



# **Business Opportunity Mapping For Qena Governorate**



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## List of Acronyms

CAPMAS	Central Agency for Public Mobilization and Statistics
FGD	Focus group discussion
GAP	Good agricultural practices
GDP	Gross domestic product
IDI	In-depth interview
ITC	International Trade Center
MAPs	Medicinal and Aromatic Plants
UNESCO	United Nations Educational, Scientific and Cultural Organization

# Introduction

## 1.1 Background and Context

**Qena is one of Egypt's South Valley governorates that has an abundance of mineral wealth, agricultural reclaimable lands, touristic monuments, and labor.** With the presence of two industrial zones in the governorate, Qena has great potential to develop its economy. However, it faces several social and economic challenges that hinder its development and competitiveness. This is reflected in a low gross domestic product, low living incomes, and a high level of poverty.

Under the “Enhanced Rural Incomes in Sohag through Market System Development” project by Swiss Development Cooperation (SDC), the goal is to enhance the rural incomes of selected communities in Sohag with focus on the loofah cluster and surrounding economic activities. As Enroot works towards boosting local economies, it constantly seeks to identify economic sectors with the potential to provide opportunities for young women and men to generate sources of income and contribute to the overall development of governorates. Accordingly, this report aims to scan Qena's economic sectors to identify business opportunities for both small and large enterprises/business owners in order to help them contribute to the overall development of the governorate.

The report presents a socio-economic profiling of the governorate of Qena, and uses a value chain and market system development approach to highlight potential opportunities and challenges in the agribusiness, agro-waste and creative sectors. The report identifies investment opportunities accordingly and proposes development interventions based on the analysis enabled by the fieldwork.

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"Industrial Map". General Authority for Investment and Free Zones.



# Study Objectives

**This report represents a business opportunity mapping that serves as an overview of the market structure and current economic situation in Qena**, with an emphasis on the specified existing sectors of agriculture, agro-waste and creative industries (handicrafts) and their sub-sectors. The study identifies potential areas of economic development, while also determining the approach required to accomplish development goals. The aim of the report is to enhance youth-led economic activities linked to the sectors in specific localities. Since the proposed opportunities are based on the situation on the ground, the findings of the study represent a baseline assessment of the possible economic opportunities and interventions that merit further analysis. While this report does not offer a comprehensive scanning of the different economic sectors in the governorate of Qena, it focuses on the economic sectors that are government-dominated. These sectors were determined based on secondary research, rapid market assessment, as well as interviews with key experts in the region. Other sectors, such as mining and tourism, have been excluded from this study because most of their interventions would require large-scale investments and the implementation of high-level policies.

The main objectives of the study are as follows:

1. Providing an extensive overview and analysis of the abovementioned sectors (agribusiness, agro-waste and creative industries/handicrafts) and their sub-sectors (illustrated in figure (1)).
2. Finding demand-based business ideas for the sub-sectors, identifying challenges and potential areas for development, and proposing ideas.
3. Identifying gaps within value chains throughout production and marketing processes.
4. Identifying relationships between producers and different markets and determining the economic development needs of the governorate.

## 01 Agribusiness



- Sugarcane
- Fennel
- Pumpkin
- Livestock ( Milk Production )

## 02 Agro-waste



- Compost
- Biogas

## 03 Creative Industries



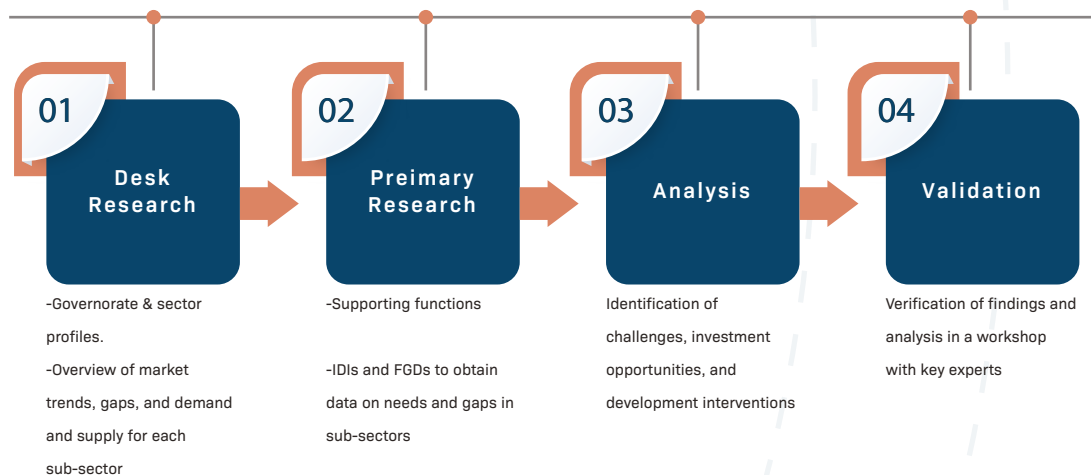
- Clay Crafts
- Loom

# Methodology

**The business opportunity mapping was prepared with a solid research methodology that combines both qualitative and quantitative analysis.** The analysis infers reliable information and avoids bias by triangulating different data sources during data collection (Figure 2). In addition, the methodology takes into account Enroot's ethical considerations in research. This was fulfilled by ensuring that participants/respondents were pre-informed of their participation in the study and oriented with the study objectives and scope. Their written or verbal consent was obtained in case of audio or video recordings.

**The mapping was done using research-inclusive techniques for data collection, utilizing both secondary and primary resources.** The primary resources were obtained through qualitative data collection using in-depth interviews (IDIs) and focus group discussions (FGDs). Secondary resources, particularly CAPMAS annual bulletins and governorate and sector reports, aided in quantitative data collection and governorate profiling. Figure 2 below outlines the research methodology followed in this study, their objectives and sources.

Figure 2 Research process



As illustrated in figure (2), the information was obtained through the following;

- Desk Research: highly depended on statistical data and descriptive statistics that provided the following: a) the market information needed to identify market gaps and business opportunities; b) a general profiling of the governorate. The following represent the main references used in this phase:
  - CAPMAS annual statistical bulletins
  - Tridge market intelligence
  - International Trade Center (ITC)
  - Luxor Governorate website
- Primary Research: Utilized qualitative methods of IDIs and FGDs. Accounting to 20 research units across 9 markets of sugarcane, fennel, pumpkin, tomatoes, dairy, compost, biogas, clay crafts and loom. IDIs and FGDs included producers, input suppliers and traders involved in the mentioned value chains.

# Qena Governorate Profile

## Geographical Profile

**Qena is considered both an agricultural and industrial governorate.** It is surrounded by Sohag from the north, Luxor from the south, the Red Sea from the east, and the New Valley from the west<sup>1</sup>. The governorate spans an area of 9,565 km<sup>2</sup> (2,363,563 feddans), of which 1,356 km<sup>2</sup> are inhabited<sup>2</sup>. Furthermore, Qena is divided into nine districts, which are Abu Tesht, El Waqf, Dishna, Farshut, Naga Hammadi, Qena, Naqada, and Qous. The districts are divided into 41 villages, which are further divided into 111 subsidiary villages and 1,466 smaller villages<sup>3</sup>. Qena's industrial zones are Al-Kalaheen Industrial Zone in Qeft and Hou Industrial Zone in Nag'a Hamadi, where mainly aluminum and sugar are produced<sup>4</sup>

Figure 3 Map of Qena



The topography of Luxor is characterized by the Nile River in the middle, which divides the governorate into the East Bank and the West Bank. It is also characterized by plains on its banks that lead to the hills of the western and eastern deserts of Egypt. Luxor is 670 km away from Cairo. It stretches over a total area of 2,955.6 km<sup>2</sup>, of which 714.3 km<sup>2</sup> is inhabited. Luxor is divided into six centers: Al-Zayneya, Al-Bayadeya, Al-Qarna, Al-Toad,

<sup>1</sup>"History of Qena". Qena Official Governorate Portal.

<sup>2</sup>Ibid.

<sup>3</sup>Ibid.

<sup>4</sup>Ibid.

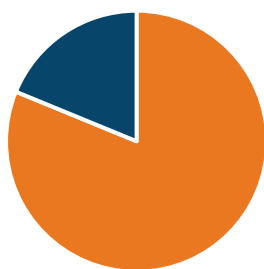
**Demographic Profile**

**Qena has a population of approximately 3 million citizens, who make up 3.4 percent of the total population of Egypt<sup>5</sup>.** More than 80 percent of Qena’s population is concentrated in rural areas<sup>6</sup>. In fact, official statistics show Qena to have the highest population distribution in rural areas amongst the rest of the governorates. Qena comes in the 8th place in Egypt’s national poverty ranking, with a poverty rate of 41.2 percent. Its share of illiterate population represents 0.2% of Egypt’s total illiterate population, while its unemployment share makes up 2% of Egypt’s total unemployed population.

Table 1 Qena demographic profiling

Demographic Indicator	Figures
Population <sup>7</sup>	3,164,281 (48.7 percent females; 51.3 percent males) Rural: 2,569,795 (81.2 percent) Urban: 594,486 (18.8 percent)
Unemployment rate by gender <sup>8</sup>	4.8 percent divided as follows: Female unemployment: 38.4 percent Male unemployment: 61.6 percent
Poverty rate	41.2 percent
Illiteracy rate	22.1 percent divided as follows: Females: 29.7 percent Males: 14.9 percent!

The charts below (Figures 4,5 and 6) illustrate Qena’s population distribution by geography, gender and employment in economic sectors



■ Rural ■ Urban



■ Males ■ Females

<sup>5</sup> "Egypt in Figures". CAPMAS, 2020, p.1

<sup>6</sup> Ibid.

<sup>7</sup> Ibid.

<sup>8</sup> "Annual Bulletin Labour Force Survey". CAPMAS, 2019, p. 241

Figure 6 Distribution of employment in each economic sector. Source: CAPMAS

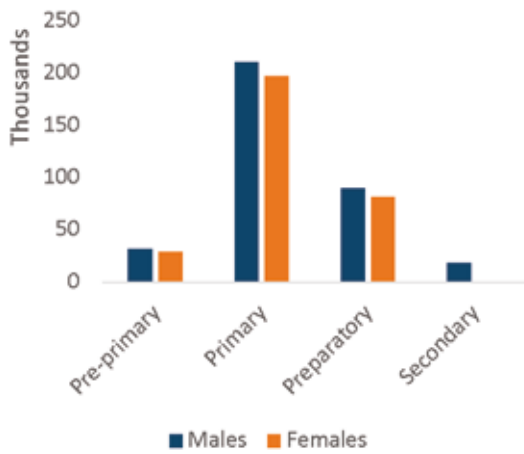
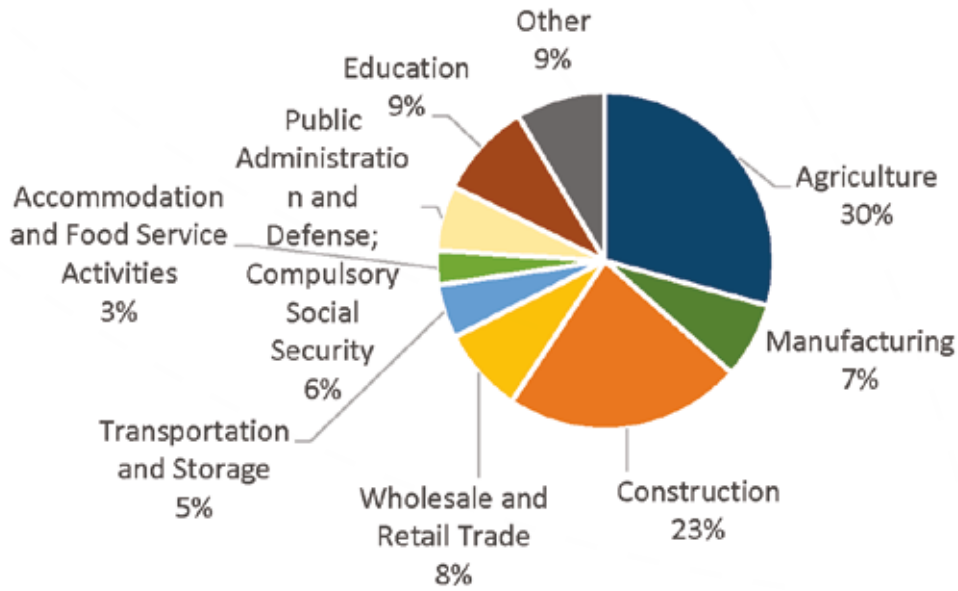


Figure 8 Education level by gender in public schools. Source: CAPMAS

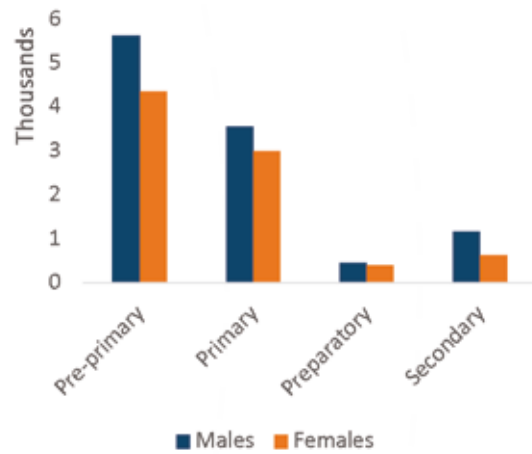


Figure 7 Education level by gender in private schools. Source: CAPMAS

access to education up till the secondary level in private schools, their participation in secondary level education in governmental schools is weak, as shown in Figure 8.



