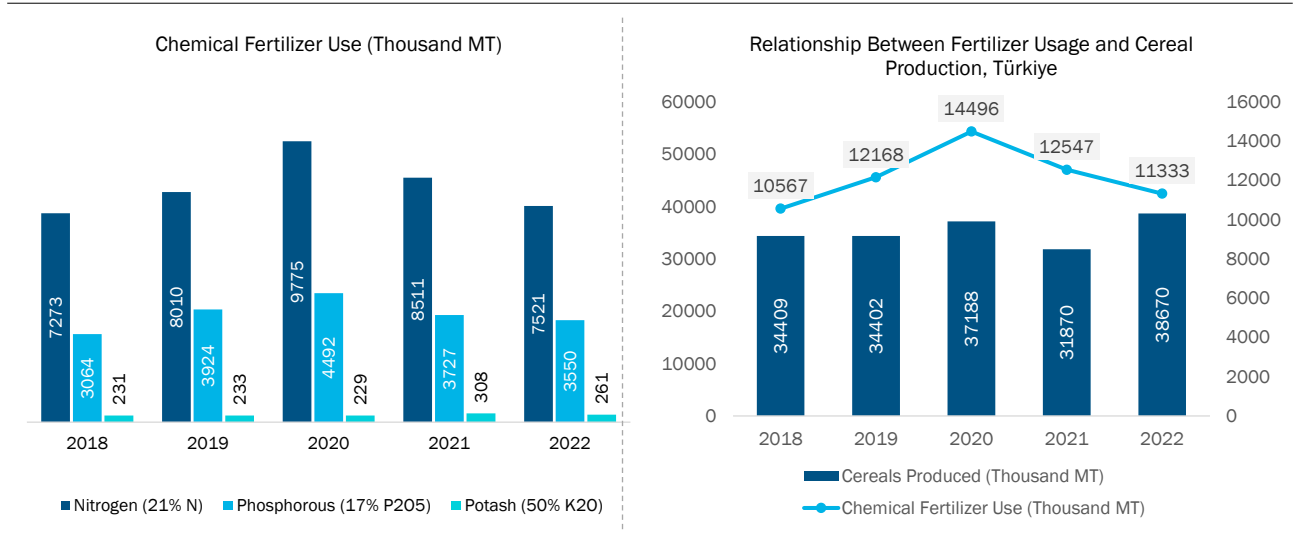


Source: Tuik Info; E - Estimated

As can be seen in above graph, the Turkish government have been successfully increasing the total utilized agricultural land area post 2019. Additionally, per the Turkish Statistical Institute, total arable land increased from 19580 sq. km. in 2019 to 19881 sq. km. in 2021. Furthermore, land under permanent crops increased from 3011 sq. km. in 2010 to 3591 sq. km. in 2021. Such growth showcases the government's increasing focus on developing the sector.



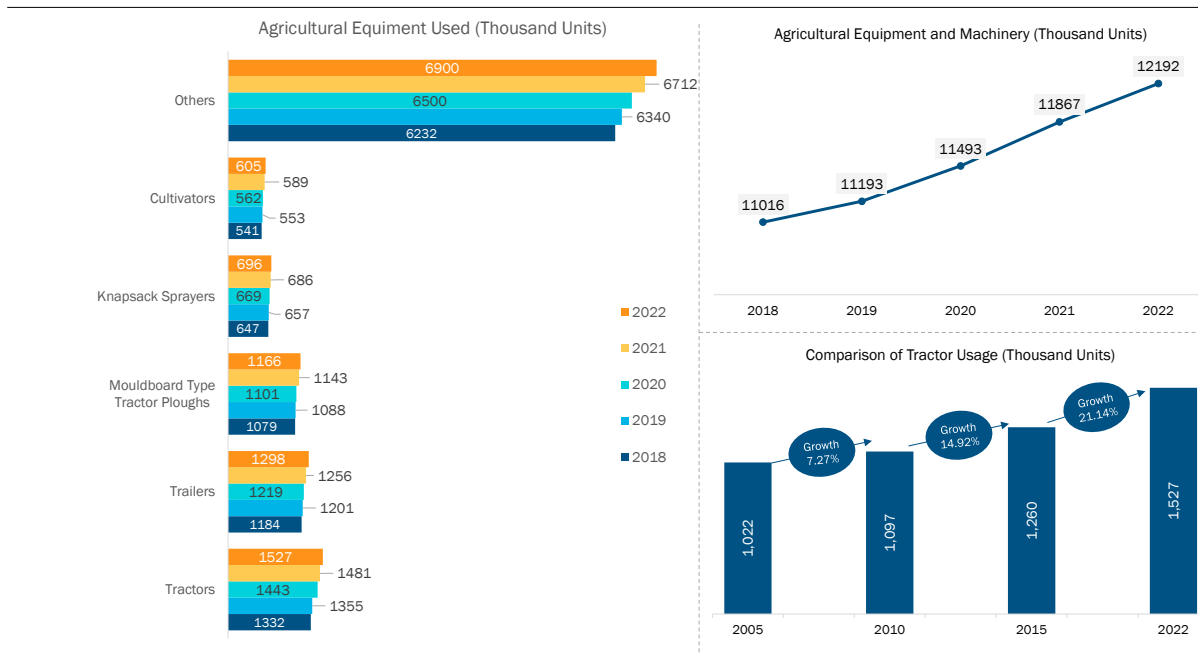
**Figure 3. Türkiye's Fertilizer Usage Statistics**



Source: Tuik Info, Food and Agriculture Organization (FAO), and Ministry of Agriculture and Forestry

As can be seen in above graph, the agricultural sector's output increased during 2020. The closure of different sectors led to an influx of laborers to the agricultural sector, contributing to higher output. When compared to 2020, both cereal production and fertilizer usage declined in 2021 due to the re-opening of various sectors, which led to an outflux of laborers from the agricultural sector. However, cereal production peaked in 2022, despite lower fertilizer usage. Rising usage of sustainable farming techniques can be attributed to the growth.

**Figure 4. Türkiye's Agricultural Machinery Usage Statistics**



Source: Tuik Info and Ministry of Agriculture and Forestry

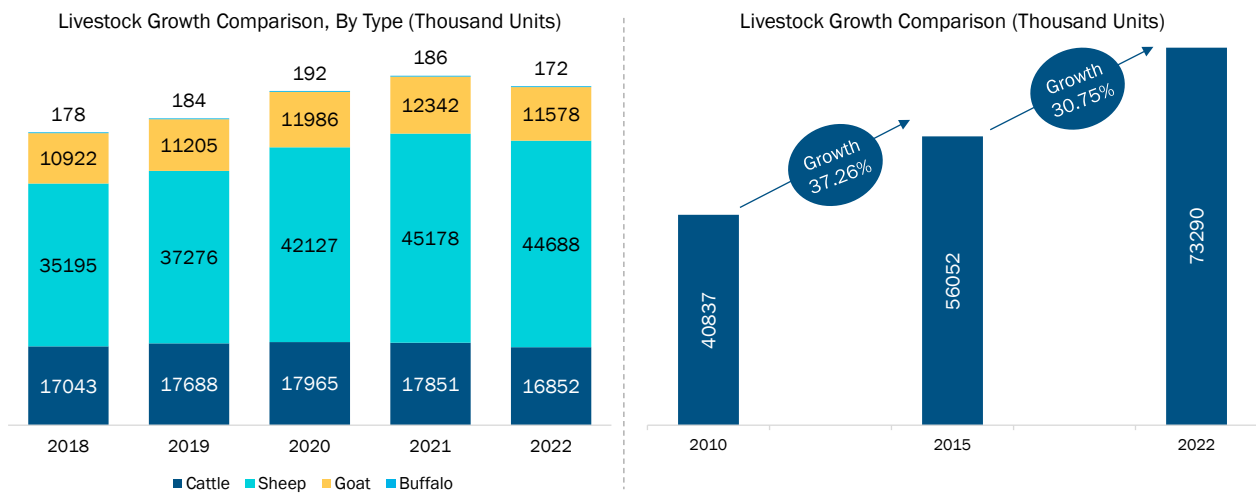


As can be seen in above graph, the agricultural sector's usage of farm tools and machines have been rising at a good pace. It showcases the country's focus on improving production from available agricultural land. Number of tractors in usage increased from 1,332 thousand units in 2018 to 1,527 thousand units in 2022, while cultivators increased from 541 thousand units to 605 thousand units. When compared to 2015, tractor usage increased by a massive 21.14% in 2022. Similarly, the total number of agricultural machinery increased from 11,016 thousand units in 2018 to 12,192 thousand units in 2022. Such trends showcase a growing opportunity for agricultural equipment manufacturers to invest in Türkiye.

### 2.2.1.2 Animal Farming

While crop farming is undertaken in all of the regions in Türkiye, mountainous eastern regions rely on animal husbandry. These regions account for one-fourth of the gross value of the total agricultural production.

**Figure 5. Livestock Statistics of Türkiye**



Source: FAO, Tuik Info, and Ministry of Agriculture and Forestry

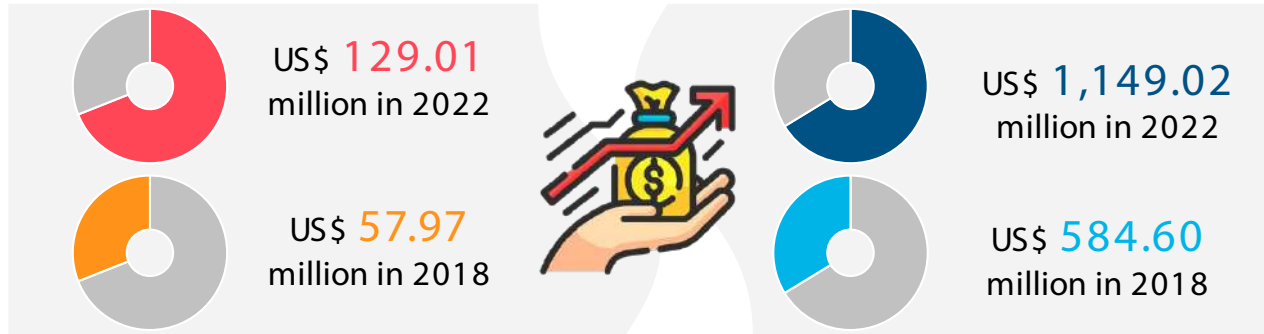
As shown in the above graph, the livestock units have been growing tremendously in the country. The growth in livestock units was more than 30% between 2015 and 2022. Sheep was the most reared animal in the country over the last five years, as can be seen in the charts, followed by cattle and goats. Buffalos are relatively less reared, due to lower demand of buffalo-based products. Animal husbandry is an integral part of Türkiye's agricultural sector. Livestock products, including eggs, hides, milk, meat, and wool, contributes more than one third of the value of agricultural output annually, and is also an important export item for the country. Per International Trade Centre:



Türkiye exported live animals



Türkiye exported meat and processed animal products

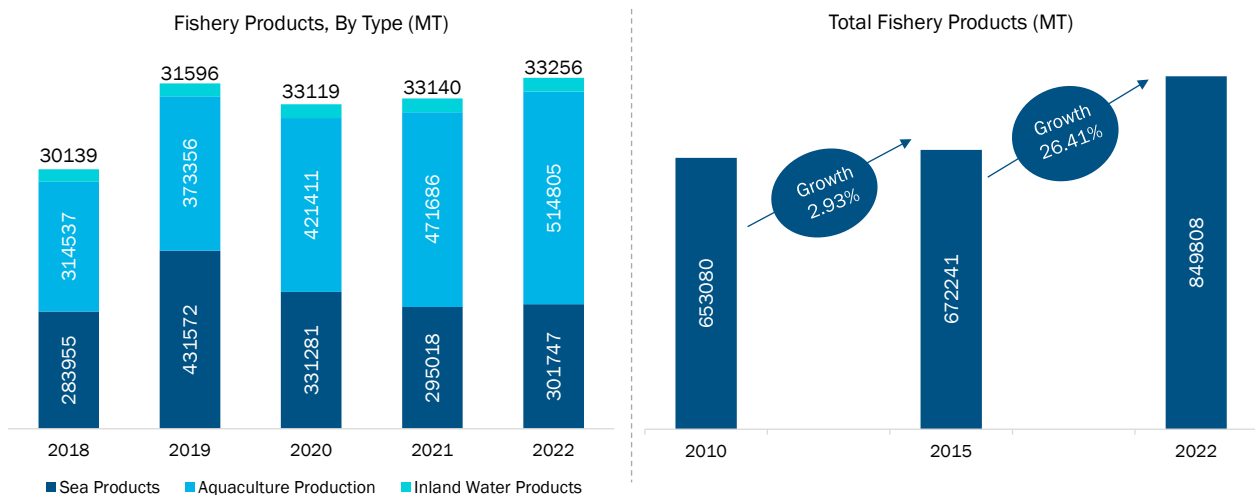


Grazing lands of Anatolia is renowned for cattle and sheep farming. Wool is also a significant export material of Türkiye. Traditional sheep species of Türkiye produces a coarse wool suitable for carpets and blankets while the finer wool producing Merino sheep, is being reared in the Bursa region.

2.2.1.3 Fishery

Fisheries and aquaculture production is an important source of accessible nutritious food and a basis of livelihoods in Türkiye. It also contributes to the coastal and rural economic well-being of the country. Turkish government supports its fishery sector through a wide range of policies with objectives centered on creating and retaining employment, improving fishers' welfare, and ensuring the sector's sustainability, along with the resources it relies on. Usually, government finance services benefit the fishery industry as a whole or some of its segments, providing direct support to individuals and companies.

Figure 6. Fishery Statistics - Türkiye



Source: Tuik Info and FAO



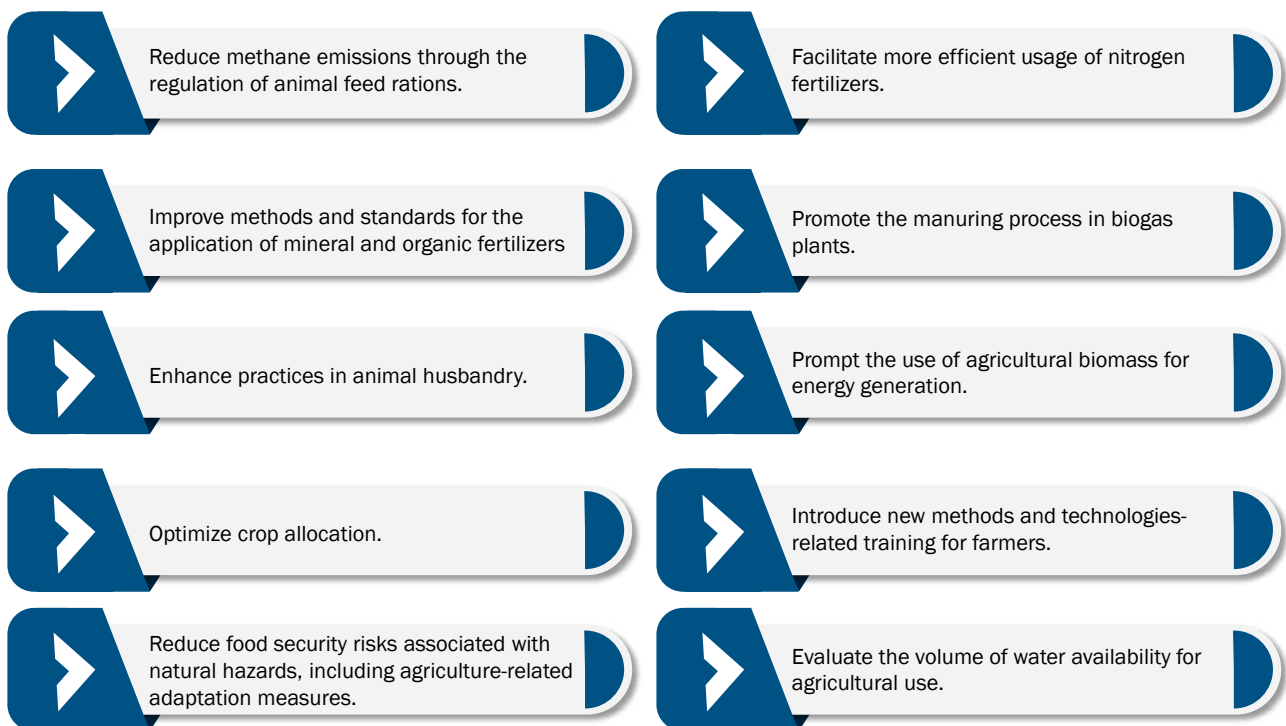
As depicted by above graph, the fisheries segment has grown by a large extent since 2010. While sea products have declined by some extent, there has been a tremendous increase in aquaculture production, owing to development in infrastructure and supportive initiatives from government. Türkiye have also increased its exports of fresh and chilled fish. Exports stood at US\$ 642.62 million in 2022, compared to US\$ 472.23 million in 2018. Such trends showcase the rising importance of the segment for the country.

## 2.2.2 Economic Contribution

### 2.2.2.1 Government Initiatives and Programs

In May 2023, the Turkish government announced plans to invest ~US\$1 billion to revamp agricultural production in rural areas. European Union's (EU) Instrument for Pre-Accession Assistance for Rural Development (IPARD) III program is funding this initiative by the Turkish government. Moreover, the investment, which is meant to create as many as 30,000 new jobs, is being coordinated by Türkiye's Agriculture and Forestry Ministry's Agriculture and Rural Development Support Institution (TKDK).

In April 2023, an updated version of the first Intended Nationally Determined Contribution of 2012— Updated First Nationally Determined Contribution (NDC)—was introduced to focus on reducing GHG emissions by 41% through 2030. In the agriculture sector, the NDC is expected to aid in the following aspects:



In March 2023, Türkiye announced plans to introduce an 11-article bill to counter climate change, and boost forest and agricultural productivity. The bill plans to encourage contracted production, prioritize support for producers, and ensure food safety and security, among others. It will include an array of processes, from hemp cultivation for fiber to the production of pesticides.





In January 2023, the Ministry of Agriculture and Forestry announced the “Agricultural Drought Combat Strategy and Action Plan for the 2023–2027 Period” to combat agricultural drought and increase awareness among the general public regarding the same, and plan sustainable agricultural water use, among other objectives. Under this plan, the Ministry intends to perform the provincial monitoring of soil moisture, precipitation, groundwater, and surface water, and gather data for drought prevention.

Türkiye’s rural development policy (2021–2023), introduced in January 2021, aims to increase the production capacity of producer unions and family businesses, and the employability of the rural workforce, among several other objectives. It plans to diversify the rural economy while evaluating agricultural and non-agricultural economic activities for ensuring greater production and employment. The policy plans to enhance the agriculture and food sectors’ competitiveness, increase food production, and ensure food security.

The Green Deal Action Plan 2021 provided strategies to contribute to Türkiye’s transition to a sustainable and resource-efficient economy. This policy also defines targets to make Türkiye’s agriculture sustainable and more productive.

The National Steppe Conservation Strategy and Action Plan 2021–2030 is envisioned to ensure the sociological, ecological, and economic sustainability and conservation of the steppes grassland.

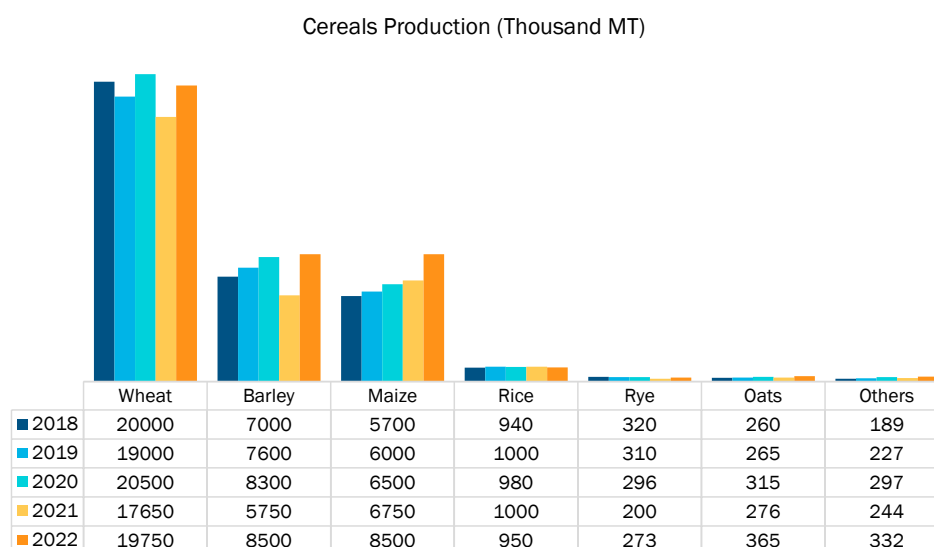
The sectoral policy on fisheries, introduced in January 2019, lays down strategies to prevent, deter, and eliminate illegal, unreported, and unregulated (IUU) fishing to warrant the preservation of fish and aquatic resources, and sustainable development and management of aquaculture and fishery. The timeframe of this sectoral policy is five years, from 2019 to 2023.

