

# ANALYZING EGYPT'S PETROLEUM TRANSPORTATION PATH

BY AMINA HUSSEIN, REHAM GAMAL, AND TASNEEM MADI

Transporting hydrocarbon products, from fields to refineries to end users, plays a vital role in facilitating both upstream and downstream activities. Globally, there are various means of transporting petroleum products including Railway tanks, pipelines, coastal tankers, and trucks. Likewise, Egypt depends on a variety of means and channels to transport petroleum products on both domestic and international levels.

In Fiscal Year (FY) 2018/19, the SUMED pipeline came on the top of these channels as it transported around 41% of Egypt's petroleum products. Other pipelines came second as it transported 37.2% of national petroleum products. Furthermore, trucks, tankers, and railways transported 18%, 3.5%, and 0.2% of Egypt's petroleum products, respectively, according to the Central Agency for Public Mobilization and Statistics' (CAPMAS) Annual Bulletin of Petroleum Materials Means of Transportation and Natural Gas in Egypt 2018/2019.

This report tracks the developments of transporting petroleum products in Egypt over the period from FY 2014/15 to FY 2018/19 mainly using the CAPMAS's annual bulletins of Petroleum Materials Means of Transportation and Natural Gas in Egypt.

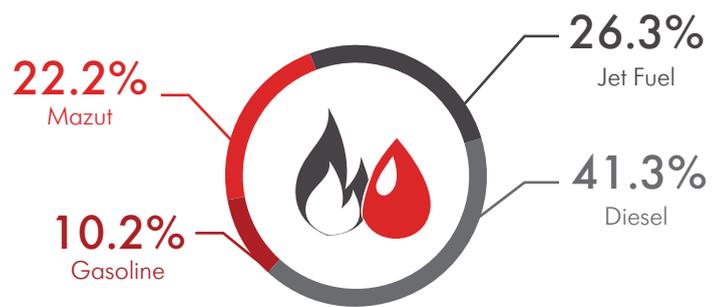
## MAIN TRANSPORTATION CHANNELS

### 1. RAILWAYS

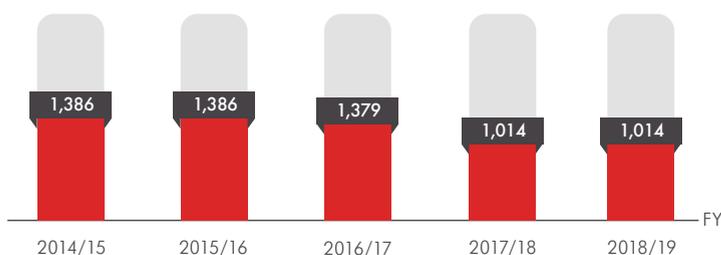
Over the referred period, the number of railways tanks, along with their respective capacities, and the quantity of petroleum products transported (by the railway tanks) exhibited a continuous declining trend.

The number of railways tanks transporting petroleum products has declined by 27% from 1,386 to 1,101 in FY 2014/15 and FY 2018/19, respectively. On an annual average, 1,236 railways tanks are available to transport petroleum products. Diesel had the highest share of the total number of railways tankers. In fact, on average, 502 tanks are used to transport diesel, annually. On the other hand, gasoline has the lowest share of railway tanks with an annual average of 124 tanks.

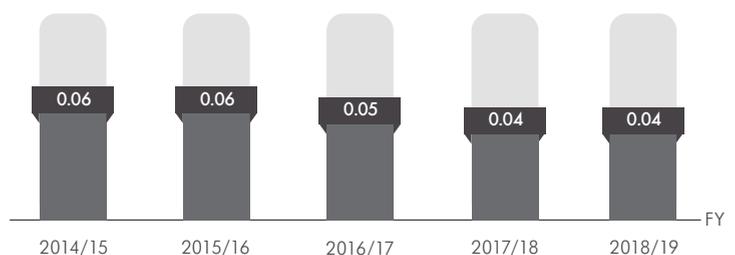
### Transported Petroleum Products' Share in Number of Tanks



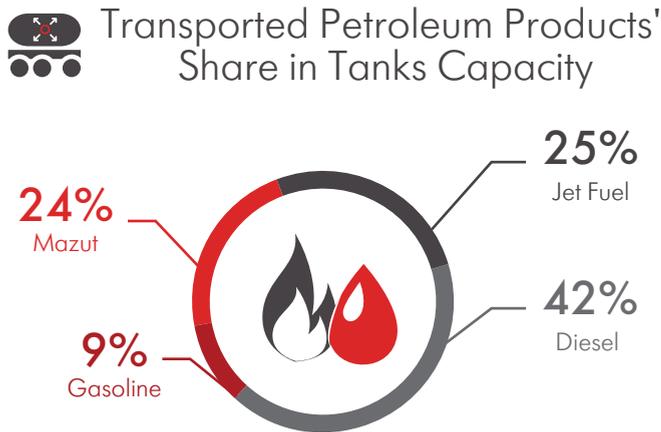
### Number of Petroleum Products Railway Tanks