# Infrastructure and Services Profile

Table 3 below presents the status and capacity of Qena’s roads, water, sewage and electric stations. The total road length of paved roads in Qena is 884 km, which represents 3.1 percent of total road length in Egypt<sup>9</sup> . When it comes to bridges, official government statistics<sup>10</sup> show that Qena has 121 bridges in total, which make up approximately 7 percent of the total number of bridges across Egypt’s governorates. Furthermore, Qena produces 227.6 mil m<sup>3</sup>, of water, comprising 2.5 percent of Egypt’s total water production. In addition, there are 9 sewage stations in Qena, which account for 2 percent of the total number of sewage stations in Egypt. Notably, the ratio of sewage treatment quantity to the total collected quantity was found to be at 100 percent. Finally, Qena’s has 0.2 percent of the total net electricity generated in Egypt.

Table 2 Qena infrastructure. Source: CAPMAS

<b>Item</b>	<b>Status and Capacity</b>
<b>Roads<sup>11</sup></b>	Paved: 6556 Km Unpaved: 119 Km
<b>Bridges<sup>12</sup></b>	Total no. of bridges: 121
<b>Water<sup>13</sup></b>	Total production: 227.6 mn m <sup>3</sup>
<b>Sewage<sup>14</sup></b>	Sewage stations: 9 Sewage treatment quantity: 39.6 mil m <sup>3</sup> Treatment Quantity/Collected Quantity: 100%
<b>Electricity<sup>15</sup></b>	1 Hydro-plant; generated electric energy 446.9 MKWH

<sup>9</sup>“Bulletin Inventory of Roads and Bridges”. CAPMAS, 2018, p. 22

<sup>10</sup> Ibid.

<sup>11</sup> Ibid.

<sup>12</sup> Ibid

<sup>13</sup>“Annual Bulletin of Pure Water and Sanitation Statistics”. CAPMAS, 2019.

<sup>14</sup> Ibid

<sup>15</sup>“Electricity and Energy Statistics Annual Bulletin”. CAPMAS, 2018

tourism and handicrafts. Qena has various touristic monuments and temples dating back to ancient Egypt and the Coptic and Islamic eras. Such monuments include the Dendera Temple, the Sidi Abdelrehim El-Qenawi Mosque, and Coptic monasteries. In 2014, around 57,113 tourists visited the Dendera Temple complex alone, out of which 81 percent were foreigners and 19 percent were local tourists<sup>16</sup> showing potential, yet potential is minimized currently due to covid-19 related situation impacting tourism sector worldwide.

**Qena has been at the forefront of Egypt's vision to develop Upper Egypt.** Based on the available data, Qena's total gross domestic product (GDP) in FY2015/2016 reached EGP 34,713,050.93, marking an increase of 17.43 percent from the previous year<sup>17</sup>. Although Qena suffers from high poverty and illiteracy rates, the governorate has major agricultural resources that can be utilized to develop its local economy.

**Qena's total agricultural area is around 354 thousand feddans<sup>18</sup>.** Qena's production of sugarcanes, tomatoes, bananas and sesame is amongst the largest in Egypt. Moreover, Qena has various agri-processing facilities, such as sugar factories and molasse processing facilities, which create additional values to agricultural products and otherwise contribute to the development of the sector.

**Qena also has historic connections with traditional handicrafts.** It is famous for its clay work and pottery, which date back to predynastic times. It is also home to unique handicrafts, including handmade kilim carpentry.

**Furthermore, Qena has a prominent industrial sector.** The Al-Kalaheen Industrial Zone in Qeft was established on 386 feddans, while the Hou Industrial Zone in Naga Hamadi was established on 777 feddans. These industrial zones include aluminum, food processing, engineering and construction, pharmaceutical, textile and apparel and chemical industries. The occupancy rates of both industrial zones have been increasing in recent years. The following section looks at the agribusiness, agro-waste and creative industries sectors and their subsectors. For each of the subsectors covered, the report provides a market overview, followed by a look at the production process and its challenges and main opportunities based on study findings and its analysis.

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16 "The Regional Strategic Plan for Luxor Governorate". General Authority for Urban Planning.

17 "GDP By Governorate". Ministry of Planning and Economic Development.

18 "Annual Bulletin of Statistical Crop Area and Plant Production". CAPMAS, 2019, p. 21

# Agribusiness Sector

**The total employment in Qena's agriculture sector is estimated to be around 208,500 individuals.** While official statistics show that only 2,100 (1 percent) females are employed in the sector<sup>19</sup>, the number is far bigger in reality. Female employment in the sector is rarely accounted for because their work counts as doing household chores.

**Qena's total cropped area amounts to 354,064 feddans**, comprising 2.4 percent of Egypt's total cropped area<sup>20</sup>. Furthermore, Qena's total cultivated area reached 269 thousand feddans, accounting for 3 percent of total Egypt's cultivated areas<sup>21</sup>. Around 7,123,338 tons of field crops are produced in Qena over an area of 331,741 feddans, making up 6.8 percent of Egypt's total production of field crops<sup>22</sup>.

## Sugarcanes

**The economy in Upper Egypt is heavily dependent on sugarcane production<sup>23</sup>.** Most of sugar cane cultivation in Egypt takes place in the sugar refineries of Upper Egypt. In fact, 77 percent of sugar cane area in Egypt is in Upper Egypt. It is estimated that over a million people are directly dependent on sugarcane production in the region and another 300,000 families depend on the ancillary businesses built around it<sup>24</sup>.

**The total production area of sugar cane reached 329.2 thousand feddans in 2018/2019 compared to 327.4 thousand feddans in 2017/2018**, marking an increase of 0.5 percent. Production in Egypt reached 15.3 million tons in 2018/2019 compared to 15.8 million tons in 2017/2018, marking a decrease of 3.1 percent due to low of productivity per feddan. Qena occupies the first rank, producing 6 million tons of sugar cane in 2017/2018<sup>25</sup>, which is 28 percent of total production in Egypt, as shown in Figure 10.

<sup>20</sup>"Annual Bulletin of Statistical Crop Area and Plant Production". CAPMAS, 2019.

<sup>21</sup>Ibid, p. 22

<sup>22</sup>Ibid, p. 24

<sup>23</sup>Omar, Shaza Roushdy and Tate, Bret. "Increasing Sugar Supply on Expanded Beet Production". USDA Foreign Agricultural Service, U.S Department of Agriculture, 2019, p.2.

<sup>24</sup>Ibid, p.2

<sup>25</sup>"Annual Bulletin of Statistical Crop Area and Plant Production". CAPMAS, 2019.

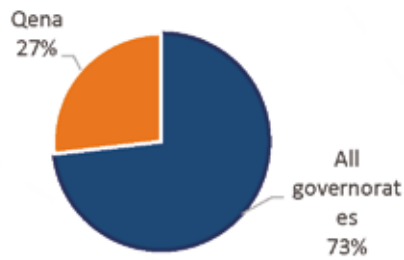


Figure 10 Qena's sugar cane production area. Source: CAPMAS

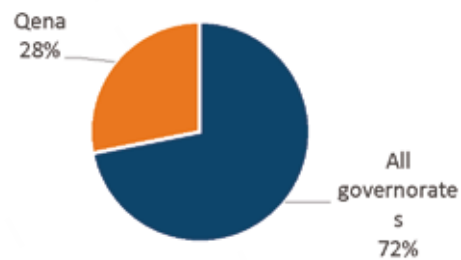


Figure 9 Qena's share of sugar cane production. Source: CAPMAS

Market Overview

In 2020, Egypt exported 114.72 thousand metric tons of sugarcane worth USD 73.36 thousand. Its share of the total global export value of sugarcane reached 0.28 percent. The value and volume of Egypt's sugarcane exports since 2013 are illustrated in Figures 11 and 12 below.

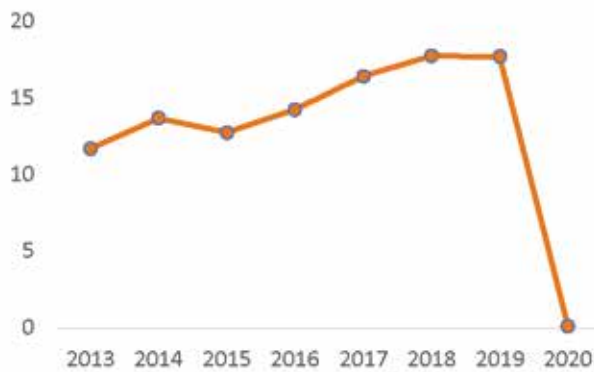


Figure 12 Volume (in metric tons) of Egypt's sugarcane exports. Source: Tridge

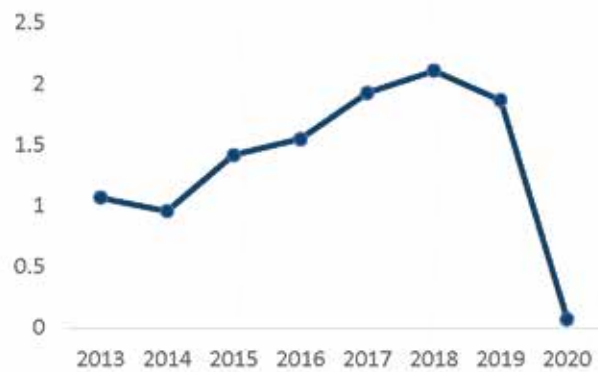


Figure 11 Value (in USD million) of Egypt's sugarcane exports. Source: Tridge

<sup>32</sup> Ibid  
<sup>33</sup> "GDP by Governorate (2015/2016)". Ministry of Planning and Economic Development, 2020.  
<sup>34</sup> "New Thebes Industrial Zone". General Authority for Investment and Free Zones.  
<sup>35</sup> Ibid.  
<sup>36</sup> "Annual Bulletin of Labor Force". CAPMAS, 2019, p.106  
<sup>37</sup> Ibid.  
<sup>38</sup> Ibid.

**Sugarcane exports have increased in value from 2014, reaching a peak of USD 2.1 million in 2018.** This is possibly due to a gradual increase in the procurement price set by the Egyptian government. In marketing year 2016/17, the government increased the sugarcane procurement price to EGP 620 (USD 34.83)<sup>26</sup>. The new rate was 55 percent higher than the 2015/16 procurement price of EGP 400 per metric ton<sup>27</sup>. In 2018, the price increased to EGP 720 (USD 41.53) per metric ton<sup>28</sup>. Such increases incentivize farmers to switch to sugarcane production, and could account for the increase in exports. Conversely, the decrease in export value in 2019 could be due to the fact that the government declined increasing the price to EGP 900 (USD 57) per metric ton, which was expected by farmers' syndicates<sup>29</sup>. Exports decreased in 2020 due the global value chain disruptions and countries' import bans during the COVID-19 crisis. Egypt's sugarcane export destinations in 2020 (Figure 13) were primarily Germany (19.33 percent), followed by the United Kingdom (17.5 percent), and Switzerland (15.97 percent).

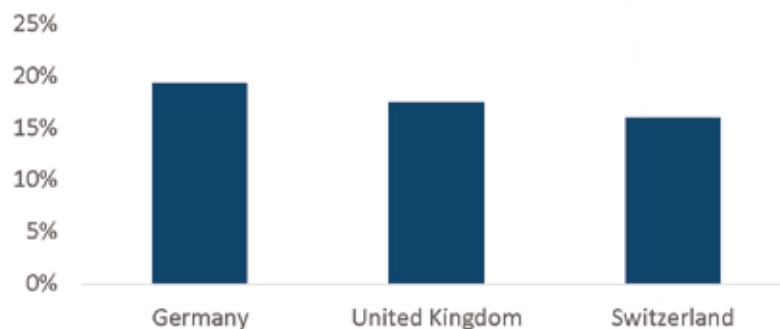


Figure 13 Top three sugarcane export destinations for Egypt.  
Source: Tridge

**In 2020, the global export value of sugar cane reached USD 15.8 million, whereas the global import value reached USD 16.11 million.** The charts below illustrate the top ten global exporters and importers of sugarcane (Figures 14 and 15). Brazil ranks 1st, accounting for 65.39 percent of total sugar cane exports<sup>30</sup>. The top

<sup>26</sup> Omar, Shaza Roushdy and Tatae, Bret. "Increasing Sugar Supply on Expanded Beet Production". USDA Foreign Agriculture Service, U.S Department of Agriculture, 2019.

<sup>27</sup> Ibid.

<sup>28</sup> Ibid.

<sup>29</sup> Omar, Shaza Roushdy and Akingbe, Olutayo. "Egypt's Sugar Supply Increase Continues on Expanded Beets Production". USDA Foreign Agricultural Service, U.S Department of Agriculture, 2020.

<sup>30</sup> "Sugar cane Export from Egypt". Tridge, Tridge Co. Ltd, 2021.

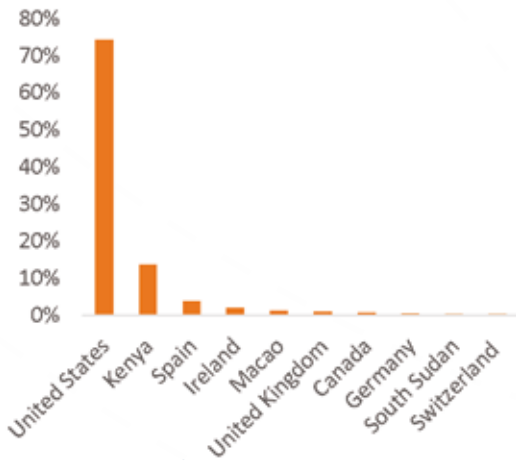


Figure 14 Top 10 global importers of sugar cane in 2020. Source: Tridge

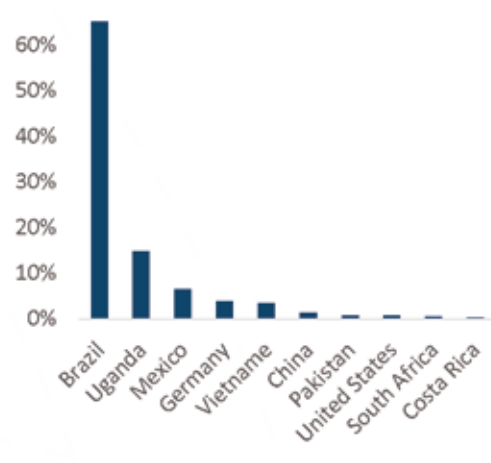


Figure 15 Top global exporters of sugar cane in 2020. Source: Tridge

importers of sugar cane are the United States, accounting for 74.43 percent of total imports, followed by Kenya and Spain<sup>31</sup>.