The Strategic Plan of the Ministry of Agriculture and Forestry, a cross-sectoral national policy, was announced in January 2019 to enhance food security, public health, and economic growth through value-added livestock and plant breeding in an efficient, productive, and ecologically sustainable manner. The timeframe of this sectoral policy is five years, from 2019 to 2023.

### 2.2.3 Agricultural Crops

The below images showcase the crops of Türkiye:

**Figure 7. Cereal Production – Türkiye**



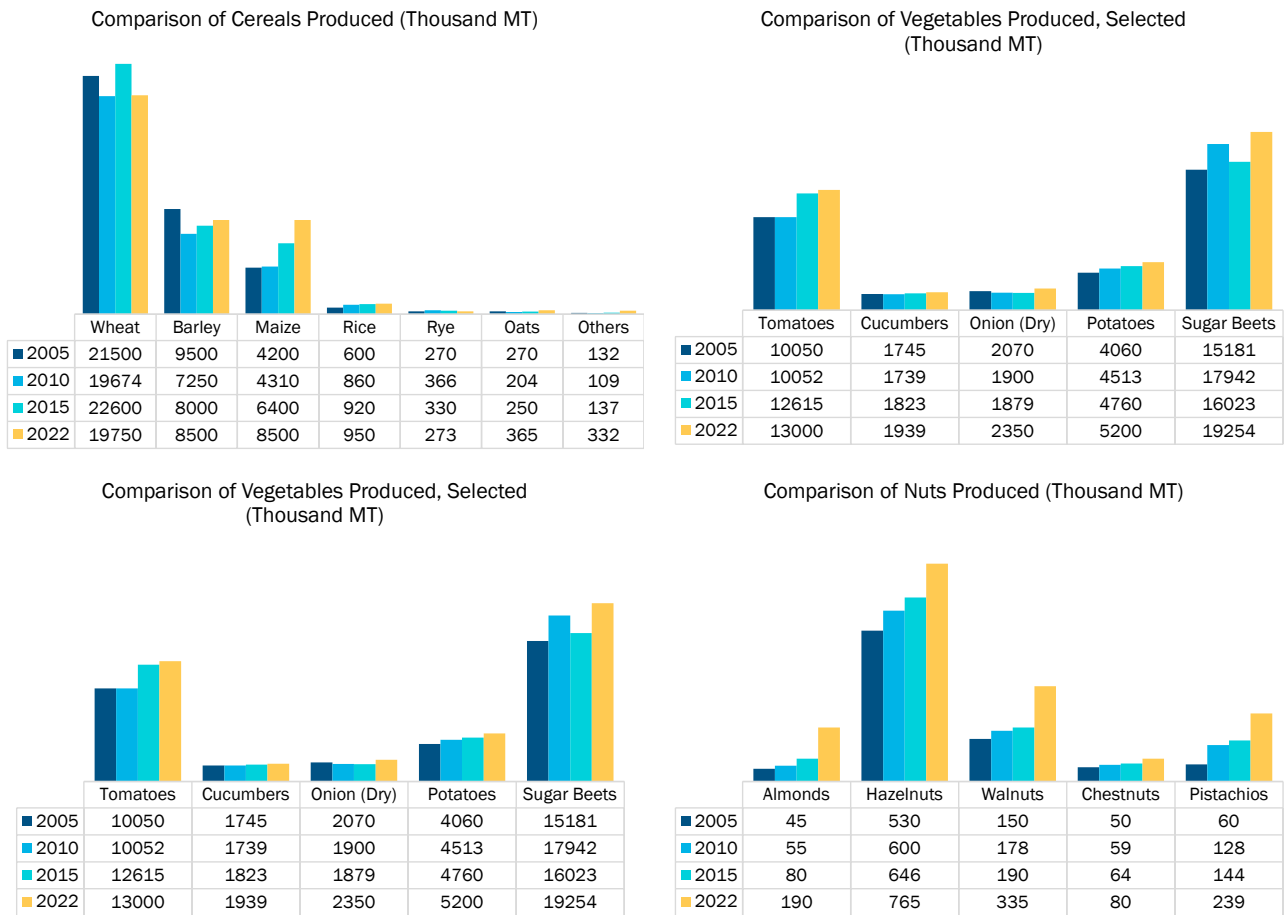
Source: Tuik Info and FAO





As depicted by the above graph, wheat is Türkiye's most produced crop, while rice, rye, and oats are gradually witnessing a rise in production. Wheat flour is one of Türkiye's most exported agricultural products, whose export value stood at US\$ 1,497.90 million in 2022. The value was US\$ 1,006.29 million in 2018, showcasing the rise in its trade value.

**Figure 8. Agricultural Production Comparison - Türkiye**



Source: Tuik Info and FAO

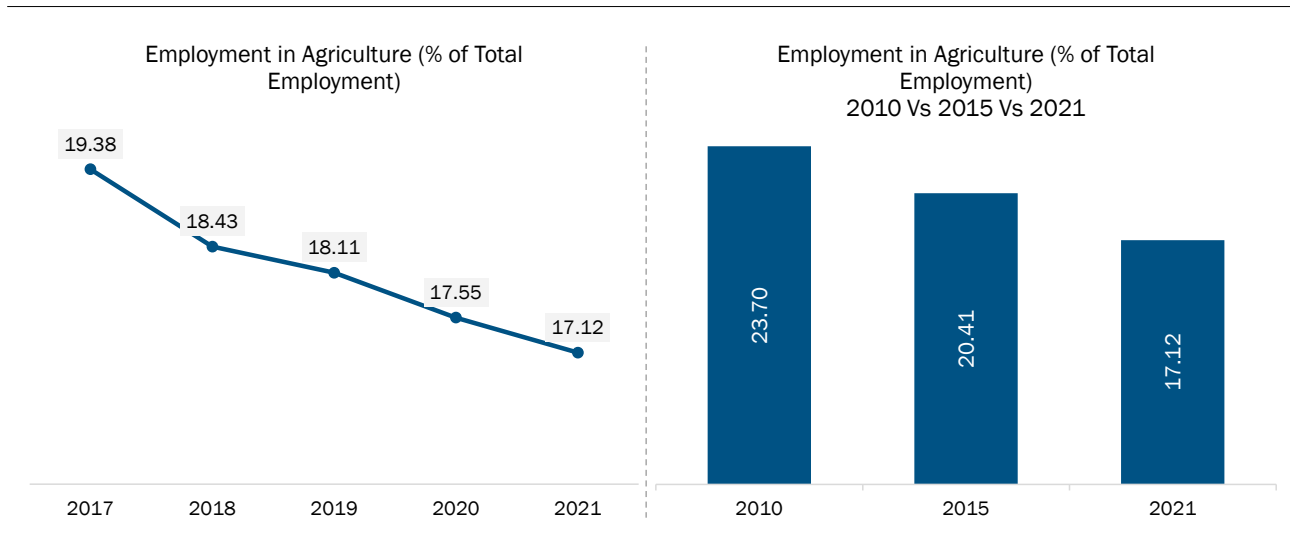
The above graphs provide a comparison between the different agricultural crops of Türkiye. It can be seen that the production of most items has risen significantly over the years. For instance, almond production in 2022 has increased by more than four times since 2005. Similarly, walnuts produced in 2022 is nearly double of 2010's production quantity. While exports have also been rising, the growth in domestic consumption is also a significant driver in promoting crop production. Shift from traditional crops, such as wheat and corn, towards dry fruit production have also contributed towards the higher production of such fruits. The presence of a significant population of refugees from countries is a positively impacting the quantity of domestic food consumption.



### 2.2.4 Labor Outlook for Agricultural Sector

Employment in agriculture represented 17.12% of 2021's total employment in Türkiye. The agriculture sector accounted for 14.78% of employed males and 22.33% of employed females in 2021.

**Figure 9. Labor Statistics, Türkiye**

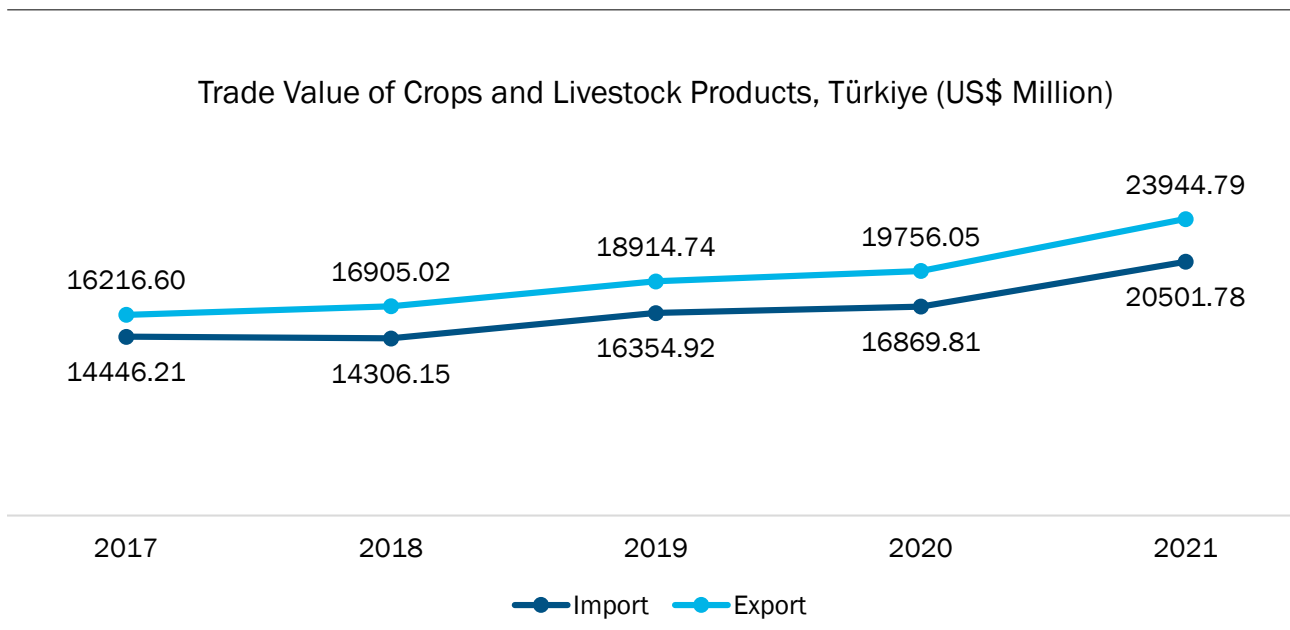


Source: Tuik Info, Modeled International Labour Organization (ILO) Estimate and World Bank

Despite a rise in crop production, Türkiye has witnessed a steady decline in agriculture's labor employment share. While the % share of total employment has declined, the number of persons employed increased to 4.87 million in 2022 from 4.737 million in 2020.

### 2.2.5 Agricultural Products - Import & Export Analysis of Türkiye

**Figure 10. Türkiye's Import & Export**



Source: FAO

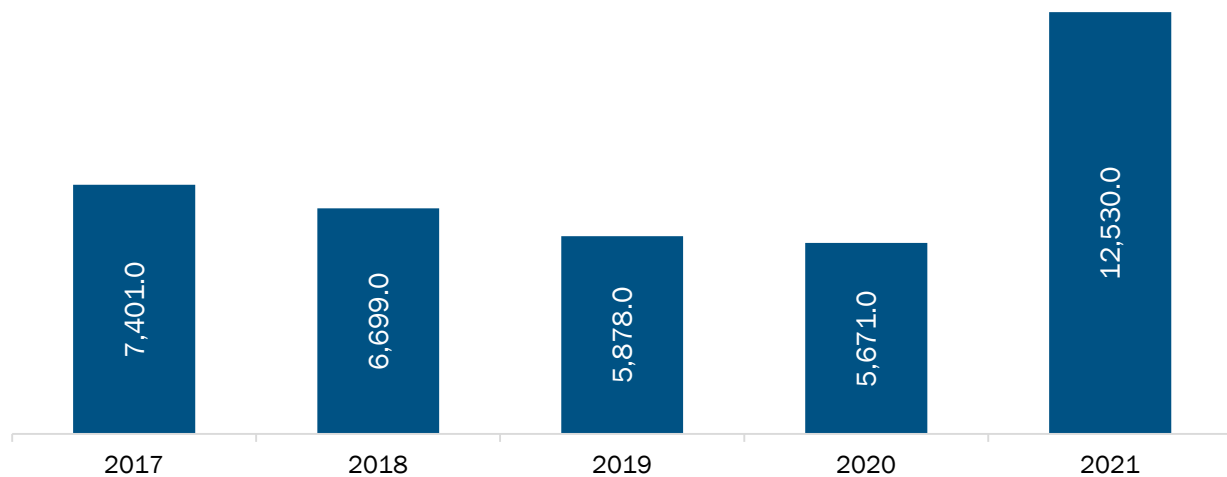


The above line graph depicts Türkiye's rising imports and exports related to agricultural products. Growth in the tourism sector, especially medical tourism, has been a significant driver of the country's internal agricultural product consumption. The tourism sector is a significant contributor to the Turkish economy, and inflow of tourists strongly aids in consumption of various agricultural products. As per UN World Tourism Organization (UNWTO), approximately 30 million tourists arrived in Turkey in 2021, up from 15.9 million in 2020. Such a spike in tourist arrival also increased food consumption, and in turn promoting growth of the agricultural sector. Additionally, as per United Nations High Commissioner for Refugees (UNHCR), Türkiye presently shelters ~3.6 million registered Syrian refugees along with ~0.32 million persons of concern from other nationalities. Presence of such a large number of refugees have also significantly contributed to the growth in domestic consumption, leading to higher food imports. Moreover, improving trade relations with several nations has boosted the export of its main agricultural products, such as wheat flour, cereal grains, and processed animal products.

### 2.2.6 Capital Investments and Major Investors - Türkiye

Türkiye is one of the top 10 agricultural economies in the world, and farming is crucial to rural development, employment, and export. The country is a regional hub for producing and processing food and exporting the same to large European and Middle Eastern markets. Further investment is required to aid farmers in upgrading their production techniques, boosting productivity, and coping with climate change. The following figure depicts the inflow of foreign direct investments (FDI) to the agricultural sector of Türkiye.

**Figure 11. Total FDI Inflows in Agriculture Sector (US\$ Million), Türkiye**



Source: FAO

Türkiye has a favorable climate and is suitably positioned to act as a bridge between Asia, Europe, and Africa. Such factors are key advantages that aid the country in attracting FDI for its agricultural sector. The bar graph shows that the country has received a steady flow of FDI in the agricultural sector over the past few years. The FDI saw a huge spike in 2021, owing to improving trade relations with neighboring nations including GCC. Additionally, the government had increased the amount of credit provided to the sector by more than 50% (as per stats



from FAO), compared to 2020, which allowed additional expansion and thus aided in attracting more investments. With further improvement in farming infrastructure and growth of technology adoption, the sector is expected to witness a strong rise in FDI in the coming years.

### 2.2.7 Ongoing and Upcoming Agriculture Projects – Türkiye

In May 2023, a major Turkish company announced the continuation of establishing new soil-less agricultural greenhouses. It has completed an initial phase of over 60 hectares, under its plan of setting up greenhouses on 500 hectares in total. The company is expected to create employment for 4,500 people upon completion with the planned investment of US\$ 650 million.

In May 2023, the Ministry of Agriculture and Forestry introduced 42 drought and disease-resistant field plant varieties to Turkish agriculture in 2023. According to the ministry's statement, research and development (R&D) initiatives are the key to producing new plant seeds.

In October 2022, Türkiye and Kazakhstan announced an enhanced focus on bilateral trade, encompassing agriculture, energy, transport & logistics, and military. Agricultural trade between these countries is expected to increase because of the agreement, which would benefit farmers from both countries.

The Uplands Rural Development Programme was designed to offer better economic opportunities for economically weak farmers in the uplands of Türkiye. It aims to enhance their prosperity and resilience by connecting and integrating farms and agribusinesses into more profitable economic clusters while using natural resources sustainably and increasing the climate-adaptive capacity of smallholders. Co-funded by the International Fund for Agricultural Development (IFAD), the program would be active during 2017–2027. The IFAD funds ~US\$ 63 million of the total estimated total cost of the program, i.e., ~US\$ 105 million.

The Goksu Taseli Watershed Development Project is being implemented in selected villages within 9 districts of the Konya and Karaman provinces of Central Anatolia. It aims to reduce rural poverty by supporting economic diversification through improved agricultural production and marketing activities and strengthening resilience to climate shocks. The project targets 32,000 smallholder farming and nomadic households, most producing fruits and field crops along with rearing small ruminants. The project would be active during 2015–2025, and it is co-funded by the IFAD, which is funding ~US\$ 18 million of its total estimated cost, i.e., ~US\$ 25 million.

## 2.3 Industry Dynamics

### 2.3.1 Driver

#### 2.3.1.1 Increasing Export of Agri-Food Products

The agricultural industry in Türkiye is diversified and well-recognized for producing various agricultural products, including cereals, fruits, vegetables, dairy goods, meat, and processed meals. The production of food and beverages in Türkiye is extensive and complex, as it relies heavily on domestic and imported ingredients. The food & beverages sector in the country, which serves domestic and international markets, is constantly expanding to fulfill the significant customer demand. In 2021, Türkiye exported nuts to countries such as Russia, Germany, Italy, the UK, and the Netherlands; this export accounted for 17.2% of its total export. Its export of wheat flour to countries such as Iraq, Yemen, and Syria accounted for 10.9% of its total exports. In 2021, Türkiye's citrus export to Russia, Ukraine, Bulgaria, etc., totaled 9.66% of the entire export. Its exports also include grapes (6.78%), dried legumes (6.69%), pitted fruits (4.42%), dried fruits (3.92%), tomatoes (3.76%), sunflower seeds (2.33%), corn (1.2%), rice (1.34%), spice (1.33%), and tropical fruits (3.74%).



Further, Türkiye is a crucial tourism destination, and it offers several growth opportunities for the agriculture sector. Consumption of food by tourists, in hotels, restaurants, and cafes significantly boost the Turkish economy. Türkiye has a well-developed food processing sector that caters to both international and domestic markets.

### **2.3.1.2 Growing Retail Food Sector and Demand for Agri-Food Products**

Türkiye has recently seen major urbanization and a steady population increase. Convenient and easily accessible food items are in demand as more people live in cities and their income levels rise. The retail food industry is expanding in response to this demand, further bolstering the sales and consumption of agri-food products. The increasing population of the young, urban middle class is also contributing to the growth of the retail food sector due to the rapidly growing popularity of online food shopping among them. The retail food sector continued its growth in 2020, with an upsurge in home-cooked food consumption amid social restrictions. The retail sector consists of modern retail chains and traditional small grocery stores with a new emphasis on deep discount stores.

By the end of 2020, retail grocery sales in Türkiye surpassed US\$ 75 billion. In 2021, the sales accounted for US\$ 76 billion; traditional grocery retailers and modern grocery stores contributed US\$ 27,052 million and US\$ 42,975 million, respectively, to these sales. Thus, changing consumer preferences, increasing modernization and convenience, and growing health and wellness awareness propel the agri-food product growth in Türkiye.

## **2.3.2 Challenge**

### **2.3.2.1 Declining Apparel Demand from Russia and Ukraine**

The conflict between Russia and Ukraine is increasingly impacting the supply chain of cotton textiles worldwide. According to a United Nations Conference on Trade and Development (UNCTAD) report on the Russia-Ukraine issue, Türkiye, China, Egypt, and India rely on various imports from these two countries. Incidentally, these are also significant consumers of clothing and textiles, and is a significant trade partner of Turkish cotton and associated products. With a share of 6.1%, Türkiye is the sixth-largest supplier of textiles and apparel to Russia. Hence the conflict between Russia and Ukraine is significantly hampering the demand for textiles and apparels, declining demand for cotton and negatively impacting the agricultural sector. Additionally, Türkiye's inflation soared to ~54.4% in February 2022, which is further likely to substantially influence its ability to supply raw materials.

Further, the pressure from Russia's invasion of Ukraine affects the performances of textile and leather goods producers in Istanbul, Türkiye.

### **2.3.2.2 Disruptions from Earthquake**

In 2023, according to FAO, the earthquake that hit southern Türkiye in February damaged more than 20% of Türkiye's agricultural production. The earthquake caused significant damage to the agricultural sector, including cattle, crops, fisheries, aquaculture, and rural infrastructure in affected areas. Additionally, it impacted 11 key agricultural provinces affecting 15.73 million people and over 20% of the country's food production. It is estimated that the calamity caused US\$ 1.3 billion in damage due to the destruction of infrastructure, animals, and crops and an additional US\$ 5.1 billion in agricultural losses.