### Petroleum Products Transportation Capacity of Tanks (mmt)

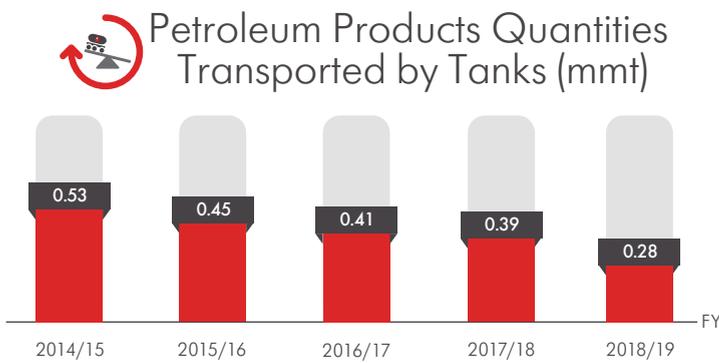


The worn out tanks led the capacity of railways to decline by 29%, from 0.06 million tons (mmt) in FY 2014/15 to a record 0.04 mmt in FY 2018/19. On average the railways tanks have a total capacity of 0.049 mmt, annually.

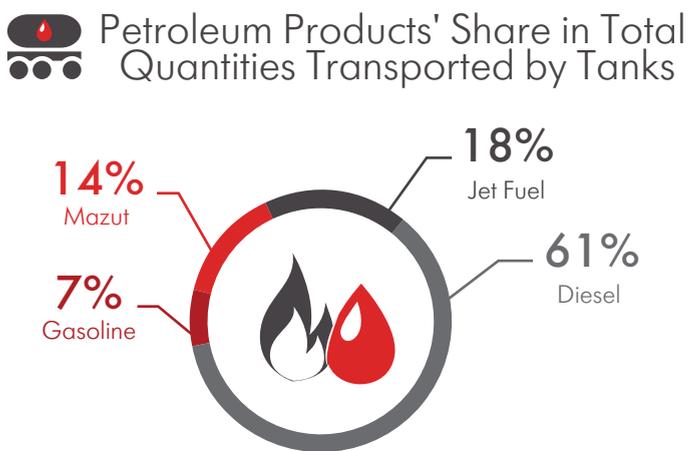


The railways transport a yearly average of 0.41 mmt of petroleum products. Despite being the least costly means of transportation, the overall change in capacity over the referred period declined by 47%, as it has fallen from 0.53 mmt in FY 2014/15 to 0.28 mmt in FY 2018/19.

This paradox can be explained by the technical problems facing the transportation process through the railways including the lack of an equipped and sufficient fleet to transport the products. In addition, the railways freight stations lack several developments as they are not sufficient for shipping, distributing, and storing the products.



The annual average of transported quantity of diesel reached 0.25 mmt, representing the highest share, while gasoline's annual average was the lowest and recorded 0.03 mmt.



## 2. PETROLEUM PIPELINES

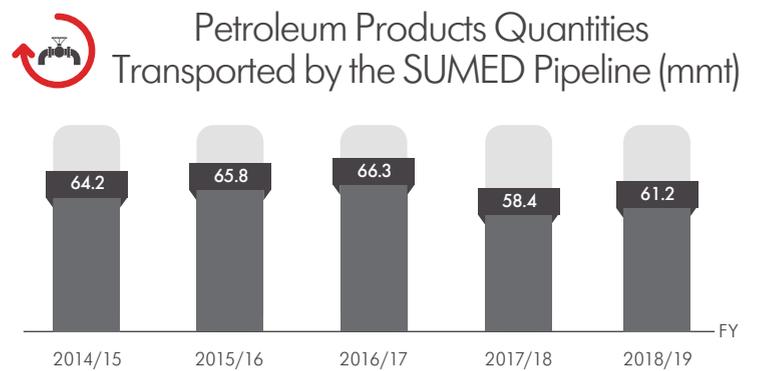
Petroleum pipelines are used to transport petroleum products including crude oil, condensates, diesel, and other petroleum derivatives. The pipelines are the best in transporting crude oil when it comes to long distances as they are fast and efficient.

In Egypt there are three main types of petroleum pipelines. The first type of petroleum pipeline is the main pipelines which transfer the petroleum products via high-pressure techniques. The second type is the distribution pipelines that bring the petroleum products from nearby wells to a treatment plant or a facility. Finally, the gathering pipelines which consist of several interconnected pipelines that deliver the petroleum products to the final consumer.