**The byproducts of sugarcane tend to have much higher export values.** Figures 12 and 13 show the value and volume and Egypt’s exports of molasses. In 2020, Egypt’s molasses exports reached a value of USD 45.65 million. Egypt’s sugarcane export destinations in 2020 (Figure 18) were primarily Indonesia (18.43 percent), followed by the Italy (15.95 percent), and the United States (11.77 percent).

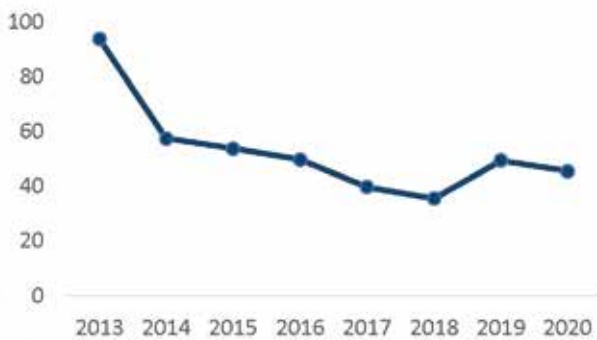


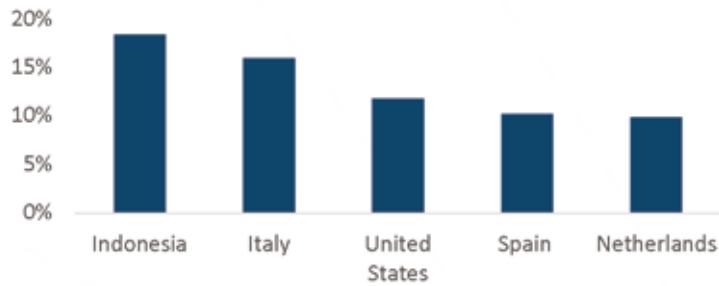
Figure 17 Value (in USD million) of Egypt's molasse exports. Source: Tridge



Figure 16 Volume (in metric tons) of Egypt's molasse exports. Source: Tridge

<sup>31</sup> Ibid.  
<sup>32</sup> "Bulletin of Agricultural Statistics". Ministry of Agriculture and Land Reclamation, 2018, p. 135.





In 2020, the global export value of molasse reached USD 850.99 million, whereas the global import value reached USD 816.22 million. The charts below illustrate the top ten global exporters and importers of sugarcane (Figures 19 and 20). **Egypt is the 5th largest exporter of molasses, with a share of 5.36 percent of global exports.** India ranks 1st, accounting for 12.89 percent of total molasse exports<sup>32</sup>. The top importers of sugar cane are the United States, accounting for 22 percent of total imports, followed by the United Kingdom and Belgium<sup>33</sup>.

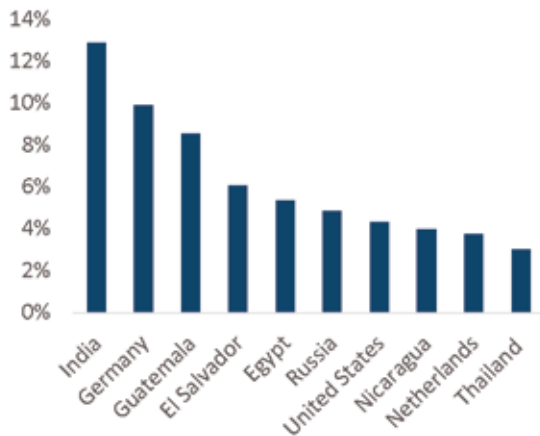


Figure 20 Top 10 global exporters of molasse.  
Source: Tridge

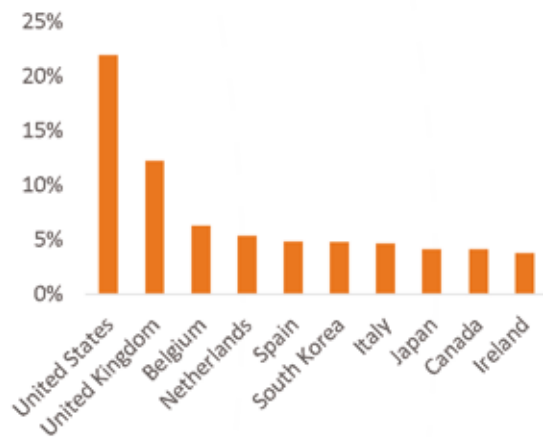
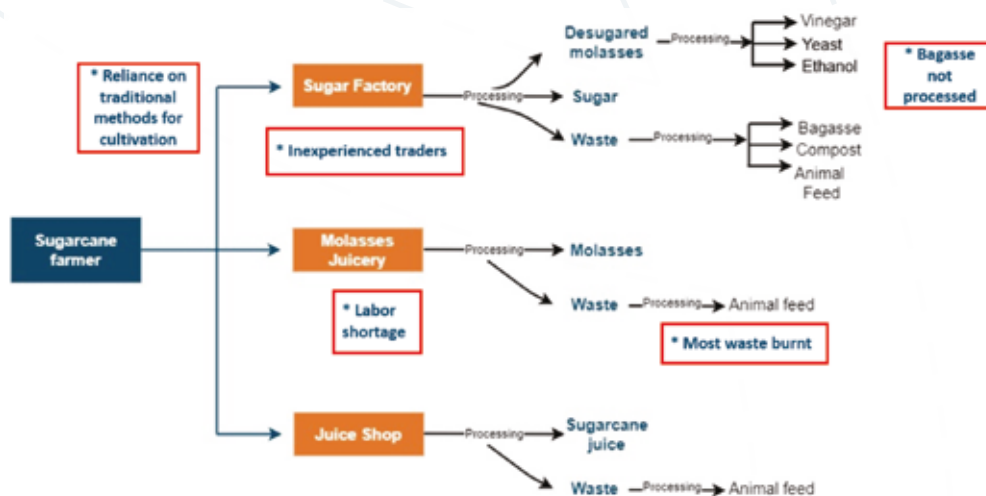


Figure 19 Top 10 global importers of molasse.  
Source: Tridge

# Overview of the Sugarcane Production Process in Qena

Figure 21 Sugarcane production process in Qena



## Sugarcane cultivation

The majority of sugar cane cultivation in Qena takes place in Naga Hammadi and Farshut. The input supplies include seeds, pesticides, salt, and phosphate. Sugar cane cultivation costs about L.E 23,000, including wages, which equals the average cost of cultivation of various crops.

Sugarcane cultivation is considered an attractive crop for farmers due to several reasons, including the fact that, while 50 workers are needed throughout the entire cultivation process, cultivation requires less exertion than most crops. Furthermore, while cultivation takes a year, beginning in March, the same sugarcane sticks in the soil are reused for four years. In addition, one feddan produces around 40 to 50 tons of sugar canes, which is considered an abundant yield per feddan. Since the farmers of the area are contract farmers, the crop is then shipped to the factory in the area, which is considered the most profitable arrangement. Table (1) shows the challenges that farmers face during cultivation and the investment opportunities that exist for the crop in the region.

### Molasses Production

The majority of molasses production in Qena takes place in Naga Hammadi, and Farshut. The input supplies required for its production include sugar canes and a large boiling basin. In the molasses juicery, the sugar cane is shredded and pressed into juice. Afterwards, the sugarcane juice is boiled until it is concentrated into molasses (with sugar). While most of the waste is burnt, it is occasionally turned into animal feed if the juicery owner has cattle. Table (1) shows the challenges that juicery owners face during cultivation and the investment opportunities that exist for the juiceries in the region.

**Big factories, such as the Naga Hammadi Sugar Factory in Qena, produce both sugar and desugared molasses.**

The latter is shipped to other factories, where it is further processed into vinegar, yeast, and ethanol. Therefore, waste from factories is processed into begasse, animal feed and compost. Juiceries, on the other hand, are not equipped with the sophisticated machinery required to benefit from the byproducts of sugarcane production, and so opportunities for further byproducts are lost.

Main Strengths	
<ul style="list-style-type: none"> <li>- <b>Organized subsector; farmers are well connected to traders and sugarcane factories</b></li> <li>- <b>Cultivation of all sugarcane types</b></li> <li>- <b>High sugar content in cultivated sugarcane</b></li> </ul>	
Dimension	Challenges
Input supplies	<ul style="list-style-type: none"> <li>- Reliance on traditional methods for cultivation; no consultation with agricultural engineer</li> <li>- Labor shortage; demand for higher wages</li> </ul>
Production	<ul style="list-style-type: none"> <li>- Increased cost of production resources in molasses juicery, such as oil and natural gas.</li> <li>- Shortage of labor; demand for higher wages</li> <li>- Increased taxes during the past few years</li> </ul>
End Market	<ul style="list-style-type: none"> <li>- Juicery owners face difficulty in marketing the molasses and in exporting</li> <li>- Many traders cannot tell the difference between pure and impure molasses. As a result, the market is overfilled with impure molasses, which deflates the price of pure molasses.</li> </ul>
	<ul style="list-style-type: none"> <li>- The chamber of commerce established a set weight for molasses containers to be factored into the price of each. Since most containers weigh less than the set weight, they end up costing less that they should.</li> <li>- Most of the waste is burnt; only occasionally is it turned into animal feed.</li> </ul>
Suggested Opportunities and Development Interventions	
<ul style="list-style-type: none"> <li>- <b>Initiate bagasse processing:</b> The bagasse produced in the sugar factory is used worldwide as a biofuel to produce heat and electricity. It is also recycled in the manufacture of pulp and paper products.</li> <li>- <b>Processing of the juicery's waste</b> into compost and animal feed</li> <li>- <b>Establishment of a unit to produce ethyl and methyl alcohol and yeast.</b></li> </ul>	

# Fennel Seeds

The total production of medicinal and aromatic plants (MAPs) in Egypt reached 642 thousand tons in 2018/2019, up from 581 thousand tons in 2017/2018, with a recorded increase of 10.5percent<sup>34</sup>. In 2018/2019, Qena’s production of MAPs reached 1,759 tons, accounting for 0.2 percent of total MAPs production in Egypt<sup>35</sup>. Additionally, cultivation of MAPs in Qena occupies around 10,874 feddans, which is around 0.9 percent of total cultivated area for MAPs in Egypt<sup>36</sup>.

As fennel constitutes the majority of MAPs production in Qena, this section of the report investigates Qena’s fennel market as part of Egypt’s production of MAPs production. Qena produces 1,294 tons of fennel, which is 29percent of Egypt’s total production of fennel<sup>37</sup>. There are 873 feddans reserved for fennel production in Qena, accounting for 25percent of total area for the production of fennel across Egypt. Figures 22 and 23 below illustrate Qena’s share of fennel production and area.

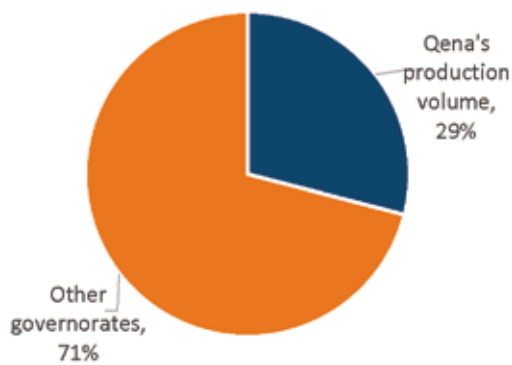


Figure 23 Qena's share of fennel seed production. Source: CAPMAS

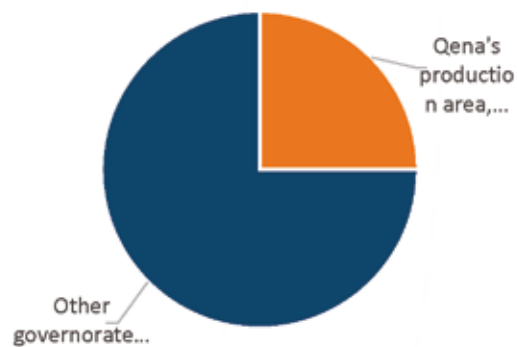


Figure 22 Qena's fennel seed production area. Source: CAPMAS

<sup>34</sup>“Annual Bulletin of Statistical Crop Area and Plant Production”. CAPMAS, 2018  
<sup>35</sup>Ibid.  
<sup>36</sup>“Annual Bulletin of Statistical Crop Area and Plant Production”. CAPMAS, 2018  
<sup>37</sup>“Bulletin of Agricultural Statistics”. Ministry of Agriculture and Land Reclamation, 2017, p. 81.

<sup>31</sup> Ibid.  
<sup>32</sup> “Bulletin of Agricultural Statistics”. Ministry of Agriculture and Land Reclamation, 2018, p. 135.

# Market Overview

In 2020, Egypt’s fennel seed exports reached a volume of 5.91 thousand metric tons and a value of USD 14.63 million. Egypt’s accounts for 12.4 percent of the total global export value of fennel. Egypt’s export trend for fennel since 2013 is illustrated in Fig 21 below. Egypt’s fennel export destinations (Fig 24) are dominated by Germany (46.3 percent), followed by the United States (33.44 percent), and Spain



Figure 25 Egypt's export trend for fennel. Source: Tridge

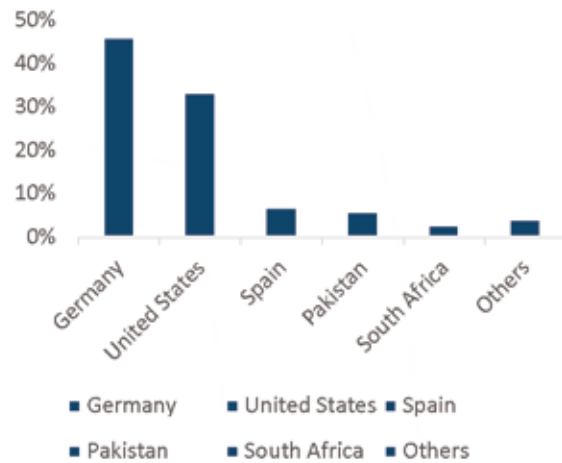


Figure 24 Top five export fennel destinations for Egypt. Source: Tridge

In 2020, the global export value of fennel reached USD 117.11 million, whereas the global import value reached USD 117 million. The charts below illustrate the top ten global exporters and importers of fennel (Figures 26 and 27). As shown in Figure 27, Egypt is the second largest exporter of fennel after China. However, fennel seed exports come in the 16th place in Egypt’s MAPs exports; its share of Egypt’s volume and value of MAPs exports are recorded at 1 percent and 0.5 percent . Top importers of fennel are Germany, the United States, and the UK.