While the country would require some time to recover from the losses, international aid has strongly supported the Turkish government's recovery process. Some such steps are as follows:



**Table 1. Recovery & Reconstruction in Agricultural Subsectors:**

Priorities	Short-term (1year)	Medium-term (2-3 years)	Long-term (3-5 years)
Inclusive and sustainable recovery of the crop sub-sector	<ul style="list-style-type: none"> <li>• Provide annual crop input support including seeds, fertilizers, and drought tolerant varieties to small size farmers, including women and vulnerable groups.</li> <li>• Provide annual crop input support including seeds, fertilizers to medium-size farmers.</li> <li>• Provide seedlings and saplings and additional required inputs for perennial (fruit trees) and high value crops (i.e., pistachio).</li> <li>• Provide financial support for land preparation/rehabilitation and replanting of damaged agricultural land, including machines, tools, and equipment.</li> <li>• Rehabilitate and improve on-farm private irrigation (water channels/management) to ensure water availability using “BBB” principles.</li> <li>• Incentivize seasonal labour force by ensuring attractive living and working condition opportunity and by promoting volunteerism.</li> <li>• Support the establishment of a pilot machinery park in all affected provinces.</li> </ul>	<ul style="list-style-type: none"> <li>• Organize capacity building exercises (i.e., Farmer Field Schools) in farm operations using Climate Smart Agriculture and Resilient Agriculture practices, which include water conservation and soil health restoration and management.</li> <li>• Facilitate financial support to farmers for the upcoming next agricultural seasons.</li> <li>• Develop an agricultural employment support program/mechanism for 11 provinces through Agricultural Information System (AIS) of MoAF.</li> <li>• Rehabilitate government buildings as well as research institutes, and specific equipment.</li> <li>• Rehabilitate and improve damaged dams and larger irrigation schemes using “BBB” principles.</li> <li>• Provide financial support (combination of grants and inputs (for SMEs) and interest rate compensation for agricultural production loans for the restoration of agro-food industry facilities and replacement of productive machineries, tools and equipment.</li> </ul>	<ul style="list-style-type: none"> <li>• Support the creation and continuation of standardized weather/holistic hazards index-based crop insurance systems for the most vulnerable farmers living in the hazards prone areas.</li> <li>• Improve public agriculture research system to develop climate resilient and climate smart agriculture practices to support farmers in disaster prone areas.</li> </ul>
Inclusive and sustainable recovery of the livestock subsector	<ul style="list-style-type: none"> <li>• Conduct vaccination campaigns and provide animal drugs.</li> <li>• Scale-up the provision of animal feed.</li> <li>• Restock lost animals, especially small ruminants, for most vulnerable women and other affected small livestock keepers.</li> <li>• Provide financial support for rehabilitation of animal shelters using “BBB” principles for low-carbon models and climate resilient animal shelters.</li> </ul>	<ul style="list-style-type: none"> <li>• Reconstruct and rehabilitate government offices, vet hospitals and clinics.</li> <li>• Create surveillance and monitoring system for the control of transboundary animal diseases.</li> <li>• Conduct capacity building for government field extension staff, veterinarians, and livestock keepers on climate smart practices.</li> <li>• Provide support to private sector and animal processing industry</li> </ul>	<ul style="list-style-type: none"> <li>• Create and continue standardized weather/holistic hazards index-based livestock insurance systems targeting small holders and rural landless needs in the most hazards prone areas.</li> </ul>



Priorities	Short-term (1year)	Medium-term (2-3 years)	Long-term (3-5 years)
Inclusive and sustainable recovery of the fisheries and aquaculture subsector	<ul style="list-style-type: none"> <li>• Rehabilitate destroyed fishponds.</li> <li>• Rehabilitate public facilities (hatchery, office buildings, fishponds) considering "BBB" principles.</li> <li>• Restock hatchery facilities.</li> <li>• Rehabilitation of docks and harbours.</li> <li>• Support (grants/soft loans) provision of new fishing gears, boats, equipment, and reparation of the damaged ones.</li> </ul>	<ul style="list-style-type: none"> <li>• Build capacity on climate resilience and risk management in small and medium size enterprises on aquaculture practices for government officials and fish farmers.</li> <li>• Ensure access to financial support for small scale fishermen, especially more vulnerable group (youth and women) to compensate their income losses and support their livelihoods.</li> </ul>	
Inclusive and sustainable recovery of the forestry subsector	<ul style="list-style-type: none"> <li>• Provide seedlings and saplings and inputs (fertilizers, etc.) for replanting of affected forest areas.</li> <li>• Conduct landscape rehabilitation and replanting including machinery, tools, and equipment.</li> <li>• Facilitate access to financial support for forest-villagers, to maintain their income generating activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Rehabilitate damaged nurseries, greenhouses, research centres and government facilities.</li> </ul>	
Improved human capital and organizational capacity for agriculture recovery	<ul style="list-style-type: none"> <li>• Support individual and local social recovery process through Rural Recovery and Development Centres (i.e., psychosocial support).</li> <li>• Provide consultancy and voluntary labour through mobility interventions (ERASMUS Mobility type interventions to bring in students and volunteers to the region).</li> </ul>	<ul style="list-style-type: none"> <li>• Enact local capacity improvements through organization-level partnerships at the national and international level (ERASMUS and grant support for NGOs).</li> </ul>	<ul style="list-style-type: none"> <li>• Conduct local collective recovery and development initiatives through multisectoral interventions.</li> </ul>

Owing to such extensive planned recovery measures, the disruption from the earthquake is expected to be short-lived.

### 2.3.2.3 Land Usage and Planning Issues

According to FAO, ~70% of farmers in Türkiye own less than 0.05 sq km of land, and the average farm size is 0.06 sq km. Thus, the average size of farms is on the smaller side. Polyculture on such



small farms is a widely practiced agricultural method wherein multiple crop types are planted on a single field. Such factors have resulted in faster depletion of soil quality. It is further accelerated by practices such as intensive tillage and faulty irrigation leading to salinization.

Furthermore, a lack of proper awareness has rapidly changed crop patterns, resulting in volatile production. Farmers have shifted towards relatively high-value-added fruits and vegetables from major crops such as corn and wheat. Often, a price rise of a particular crop encourages numerous farmers to switch to planting that crop in one year, leading to additional supply and a resulting decrease in its price in the following. Such unplanned moves have thus led to decreased stability of farmers' livelihoods and unpredictable food production. At the same time, the expansion of urban areas and the growth of profitable sectors have led to constant changes in land usage. Proactive policies, with considerations for long-term agricultural supply, can strongly aid in negating such challenges.

### **2.3.3 Opportunities**

#### **2.3.3.1 Strawberry Farming**

Türkiye has emerged as one of the world's top strawberry producers in recent times. Although strawberries are cultivated in almost all parts of Türkiye, the Mediterranean (52.1%), Aegean (24.7%), and Marmara (14.6%) regions are the top producers. Strawberry production businesses in the country focus solely on attaining high fruit quality throughout the year to cater to the demands of domestic and international markets.

The Mediterranean coastal region is the most promising region for strawberry farming due to temperature conditions suitable for the growth of citrus fruits and the availability of sandy soils. Modern agricultural techniques, including summer and fall planting, fresh runners rooted in pots (FRRP), solarization, black plastic mulching, drip irrigation, fertigation, walk-in high tunnels, and plastic and glass houses, are being applied in this region. As a result, fresh strawberry harvesting begins in the second half of November and continues through July. A single plant can produce 500–1,100 g of yield. Most of the cultivars planted are from California.

Strawberry varieties grown in the Marmara region are excellent for freezing, and hence are processed for exporting. In 2021 Türkiye exported 42 thousand metric tons of frozen strawberries. Its strawberry industry presents several opportunities for economic development, agricultural diversification, job creation, market access, technological innovation, and promoting good nutrition and health. Moreover, with the implementation of proper strategies, Türkiye can solidify its position in the global strawberry market.

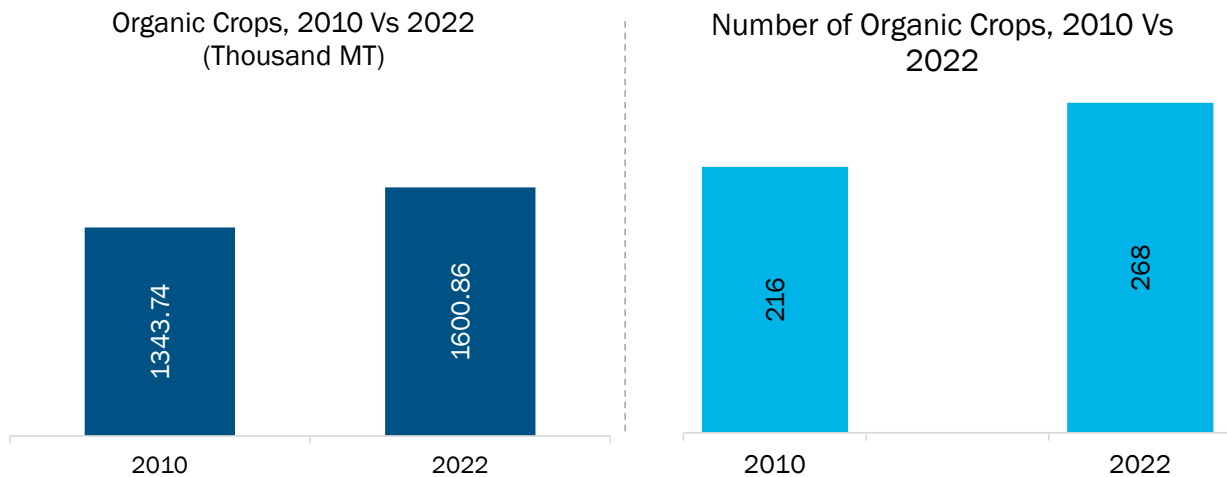
#### **2.3.3.2 Organic Farming**

Organic farming is a long-term agricultural strategy that promotes the usage of natural inputs and practices to produce food while protecting soil fertility, biodiversity, and ecosystem health. In Türkiye, organic agricultural practices are commonly used to grow fruits such as apricots, sultanas, figs, hazelnuts, figs, grapes, and peaches. Turkish farmers also grow vegetables like tomatoes, eggplants, and cucumbers through this farming technique. The development and success of organic farming in Türkiye can be attributed to various factors, including compliant grazing grounds for livestock raising and favorable climatic conditions for growing crops. In addition, the growing consumer demand for high-quality, healthy food products has aided organic farming tremendously.





**Figure 12. Organic Farming Statistics, Türkiye**



Source: FAO

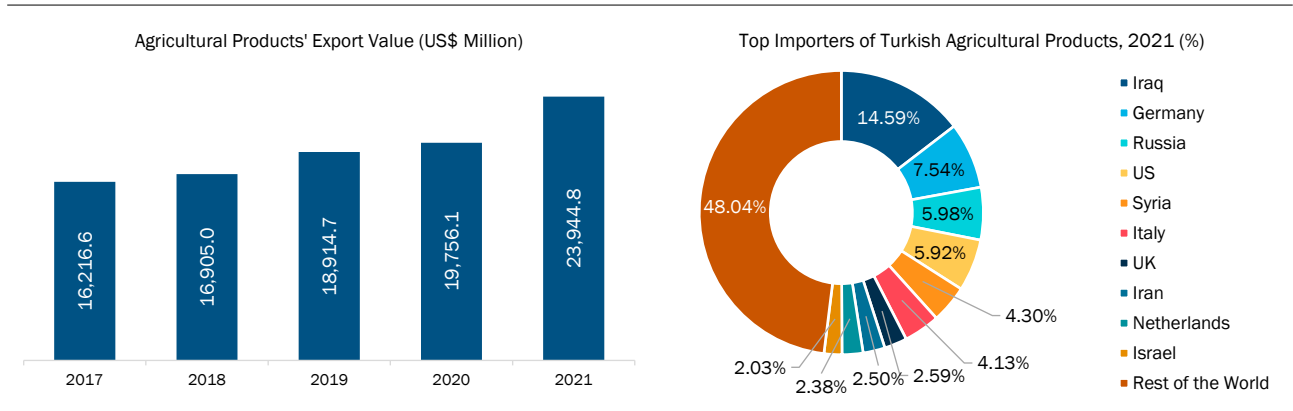
The volume of organic crop production stood at ~1601 thousand MT in 2022, while it was ~1,344 thousand MT in 2010. The number of agricultural holdings increased from 42,097 in 2010 to 44,927 in 2022. The number was much higher in 2019 and stood at 74,545. However, the disruptions during the pandemic led to a decline in number. As the country resumes its pre-pandemic growth trajectory, organic farming is expected to provide good growth opportunities for the agricultural sector. Additionally, in August 2021, a roadmap titled the Green Reconciliation Action Plan was announced to renew the country's agriculture sector, among others, and reduce its environmental impact while warranting its competitiveness in a dynamic international scenario. The plan also details the requirement for making organic farming more popular among farmers since the demand for organic products is growing, creating opportunities for the development of sustainable and environmentally friendly organic farming production.

### 2.3.3.3 Growth of Exports

Türkiye is a major agricultural product exporter, with the potential to grow export markets further. Fresh fruits and vegetables, cereals, nuts, processed food, and agricultural inputs are among the most important exports.



**Figure 13. Agricultural Export Statistics, Türkiye**



Source: FAO

As depicted in the bar graph, Turkish export of agricultural products have increased significantly over the last decade. Additionally, the country is successful in exporting its agricultural products throughout the world. Iraq, Germany, Russia, the US and Syria were the largest importers of Turkish agricultural products in 2021. Türkiye's agricultural exporters have managed to keep up the pace and increase their overseas sales to a record level in the first four months of 2023. From January through April, outbound agricultural shipments in Türkiye totaled ~US\$ 11.2 billion, a 1.6% rise year on year. The shipments of fresh fruits and vegetables exceeded US\$ 1.2 billion, and olive and olive oil rose to more than US\$ 377 million, per data from Ministry of Trade. Türkiye supplied Iraq with grain, legumes, oilseeds, and their byproducts valued US\$ 660.6 million. While the olive and olive oil industry delivered US\$ 130.7 million worth of goods to Spain, the fresh fruits and vegetable industry exported US\$ 316.534 million worth of goods to Russia. The expansion of agricultural exports can be boosted by exploring new markets.

### 2.3.3.4 Rising Importance of Agritech







Agricultural technology or agritech revolves around innovative approaches to transform food production and processing methods and tries to ensure it reaches the consumers in the safest way. Several startups have been emerging in the country, based on agritech. The different technologies being developed include:

- Methods to enable agricultural products reaching consumers through natural protection methods
- Detect pests and make crop predictions via data analysis algorithms and artificial intelligence (AI)
- Natural conservation management of plants
- Smart beverage production techniques
- Food wastage

Such innovations have been ably supported by the Turkish Government. One such include the banning of ~ 200 pesticides in 2021. Hence, solutions developed by these agritech startups have been gaining traction and have also attracted FDI from different nations, especially Europe. A leading early-stage venture capital funds in Europe has 13 startups from Türkiye in its portfolio. Such trends in agritech development is expected to offer good growth opportunities for the agricultural industry in Türkiye.



### 2.3.4 Macroeconomic Factors Impacting the Sector

<b>GOVERNMENT</b>		<ul style="list-style-type: none"> <li>• The Turkish government invests heavily in irrigation and infrastructure improvement projects. For example, it offers ~50% grant funding for the installation of irrigation systems (drip or sprinkler) under the “Rural Development Investments Support Program.”</li> <li>• By the end of 2021, pressurized irrigation systems were constructed on a total area of 1.12 million hectares in the country, and almost 330 000 producers had received loans and credit support.</li> </ul>
<b>ECONOMICAL</b>		<ul style="list-style-type: none"> <li>• According to World Economic Outlook April 2021 report published by the International Monetary Fund (IMF), Türkiye stood 11th in the world in terms of GDP at PPP in 2020”.</li> <li>• Since 2000, the GDP per capita has tripled in the country and is now higher than the average GDP per capita of most countries in the world.</li> <li>• Türkiye has a large agriculture sector that contributed 6.67% to the national GDP in 2020 and employed about 18% of the working population. The GDP contribution of the sector decreased to 5.5% in 2021.</li> </ul>
<b>SOCIAL</b>		<ul style="list-style-type: none"> <li>• 23.43% of the population in Türkiye resides in its rural regions, wherein agriculture is the main source of employment. Many people and families rely on agriculture for their livelihood. It offers opportunities for farmers, farm workers, and numerous linked industries, including food processing and packaging, transportation, and retail.</li> <li>• Amid rapid urbanization and industrialization in Türkiye, young people in vast numbers have migrated from rural areas to cities for better economic prospects and living standards. Thus, the rural population of Türkiye declined by 1.2% in 2021. The demographic composition of rural areas has changed with migration, thus impacting social structures.</li> </ul>
<b>TECHNOLOGICAL</b>		<ul style="list-style-type: none"> <li>• The Ministry of Agriculture and Forestry is the primary government agency in charge of agricultural production and the biggest investor in Turkish digital agricultural solutions. Its budget for 2019 was over US\$ 4.5 billion, of which US\$ 884 million was planned for investments. ~US\$ 26.5 million, or 3% of the investment pool, was set aside exclusively for digital agriculture solutions.</li> <li>• The Communiqué on Supporting Agriculture-Based Economic Investments in Scope of Rural Development Supports (Communiqué) states that investment projects for the construction of modern greenhouses with air conditioning, irrigation and fertilization systems, and technological advancements in agricultural production would also be considered among the beneficiaries of subsidies.</li> </ul>
<b>ENVIRONMENTAL</b>		<ul style="list-style-type: none"> <li>• In Türkiye, land use is changing primarily due to agriculture. Deforestation is a result of clearing out forested areas to make room for agricultural activity. This may lead to decreased biodiversity, ecosystem disruptions, and accelerated soil erosion.</li> <li>• Further, unsustainable farming practices such as extensive agriculture, excessive chemical fertilizers and pesticides, and inappropriate irrigation lead to soil degradation.</li> <li>• Problems such as soil erosion, soil infertility, and organic matter depletion are frequent in agricultural settings. Soil degradation notably impacts long-term sustainability and agricultural productivity.</li> </ul>
<b>LEGAL</b>		<ul style="list-style-type: none"> <li>• Implementing reasonable environmental policies to ensure sustainability would help the government of Türkiye reduce the role of state enterprises in agricultural markets, shifting the focus from self-sufficiency goals and planned agricultural production to competitiveness and efficiency, thereby promoting resilient growth of the agriculture sector.</li> </ul>

Source: Tuik Info, FAO, ITA, USDA FAS, OECD, World Bank, and Government Websites



## 3. GCC

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### 3.1 Introduction to Agriculture Sector

#### 3.1.1 Overview and Key Industry Trends

Agriculture is challenging for GCC nations due to their marginal environments that are characterized by poor soil quality, high temperatures, and low annual rainfall. Moreover, they are highly vulnerable countries due to water scarcity, salinity, and climate change. GCC countries are pioneering and leveraging agricultural technology to overcome barriers associated with desert ecosystems and stimulate domestic food supplies. The UAE is striving to become the most food-secure nation by 2051, and hence, the adoption of agricultural technology has been rising to increase domestic food production. Additionally, positive changes in business scenarios, increased competitiveness, and a rise in female participation in workforces in countries such as Kuwait and Oman strongly aid in the growth of the agricultural sector. However, further sectoral diversification efforts are still needed in the GCC and are underway.

GCC countries strongly focus on enabling food security from national sources, optimal utilization of available water resources, enhancing the productivity of the agriculture sector, and encouraging joint ventures with private sector contribution. The World Bank Gulf Economic Update (GEU) projects GCC's GDP to grow by 2.5% in 2023 and 3.2% in 2024; however, the agricultural sector is expected to fare better. The region recorded a remarkable GDP growth of 7.3% in 2022, which can be attributed to a strong increase in oil production. However, fluctuating prices of hydrocarbons, which are the primary economic contributors in the region, are expected to downplay the projected growth of the economy in the short term. Hence, domestic agricultural product consumption is anticipated to take a slight hit.