## I. THE SUMED PIPELINE

The SUMED pipeline, a pipeline with a 42-inch diameter with a length of 320 km and a capacity of 117 mmt annually, is the main pipeline in Egypt. The pipeline extends from the Ain Sukhna terminal on the Gulf of Suez to offshore Sidi Kerir, on the Mediterranean Sea and is managed by the Petroleum Pipelines Company (PPC). Furthermore, the pipeline is a global center for crude oil storage and marketing, from the producing countries such as Arabian Gulf and the Arabian Peninsula to the US and Europe.

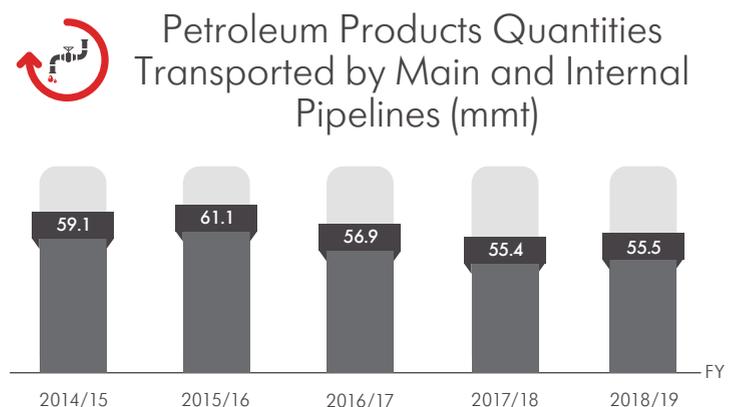
Over the period from FY 2014/15 to FY 2018/19, the transported petroleum products (crude oil and condensates) amounted to 316 mmt. Between FY 2014/15 and FY 2016/17, the quantity of transported petroleum products has been increasing. Yet, the expansion of the Suez Canal in late 2015 led the crude oil trade to shift from SUMED to the Canal. For instance, in 2017, the transported crude oil and other products by the Canal rose by 18% compared to 2016 then further increased by 7% in 2018, according to the Suez Canal Authority's (SCA) Data. the increase in 2017 and 2018 was due to the expansion in the Canal in 2015, which allows more than 60% of the tankers pass by the Canal as a transit route, according to a report titled by "The Suez Canal After the Expansion", published by SRM Maritime Economy and AlexBank, in October 2018. Correspondingly, in FY 2017/18, the transported quantity by SUMED remarkably declined by 12%. However, in FY 2018/19 these quantities slightly increased again by 4.8%.



## II. MAIN AND INTERNAL PIPELINES

Over the period from FY 2015/16 to FY 2018/19, the number of petroleum pipelines increased by 38% to reach a total of 80 pipelines. This shift was mainly due to the increase in the number of crude oil pipelines, which doubled over the referred period, in addition to a 20% increase in the number of LPG and product pipelines. By constructing more pipelines, the network's total length increased by 9% to reach 5,842 km in FY 2018/19 compared to 5,374 km in FY 2014/15.

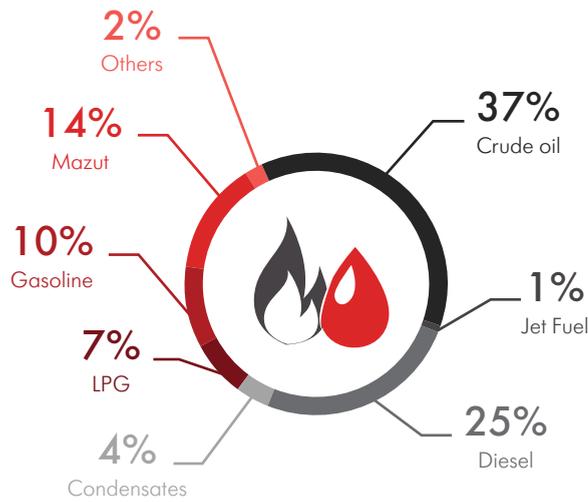
Over the period from FY 2014/15-2018/19, the transported petroleum products through the main and internal pipelines accounted for 288 mmt. It is noteworthy to point out that FY 2015/16 represented the year with the highest transported quantity with an increase of 3.5% compared to FY 2014/15. This resulted in the increase in the transported quantity of diesel by 24%.



Over the referred period, the transported crude oil was the highest with 107 mmt an average share of 37% of the total products. It is worth mentioning that, in FY 2016/17, when crude oil production naturally declined by 8%, compared to FY 2015/16, its transported quantity significantly declined by 10% to reach 20.5 mmt. Thus, the total transported products through pipelines remarkably decreased by 7% in the same year.