<sup>38</sup>“Foreign Trade Data Repository”. General Organization for Export and Import Control. Unpublished.

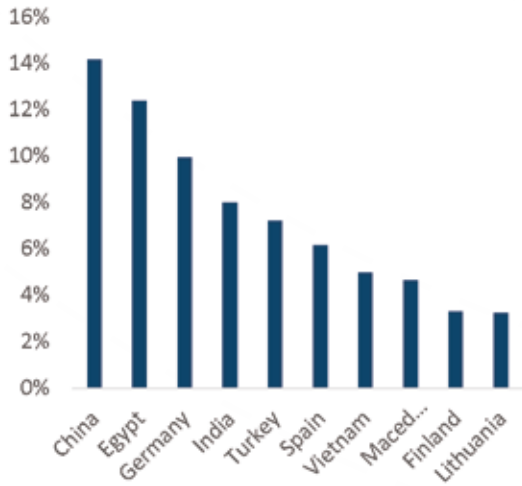


Figure 26 Top ten global fennel exporters. Source: Tridge

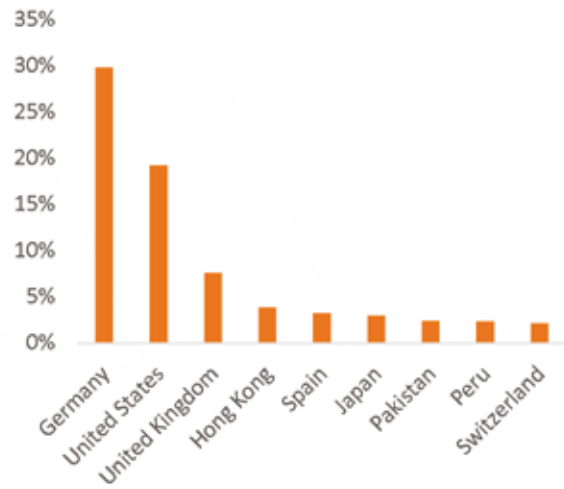


Figure 27 Top ten global fennel importers. Source: Tridge

Figure 28 below demonstrates Egypt’s fennel seed export trends to Germany, Spain and the United States, which have increased over the past three years, signifying the potentiality of those markets for fennel seed exports.

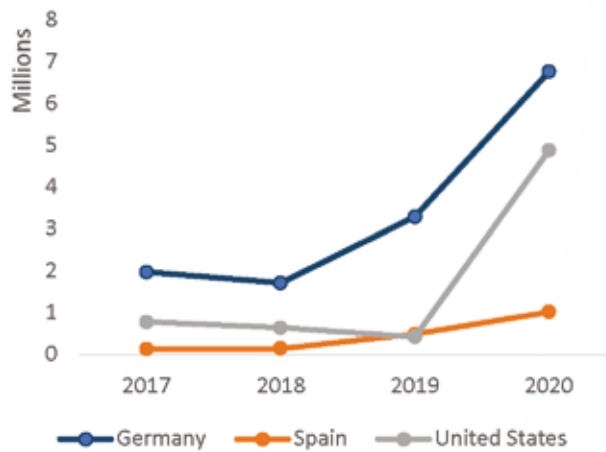


Figure 28 Selected countries for fennel seed export trends. Source: Tridge



**Fennel oil, ground fennel and fennel seed tea are the most common value-added products of fennel.** Apart from usage as a spice, fennel has traditionally been used for health benefits including aiding the digestive system, improving eyesight, assisting in losing weight and relieving stomach pains. Fennel juice syrup is also used for chronic coughs<sup>39</sup>. Other benefits include managing blood pressure to reducing symptoms of asthma. **As such, the demand for fennel is predicted to continue to increase due to increasing population, changing food consumption behavior and increasing demand for value-added products such as oil and powder.**

### Overview of the Fennel Seeds Production Process in Qena



The main production clusters for fennel seeds in Qena are concentrated in Qeft, Al Jabalaw, Al Ashraf, and in Qena’s desert hinterland. The highest production of fennel seeds is mainly in Qeft where an average of 40-70 feddans of fennel are cultivated annually. The production of one feddan ranges from half a ton to two tons depending on whether or not pesticides are used. The main type of fennel produced in Qena is Egyptian/balady fennel. Moreover, the production process starts in November and ends in April. 80 workers per feddan are employed throughout the process.

The input supplies required for fennel production are seeds, fertilizers, pesticides, calcium, and potassium. While the agricultural association occasionally supplies the farmer with fertilizers, the amount is usually insufficient. Farmers end up purchasing more in order to properly service their lands. During 2020, one feddan of fennel cost the farmer EGP 10,000, and the fennels produced were sold for EGP 5,000. Such a loss incurred by the farmer was due to the halt of exports during the Covid-19 crisis.

Due to absence of processing utilities, processing of fennel seeds does not take place in Qena or in Upper Egypt. In most cases, farmers sell the fennel produced in raw form to traders from Lower Egypt, particularly

from Daqahleya, where the fennel seeds are sieved and directly exported. In rare occasions, companies make verbal contractual agreements with the farmers, particularly on condition that farmers do not use pesticides. However, according to the farmers interviewed, those companies rarely fulfill their end of the deal. As a result, farmers end up losing more, since avoiding the use of pesticides drastically lowers the feddan’s productivity. Table 6 below outlines the main challenges faced by fennel farmers and the suggested business opportunities identified accordingly.

Table 4 Main challenges and opportunities of fennel seed production

Main Strengths	
<p><b>-High quality of soil and fennel crop.</b>  <b>-Egypt is the 2<sup>nd</sup> largest fennel exporter globally.</b></p>	
Dimension	Challenges
Pre-production	<p>-Input supplies are costly and the supply of fertilizers by agricultural associations is either inconsistent, insufficient, out of season, or expired.</p> <p>-Limited agricultural guidance, and lack of awareness between farmers about the safe types of pesticides to be used.</p>
Production and processing	<p>-No processing activities or utilities (sieving and reapers), so crops are sold in a raw form with a low price.</p>
End-market	<p>- Crops are sold in a raw form with a low price</p> <p>-Precarious contractual agreements with exporting companies.</p>
Suggested Opportunities	
<p><b>Sieving and harvesting (reaping) machineries</b> to ensure high purity of fennel seeds, which would open up direct export opportunities from Qena or Upper Egypt in general instead of relying on Lower Egypt as the main export hub.</p>	
Proposed Development Interventions	
<p>- <b>Invest in R&amp;D and innovation</b> of fennel seeds to meet the diversified market demand and to promote exports</p> <p>-Introduce <b>Dutch seeds</b>, which are in higher demand for export given their wide range of medical benefits</p>	

# Pumpkins

Egypt's total pumpkin production is estimated at 3 thousand tons, making up 0.01 percent of Egypt's total production of vegetables, with an average yield of 7.68 tons per feddan . The total area used for the production of pumpkins is approximately 411 feddans. In 2017/2018, Qena's pumpkin production was valued at 2,135 tons over an area of 323 feddans<sup>40</sup>. Figures 29 and 30 illustrate Qena's share of total production and cultivated area.

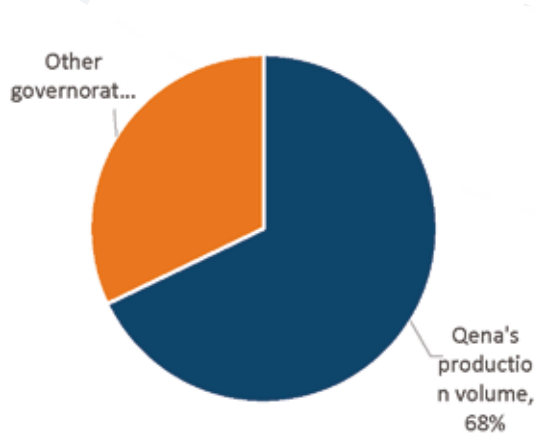


Figure 31 Qena's share of pumpkin production.  
Source: CAPMAS

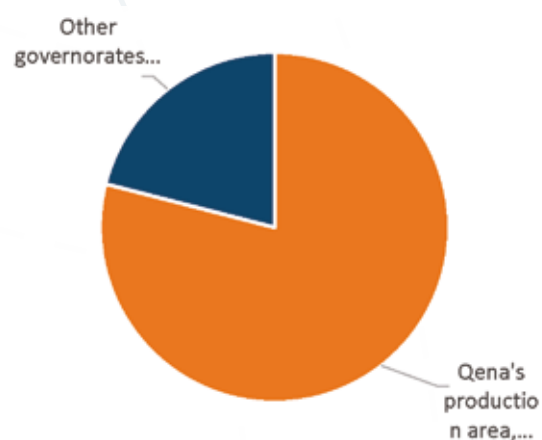


Figure 30 Qena's share of pumpkin production area.  
Source: CAPMAS

## Market Overview

in 2020, Egypt's pumpkin exports reached a volume of 911.94 thousand metric tons with a value of USD 820.17 thousand. Its share of the total global export value of pumpkins reached 0.01 percent. Egypt's export trend for pumpkin (value) since 2013 is illustrated in Figure 31 below. Egypt's main pumpkin export destinations (Figure 32) are Germany (83.5 percent), followed by the UK (13.3 percent).

<sup>64</sup>Siam, G. and Abdelhakim, T., "Analysis of the Tomato Value Chain in Egypt". HAL archives ouvertes, CIHEAM-IAMM, 2018, p.14.

<sup>65</sup>Ibid.

<sup>66</sup>Ibid

<sup>67</sup>Ibid

<sup>68</sup>"Export Potential Map". International Trade Center.

<sup>69</sup>Ibid



Figure 33 Egypt's export trend for pumpkin.  
Source: Tridge.

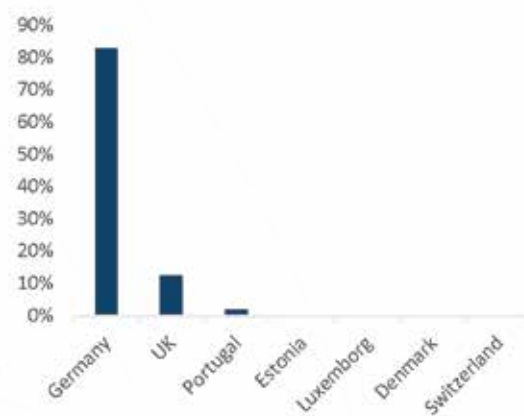


Figure 32 Egypt's top export destinations for Egypt.  
Source: Tridge

Figure 33 demonstrates Egypt's pumpkin export trends to Germany, and the UK, which have increased significantly in 2020, thus signifying the high potentiality of those markets for pumpkin exports.

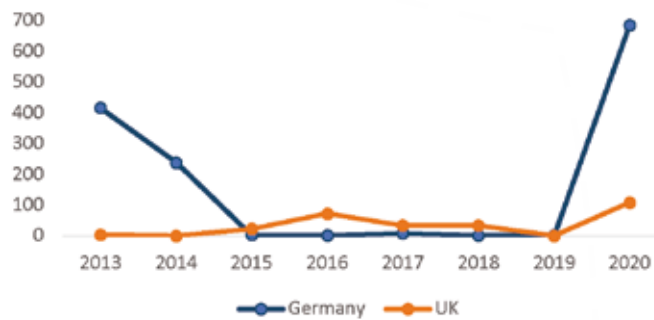


Figure 34 Pumpkin export trends from Egypt to selected countries.  
Source: Tridge

Egypt's exports of pumpkin seeds are significantly higher than its exports of fresh pumpkins, with an export volume of 675.5 metric tons, and an export value of USD 1.39 million. Egypt's exports of pumpkin seeds account for 0.28 percent of the global value of pumpkin seed exports. Figures 34 and 35 below illustrate Egypt's export trends for pumpkin seeds, as well as pumpkin seed exports from Egypt to



Figure 35 Egypt's export trend for pumpkin seed exports.  
Source: Tridge

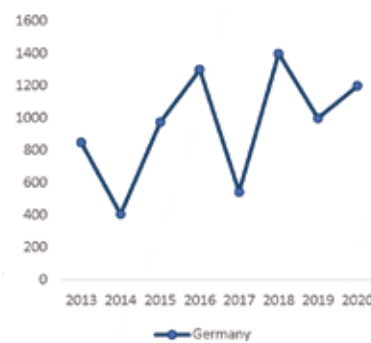


Figure 36 Pumpkin seed export trends from Egypt to Germany.  
Source: Tridge

# Overview of the Pumpkin Production Process in Qena

Figure 37 Pumpkin production & trade process in Qena



**The production of pumpkins in Qena** is solely concentrated in Al-Harajiyah area in the district of Qus in Qena. While official statistics state that pumpkins are cultivated on over 400 feddans in Qena, farmers believe that there are over 500 cultivated feddans. The number of feddans cultivated by a single farmer to produce pumpkins can range from 2-100 feddans. Depending on the climate, a single feddan yields on average around 10 tons of pumpkins (range is from 6-20 tons) with an average selling price of EGP 1,800 per ton. The main types of pumpkins cultivated in Qena are "Baladi" and "Domyati".