#### 3.1.2 Forecast of Agriculture's Contribution to GDP

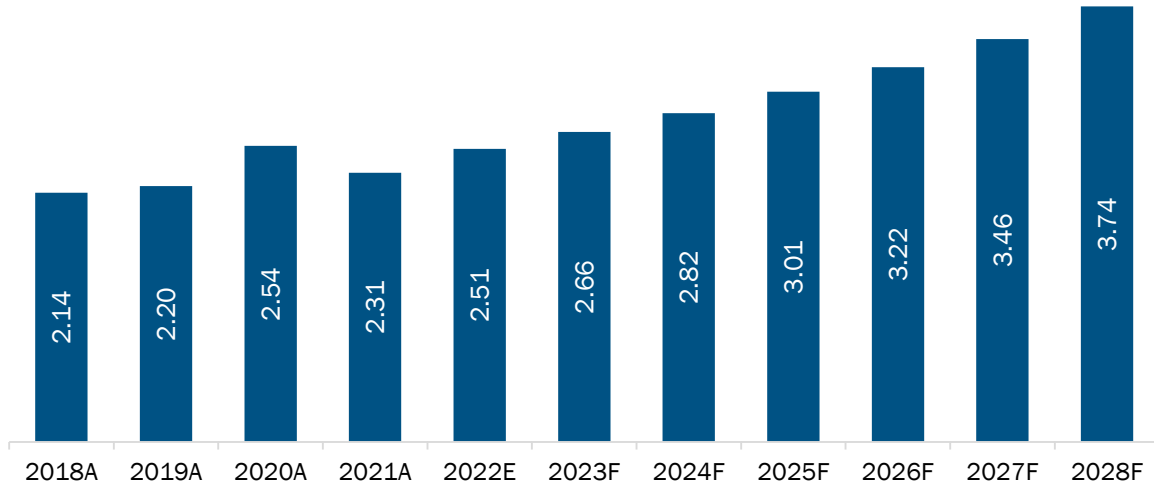
The below graphs showcase the actual and forecasted contribution of the agriculture sector to the respective country's GDP. The forecasted values were calculated based on various parameters such as current GDP growth rate, agriculture's historic share in GDP, inflation rate, expected investment in the agriculture sector, vision document of respective countries, import & export analysis, and others.

##### 3.1.2.1 Saudi Arabia

Saudi Arabia has converted large areas of desert into agricultural fields. The Ministry of Agriculture frames the agricultural policy, while the Saudi Arabian Agricultural Bank (SAAB) disburses subsidies and grants interest-free loans. The Grain Silos and Flourmills Organization is responsible for purchasing and storing wheat, constructing flour mills, and producing animal feed. The government also offers land distribution and reclamation programs and funds research projects. The government offers long-term, interest-free loans and technical support. Also, it incentivizes private players by providing free seeds and fertilizers, low-cost water, energy, and duty-free imports of raw materials and machinery.



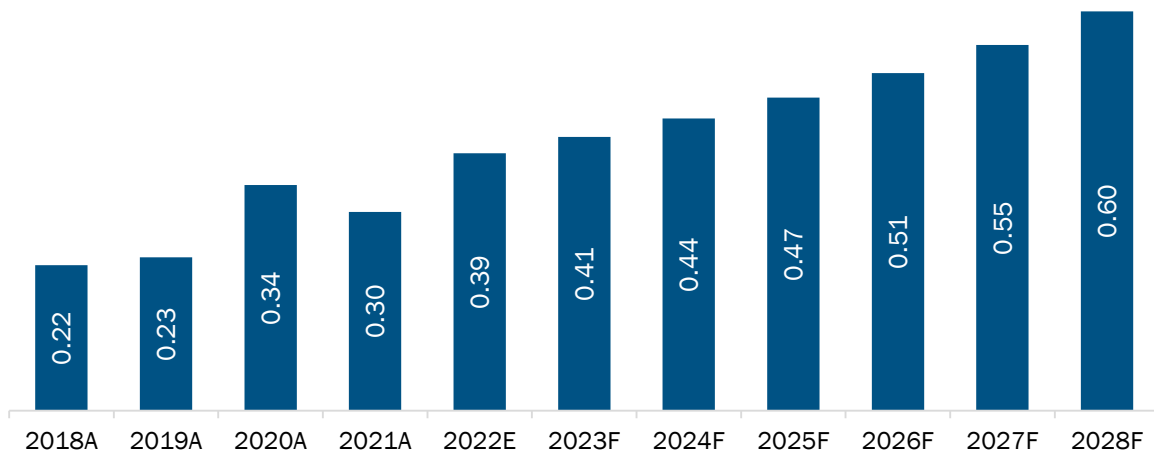
**Figure 14. Agriculture, Forestry, and Fishing, Value Added (% of GDP), Forecast to 2028**



A - Actual, E - Estimated, and F - Forecasted; Source: A - World Bank; E, F - Analyst Team

### 3.1.2.2 Qatar

**Figure 15. Agriculture, Forestry, and Fishing, Value Added (% of GDP), Forecast to 2028**



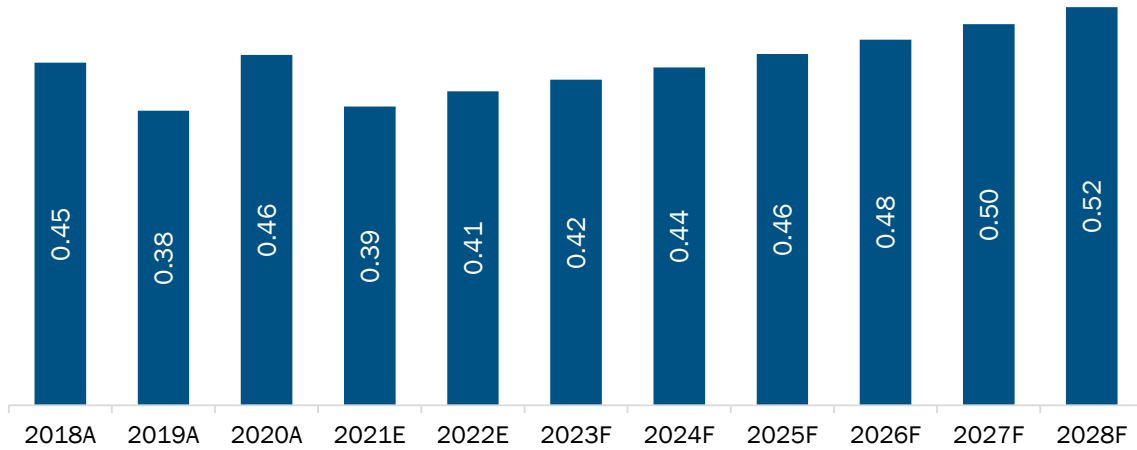
A - Actual, E - Estimated, and F - Forecasted; Source: A - World Bank; E, F - Analyst Team

Qatar's environment poses challenges for plantation and organic farming due to its high temperature, scarce freshwater, poor annual rainfall, and arid soil. It thus offers limited scope for agriculture and utilization of arable land. Date palm farming, nomadic herding, and fishing are the primary drivers of the agricultural sector in the country. A very small % of land in Qatar is suitable for use as pastureland, which limits animal husbandry to some extent. However, sustainable farming techniques are rising in the country and are expected to decrease some of the present challenges the agricultural sector faces.



### 3.1.2.3 Kuwait

**Figure 16. Agriculture, Forestry, and Fishing, Value Added (% of GDP), Forecast to 2028**

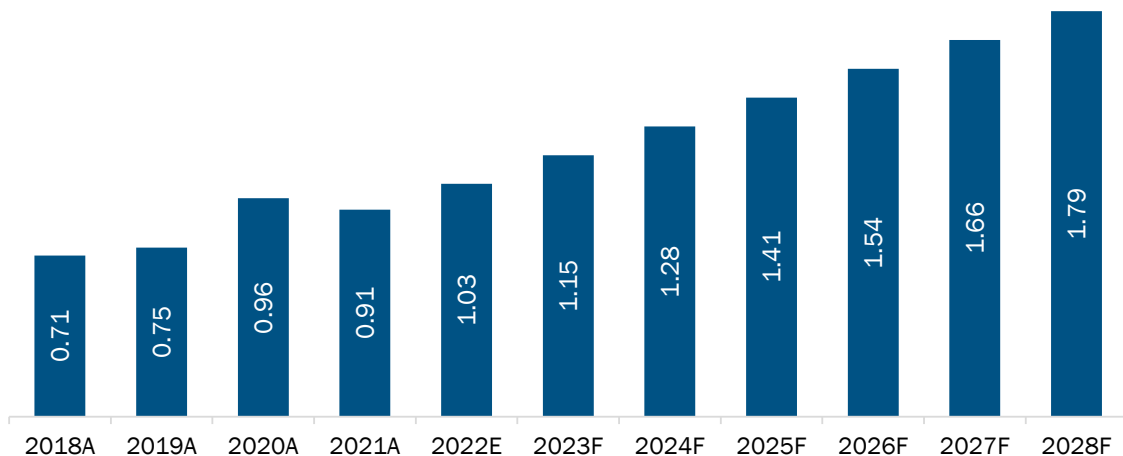


A - Actual, E - Estimated, and F - Forecasted; Source: A - World Bank; E, F - Analyst Team

Kuwait has a hot desert environment with extremely dry and long summers. The country's sandy soil has poor moisture and low organic content. Desalinated seawater and brackish groundwater are primarily utilized for agriculture since natural water resources are scarce. The harsh climatic conditions, water scarcity, and poor soil quality are the foremost constraints faced by Kuwait's agriculture sector. Although Kuwait's agricultural sector represents a small part of the nation's economy, the government is actively pursuing new agricultural technologies in a bid to increase production.

### 3.1.2.4 UAE

**Figure 17. Agriculture, Forestry, and Fishing, Value Added (% of GDP), Forecast to 2028**



A - Actual, E - Estimated, and F - Forecasted; Source: A - World Bank; E, F - Analyst Team

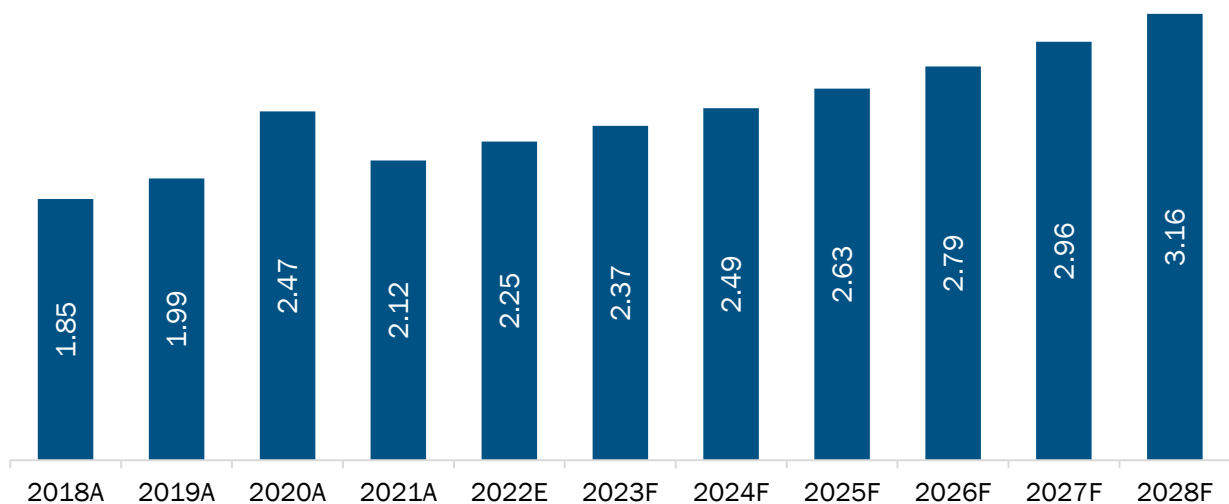


Most of the UAE's cultivated land is taken up by date palms. The government offers substantial subsidies on fertilizers, seeds, and pesticides, to aid in the growth of the sector, apart from providing loans for machinery and technical assistance. Lack of quality soil, extreme heat, periodic locust swarms, and inadequate water supplies are the main obstacles to agriculture. The major vegetable crops, supplying nearly all the country's needs during the season, are tomatoes, cabbage, eggplant, squash, and cauliflower.

Additionally, the country is focusing on adopting modern farming techniques such as greenhouse farming and aquaculture. It is estimated that there are over 35,000 farms that are utilizing advanced technology and purpose-built environments like greenhouses and vertical farms. It also contributes toward UAE's 2018 pledge to secure food with initiatives including diversification of food sources. Moreover, the government has supported traditional fishing in the surrounding ocean and offers subsidies on fishing boats and equipment. It has also opened workshops that offer free repair and maintenance of vessels.

### 3.1.2.5 Oman

**Figure 18. Agriculture, Forestry, and Fishing, Value Added (% of GDP), Forecast to 2028**



A - Actual, E - Estimated, and F - Forecasted; Source: A - World Bank; E,F - Analyst Team

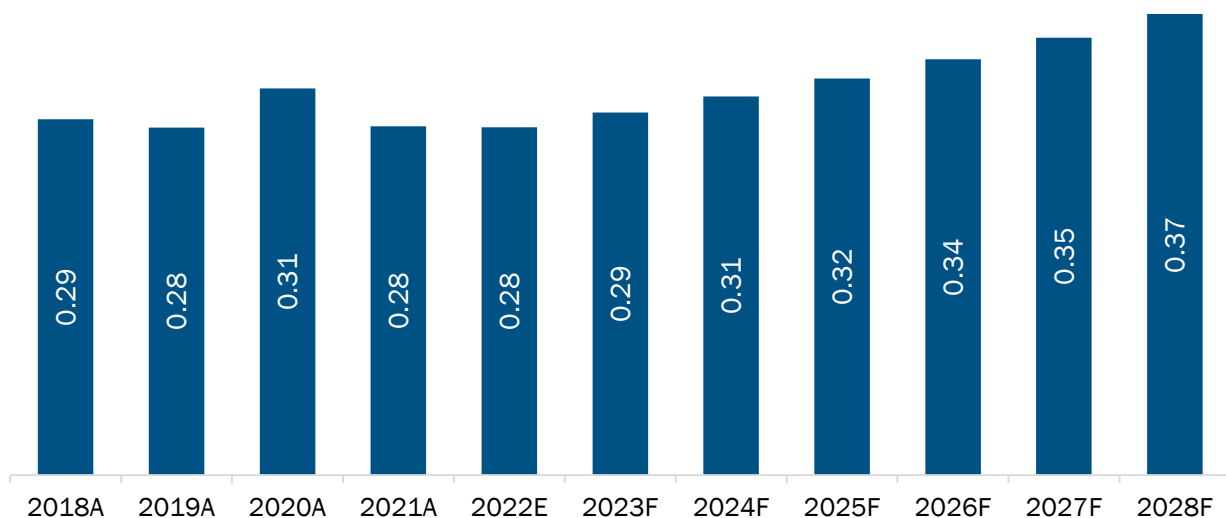
Agriculture is an important industry for Oman, contributing to its food security and overall development goals. "Sustainable Agriculture and Rural Development Strategy towards 2040" or SARDS 2040 is a plan developed by the government that details the agricultural sector's



investment plans and development roadmap. The government also plans to support the sector’s development by engaging with experienced business development partners, employing experts to provide specialized technical support, and offering assistance and incentives to farmers to supply the demand generated by such agribusinesses.

### 3.1.2.6 Bahrain

**Figure 19. Agriculture, Forestry, and Fishing, Value Added (% of GDP), Forecast to 2028**



A - Actual, E - Estimated, and F - Forecasted; Source: A - World Bank; E, F - Analyst Team

Agriculture in Bahrain has always been an important sector of the economy, despite the low rainfall and poor soil. Date palm cultivation dominated Bahrain’s agriculture before the development of the oil industry and has been producing sufficient dates for both domestic consumption and export. At least twenty-three varieties of dates are grown domestically, and the dates’ leaves, branches, buds, and flowers of the date palm are also used extensively. It is also an important export item and significantly contributes to the country’s economy.

## 3.2 Agricultural Sector in Details - GCC

### 3.2.1 Type of Agriculture

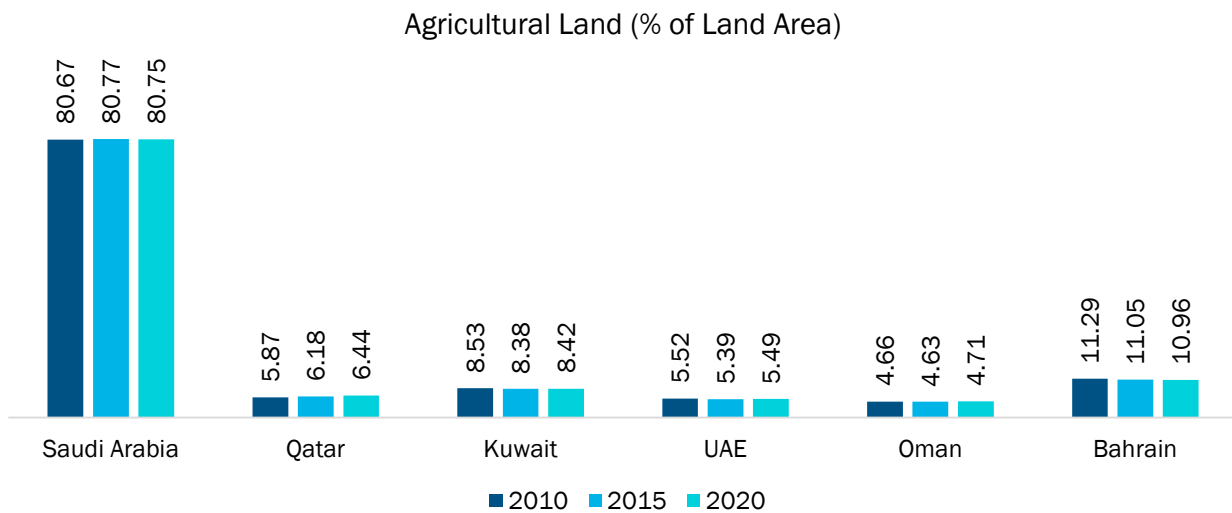
#### 3.2.1.1 Plant Based

In the GCC, the marginal conditions and scarce water availability are the primary challenges to crop production. Although GCC countries are among the wealthiest and the most food-secure nations as per the Global Food Security Index (2021), they still import most of the food they need.





**Figure 20. GCC Statistics**



Source: World Bank

As showcased by the above chart, Saudi Arabia had the largest share of agricultural land in the GCC region in 2020, which translates to more than 80% of the Kingdom's land area. Bahrain had the second highest percentage, followed by Kuwait and Qatar. It is to be noted that most of the GCC nations have increased their agricultural land share, when compared to 2015's data.

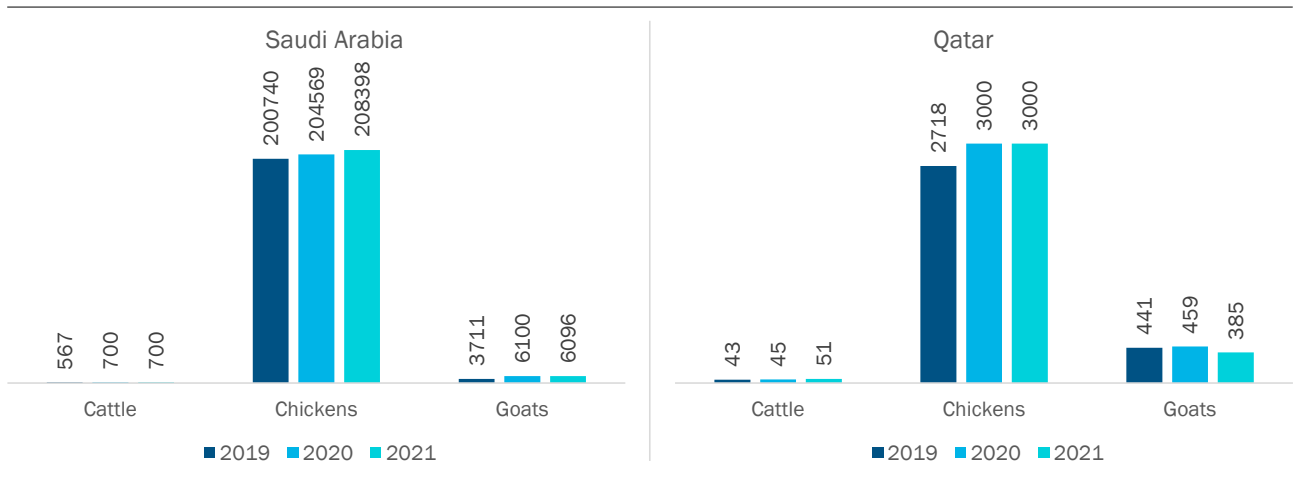
### 3.2.1.2 Animal Farming

The livestock sector in GCC countries is being transformed through initiatives such as conserving animal genetic resources, eradicating animal diseases, preventing zoonosis, and raising awareness about healthy diets. The United Nations Food and Agriculture Organization (FAO); Oman's Ministry of Agriculture, Fisheries and Water Resources (MAFWR); and AlJisr Foundation are working together to strengthen the value chain for camel milk and by-products. In partnership, they also aim to enhance the capacities of women producers and extend support for the development of small processing units for the sustainable production of camel milk by-products.