**The input supplies required include nitrates, pesticides, insecticide seeds, fertilizers, chemicals and phosphates.** They cost EGP 10,000 per feddan, which is considered quite burdensome for the farmer, given that the agricultural association does not provide any subsidized fertilizers for the farmers. This is because pumpkins are not included under the assigned subsidized quota of fertilizers. Depending on the variety, the pumpkin's agricultural cycle takes approximately 90 days, starting from July and ending in November.

**The main comparative advantage of pumpkins cultivated in Qena is its seasonality.** Unlike other governorates, such as Damietta, Qena cultivates its pumpkins in the summer. This means there is always a market demand for the pumpkins produced in Qena.

One of the most demanded types of pumpkin for export is the “Emat Al Sultan”, which is not cultivated in Qena, given that it requires a specific soil nature that is available only in new lands . In spite of this, other pumpkin varieties cultivated in Qena such as “Domyati” are also exported through export stations in Kafr El Dawar and 6th of October . There are generally minimal export standards for pumpkins because they require very little or no pesticides and hormones during cultivation While farmers in Qena realize that the pumpkins they supply are exported, they do not directly deal with exporters and are not aware of the exporting companies involved.

**Some of the main challenges faced by farmers** include low access to quality seeds, relatively high costs of input supplies and irrigation and lack of storage space. Table 7 below outlines the main challenges faced by pumpkin farmers and the suggested business opportunities identified accordingly.

Table 5 Main challenges and opportunities of pumpkin production

<b>Main Strengths</b>	
<p><b>-High production; Qena is the primary producer of pumpkins in Upper Egypt</b></p> <p><b>-Competitive seasonality; production in summer unlike other governorates which cultivate farmers in the winter</b></p>	
<b>Dimension</b>	<b>Challenges</b>
Pre-production	<ul style="list-style-type: none"> <li>-Low quality of seeds (broken seeds) which negatively affects the feddan's yield and productivity.</li> <li>-Input supplies are costly and agricultural associations do not supply any fertilizers for pumpkins</li> </ul>
Production and processing	<ul style="list-style-type: none"> <li>-High cost of irrigation; canals are the main sources of water, and lifting it to be used for irrigation is quite costly.</li> <li>-Absence of storage and cooling facilities to preserve pumpkins from being ruined</li> <li>-No processing takes place; pumpkins are exported in a raw state as they are</li> <li>-Pumpkin waste is thrown out and not utilized</li> </ul>
End-market	<ul style="list-style-type: none"> <li>- Farmers sell with the same price to the trader whether for export or local market consumption (no premium price is set for export purposes). !</li> </ul>
<b>Suggested Opportunities and Development Interventions</b>	
<ul style="list-style-type: none"> <li>- Establishment of nurseries that would supply high-quality seeds to improve feddan productivity.</li> <li>- Pumpkin waste can be utilized as compost as well as livestock feed, which is due to its high nutritional value, high level of antioxidants, pigments, and polysaccharides content. The waste could enhance quality of meat, milk, and eggs, as well animal health.</li> </ul>	

# Tomatoes

Tomatoes occupy the first place among horticultural crops in terms of volume of production . Egypt produces an average of about 8 million tons of tomatoes per year , which can be attributed to its suitable climate, dual seasonality, and fertile lands . On the other hand, the total area of tomato in Egypt reached 409 thousand feddan in 2018/2019, and 416 thousand feddans in 2017/2018, with a decrease of 1.8 percent . The total production of tomatoes in Egypt reached 6,796 thousand tons in 2018/2019, and 6,778 thousand tons in 2017/2018, with an increase of 0.3 percent . Figures 38 and 39 show Qena's share of the total tomato cultivation area and production in Egypt.

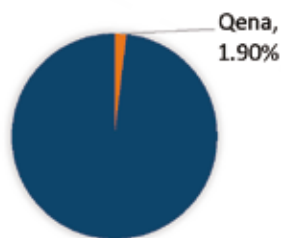


Figure 39 Qena's share of tomato production.  
Source: CAPMAS

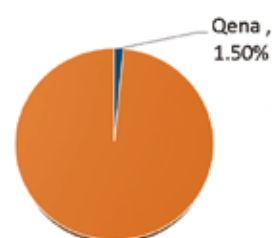


Figure 38 Qena's share of tomato production area.  
Source: CAPMAS

## Market Overview

In 2020, Egypt's tomato exports reached a volume of 397.44 thousand metric tons with a value of USD 562.01 thousand. Its share of the total global export value of tomato reached 0.84 percent. The export values of tomatoes, tomato pastes and tomato sauces tend to fluctuate from one year to another as shown in Figure 41. Furthermore, Egypt's main tomato export destinations (Figure 40) are the UK (70 percent) and Germany (20.8 percent).

The fluctuations in tomato exports are the outcome of several factors within the tomato value chain in Egypt. The value chain is dominated by small-scale farmers who cultivate tomatoes using traditional methods . 80 percent of tomato production takes place on 5 feddans or less. There is a lack of mechanization and/or vertical cultivation due to the heavy fragmentation of land . The amount exported is only a small fraction of what is produced; the majority of tomatoes grown by these small-scale farmers are sold to domestic traders and middlemen within a traditional



and informal distribution system . In addition, while Egypt consistently ranks as the 19th tomato-exporting country in the world in terms of trade value , it ranks the14th in terms of quantity exported, as shown in Figures 40 and 41 below.

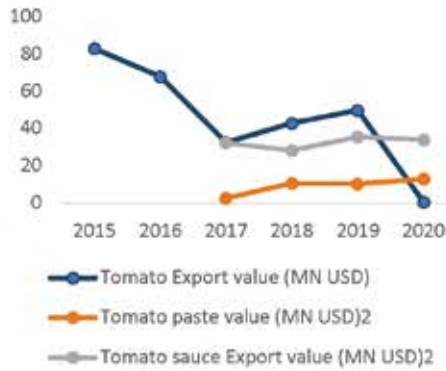


Figure 41 Egypt's tomato exports. Source: Tridge

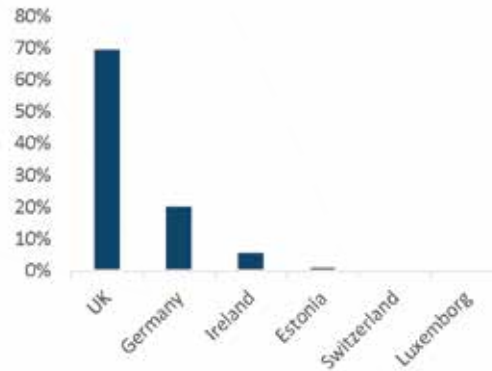


Figure 40 Egypt's top export destinations for tomatoes. Source: Tridge

In 2020, the global export value of tomatoes reached USD 6.71 billion, whereas the global import value reached USD 6.86 billion. As reflected in both figures, six countries export fewer tomatoes for higher values than does Egypt. Four main factors affect the quality of tomato production by small-scale farmers within the tomato value chain. The first is that traditional practices that were inherited over generations prevail against good agriculture practices (GAP)<sup>52</sup> . The second is the lack of information on the quality requirements of local and global markets<sup>53</sup> . The third are the constant fluctuations in productivity that take place due to climate changes and pest infestations<sup>54</sup> . As a result, there is a lack of compliance with international standards<sup>55</sup> .

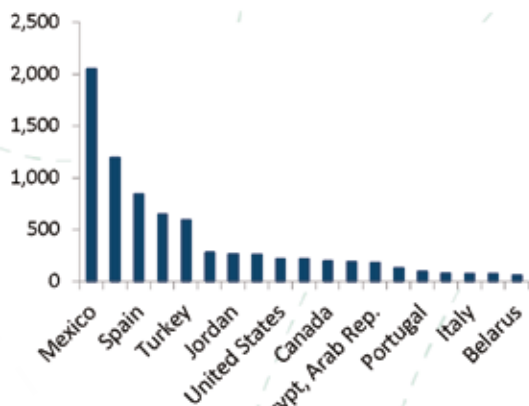


Figure 43 Top 20 tomato exporters in 2019 by export value (in USD million). Source: World Integrated Trades Solution (WITS)

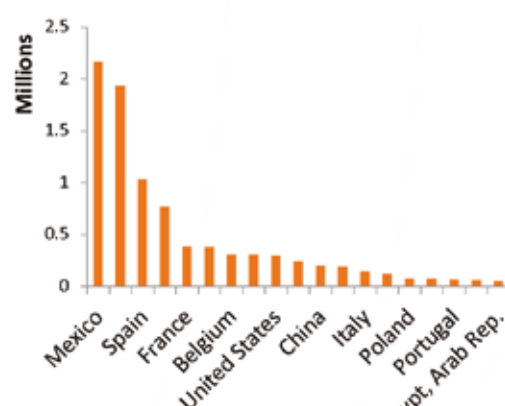


Figure 44 Top 20 tomato exporters in 2019 by quantity exported (in millions of tons). Source: World Integrated Trades Solution (WITS)

<sup>52</sup> Siam, G. and Abdelhakim, T., "Analysis of the Tomato Value Chain in Egypt". HAL archives ouvertes, CIHEAM-IAMM, 2018, p.14.  
<sup>53</sup> Ibid.  
<sup>54</sup> Ibid.  
<sup>55</sup> Ibid.  
<sup>55</sup> "Export Potential Map". International Trade Center.

According to the International Trade Center (ITC), the markets with the greatest potential for Egypt's exports of fresh tomatoes are Saudi Arabia, the United Arab Emirates and Russia, with the latter showing the largest absolute difference between potential and actual exports in value terms, leaving room to realize additional exports worth USD 5.6 million . For tomato ketchups and sauces, markets which show the greatest potential for Egypt's exports are Saudi Arabia, the United Arab Emirates and Kuwait. However, Iraq shows the largest absolute difference between potential and actual exports in value terms, leaving room to realize additional exports worth USD 2.2 million . Moreover, the charts below (Figures 44, 45 and 46) demonstrate Egypt's export trends for fresh tomatoes, value-added tomatoes, and tomato sauces, signifying the high potentiality of those markets for tomato exports.



Figure 45 Tomato export trends for selected countries. Source: Tridge



Figure 44 Value-added tomato export trends for selected countries. Source: Tridge

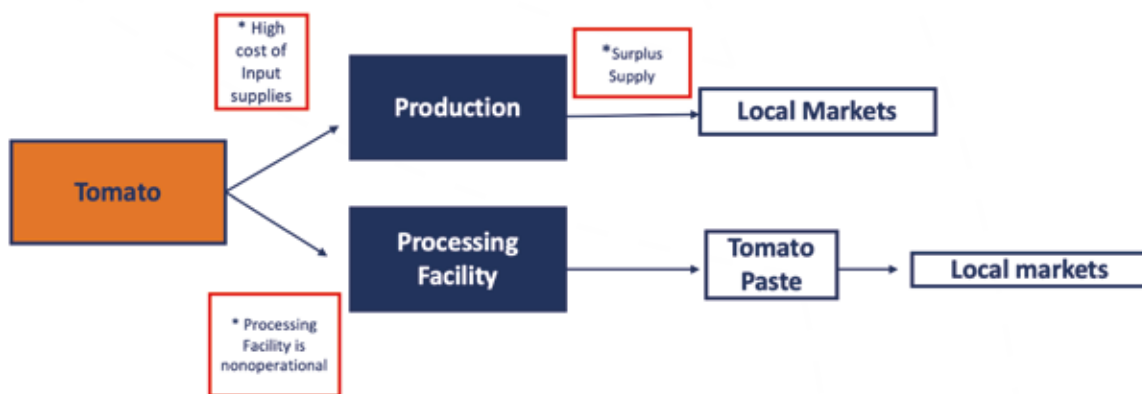
million . Moreover, the charts below (Figures 44, 45 and 46) demonstrate Egypt's export trends for fresh tomatoes, value-added tomatoes, and tomato sauces, signifying the high potentiality of those markets for tomato exports.



Figure 46 Tomato sauce export trends for selected countries. Source: Tridge

# Overview of the Tomato Production Process in Qena

Figure 47 Tomato production process in Qena



**In Qena, there is a tomato cluster located in the Al Geblaw Village.** The tomatoes cluster is slowly transitioning from concentrating around muddy soils to sandy soils and mountains. This transition is due to many factors, including urbanization, profitability and the low costs of new lands. At the mountains, farmers can have large areas, ranging anywhere from 7 to 15 feddans, to plant tomatoes. According to farmers in the area, mountain areas have higher production per feddan than areas with muddy soils. In areas that have muddy soils, the production rate per feddan is between 900 to 1,000 tomato boxes, or “edayas”, whereas in the mountains, production averages 1,500 “edayas”<sup>58</sup>. Since mountain farming is considered unconventional, farmers use a drip-irrigation system to cultivate tomatoes.

**The farming process begins in the month of September.** The process of land preparation takes around 12 labor days. Tomato seedlings are bought from input suppliers. Farmers also purchase chemicals and fertilizers from the private sector instead of relying on fertilizers supplied by cooperatives.