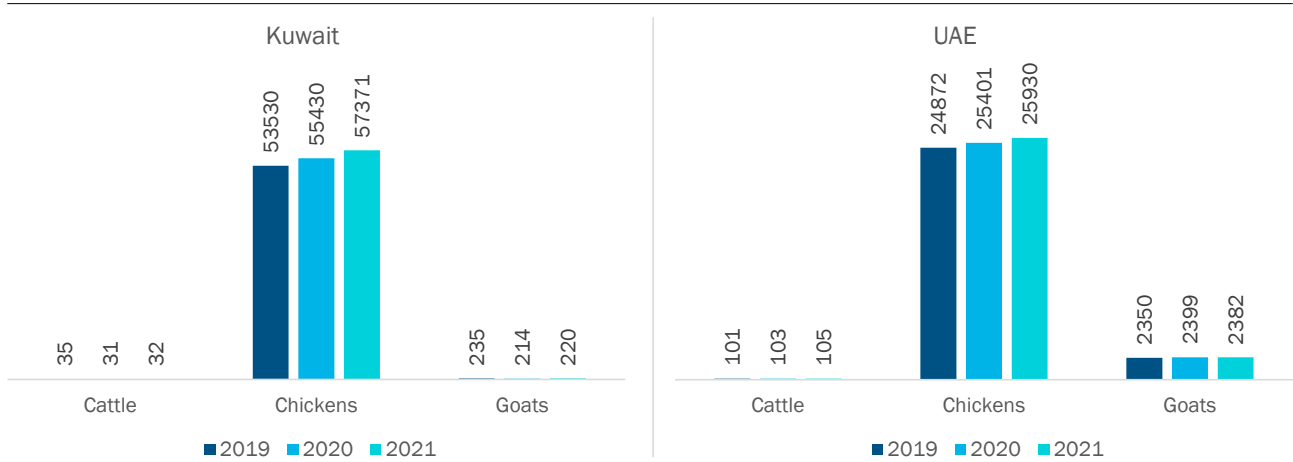
Since 2019, the FAO Saudi Arabia has provided technical and advisory assistance to effectively implement the Sustainable Rural Agricultural Development (SRAD) Programme—a flagship program formulated to realize the goals of Saudi Vision 2030. The program was conjointly formulated by the Ministry of Environment, Water and Agriculture (MoEWA) and FAO upon the request of the Saudi government.



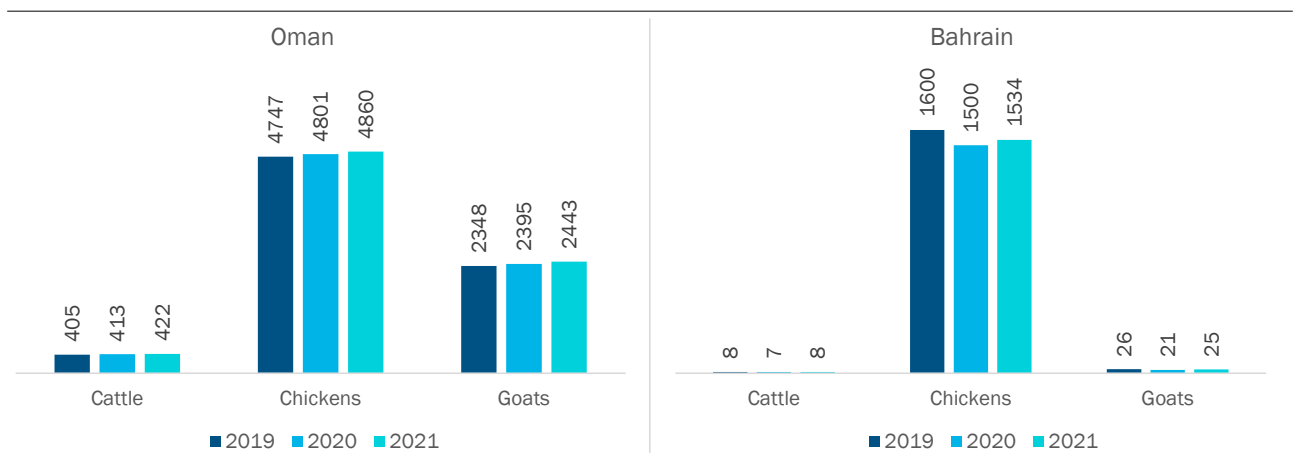
Figure 21. Animal Stock's Statistics of GCC (Thousand Units)



Source: FAO



Source: FAO



Source: FAO

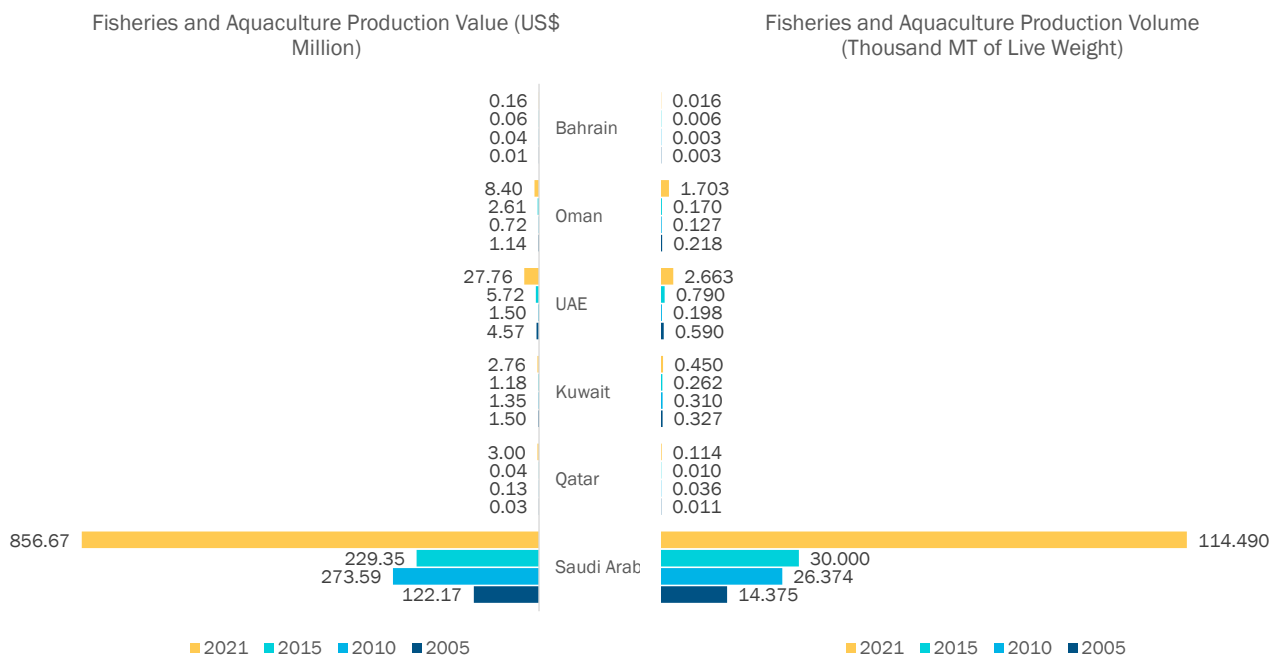


The above figures depicts the rise in livestock count for each GCC nation. Chickens are the most reared animal in all GCC nations, while Bahrain, Qatar, and Kuwait have contrasting figures for goat and cattle farming, when compared to the other three GCC nations.

### 3.2.1.3 Fishery

The fishery industry in GCC is yet to utilize most of its potential and is still in a nascent stage. With growing concerns about food security, the fishing and fishery industry is gaining prominence in the region. Additionally, a rising focus on aquaponics drives the growth of this industry. Concerns over food security and marginal conditions have led the GCC countries to adopt aquaculture. Improving fisheries and aquaculture management is thus crucial for the GCC nations to continue to benefit from marine resources and ecosystem services.

**Figure 22. Fishery Statistics of GCC**



Source: FAO

The above chart showcases the growth of the fishery sector in GCC nations. Saudi Arabia has the largest fishery sector in GCC, followed by UAE and Oman. All GCC nations have registered good growth rate over the years, and are expected to put additional focus on development of the sector further in future. Soaring populations, rising awareness of protein consumption, and the burgeoning need for diversifying protein supplies beyond poultry and red meat are other factors driving traction toward the fishery sector. For instance, Saudi Arabia aims to increase annual seafood production from ~77,000 MT to ~600,000 MT by 2030 by injecting US\$ 3.5 billion in funds. The plans involve ministries, private investors, institutional bodies, and entrepreneurs.



### 3.2.2 Economic Contribution

#### 3.2.2.1 Government Initiatives and Programs

##### Saudi Arabia

- In March 2021, the government cabinet passed resolution 431/2021 to approve the Agricultural law consisting of 37 articles. The law aims to regulate the agricultural sector on the grounds of management, protection, development, and sustainability. The law also aims to guide Saudi Arabia toward food security, and rural and social development by reinforcing production, import and export, and other activities related to the agricultural sector.
- The 2030 National Strategy for Agriculture, framed in 2017, is the guiding document for the national assessment of the performance of the agricultural sector and for the formulation of its objectives. The document focuses on the sustainability of natural resources, food security, the welfare of society and farmers, economic contribution, and prevention of wastage.
- In April 2023, Saudi Arabia and an Omani company signed a Memorandum of Understanding (MoU) to establish a factory in the Kingdom to produce liquid fertilizers that provide crop nutrients in a soluble form. With this, the government intends to increase agricultural production for achieving the targets of the Saudi Vision 2030.

##### Qatar

- In 2014, the Ministry of Municipality and Urban Planning (presently known as the Ministry of Municipality and Environment) approved Qatar National Development Framework (QNDF) 2032. It is a nationwide multisectoral document that regulates all planning and development in the country. The national framework developed under the Qatar National Master Plan (QNMP) included an integrated set of regulations, guidelines, policies, and strategies applicable to the agricultural sector. It aims to redress the food deficit, ensure food security, and promote efficiencies in production.
- The Qatar National Food Security Strategy 2018–2023 was devised to frame the country's robust food security strategy. It intends to boost the production of local vegetables and table eggs to 70%, fish to 90%, shrimp to 100%, and red meat to 30% of total domestic demand by 2023.
- In July 2020, the Ministry of Municipality and Environment (MME) launched the Daman program to support local farms through the pre-contracted purchase of their vegetable produce and help farmers set need-based production plans.

##### Kuwait

- In January 2019, Kuwait adopted the National Adaptation Plan (NAP) 2019–2030 to enhance its agricultural activity and food security, among other aspects. It aims to make agriculture and fisheries more productive and sustainable; employ efficient irrigation systems to diminish the wastage of water; utilize and conserve water in a more sustainable way (such as bio-diverse planting, hydro-zoning, and PO irrigation); develop monitoring capacity to prevent overfishing; and enhance awareness by involving local communities in the protection and sustainable consumption of marine life.
- The updated NDC of Kuwait focuses primarily on food security and sustainable agriculture. It reiterates the NDC's efforts to prevent fishing in the country's bay for maintaining biodiversity and fish stocks, thereby avoiding the depletion of fish and prohibiting the capture of some fish and shrimp species. Additionally, it rationalizes water consumption, develops and implements water resources programs, and oversees wastewater reuse from processing stations.



## UAE

- The UAE is prioritizing the acceleration of efforts to achieve the National Food Security Strategy 2051 targets through alliances and solutions that can revolutionize the agricultural sector and food systems. In March 2023, the Ministry of Climate Change and Environment (MOCCA) launched the first session of the National Dialogue for Food Security, which was aimed to enable positive discussions between the government and private sector stakeholders, to ultimately enhance the country's food security.
- The National Strategy and Action Plan for Combating Antimicrobial Resistance (NAP-AMR) plans to make agriculture more productive and sustainable through various steps; a few of these are as follows:
  - Establishing AMR surveillance in the veterinary field
  - Reviewing and adopting biosafety laws in veterinary, agriculture, and food safety
  - Improving the awareness of veterinarians and farmers
- The National Climate Change Plan of the UAE primarily aims to address the sources and effects of climate change. It also strives to set up a network of marine and terrestrial protected areas, and oversee water management and desalination technologies to handle rising water temperatures and salinity.
- In November 2021, the UAE and the US jointly launched the Agriculture Innovation Mission for Climate (AIM for Climate) initiative to accelerate innovation in "climate-smart" agriculture and to combat productivity losses linked to climate change. They pledged US\$ 4 billion for this initiative, which was doubled to US\$ 8 billion in November 2022.

## Oman

- Oman's 10th Five-Year Development Plan 2021–2025 is based on Oman Vision 2040, and developing the agriculture sector is a key objective of this plan. It aims to expand economic diversification's base; develop mechanisms and programs for productive structures; and support the sectors of fish farming, fisheries, agriculture, and agricultural product processing to contribute to food security.
- The National Energy Strategy and Vision 2040 are two essential reference documents for the NDC of Oman. It aims to gradually transition to a low-carbon economy by slowing GHG emissions, as it intends to lower the emissions by 7% in 2030. The Sultanate implemented a planned alignment between their NDC goals and the National Adaptation Plan (NAP) process to improve the coherence and efficiency of the implementation of such plans.
- Oman has been adopting technologies to counter any threats to food security plans. In February 2023, the Ministry of Agriculture, Fisheries and Water Resources (MAFWR) experimentally used drones to control desert locusts at breeding sites to check their spread to other locations.

## Bahrain

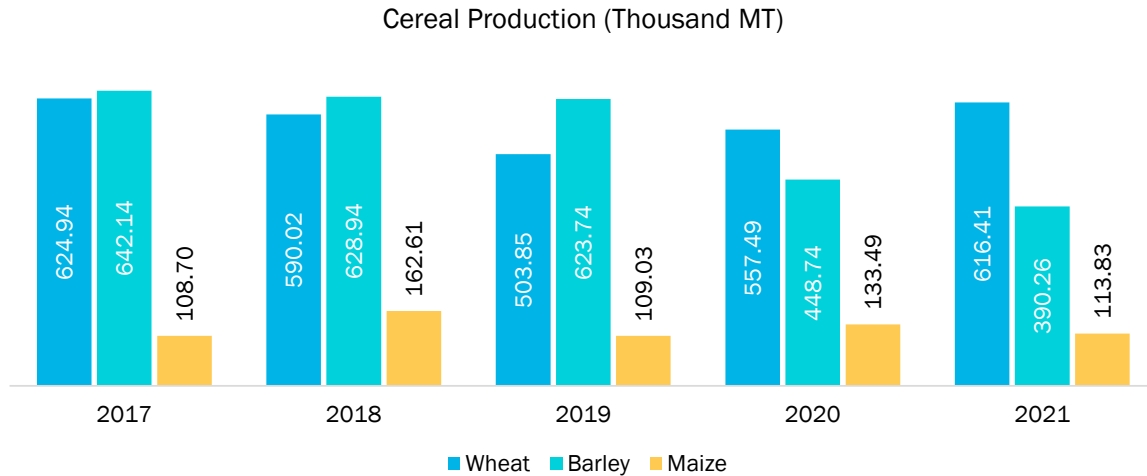
- In March 2023, the Information & eGovernment Authority (IGA) of Bahrain launched the Botanical Atlas project that offers a set of vegetation maps, and knowledge on the classification and types of crops in the Kingdom, along with their locations on maps. The Atlas project would use remote sensing techniques, satellite imagery, and field surveys for obtaining such spatial information.
- In December 2022, the Deputy Prime Minister directed the Ministry of Municipalities Affairs and Agriculture of Bahrain to allot new agricultural plots for investors through the land investment platform. The move was aimed at the comprehensive development of the agriculture sector, thereby ensuring sustainable food security.
- In October 2022, the agriculture ministers of Israel and Bahrain signed a declaration of cooperation at the International Summit on Food Technologies. It included mutual knowledge sharing on technology, expansion to diverse agricultural products, and improvement of production quality.



### 3.2.3 Agricultural Crops

The below images showcase crops of GCC:

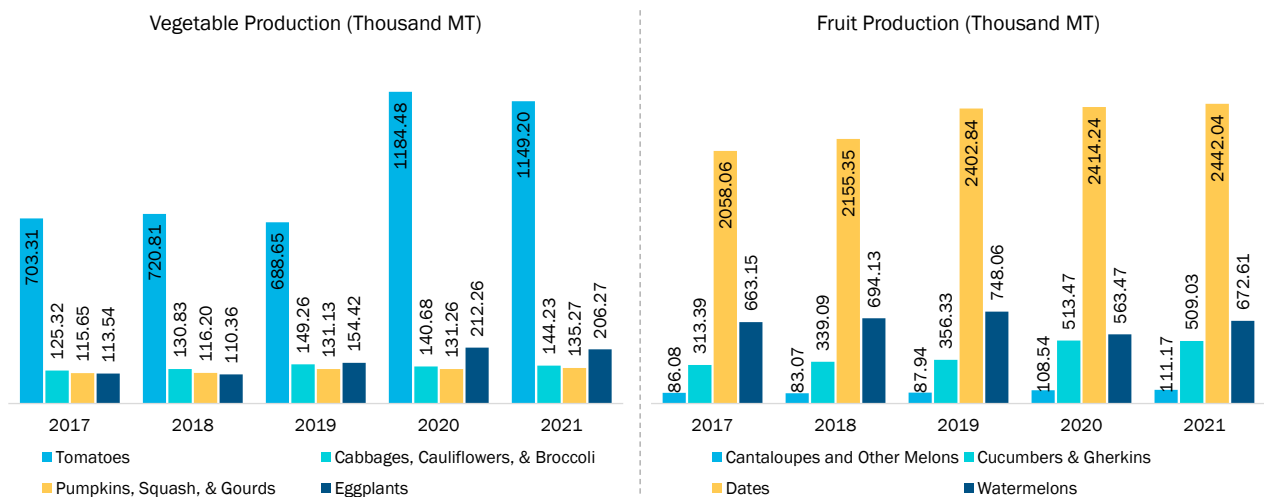
**Figure 23. Selected Cereal Production - GCC**



Source: FAO Estimates

The above figure depicts the gradual rise in various cereal production in GCC nations. While the marginal climate have been an eternal challenge for crop production in GCC, development of farming methods and adoption of various advanced techniques have allowed the countries to increase their production of various cereals, and decrease their dependence on imports.

**Figure 24. Selected Fruit and Vegetable Production - GCC**



Source: FAO Estimates

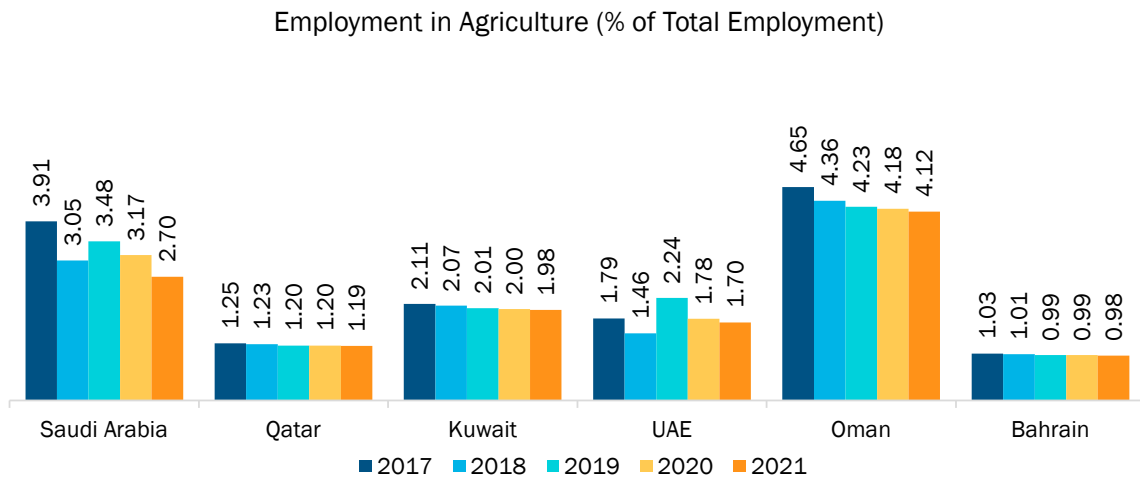
The above figure depicts statistics for fruit and vegetable production in GCC nations. As depicted, tomatoes and dates were the most produced vegetable and fruit in GCC. Both have high rates of domestic consumption as well as exports, which promotes growth of the agricultural sector.



### 3.2.4 Labor Outlook

Compared to Türkiye, the employment rate in agriculture was a meager 2.11% in GCC. The sector employed 2.52% of males and 0.19% of females of the total employed population in the GCC in 2021.