**The farming process begins with the seedlings being covered by soil and watered.** Farmers begin the initial harvest from January till June. Afterwards, tomatoes are harvested and sold as raw materials either to traders or to processors. Prices are determined exclusively by the availability of tomatoes, the demand and lastly the

<sup>58</sup>Note: One ‘edayas’ ranges from 18-25 kgs

## Overview of the Production Process in Qena

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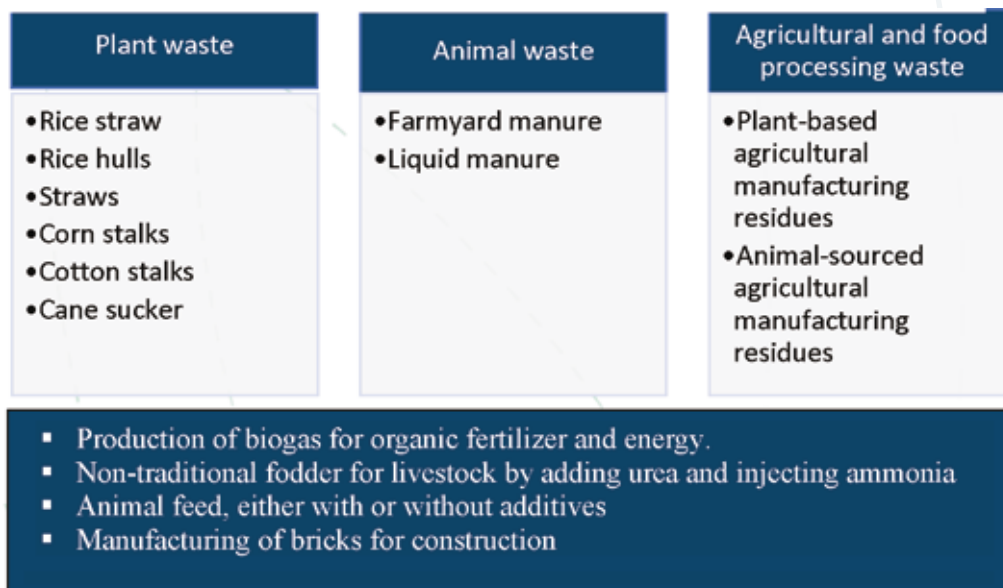
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Main Strengths	
Dimension	Challenges
Input supplies	<ul style="list-style-type: none"><li>- Prices of seeds and fertilizers are unregulated.</li><li>- No licenses for nurseries</li><li>- Low capacities and inefficiencies</li></ul>
Production and Processing	<ul style="list-style-type: none"><li>- Pesticides and seeds are sometimes flawed or not up-to quality.</li><li>- Farming costs (e.g., electricity, input supplies) are higher than selling prices.</li></ul>
End-market	<ul style="list-style-type: none"><li>- Excessive tomato farming causes a surplus of tomatoes and reduces their prices.</li><li>- Limited access to export markets</li></ul>
Suggested Opportunities and Development Interventions	
<ul style="list-style-type: none"><li>- Storage and refrigerating facility for dried tomatoes.</li><li>- Solar panels as alternatives to traditional electricity</li><li>- Processing facilities to produce tomato paste, ketchup, tomato juice.</li></ul>	

# Overview of the Agro-waste Sector

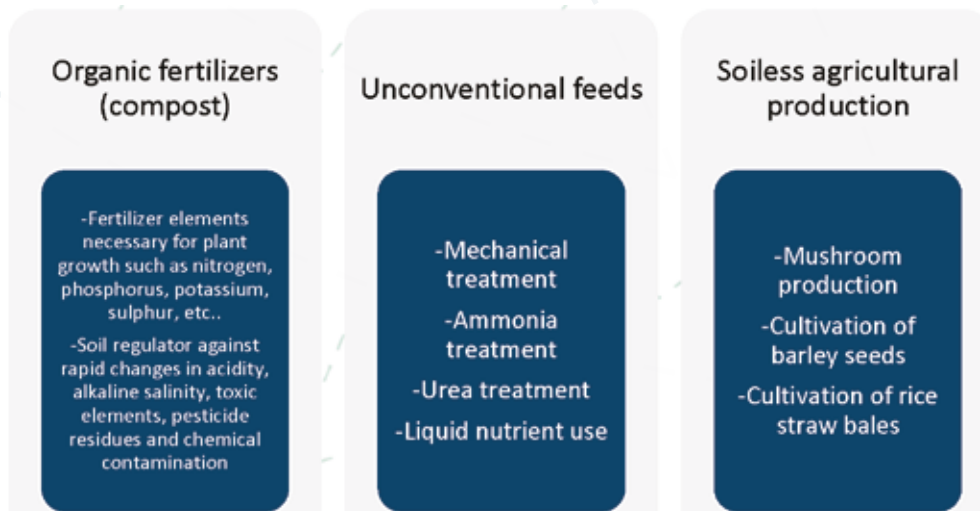
**Plant and animal agricultural waste are by-products within the agricultural production system that have the potential to be maximized** by converting them into organic fertilizers, fodder, food for humans, clean energy or manufacturing materials. This in turn would contribute to achieving cleaner agriculture, protecting the environment from pollution, providing jobs in rural areas, and improving the economic and environmental situation, in addition to raising the health and social statuses in rural Egypt. Agricultural waste can be divided into plant residues, animal residues, and agricultural waste and food processing (plant-based agricultural manufacturing residues and animal-sourced agricultural manufacturing residues). This division along with some of the potential uses for agricultural waste are illustrated in Figure 48 below.

Figure 48 Agricultural waste division and potential uses. Source: Ministry of Environment



Studies conducted indicate that the byproducts of agricultural waste from organic and mineral components in Egypt are worth EGP 3 billion. There are typically three main areas of use for waste in the agricultural field, which are organic fertilizers, unconventional feeds, and food production. The different areas of use are illustrated in Figure 49 below .

Figure 49 Areas of use for agricultural waste. Source: Ministry of Environment



**Agricultural waste management is growing significantly in Egypt.** The Egyptian government has recently constructed 731 sites for piling up straws in six governorates . Furthermore, Egypt seeks to implement several projects in that area, including one involving producing fiberboards out of rice straws. Until today, 851,796 tons of straws have been piled up, and 538,731 tons have been minced. A total amount of 749 tons of fertilizers have been produced . The total volume of waste (straws, thrones, firewood, hay) produced in Egypt during FY2017/2018 reached 163,070,437 thousand Hem . Qena's share of waste production for the same year was recorded at 4.05 percent, with straws constituting the majority of Qena's waste (37.9 percent), followed by thrones (31 percent), straw (24 percent), and finally firewood (6.9 percent) . Figure 50 below illustrates the classification of agro- waste in Qena.

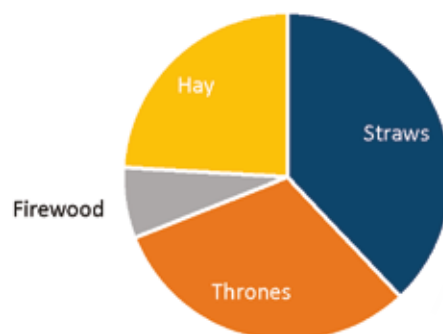
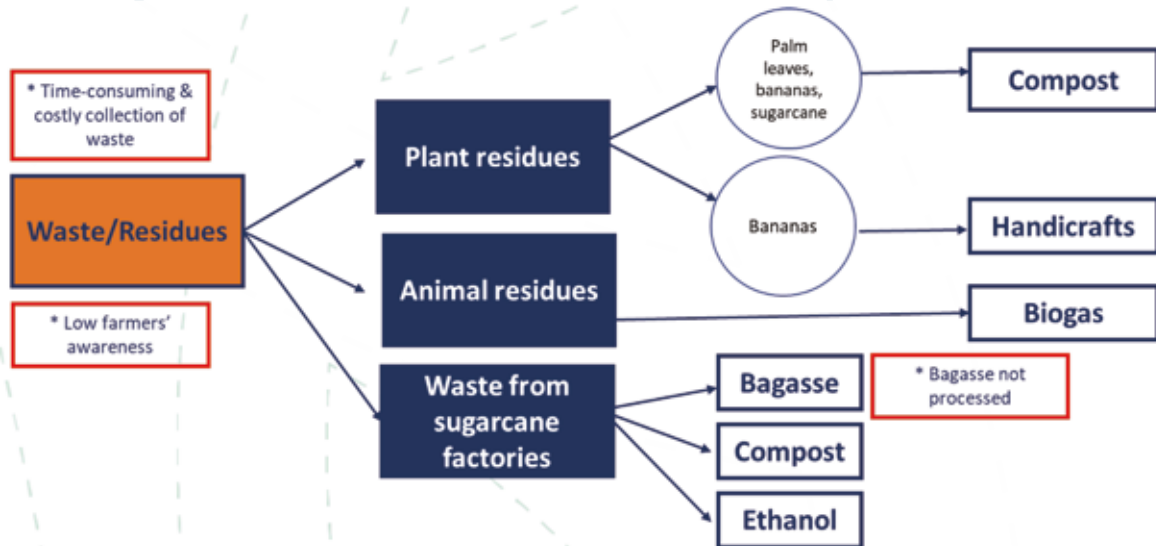


Figure 50 Classification of Qena's agro-waste. Source: Ministry of Environment

# Overview

Figure 51 Fennel seeds production and trade process in Qena



Given that Qena is primarily an agricultural governorate, it produces a significant volume of waste/residues from both agricultural and animals farms. However, the majority of waste is burnt, creating adverse environmental and health effects. As such, some initiatives have begun over the past few years to create compost and handicrafts out of the residues of sugarcane, banana, and palm date farms. Furthermore, waste from animal farms is also being used to create biogas. It could be processed to produce animal feed, wood fibers, and bio-fuel.

Composting has been established as an efficient way of minimizing environmental problems and reducing the volume of discarded solid organic waste. It is essentially a type of waste processing that has gained increasing acceptance over the years. During compost production in Qena, the agricultural residues/waste from sugarcane, bananas, and palm dates are manually collected from the land, minced using a wheat-reaping machine, and then taken to create compost/organic fertilizers. The input supplies required are the residues, bran, and compost production additions. The time taken to complete the composting process depends on the nutrient balance of the composting materials, particularly the carbon to nitrogen ratio . Ideally the compost of household waste takes around seven months to mature. Respondents interviewed in Qena stated that the process takes them 4-5 months.

The production of handicrafts out of banana fibers is a relatively new initiative in Qena, and is concentrated in Al-Ayayshah area in the district of Qus. The process is essentially led by women who take the banana waste from farmers, which they first peel and then insert in a specialized machine that automatically turns the waste into



fibers. The produced fibers are left to dry, combed and then shaped into different handicrafts such as bags, mats and accessories. The created products, which include bags, are occasionally inlaid with leather. In addition to creating handicrafts, the recycling of banana waste automatically produces compost, which the women give to the farmers in return for a steady supply of banana tree waste. As previously mentioned, given the novelty of the initiative and the fact that the project is still in its initial phase, the market demand for the products has not yet been thoroughly assessed.

**The production of biogas in Qena is utilized as an energy-saving tool for household consumption.** In addition to its low installation costs, biogas is essentially both a cheaper and safer alternative to natural gas. One of the biogas production units in Qena is located in Al-Taramsa area in the district of Qena. The production process entails mixing around four tons of livestock waste with an equal amount of water before leaving it to ferment for fifteen days. One small biogas unit can produce three meters of biogas, which is estimated to save up two gas pipes. An estimate of EGP 8-9 thousand is required to build a biogas unit, and running it requires minimal labor.

**It is evident from the findings of this study that agricultural waste is underutilized in Qena,** a matter further exacerbated by the lack of waste collection units and activities and agro-waste production lines. This is observed in the recycling of sugarcane straws, in which the absence of an automated process to collect the sugarcane residues from lands decreases the whole efficiency of the process. A promising investment opportunity that is worth considering is the installation of biogas units, which would be shared between households. Table 9 below outlines the main challenges faced by compost producers and the suggested business opportunities identified accordingly.





Main Strengths	
<ul style="list-style-type: none"> <li>-Increasing global demand for organic agricultural products; the use of compost will automatically decrease the need for pesticides/volume of pesticides used and will automatically increase export potential</li> <li>-Foreseeable increase in energy consumption, which incentivizes the need to seek renewable sources of energy as replacement of fossil-fuels</li> </ul>	
Dimension	Challenges
Pre-production	<ul style="list-style-type: none"> <li>-Collection and sorting of the waste/residues is both costly and time-consuming</li> <li>-Absence of an automated to collect sugarcane-straw/dry leaf residues in a way that does not affect the crop itself.</li> </ul>
Production and processing	<ul style="list-style-type: none"> <li>-Unutilized sugarcane waste/residue processing potential such as bio-fuel production.</li> <li>-Insufficient machinery to process the supply of banana-tree waste, which once dries up, would become ineligible for recycling</li> </ul>
End-market	<ul style="list-style-type: none"> <li>- Low farmers' awareness about the use and potential benefits of compost</li> </ul>
External factors	<ul style="list-style-type: none"> <li>-Current legal regulations prohibit the presence of agro-waste recycling factories in industrial zones.</li> </ul>
Suggested Opportunities and Development Interventions	
<ul style="list-style-type: none"> <li>-Establishing a waste collection hub; encourage farmers to supply their waste in return for incentives such as seeds, fertilizers, etc.</li> <li>-Lobbying for the inclusion of agro-waste factories in industrial zones</li> </ul>	

# Overview of the Livestock Sector

**The livestock sector is a major contributor to Egypt's economic development.** Livestock production in Egypt is unique in that it is confined exclusively to irrigated cropping areas . Livestock production complements agricultural production in Egypt, particularly since the latter is not highly mechanized .

**The livestock sector includes dairy, meat and poultry production.** In Qena, the livestock sector has contributed to an estimated EGP 4,376,000 net profit, making it an important source of livelihood for many families. Qena contains 7.5 percent of Egypt’s livestock; there are 1.3 million heads in Qena, 32 percent of which are sheep, 29 percent are goats, 16 percent are buffaloes, and 15 percent are cows. The rest includes mules, donkeys, horses, and camels, as shown in Figure 52.