**Figure 25. Labor Force, GCC Countries (Million Heads)**

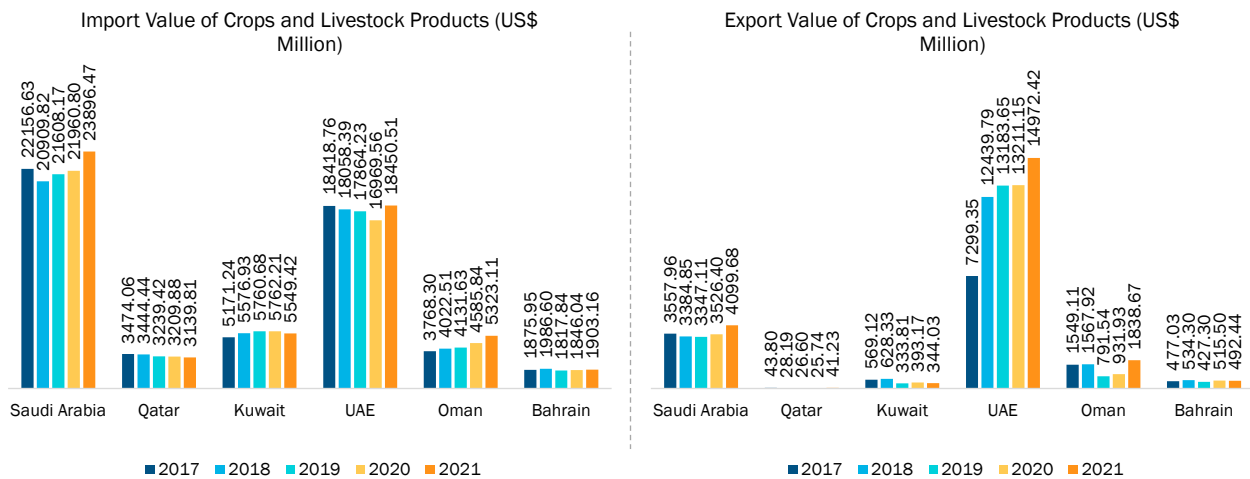


Source: Modeled ILO Estimate and World Bank

Agriculture is not a primary industry in GCC nations since they mostly rely on imported food. Hence, the agricultural sector’s employment share is quite low in these nations. Despite the agricultural sector’s production growth and increasing stress on food security, the employment rate is not expected to increase drastically. This is because GCC nations are adopting various advanced technologies and machinery for sustainable development of the sector. Such steps reduce the requirement for human labor while improving the yield.

### 3.2.5 Agricultural Products – Import & Export Analysis of GCC

**Figure 26. GCC – Import & Export**



Source: FAO

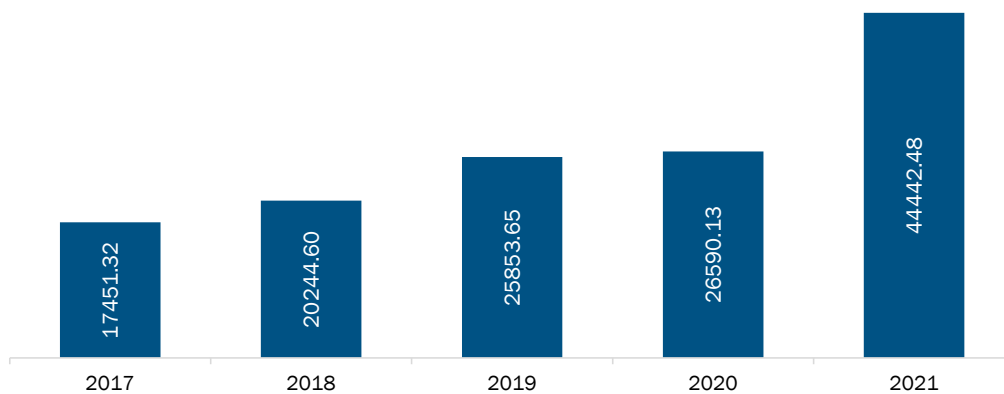


As depicted by above figure, the GCC nations have been large importers of agricultural products. Saudi Arabia and the UAE are the primary importers. These two countries are also the major exporters of agricultural products and processed foods. Qatar held the lowest export share amongst GCC countries, while Bahrain had the lowest import share.

### 3.2.6 Capital Investments and Major Investors

The agricultural sector in the GCC has expanded in recent years due to increased food demand, propelled by rapid population growth and government-backed initiatives that aim to strengthen food security in the region. As a result, the agricultural sector has witnessed remarkable developments, including the growth of public-private partnership (PPP) projects, one-stop-shop distribution channels, and financial support to further encourage local production. In recent years, GCC nations have sought to accelerate the pace of projects supporting the development of the agriculture sector. Their efforts involved undertaking investments for achieving self-sufficiency regarding cereals, vegetables, and fruits. Despite the marginal climate, the GCC has been extensively adopting and utilizing sustainable and smart technologies, including automated irrigation systems, hydroponics, and aquaponics, to enhance the quality and quantity of fruits and vegetables produced. The following figure depicts the inflow of foreign direct investments (FDI) into the agricultural sector in the GCC.

**Figure 27. Total FDI Inflows in Agriculture Sector (US\$ Million), GCC**



Source: FAO

As depicted by above figure, the GCC nations have been witnessing a surge in FDI for the agricultural sector. Saudi Arabia is the primary recipient of such investments, owing to the various steps undertaken to bolster local food production and develop food processing industries. Steps include developing systems of agricultural and marketing services, adopting a strategy for responsible agricultural investments, and utilizing digital innovation and platforms concerned with sustainable food value chains, among others.

### 3.2.7 Ongoing and Upcoming Agriculture Projects

In June 2023, the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and the FAO partnered to augment the yield of millet and sesame crops in Saudi Arabia. The collaboration is expected to advance food production, encourage economic diversification, and promote the usage and application of digital tools to tackle challenges posed by the limited availability of natural resources, particularly water.





In March 2023, an Abu Dhabi-based investment and holding company partnered with an Italian high-impact technology company to launch a vertical farming project in its cutting-edge agricultural tech park located in a special economic zone of Abu Dhabi. It is the first of several controlled environment agricultural projects that the park plans to house. This vertical farming project aims to explore and push the boundaries of desert-climate farming in the UAE.

In March 2023, Saudi Agricultural Development Fund (SADF) signed off development and investment loans worth ~US\$ 610 million from January 2023 to March 2023, showcasing an approximately three-times increase from the same period in 2022. Small farmers and animal breeders of Al Aflaj, Al Ghat, Asir, Hail, Al Olaya, Shaqra, Tathleeth, Nairiyah, and Rabigh would continue to benefit from these loans.

In February 2023, the Environment, Water and Agriculture Ministry of Saudi Arabia sanctioned US\$ 105 billion for ~3,300 projects for water and farming. The projects include private companies working on improving water supply networks and expanding agricultural infrastructure.

In February 2023, a 2021-founded agricultural startup in Kuwait officially launched its innovative smart agriculture project to bolster food security by aeroponically producing healthy, high-quality agricultural products with minimal water usage and state-of-the-art technologies. The project aims to build a more flexible and sustainable food system by integrating advanced food technologies into agriculture.

In December 2022, Bahrain launched the Agricultural Trade & Investment Guide 2023 through its National Initiative for Agricultural Development (NIAD). The guide was prepared in collaboration with a leading law firm to aid investors with knowledge, and to take steps toward achieving national food security and contributing to economic development.

In November 2022, the first phase of the wheat farm in Sharjah's Mleiha was launched over a field area of 400 hectares, using desalinated water for irrigation. This project is a crucial part of the UAE's food security ambitions. The farm was envisioned due to the disruptions caused by the pandemic and conflicts, which increased apprehension over the lack of arable land. The project includes the fields of 35 different experimental types of wheat strains procured from different parts of the world, spread across two hectares, to explore their compatibility with Emirati soil and weather. The second phase is scheduled for completion in 2024 across an area of 880 hectares, while the third phase will reach its completion in 2025 on an area of 1,400 hectares.

In October 2022, the Ministry of Social Affairs of Kuwait agreed in principle to an initiative of the Public Authority for Agriculture Affairs and Fish Resources to establish and develop a national electronic platform called Deirtna Farms to support the marketing of local food produced by agricultural holdings affiliated to the Authority.

In July 2022, Oman News Agency (ONA) announced that the government signed 28 land usufruct contracts with several private sector institutions to launch agricultural and fisheries projects in numerous governorates with a total value of ~US\$ 85 million, over an area of more than 8,000 sq. km.

In June 2022, the Abu Dhabi Authority for Agriculture and Food Safety (ADAFSA) inaugurated the Abu Dhabi Agricultural Genome Programme as part of its 2022–2025 strategic plan. With this program, ADAFSA would strive to develop animal breeds and plant varieties better suited to the environmental conditions of Saudi Arabia, which are mainly characterized by high temperatures, low rainfall, and, often, high soil salinity levels. Hence, the program can aid in enhancing food security.



In May 2022, Bahrain's NIAD launched an online platform, developed by 20 government agencies in collaboration, to boost its agricultural sector. The platform acts as a one-stop-shop for academic research, credible resources, satellite images, scientific data, statistics, training programs, and Bahraini farmers' contact details, among others.

In April 2022, the Ministry of Municipality of Qatar initiated 23 different research projects for enhancing the agricultural outcomes of the country. The initiative aims to strengthen food security in the country, alongside complementing several other projects initiated by the ministry, which include projects for date production development, sustainable productivity of vegetable crops, and development of small ruminant breeding systems.

In March 2022, the Agricultural and Fisheries Development Fund of Oman approved 13 projects across different governorates, worth ~US\$ 3 million, for the development of the agricultural and fisheries sectors.

In January 2021, the Ministry of Agriculture, Fisheries and Water Resources (MoAFWR) of Oman signed an agreement to lease 100 acres of land to a leading agricultural company to implement smart agriculture-related projects in the Wilayat of Al Kamil Wa Al Wafi. The ~US\$ 17 million project aimed to increase the yield of various vegetable farms, extend their production seasons, and raise the quality and safety of local production. The agreement was a part of the Oman Vision 2040, and it was within the auspices of cooperation between the public and private sectors. It aimed to encourage investments in the agricultural and animal husbandry fields, achieve local food security, and create job opportunities for Omanis.

In January 2021, Qatar's national agriculture project commenced vegetable production over a field of 4,000 sq. m. of aquaculture farming. The project involves an aquaponic system, i.e., a food production system that combines aquaculture and the cultivation of plants in water. The plants absorb nutrients from the fish's waste while cleaning the water, which in turn, promotes the growth of fish in water tanks from which the water containing fish waste is supplied to plants.

In December 2020, the ADAFSA approved five investment projects worth US\$ 143 million for establishing fish, fruit, vegetable, poultry, and cattle farms on a total land and sea area of ~4,000 sq. km. The ADAFSA identified and managed investment opportunities in cooperation with the Abu Dhabi Investment Office (ADIO). Private sector companies were tasked with the subsequent developments as part of ADAFSA's efforts to boost agricultural projects and accomplish sustainable agricultural development.

### **3.2.8 Industry Dynamics**

#### **3.2.8.1 Focus on Food Security**

Governments of GCC countries have started immediate interventions to maintain food security. These measures include boosting local farmers' output, facilitating imports, and strengthening supply chains. A few nations in the GCC are also establishing temporary government agencies to manage food security. According to the Global Food Security Index, which considers the accessibility, price, quality, and safety of food supply, GCC countries are among the more food-secure nations than other countries. On the contrary, before the COVID-19 pandemic, GCC members imported over 85% of their food. Their imports included most of the rice consumed in the region, 93% of the grains, 62% of the meat, and 56% of the vegetables.

In addition, direct support for farmers is another typical component of food security strategies. An initiative to assist small farmers in the process of switching to organic farming was launched in Saudi Arabia in 2019 as part of a plan to increase organic production by 300% by 2030. Additionally, the Saudi government launched the Sustainable Agricultural Rural Development Programme in 2019 to promote the systematic cultivation of rain-fed crops. The program also aimed to encourage the



production, processing, and sales of fruit, seafood, livestock, and Arabic coffee. Qatar's State Food Security Projects 2019–2023 intends to achieve 100% self-sufficiency in fresh dairy products, poultry, and prawns by 2023; 70% self-sufficiency in fresh eggs and greenhouse-grown vegetables; and 95% self-sufficiency in fresh fish. The UAE, whose food security has been based on imports from international markets, concentrates on twin goals that revolve around food access and readiness to overcome supply chain problems. India, one of the leading food producers in the world, has joined hands with the UAE to help it achieve its goal of increasing food security. The alliance of these two countries is likely to benefit many areas associated with the UAE'S food security.

### 3.2.8.2 Rising Population and Urbanization

The population of GCC has almost doubled in 20 years, increasing from 26.2 million in 1995 to 56.4 million with the urban population of 84.3% project in 2030. Hence it has become essential to increase domestic food production through the development and intensification of the agriculture sector. This is being done by utilizing underused land, implementing effective irrigation systems, and employing contemporary farming methods to enhance yields. GCC is pursuing diversification of agricultural production for bringing variety into the crops grown in the area and fulfilling the changing nutritional needs of the rising population. Moreover, the agricultural sector's productivity in GCC countries is being enhanced, to decrease the dependency on imported food, by finding suitable crops that can withstand and respond well to local climate conditions. Diversifying agricultural production also aids in a rise in exports of agricultural goods. In 2021, Kuwait exported 59.4% of its total wheat flour export to China, India, South Korea, Japan, etc.

In 2021, the agricultural products exported by Saudi Arabia included tropical fruits, coffee, and vegetables. Tropical fruits, exported to countries such as China, Japan, and India, accounted for the largest share, i.e., 64.8%, of the total ago-product exports of the country.

## 3.2.9 Challenges

### 3.2.9.1 Need for Climate-Independent Farming Techniques

Climate change seriously threatens global water and food security. GCC is experiencing warmer temperatures, more severe droughts, and a rise in the frequency and intensity of extreme weather events. All 6 GCC nations are affected by water risks and are experiencing severe water stress. High temperatures, strong winds, and sporadic sandstorms are common in GCC nations, severely harming cattle health and crop growth. Extreme weather conditions such as droughts and heat waves can lower agricultural productivity and make crops susceptible to pests and diseases.

Additionally, such a climate renders little scope for the growth of green pasture, an essential for animal husbandry. Despite the presence of various soil types, the majority of the soil types have poor quality. Again, strong winds lead to continuous mixing of various types of soil; thus, good quality soil is scarce in the region. For instance, ocean wind often brings white calcareous sand from coastal areas and mixes it with iron-rich red soil or igneous rock-based grey soil. Hence all such factors are the primary challenges to the agricultural sector's growth. The effects of harsh weather conditions can be reduced by creating crop varieties resistant to climate change, implementing cutting-edge irrigation systems, and investing in protected agriculture.

### 3.2.9.2 Water Scarcity

The GCC countries are situated in an area that is dry or semi-arid, has few freshwater resources, receives little rainfall, and has high temperatures. Hence these nations strongly rely on desalination, a technique that eliminates salt from seawater, to supply their citizens with enough water. Water shortage in the GCC is caused mostly by natural factors such as insufficient rainfall and high temperatures. Hence, it leads to overexploitation of groundwater resources and inefficient



irrigation practices. Groundwater is a key water supply in the region but is rapidly depleting. Furthermore, climate change is worsening the situation by increasing the frequency and severity of droughts. Water availability for agricultural uses is thus a major concern and restrains the sector’s growth. Most agricultural activities rely significantly on groundwater extraction and desalinated water, which are cost-intensive and not sustainable for the long term.

### 3.2.10 Opportunities

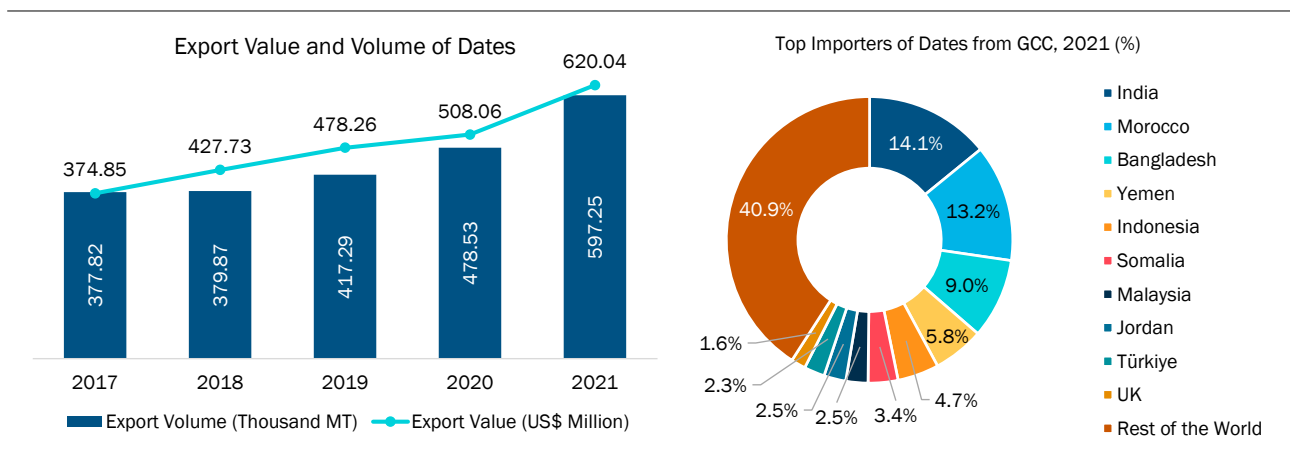
#### 3.2.10.1 Developments in Vertical Farming

Vertical farming specialists claim that vertical farms use 95% less water than open-field farms and produce 75 times more food per square foot. Such claims have sparked interest of regional investors and global financiers, who aim to utilize its potential to address food security issues in the GCC. Two US-based businesses have already made a name for themselves as major players in the GCC vertical farming market. Further, numerous other businesses have started taking interest in the vertical farming sector in GCC countries in light of the early progress of vertical farming businesses of the two US companies. A leading UAE based airlines and an US – based company have joined forces to build Dubai’s largest vertical farm. In the year 2022, the first commercial vertical indoor farm in the GCC commenced operations in Dubai, UAE. A robust vertical farming industry might help the GCC countries to keep a check on rising food prices and overcome challenges associated with the geopolitical problems, which afflict foreign farm investments. Although the vertical farming industry is in a nascent stage in GCC, it is likely to flourish with the support of governments, investors, and private sector businesses (supermarkets). Thus, vertical farming offers notable opportunities for ensuring water efficiency, year-round production, and climate control.

#### 3.2.10.2 Date Palm Farming

In the GCC, date palm farming is a strategic industry. The industry is one of the region’s oldest economic activities, and it continues to play an important part in its people’s welfare, culture, history, environment, and nourishment. The GCC region has a long history of date palm agriculture. Saudi Arabia is eminent for producing many types of dates that consumers prefer, mostly khlas and sukkari. Al Ain and the Northern Emirates are major date-growing regions in the UAE, and dates are considered the national fruit. Oman boasts of one of the longest date production seasons in the world, extending seven months. The country is home to ~9.1 million date palms, and around 325 varieties of dates are cultivated there. Date palm planting and processing offer economic output, value-added goods, and export potential.

**Figure 28. Trade Statistics of Dates**



Source: FAO



As can be seen from above bar and line graph, the export value and volume of dates have risen consistently over the years and remained unaffected by the pandemic. India, Morocco, Bangladesh, Yemen, and Indonesia are the largest importers of dates from the GCC nations. Thus, partnering with countries in the tropical zone can aid in growth of date exports. Investing in date palm research, innovative cultivation techniques and processing technology can help this sector grow even more. As the world is shifting towards a healthier diet, the export of dates to various countries is becoming more lucrative and can strongly aid the agricultural sector in GCC to grow.