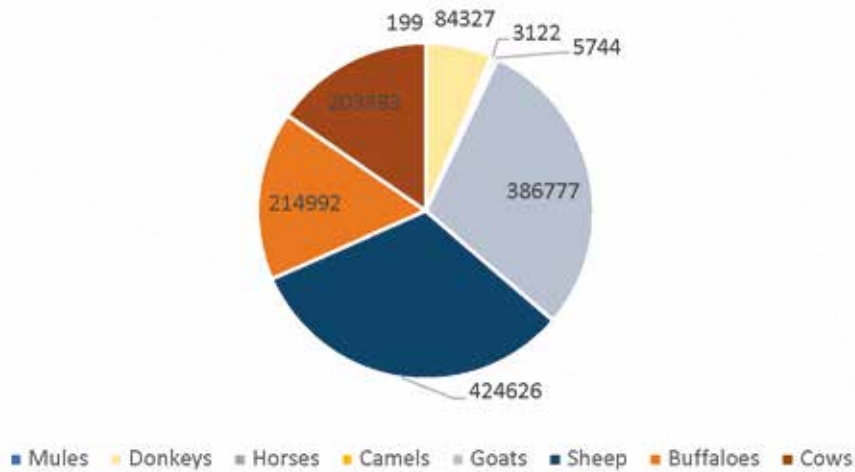


Figure 52 Estimated No. of cattle and animals in Qena.  
Source: CAPMAS

**Qena occupies the 4th place in Upper Egypt in terms of total number of cow heads in 2018**, which reached 203,393 heads, the majority of which are a “baladi” breed. Figures 53 and 54 below illustrate Qena’s production share and the different strains of cows it has.

Qena is notably one of the significant players in milk production across Egypt, ranked as the 9th governorate nationwide and the 4th in Upper Egypt in terms of milk production. Total milk production in Qena reaches 196,381 tons per year, constituting 3.8 percent of Egypt’s total raw milk production, and is comprised of cow milk and buffalo milk. Buffalo milk takes up the majority in milk production (63 percent), followed by cow milk (37 percent), as shown in Figure 55 below.

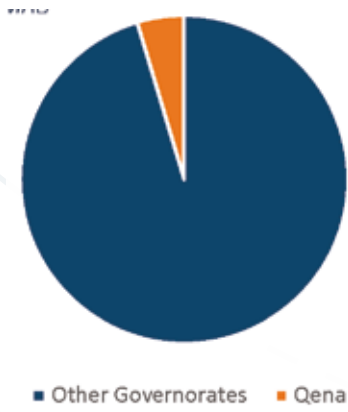


Figure 53 Qena's share of cow production. Source: CAPMAS

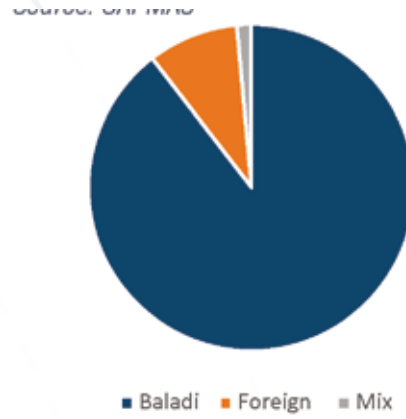


Figure 54 Distribution of Qena's cow strains. Source: CAPMAS

Figure 55 Distribution of Qena's milk production. Source: CAPMAS.

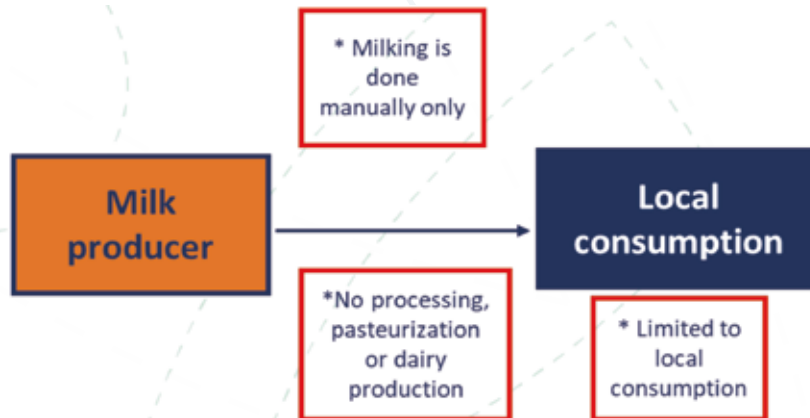


Figure 55 Distribution of Qena's milk production. Source: CAPMAS.



# Overview

Figure 56 Milk production process in Qena



**In Qena, most milk is produced in small-scale units, namely farms.** Farmers use the agro-waste of their lands to feed their livestock. However, in the district of Dandara, milk production is medium-scale, amounting to an average of 40 cows or buffalos.

**The production process starts by selecting the livestock suitable for milk production and their feed,** both of which the farmers either grow or directly purchase from the markets. Both the livestock and the feed have a direct impact on the quantity and quality of milk produced. The most common strains of livestock are the “Baladi”, “Spanish”, and “Ferzeen”. The “Ferzeen” and “Spanish” breeds are typically the most suitable for milk production. The types of feed include forage, corn, hay, clover and soya beans. Feed is an important factor determining the cream content in the milk produced.

**Livestock need medical care for time to time;** some livestock, most particularly foreign breeds, are sensitive to heat. This contributes to a reduced quantity of milk and might cause medical issues such as swelling. Farmers in Dandara find it difficult to find quality veterinary care in the region. Due to the lack of periodical medical supervision, most farmers are unaware of the medical needs of their livestock.

**Dairy is produced using low-tech methods;** cows are hand-milked by women laborers. The produced milk is packed inside plastic bags and sold to local supermarkets. Cow milk has a higher demand and is preferred for kids. Cow milk is sold for EGP 8 to local supermarkets, while buffalo milk is sold for EGP 12. While there is little to no value-addition in the production process, milk production does not meet the demand of local milk consumption.

Table 10 below outlines the main challenges faced by the milk producers and the suggested business opportunities identified accordingly.

Table 8 Main challenges and opportunities of milk production

Main Strengths:	
Dimension	Challenges
Input supplies	<ul style="list-style-type: none"> <li>- Limited resources</li> <li>- High costs of feed</li> </ul>
Production and Processing	<ul style="list-style-type: none"> <li>- Limited access to information</li> <li>- Primitive practices and lack of advanced machinery</li> </ul>
End-market	<ul style="list-style-type: none"> <li>- Lack of value-addition</li> </ul>
Suggested Opportunities and Development Interventions	
<ul style="list-style-type: none"> <li>- Establishing milk collection hub for goats (high-end production, expensive cheese)</li> <li>- Establishing goat milk processing facilities</li> <li>- Lobbying for facilitation of needed licenses and registration papers</li> </ul>	

# Creative Industries

The region of Upper Egypt has retained through time the creative industries of ancient Egypt and boasts traditional artisanal goods to this day. Two main types of handmade products stand out: clay pottery products and loom products, particularly handwoven carpets and kilims. While these products have experienced a decline due to the decrease in tourism and a constantly shrinking market, their rarity offers a form of market competitiveness that if developed could allow for their proper introduction to the global market.

## Clay Crafts (Pottery)

### Market Overview

Clay crafting is one long-standing tradition from ancient times that Egypt boasts to this day, primarily in Upper Egypt. Egypt exports two types of clay pottery: heat-treated and painted, of which the former constitutes the majority of export production. However, exports of heat-treated pottery sharply decreased from USD 258.8 thousand in 2019 to USD 1.4 thousand in 2020 as shown in Figure 58. At the same time, exports of painted pottery, which stopped in 2019, reached USD 3.3 thousand in 2020, as shown in Figure 57.



Figure 58 Export value (in USD thousand) of heat-treated pottery per year. Source: Export Development Authority



Figure 57 Export value (in USD thousand) of painted pottery per year. Source: Export Development Authority

This is also reflected in the change in importing countries throughout the years, as shown in Figures 59 and 60. From 2015 to 2020, importing countries have completely changed and the export value of clay has largely declined. While Libya stood out as a top clay importer in 2015, importing clay worth USD 63.6 million, it was no longer an importer at all by 2020. At the same time, the Netherlands became the new top clay importer in 2020, importing clay worth USD 50 thousand only.

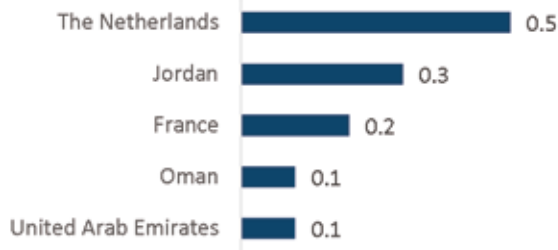


Figure 60 Export values (in USD thousand) of Egyptian clay pottery per top importer in 2020. Source: Export Development Authority

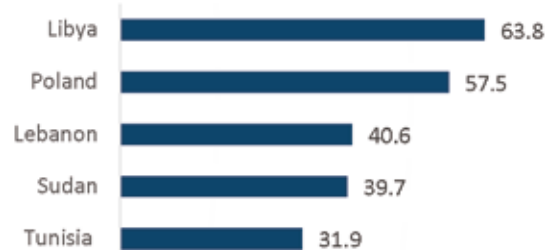
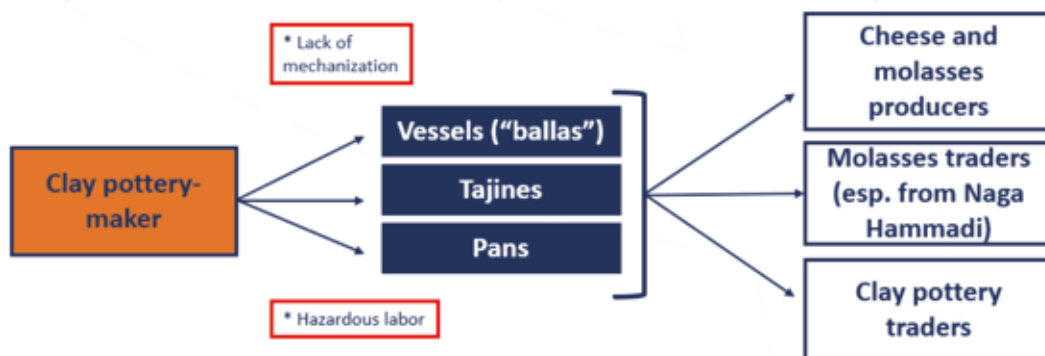


Figure 59 Export values (in USD thousand) of Egyptian clay pottery per top importer in 2015. Source: Export Development Authority.



# Overview of the Clay Production Process in Qena

Figure 61 Clay pottery process and trade



**Most clay pottery production in Qena takes place in Hegaza.** Around 1,000 people in the region work at some point or other in the clay business. The main input supply for the production of pottery is clay obtained from nearby mountains. The production of clay pottery requires a pottery wheel, livestock, and reed, and large hole dug in the ground with a fire to create an “oven”. While one person alone produces about 170 vessels (known as “ballas”) in a day, the entire process of clay pottery production requires around 20 people to collect the clay from and mountains and to place the vessels in the oven.

**Overall, the process of clay pottery production is highly primitive;** no machinery is involved. It is the same process employed in ancient times. However, the competitiveness of this clay pottery lies in the type of clay that is specific to the region; it is a particular product that it is not available elsewhere.

**Producers work independently, mainly targeting local market in Luxor and Qena.** The main buyers of clay pottery in Qena are cheese and molasses producers, as well as the molasses traders of Naga Hammadi. One vessel (“ballas”) is sold for around L.E 11 or 12. In some cases, the sales barely cover the expenses, which are divided between transportation and extra labor. Table (2) shows the challenges that potter-makers face during production and the investment opportunities that exist for clay pottery production in the region.

Main Strengths	
<ul style="list-style-type: none"> <li>- <b>Fast production per day and per pottery-maker</b></li> <li>- <b>Special kind of clay; product is particular to the region and is not available elsewhere</b></li> <li>- <b>Healthy cooking and eating utensil</b></li> </ul>	
Dimension	Challenges
Pre-production	<ul style="list-style-type: none"> <li>- Lack of labor insurance; obtaining the clay from the mountains is considered dangerous.</li> </ul>
Production	<ul style="list-style-type: none"> <li>- Lack of labor insurance; heating the oven with fire is considered dangerous.</li> <li>- Lack of any mechanization</li> </ul>
End-market	<ul style="list-style-type: none"> <li>- Many vessels break during shipping</li> <li>- Sales barely cover expenses</li> <li>- Limited designs</li> </ul>
Proposed Development Interventions	
<ul style="list-style-type: none"> <li>- <b>Branding Qena's pottery as a unique and healthy product that is unavailable elsewhere, especially by marketing the product online</b></li> <li>- <b>Invest in design and R&amp;D</b> to improve the qualities and characteristics of the pottery products by making them more user-friendly and less prone to breakage</li> </ul>	

## Loom

The loom industry in Egypt dates back to ancient times. Handmade weaving of carpets and kilim out of loom in Upper Egypt is deeply entrenched in the culture of the region to this day.

In 2020, handmade weaving in Upper Egypt was inscribed on the UNESCO List of Intangible Cultural Heritage in Need of Urgent Safeguarding . Handmade weaving faces various threats, namely that it is no longer lucrative, that it requires unused space to accommodate the loom, and that its working materials are expensive. As a result, the craft has become largely neglected within the communities of Upper Egypt .



# Market Overview

The main product of the loom industry that Egypt exports are carpets, as shown in Figure 62. The export value of handwoven carpets has fluctuated throughout the years, with a dramatic increase from USD 6.6 thousand in 2018 to USD 183.1 thousand in 2019 offset by a halt altogether in 2020.



Figure 62 Export value (in USD thousand) per year of handwoven carpets made out of wool and animal hair. Source: Export Development Authority.

On another note, the loom industry of Egypt includes the production of looms (weaving devices). The exports of looms wider than 30 cm and those with shuttles have actually increased in 2020 following a halt in 2019, as shown in Figures 63 and 64 below.



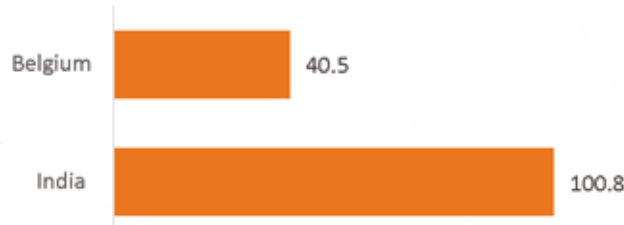
Figure 63 Export value (in USD thousand) per year of looms wider than 30 cm. Source: Export Development Authority.



Figure 64 Export value (in USD thousand) per year of looms wider than 30 cm with shuttles. Source: Export Development Authority.

The large increases in exports of both types of looms in 2015 and 2016 were the outcome of the temporary entry of a single importer at those respective periods. The large increase in exports in 2016 of looms wider than 30 cm is due to one-time imports by India and Belgium, as shown in Figure 65.

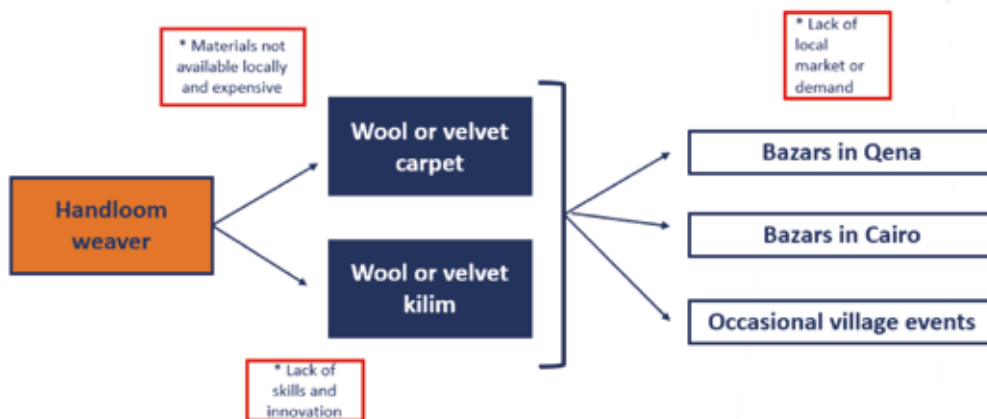
Figure 65 Export value of (in USD thousand) of looms wider than 30 cm per exporter in 2016. Source: Export Development Authority



The increase in exports of looms wider than 30 cm with shuttles in 2015 was due to one-time imports by the United Kingdom . On the other hand, the increase in 2020 in exports of both products is exclusively due to imports from Spain and Turkey .

# Overview of the Loom Production Process in Qena

Figure 66 Production process handwoven carpets and kilims



Handmade weaving is an old tradition in Qena. Most production in Qena takes place in Qus and Negada. The input supplies are as follows: a handloom, which holds the warped yarn tightly in a vertical position, wool yarn (“noal”), and the threads, which are interwoven into the yarn to create designs. Velvet yarn has recently been introduced as a new substitute for wool yarn. The cost of yarn and threads vary; one kilogram of wool or velvet yarn ranges from L.E 40- to L.E 60, which is considered expensive. These materials are obtained from Cairo.

**Weaving is traditionally and predominantly a female occupation to this day.** There is no set number of weavers required to produce one product; a carpet or kilim could be weaved by a single weaver or two or more depending on the amount of experience each of them has. Therefore, there is no specified amount of labor for production.

**Woolen and velvet carpets and kilim are the final products.** Kilim are generally more in demand than carpets. However, one of the main challenges of traditional weaving is that it takes long work hours that are not always reflected in the prices of the carpets and kilims produced. The products are not highly appreciated in the local market, particularly since their designs are too basic and redundant when there is opportunity for creativity. The products are more popular amongst tourists than by local consumers in the Egyptian market, and tend to be profitable only when sold in touristic areas. This serves to show that such products do have potential in foreign markets. The fabric in general is considered high quality and thus fit to be introduced in niche markets rather than in mass markets. New product design efforts can prove beneficial in expanding market outreach and in opening new channels. Table 12 shows the challenges that weavers face during production and the investment opportunities that exist for handicrafts in the region.

Table 10: Challenges and opportunities of handicrafts production in Qena

<b>Main Strengths</b>	
<ul style="list-style-type: none"> <li>- <b>Availability of female labor</b></li> <li>- <b>Reviving old traditions</b></li> <li>- <b>Use of recycled fabric to produce more handicrafts</b></li> <li>- <b>Products are made of good-quality fabric</b></li> </ul>	
<b>Dimension</b>	<b>Challenges</b>
<b>Pre-production</b>	<ul style="list-style-type: none"> <li>- Yarn and threads are brought all the way from Cairo; tend to be costly.</li> </ul>
<b>Production</b>	<ul style="list-style-type: none"> <li>- Increased cost of production resources, such as yarn</li> <li>- Lack of skills</li> </ul>
<b>End-market</b>	<ul style="list-style-type: none"> <li>- Unavailability of local markets; almost exclusive reliance on occasional bazaars and touristic areas</li> <li>- Limited branding and design capabilities</li> </ul>
<b>Proposed Development Interventions</b>	
<ul style="list-style-type: none"> <li>- <b>Providing training to improve skills and inspire creation of new designs</b></li> <li>- <b>Developing yarn production in Qena</b></li> </ul>	

# Proposed Investment Opportunities

The suggested business ideas seek to capitalize on the strength and opportunities and address the weakness and threats faced by the different subsectors in Qena. The proposed investment opportunities are hereby illustrated in the table below (table 13).

Table 11 Proposed investment opportunities

Business Concept	Project Objective	Project Size	Project Description
<b>Agribusiness</b>			
<b>Sugarcane</b>			
<b>Bagasse processing facility to produce biofuel</b>	<ul style="list-style-type: none"> <li>▪ Job Creation</li> <li>▪ Value-addition</li> <li>▪ Access to better and newer markets</li> </ul>	Medium	The main project objective is to produce biofuel to generate heat and electricity. Bagasse can also be recycled to manufacture pulp and paper products.
<b>Ethanol production unit</b>	<ul style="list-style-type: none"> <li>▪ Job Creation</li> <li>▪ Value-addition</li> <li>▪ Access to better and newer markets</li> </ul>	Small	The main objective is to produce ethanol from the cultivated sugarcane. Ethanol serves as a renewable fuel and blends with gasoline and diesel to increase energy security
<b>Fennel Seeds</b>			
<b>Sieving and harvesting (reaping) machineries</b>	<ul style="list-style-type: none"> <li>▪ Technical assistance</li> <li>▪ Job Creation</li> <li>▪ Value-addition</li> <li>▪ Access to better and newer markets</li> </ul>	Small	The main objective is to ensure the high purity of fennel seeds, which would open up direct export opportunities from Qena or Upper Egypt in general instead of relying on Lower Egypt as the main export hub.
<b>Pumpkins</b>			

<p><b>Usage of pumpkin waste to create compost and livestock feed</b></p>	<ul style="list-style-type: none"> <li>▪ Job Creation</li> <li>▪ Value-addition</li> <li>▪ Access to better and newer markets</li> </ul>	Small	<p>The main objective is to maximize the potential of pumpkin waste as animal feedstock as a strategy for more sustainable livestock production</p>
<p><b>Provision of nurseries to produce high-quality pumpkin seeds</b></p>	<ul style="list-style-type: none"> <li>▪ Access to better and newer markets</li> </ul>	Small	<p>The main objective is to <b>increase the export potential of</b> Qena's pumpkins by increasing quality and productivity in order to meet global export standards</p>
<b>Tomatoes</b>			
<p><b>Provide cold-chain infrastructure for tomatoes</b></p>	<ul style="list-style-type: none"> <li>▪ Job Creation</li> <li>▪ Value-addition</li> <li>▪ Access to better and newer markets</li> </ul>	Small	<p>The main objective is to reduce food losses in the tomato supply chain in order to guarantee maximum benefit to the farmers</p>
<p><b>Processing facilities to produce tomato paste, ketchup, tomato juice, etc..</b></p>	<ul style="list-style-type: none"> <li>▪ Job Creation</li> <li>▪ Value-addition</li> <li>▪ Access to better and newer markets</li> </ul>	Medium	<p>The objective of the project is to capitalize on the volume of tomato produced by adding value to it through transforming it into different forms such as paste, juice, etc..</p>
<b>Livestock (milk production)</b>			
<p><b>Milk collection hub for goats</b></p>	<ul style="list-style-type: none"> <li>▪ Job Creation</li> </ul>	Medium	

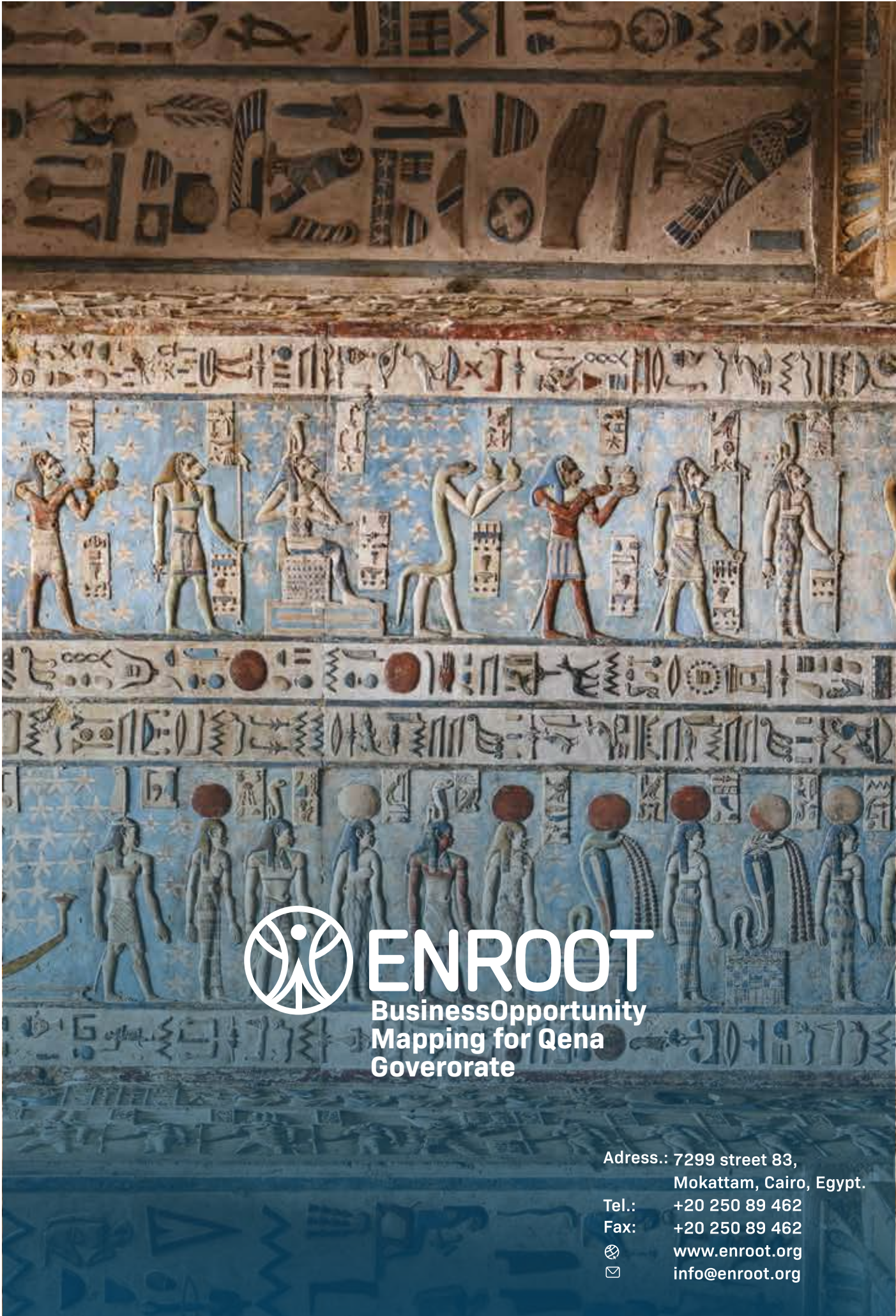
<b>Goat milk processing facilities</b>	<ul style="list-style-type: none"> <li>▪ Value-addition</li> <li>▪ Access to better and newer markets</li> </ul>		The objective of the project is to supply high-end quality milk products, including milk, cheese, etc.
<b>Agro-waste</b>			
<b>Waste Collection Hub</b>	<ul style="list-style-type: none"> <li>▪ Job creation</li> <li>▪ Access to better and newer markets</li> </ul>		The purpose of the project is to create a separate unit to collect the input material needed for agro-waste processing. The hub will work encouraging farmers to supply their waste in return for incentives such as seeds, fertilizers, etc..

## Proposed development interventions

While the objective of the report was to identify potential business ideas in Qena, the report and the analysis have shown specific areas of development that are needed which serve as potential intervention areas for the development community. Analyzing the market structure with the objective of developing the local economy and stimulating youth-led economies cannot detach from the role of donor and development organization. It is thus important to highlight based on analyzed market systems the potential development interventions to help alleviate the overall environment and elicit growth in potential subsectors. On that basis, table 14 below represents foreseen development interventions areas in certain subsector based on the associated potential opportunities



Proposed development interventions	
Agribusiness	
Fennel Seeds	
<ul style="list-style-type: none"> <li>- <b>Innovation and R&amp;D for fennel seeds</b> to meet the diversified market demand and promote exports</li> <li>- <b>Introduction of Dutch fennel seeds</b> to increase export potential of fennel seeds from Qena, since Dutch seeds are in high demand due to their medical benefits</li> </ul>	
Creative Industries	
Clay crafts (Pottery)	
<ul style="list-style-type: none"> <li>- <b>Create unique brand for Qena's pottery</b> to open up new markets for Qena's pottery by highlighting its unique selling proposition including its healthiness and low cost</li> <li>- <b>Invest in design and R&amp;D of the clay products</b> to improve the qualities and characteristics of the pottery products by making them more user-friendly and less prone to breakage in order to better their integration in the pottery value chain</li> </ul>	
Loom	
<p><b>Creation of new loom-based designs</b> to position Qena as a leader in the loom trade by introducing designs which speak to Qena's local heritage and which at the same time meets global taste and demand</p>	



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