### 3.2.11 Macroeconomic Factors Impacting the Sector

<b>GOVERNMENT</b>		<ul style="list-style-type: none"> <li>• GCC governments are investing highly in the agricultural sector, in a bid to promote food security. According to the Ministry of Environment, Water, and Agriculture, in 2022, Saudi Arabia announced a US\$ 24.2 billion grant to invest in food products, expand domestic output, and propel export capacity.</li> <li>• The Agricultural Cooperation Committee, formed by the GCC member states, implements the programs of the GCC Revised Common Agricultural Policy aiming to achieve agricultural integration among GCC nations.</li> </ul>
<b>ECONOMICAL</b>		<ul style="list-style-type: none"> <li>• Among all GCC countries, Saudi Arabia has the largest agricultural market. Although the oil sector was a primary enabler of the growth of the Saudi economy in 2021, the country has been emphasizing on diversifying its economy by investing more in the agricultural sector to reduce its dependency on the oil sector in the long term.</li> <li>• Similarly, economic diversification aims of other GCC nations are also boosting the contribution of agriculture to the respective nation's economy.</li> </ul>
<b>SOCIAL</b>		<ul style="list-style-type: none"> <li>• The total population of GCC has doubled over 20 years, reaching up to 56.4 million in 2021. The region has also experienced rapid urbanization. The demand for quality agricultural food products is rising with the increasing urban population.</li> </ul>
<b>TECHNOLOGICAL</b>		<ul style="list-style-type: none"> <li>• The GCC, in cooperation with relevant authorities and private companies, intends to increase its agricultural production capacity by using new technologies in farming and other related activities.</li> <li>• The adoption of climate-smart agriculture (CSA) processes and technologies by smallholder farming households are rising in the region as relevant authorities create higher awareness and provide financial aid for implementing such technologies.</li> </ul>
<b>ENVIRONMENTAL</b>		<ul style="list-style-type: none"> <li>• Animal production, enteric fermentation, and synthetic fertilizers significantly determine the greenhouse gas (GHG) emission levels of the agriculture sector. In the GCC countries, large animal sectors, especially dairy and meat production, might contribute to methane and nitrous oxide, and powerful GHG emissions, contributing to climate change.</li> </ul>
<b>LEGAL</b>		<ul style="list-style-type: none"> <li>• Several ministries and municipalities in the UAE share jurisdiction to maintain food safety and regulate the import of agricultural products.</li> <li>• The Ministry of Industry and Advanced Technology (MOIAT) and the Ministry of Climate Change and Environment (MOCCAEE) oversee compliance with the Federal Government's rules and requirements for domestic food items. Ministries such as the Ministry of Health (MOH) and the Ministry of State for Food and Water Security also participate in the creation of some laws and regulations.</li> <li>• Local governments within each Emirate act as administrators of the federal food regulations, ensuring that all imported, and locally produced goods adhere to the law.</li> </ul>

Source: FAO, ITA, USDA FAS, OECD, World Bank, and Government Websites



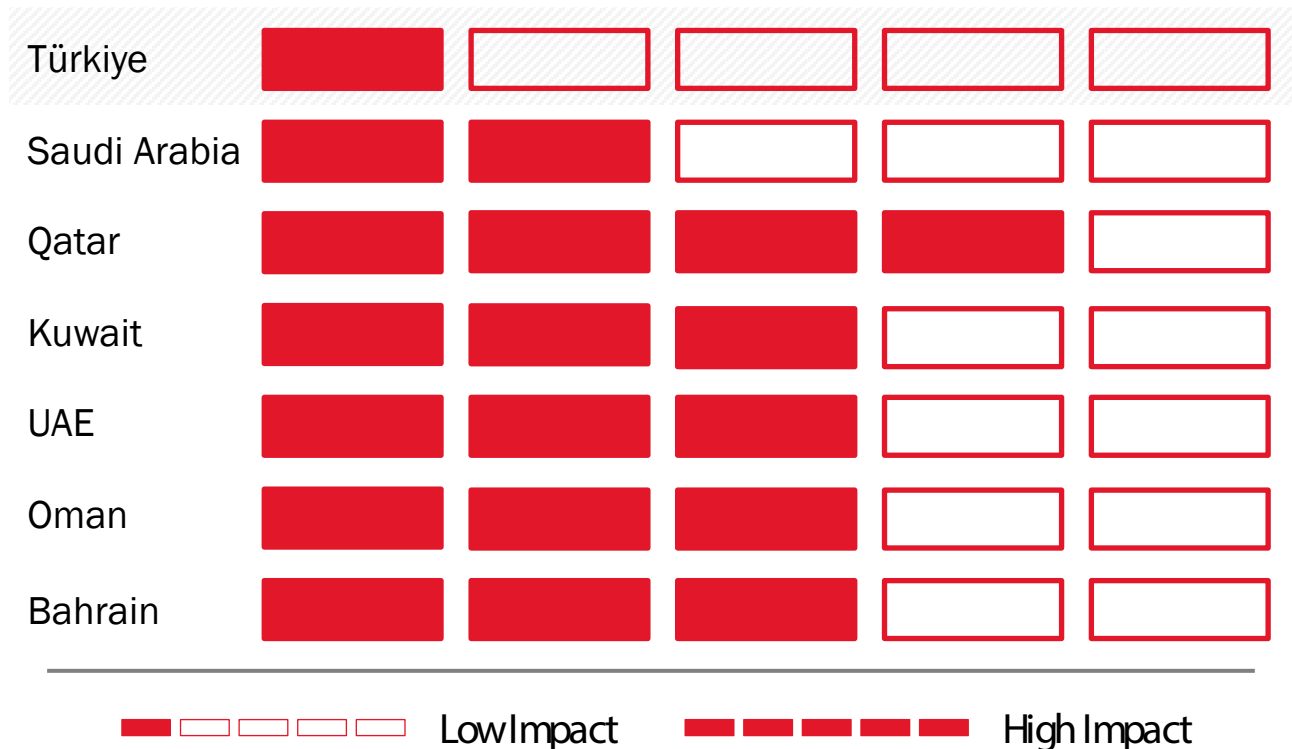
# 4. Country-Level Impact of COVID-19 on the Agriculture Sector

The impact of COVID-19 differed from country to country across the Middle East. Issues such as low annual growth and production were aggravated in the agricultural sector in the first quarter of 2020. Due to the announcement of travel bans and lockdowns, a labor shortage ensued, causing a slight decline in the sector in the first quarter. Thus, the COVID-19 pandemic exposed serious vulnerabilities in Middle Eastern societies, institutions, and economies during that period. However, strong actions from the respective government allowed for growth in production and export. Additionally, domestic consumption of agricultural products also increased, raising the demand for various agricultural products.

As the global economy recovers from the effects of the pandemic, GCC countries and Türkiye are undertaking several steps to bolster local food production as a step toward food security. The estimated positive impact of the COVID-19 pandemic on the growth of the agriculture sector in various countries is described below:

**Figure 29. COVID-19 Pandemic's Impact Assessment**

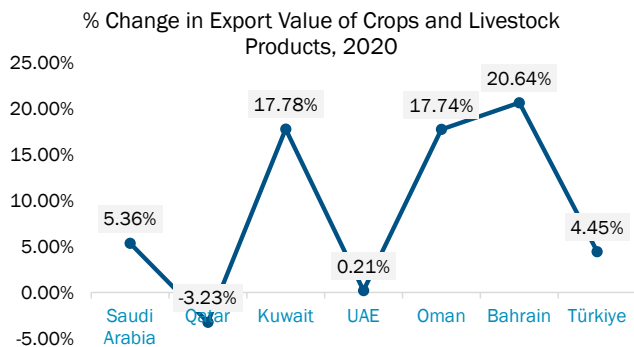
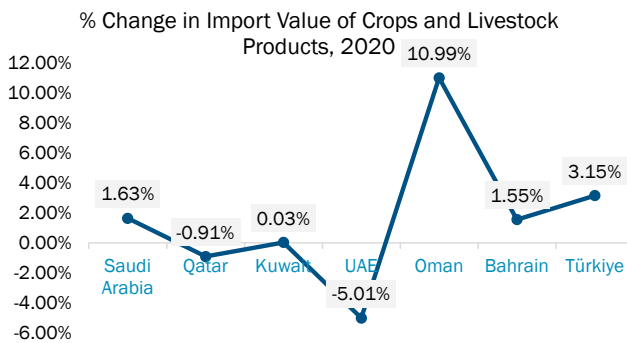
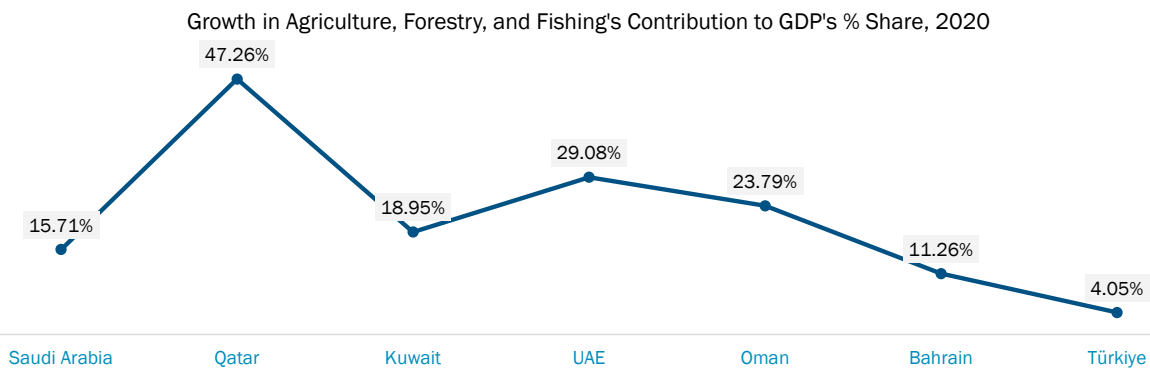
### Assessment of COVID-19's Positive Impact on Agriculture Sector



Source: Analyst Team



The above image showcases the estimated positive impact of the pandemic on each country's agricultural sector. The same was deduced from the overall GDP growth, sector's contribution to GDP, domestic consumption, changes in the agricultural production index, import & export, and change in agricultural land area, among others. Qatar's agricultural sector was estimated to be the most positively impacted, while Türkiye's and Saudi Arabia's sectors were least impacted. Further country-level details on the impact of the pandemic are provided in the next section.



Source: World Bank and Food and Agriculture Organization (FAO)

The above image showcases the various indicators of the impact of the pandemic on the agricultural sector. All the GCC nations and Türkiye witnessed a rise in the sector's contribution to GDP. Similarly, most nations also increased the export and import of agricultural products. The import and export decline in UAE and Qatar was mainly triggered by the departure of expatriate labor to their native nations.





## 4.1 Country-Level Implications of the COVID-19 Pandemic on Agriculture Sectors:

### Türkiye

- Export restrictions from Black Sea regional trading partners
- Lockdowns, including the closedown of all grocery stores.
- Decreased profit for farmers due to fluctuating product prices.
- Surged farm prices of oranges due to higher demand for Vitamin C-enriched foods, leading to decreased exports.
- Proportionate increase in domestic milk, meat, and egg prices due to soaring sunflower meal prices.

The government of Türkiye introduced several new measures to counteract the effects of the COVID-19 pandemic. A few of these measures were as follows:

- 6-month delay in repaying government loans for farmers.
- Establishment of the Unfair Price Evaluation Board to regulate exorbitant price increases, and restrict hoarding, and black-marketing.
- Introduction of a new online digital marketplace to connect producers with buyers.
- Launch of additional duty-free grain tenders to assist producers and ensure the demand-supply balance in the food sector.

### UAE

- Disruptions in UAE's agriculture and poultry sector due to the lack of laborers.
- Disruptions in farming supply chains due to lockdowns, travel bans, curfews, and face mask mandates.
- Several broad social and economic reforms to recover from the pandemic-related downturn.

### Oman

- Weak economic growth and higher budget deficits.
- Lower food security-related concerns due to relatively less panic buying.
- Decreased consumption of imported food owing to food safety concerns.
- Reduced fish consumption due to social restrictions.

### Saudi Arabia

- Relatively low impact owing to better self-sufficiency.
- A decrease in agricultural product import due to the temporary shutdown of international borders.
- Reduction in food consumption due to falling incomes.
- Shift in focus toward food security and agricultural water usage.

### Qatar

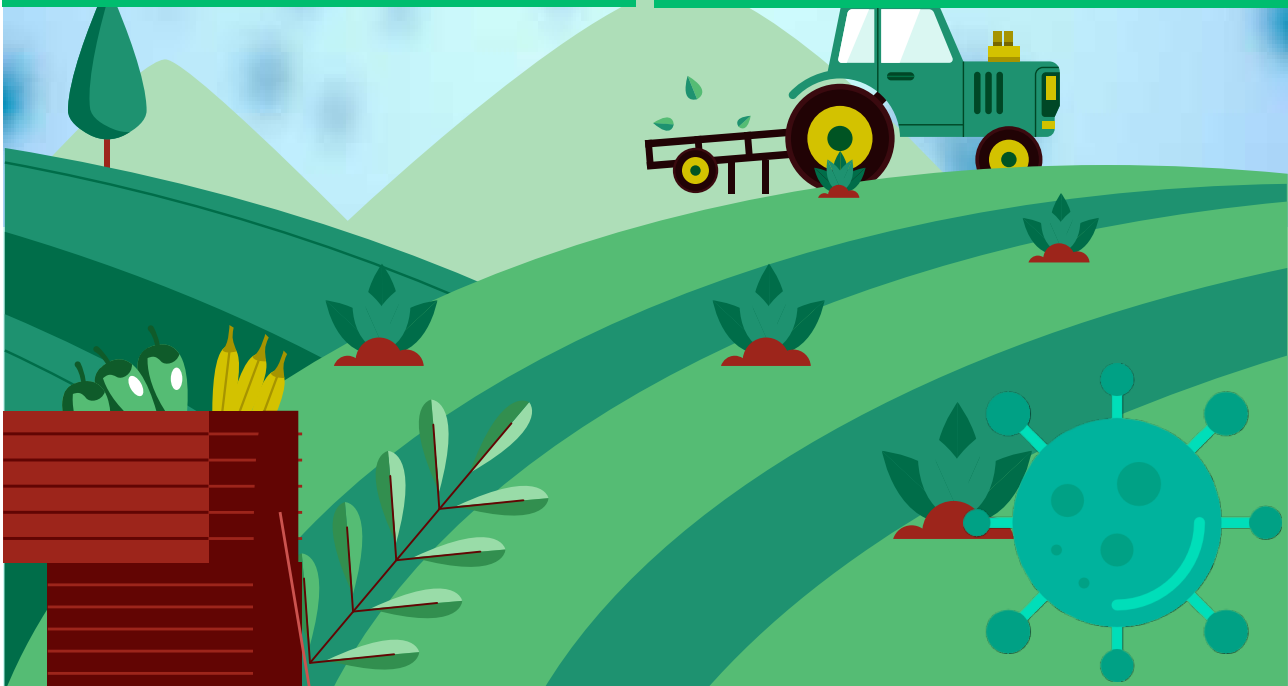
- Food supply shortages caused by the discontinuation of imports and panic-buying by consumers.
- A decline in farm production due to a shortage of workers.
- Mitigation of adverse effects due to the availability of adequate safety stocks of key staple commodities.
- Economic support packages safeguarded citizens from food unavailability.

### Kuwait

- Heavy dependence on the oil & gas sector and unstable global oil prices.
- The General Reserve approached exhaustion due to a sharp rise in the Fiscal deficit of Kuwait in 2020.
- GCC approved Kuwait's proposal to create a joint food supply network.
- Special arrangements at borders to facilitate food import.

### Bahrain

- Bahrain was relatively well-shielded from the adverse effects of the COVID-19 pandemic. Most disruptions in the agriculture sector caused due to the lack of laborers and disruptions in supply chains.
- Government launched a series of monetary and fiscal measures to mitigate the adverse effect of the pandemic.





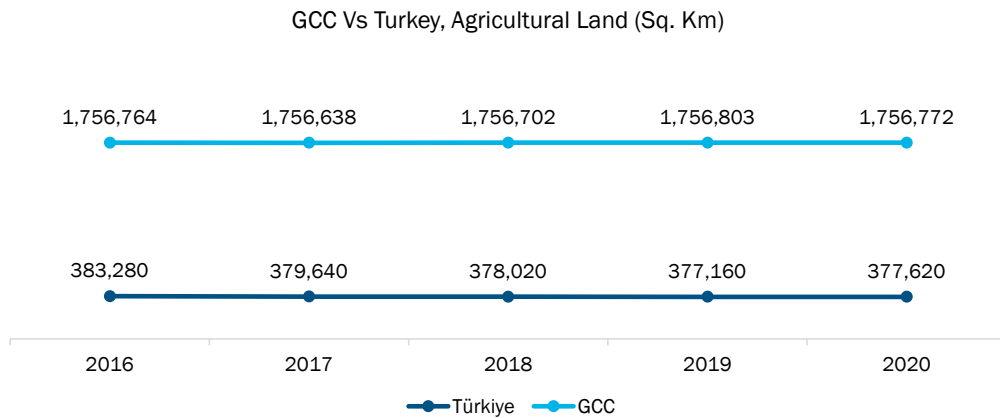


# 5. GCC and Türkiye Agriculture Outlook

## 5.1 GCC Vs Türkiye Comparison

### 5.1.1 Agricultural Land

**Figure 30. GCC Vs Türkiye Agricultural Land Statistics**

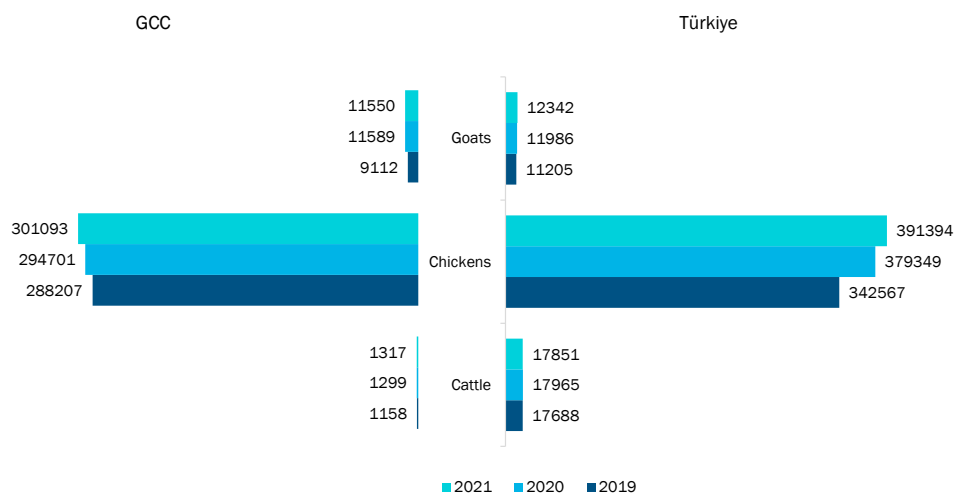


Source: World Bank

The above image compares the agricultural land in GCC and Türkiye. While GCC has a much larger land area under agriculture, the prevalence of marginal climate hinders effective production. Hence, GCC is adopting innovative farming techniques to ensure better land resource utilization.

### 5.1.2 Livestock

**Figure 31. Livestock Statistics Comparison - GCC Vs Türkiye**



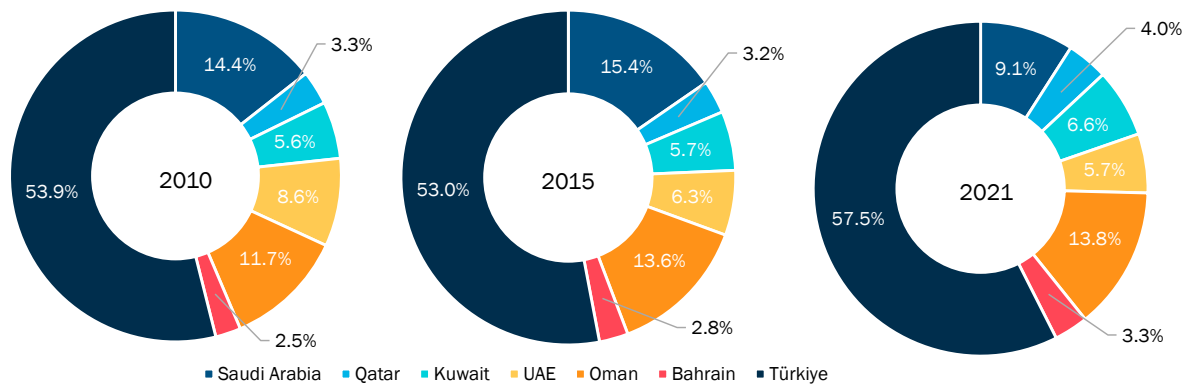
Source: FAO



While GCC nations have an advantage over Türkiye with agricultural land, Türkiye boasts of higher livestock count than that of all GCC nations combined. Availability of grazing pasture is a big advantage that Türkiye has over GCC nations. It boosts the animal husbandry sector in Türkiye.

### 5.1.3 Labor in Agricultural Sector

**Figure 32. Comparison of Labor Force Strength in Agriculture**

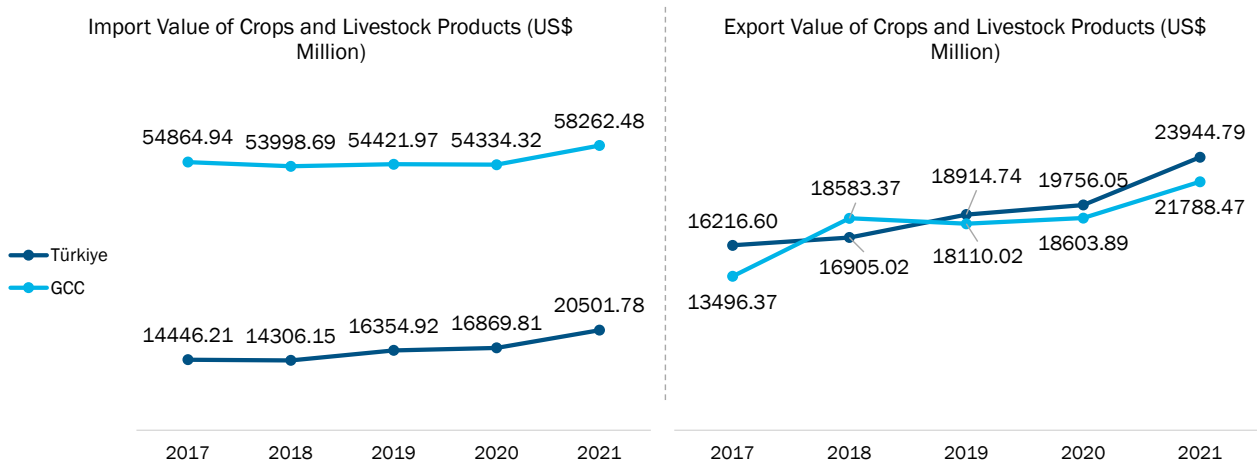


Source: Modeled ILO Estimate and World Bank

For employment in agricultural sector, Türkiye has more than 50% headcount, when total headcount of GCC and Türkiye is combined. Additionally, the country successfully increased its share further in 2021, compared to 2015. It showcases the country's growing focus on development of the agricultural sector.

### 5.1.4 Import & Export Comparison - GCC Vs Türkiye

**Figure 33. Import & Export**



Source: FAO



The line graphs show that Türkiye exported more agricultural products than all GCC nations combined. Again, Türkiye's imports were almost one-third of all GCC nations combined. Hence these graphs showcase Türkiye's well-developed agricultural sector and rising exports while also showing the improvements of GCC nations as they increase their exports.

**Table 2. Türkiye's Export and Import Statistics with GCC – Selected Agricultural Products (US\$ Thousand)**

Commodity	Exported By Türkiye			Imported By Türkiye		
	2020	2021	2022	2020	2021	2022
Cereals	1847	546	6620	46	73	0
Edible Vegetables and Certain Roots and Tubers	64619	39644	35648	363	379	35
Live Animals	22434	29530	24415	107	3	4
Meat and Edible Meat Offal	40883	32244	79309	293	607	0
Fish and Crustaceans, Molluscs and Other Aquatic Invertebrates	74149	81154	54233	485	1753	484
Coffee, Tea, Maté and Spices	10272	5917	10284	3633	5322	1394

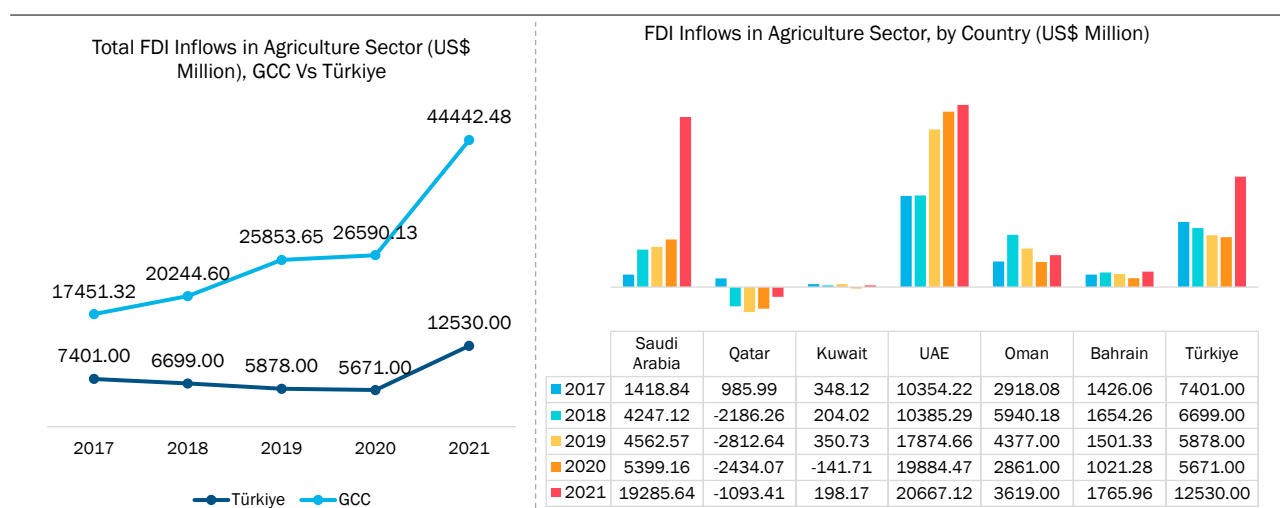
Source: International Trade Centre

The above table depicts the trade value of Türkiye's trade with the GCC nations for 2020 – 2022, for selected agricultural items. Since GCC nations are increasing their focus on developing the food processing industries, it can act as a collaboration opportunity with Türkiye. Raw materials are already being imported from Türkiye by GCC nations, and the processed products can be exported to Türkiye.

### 5.1.5 Comparison of FDI in the Agricultural Sector

The agricultural industry is among the most crucial segments regarding foreign investments since it provides the most favorable way to boost the agricultural sector in both GCC and Türkiye. FDI is a crucial determinant of agricultural production via technology transfer and skills that benefit that country's farmers. FDI helps benefit from the latest scientific research and farming technologies, and farmers and the farming capacity of the country can upgrade themselves to match the latest trends worldwide. Additionally, the infusion of foreign capital assist in increased productivity of the sector and aids in higher exports.

**Figure 34. FDI Inflows in Agriculture Sector (US\$ Million), GCC Vs Türkiye**



Source: FAO



Note: Negative values of FDI net inflows for a particular year show that the value of disinvestment by foreign investors was more than the value of capital newly invested in the reporting economy. When a Party, who has acquired shares in a Foreign Company in accordance with relevant provisions, decides to withdraw the same, it is known as Disinvestment.

The line graph showcases the rising amount of FDI in GCC, despite Türkiye having a well developed agricultural sector. The primary reason for such a trend is the increasing adoption of sustainable farming methods and advanced technologies that utilize drones, sensors, smart irrigation, and automation.

## 5.2 Opportunities for Cooperation and Investment Between GCC Countries and Türkiye

### Opportunities for Cooperation and Investment Between GCC Countries and Türkiye



The governments of Türkiye and GCC countries consistently focus on developing economic relations with each other. Türkiye is largely an agricultural nation, whereas GCC strongly depends on imported food. Moreover, GCC nations are pioneering advanced technology-based agriculture, which Türkiye lags by to some extent. Hence, a rise in trade between the two parties can be mutually beneficial, and it can contribute to efficient and highly productive agricultural sectors that are environmentally and socially sustainable. Fields for possible cooperation and investment opportunities in these countries are mentioned below.

#### Food Processing



Türkish investors can use the Free and Special Economic Zones of GCC nations to develop the food processing industry. The corresponding agreements can be designed to ensure that the raw materials are imported from Türkiye. Further, with proximity to GCC nations, West Asia and Africa can serve as great export destinations for processed food, which can be mutually beneficial for Türkiye and GCC nations.

#### Smart Irrigation



Water loss due to climate change and the prevalence of marginal climate have necessitated water conservation and the implementation of smart irrigation systems in Türkiye and GCC nations. Türkiye plans to implement advanced irrigation systems through the public-private partnership (PPP) model, which can offer great investment opportunities for investors from the GCC. Türkiye's 11th development plan for 2019-2023 mentioned allocating a special budget to install irrigation systems over 2 million hectares of land. The government intends to fund the irrigation of ~750 thousand hectares, while the rest would be achieved through PPPs.

#### Renewable Energy Usage



GCC strongly focuses on developing, implementing, and using various renewable energy sources. In agriculture, renewable energy can be used to replace non-renewable sources, and the excess energy generated can be sold as a "cash crops." Additionally, GCC nations and Türkiye can mutually aid farmers through technology and knowledge transfer, and support.

#### Enhancing Market Access for Economically Weak Smallholder Farmers

GCC countries and Türkiye can cooperate and arrange for the training and capacity-building of all stakeholders involved in agricultural production chains. Such partnerships can focus on youth, women, formal organizations of farmers, and informal interest groups. Additionally, these nations can collaborate on improving farm production and storage infrastructure to reduce post-harvest losses. A common web-based portal for sharing data and improving access to market information can further aid in production decisions regarding crop quality, quantity, and variety.



#### Sustainable Natural Resource Management



Türkiye and the GCC can collaborate and exchange knowledge on sustainable farming, agricultural production, and climate change resilience. A few of the possible collaboration opportunities are as follows:

- Mutual knowledge transfer on soil and water conservation technologies and best practices
- Building a knowledge repository about climate change and land use/ degradation
- Development and implementation of climate-smart agricultural (CSA) practices such as drip and sprinkler irrigation, hail protection nets, indoor crop production, and recycling wastewater for irrigation.

#### Reduction of Food Waste and Loss

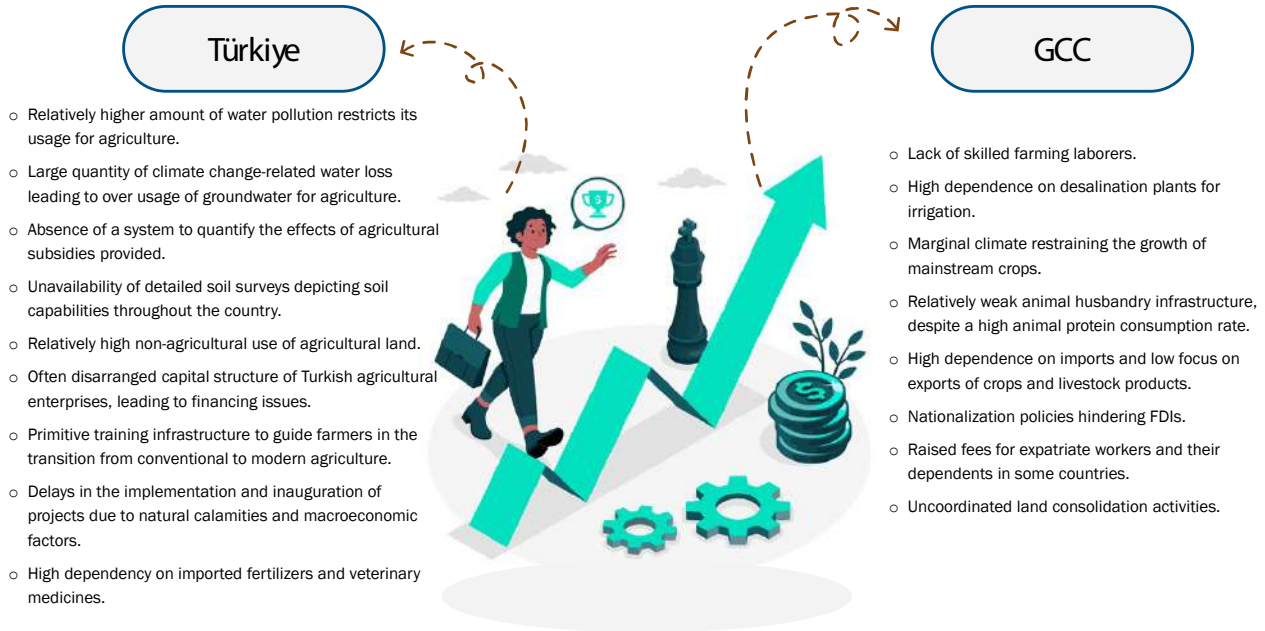
GCC countries are particularly vulnerable to food loss and waste, due to their marginal climate and high dependence on food imports, among other factors. Marginal climate often leads to loss of imported agricultural products enroute to various destinations across the GCC nations. Türkiye and GCC can collaborate to develop a protocol to better quantify this problem. The protocol can illustrate the need for and introduction of new regulations, additional efforts to raise awareness, and a plan to leverage innovative technologies. While a few GCC nations have already adopted different measures, a collaborative effort may provide a better outcome.





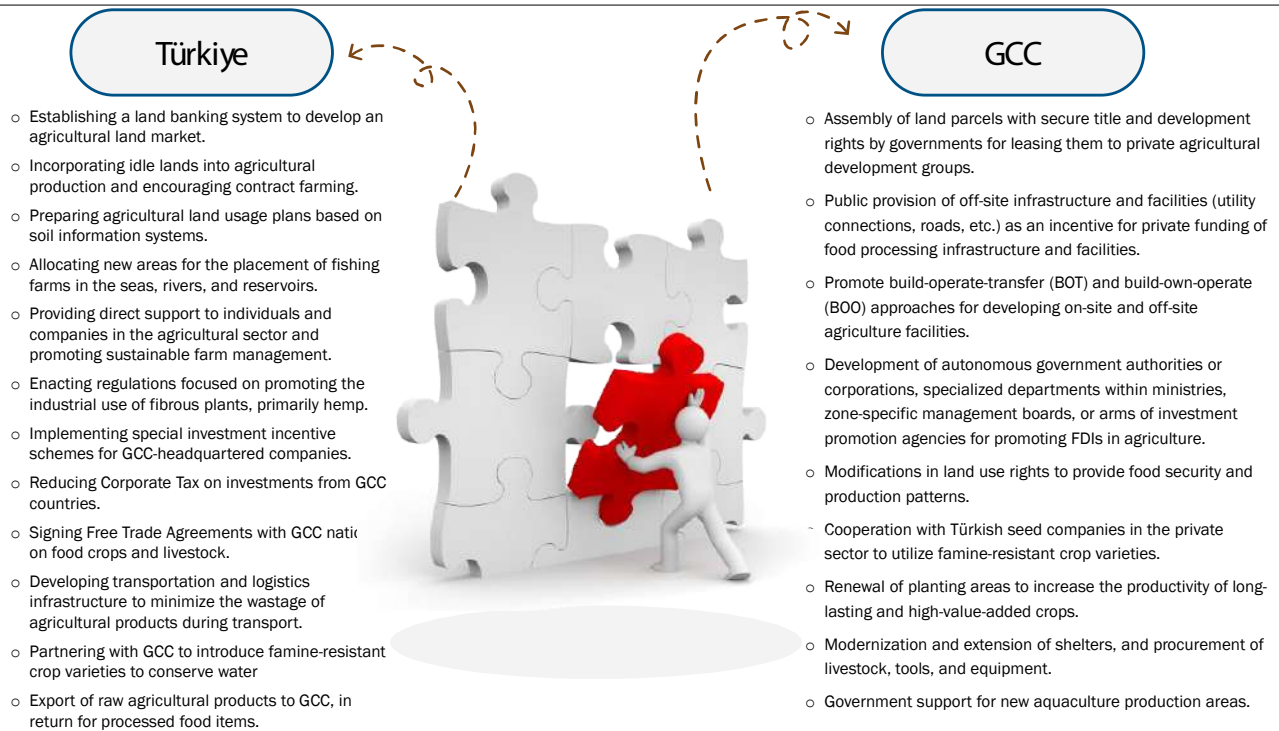
## 5.3 Challenges and Possible Solutions

### 5.3.1 Challenges



Source: Tuik Info, FAO, ITA, USDA FAS, OECD, World Bank, and Government Websites

### 5.3.2 Possible Solutions



Source: Tuik Info, FAO, ITA, USDA FAS, OECD, World Bank, and Government Websites



## 5.4 The Top Existing Cooperation Projects

**Table 3. Top Existing Cooperation Projects**

Year	News	Partners
March 2023	Türkiye and the UAE signed a Comprehensive Economic Partnership Agreement (CEPA) to increase trade between the two countries to the valuation of US\$ 40 billion in the next 5 years, according to the latter's projections. The CEPA is estimated to focus on strategic areas such as Aggrotech, clean energy, food security, and continued cooperation on real estate and construction projects.	Türkiye and UAE
January 2023	Türkiye and Qatar discussed bolstering their cooperation on military and security at the Supreme Strategic Committee in Doha, the capital of Qatar. Agricultural cooperation and trade are expected to be integral to the agreement signed at the meeting.	Türkiye and Qatar
November 2022	Oman and Türkiye signed a cooperation protocol following the 11 <sup>th</sup> Türkiye-Oman Joint Economic Commission (JEC) meeting, which is expected to bolster mutual trade and ties in various fields. The sectors in which the two countries aim to develop cooperation include agriculture and forestry, construction, energy, finance, science and technology, industry, transportation, education, health, environment, tourism, and culture.	Türkiye and Oman
June 2022	Saudi Arabia and Türkiye agreed to cooperate and engage in bilateral relations, including political, economic, military, agriculture, security, and cultural areas. The efforts are expected to enhance the engagement between the public and private sectors of the two countries.	Türkiye and Saudi Arabia
February 2022	The Ministry of Agriculture and Forestry of Türkiye signed a memorandum of understanding (MoU) with the Ministry of Climate Change and Environment of the UAE to expand cooperation in rural development, agriculture, and modern farming systems' adoption.	Türkiye and UAE
December 2021	Türkiye and Qatar signed 15 cooperation agreements to explore ways of strengthening and developing strategic cooperation between the two countries on the sidelines of the Türkiye - Qatar Supreme Strategic Committee. Agricultural cooperation and trade were also included in the agreements signed at the meeting.	Türkiye and Qatar

*1 Tuik Info, FAO, ITA, USDA FAS, OECD, World Bank, and Government Websites*



# 6. Appendix

## 6.1 Word Index

**Table 4. List of Abbreviation**

Abbreviation	Expansion
ACC	Agricultural Credit Co-operatives
AI	Artificial Intelligence
AOAD	Arab Organization for Agricultural Development
APAC	Asia Pacific
BSTDB	Black Sea Trade and Development Bank
BO	Build-Operate
BOT	Build-Operate-Transfer
BLT	Build-Lease-Transfer
CAGR	Compound Annual Growth Rate
CBT	Central Bank of Türkiye
COVID-19	Coronavirus Disease 2019
CSR	Corporate Social Responsibility
DNI	Direct Normal Irradiation
EC	European Commission
EBRD	European Bank for Reconstruction and Development
EU	European Union
FAO	Food and Agriculture Organization
FAS	US Foreign Agricultural Service
FDI	Foreign Direct Investment
FTA	Free Trade Agreement
FZ	Free Zone



Abbreviation	Expansion
GCC	Gulf Cooperation Council
GDP	Gross Domestic Product
GEU	World Bank Gulf Economic Update
ICLS	International Conference of Labour Statisticians
IEA	International Energy Association
ILO	International Labour Organization
IMF	International Monetary Fund
IPARD	Instrument for Pre-Accession Assistance for Rural Development
IsDB	Islamic Development Bank
ITA	International Trade Administration
IUU	Illegal, Unreported, And Unregulated
LNG	Liquefied Natural Gas
MEA	Middle East and Africa
MOCCAЕ	Ministry of Climate Change and Environment
MoCIIP	Ministry of Commerce, Industry and Investment Promotion
MoEWA	Ministry of Environment, Water and Agriculture
MoHRE	Ministry of Human Resources and Emiratization
MSE	Muscat Stock Exchange
MT	Metric Ton
NAP	National Adaptation Plan
NDC	Nationally Determined Contribution
NDP	National Development Plan
NPP	Nuclear Power Plant
NRW	Non-Revenue Water
OECD	Organisation for Economic Co-operation and Development
PESTLE	Political, Economic, Social, Technological, Legal, and Environmental





Abbreviation	Expansion
PPP	Public-Private Partnership
QNDF	Qatar National Development Framework
QNMP	Qatar National Master Plan
R&D	Research & Development
SAM	South America
SEZ	Special Economic Zone
SME	Small & Medium Enterprises
SOE	State Owned Enterprises
SRAD	Sustainable Rural Agricultural Development
SWOT	Strengths, Weaknesses, Opportunities, and Threats
TCZB	Ziraat Bank
TKDK	Türkiye's Agriculture and Forestry Ministry's Agriculture and Rural Development Support Institution
TL	Türkisch Lira
TOR	Transfer of Operating Rights
UAE	United Arab Emirates
UK	United Kingdom
US	United States
US\$	US Dollar
WDN	Water Distribution Network
WHO	World Health Organization
Y-o-Y	Year on Year
ZLD	Zero Liquid Discharge



## 6.2 Key Sources

**Table 5. Key Sources**

Arab Organization for Agricultural Development	International Trade Administration
Boursa Kuwait / Kuwait Stock Exchange	Islamic Development Bank
Black Sea Trade and Development Bank	Ministry of Climate Change and Environment, UAE
Central Bank of Bahrain	Ministry of Human Resources and Emiratization, UAE
Central Bank of Kuwait	Ministry of Industry and Advanced Technology, UAE
Central Bank of Türkiye	National Center for Statistical Information, Oman
Central Bank of the UAE	Organisation for Economic Co-operation and Development
Central Informatics Organisation, Bahrain	Observatory of Economic Complexity
Central Statistical Bureau, Kuwait	Organisation of the Petroleum Exporting Countries
European Bank for Reconstruction and Development	Planning and Statistics Authority, Qatar
Food and Agriculture Organization	Qatar Central Bank
Federal Competitiveness and Statistics Centre, UAE	Saudi Central Bank
General Authority for Statistics, Saudi Arabia	Türkiye's Agriculture and Forestry Ministry's Agriculture and Rural Development Support Institution
Gulf Cooperation Council	Türkish Statistical Institute / Tuik Info
Gulf Investment Corporation	United Nations Conference on Trade and Development
Gulf Petrochemicals and Chemicals Association	US Foreign Agricultural Service
International Conference of Labour Statisticians	World Bank
International Labour Organization	World Health Organization
International Monetary Fund	World Trade Organization
Institute of International Finance	World Bank Gulf Economic Update





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