### Petroleum Products' Share in Total Quantities Transported through Pipelines



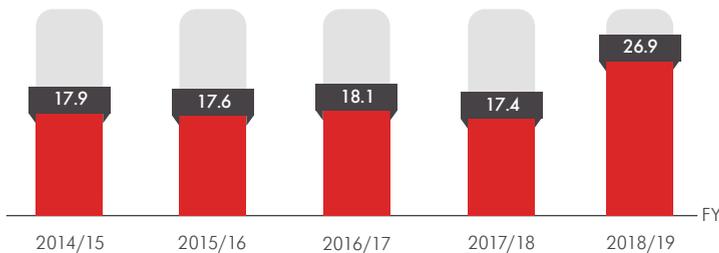
### 3. TRUCKS

Trucks are mainly used for transporting gasoline, diesel, mazut, and LPG products. Over the period from FY 2014/15 to FY 2018/19, the transported quantity totaled 98 mmt, according to the CAPMAS's data.

It is worth mentioning that FY 2018/19 saw a leap in the transported quantities of diesel, gasoline, and mazut, which outstandingly rose by 50%, 60%, and 106%, respectively. Consequently, the total transported quantity significantly increased by 55% in FY 2018/19 compared to FY 2017/18. This made FY 2018/19 the year of the highest transported amount at 26.9 mmt.



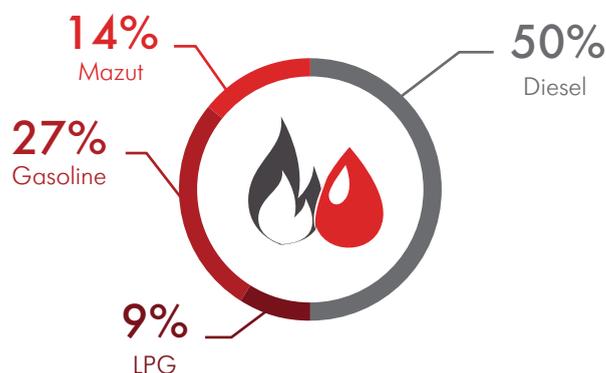
### Petroleum Products Quantities Transported by Trucks (mmt)



Over the referred period, the transported quantity of diesel represented almost half the total transported quantity, amounting at 48.5 mmt. On the other hand, LPG was the least transported quantity with only 8.8 mmt.



### Petroleum Products' Share in Total Quantities Transported by Trucks

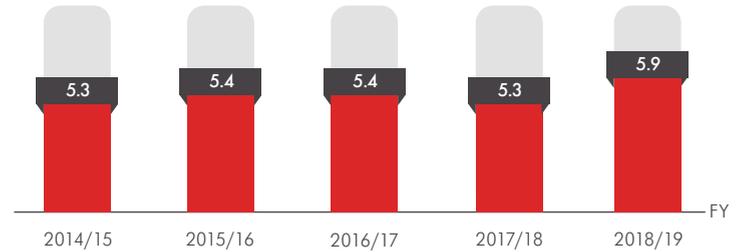


### 4. WATER TRANSPORT UNIT

Egypt mainly has four coastal tankers which are Alnabila 5, Alsharifa 4, Alexia 2 and Alexia 3. Recently, however, Albom tanker also engaged in the transportation process. Over the period from FY 2014/15 and FY 2018/19, these tankers were capable of transporting about 22 mmt of petroleum products. The referred period witnessed a fluctuating trend while FY 2018/19 remarked the highest year of transporting petroleum products by 5.9 mmt, representing 27%.



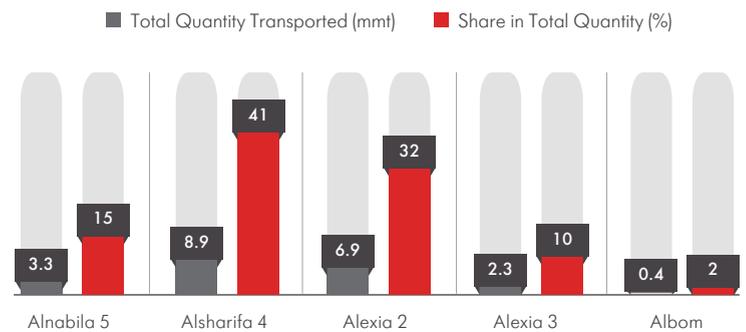
### Petroleum Products Quantities Transported by Coastal Tankers



CAPMAS's figures show that Alsharifa 4 transported 8.9 mmt, which is the largest transported amount in comparison to the other tankers, representing an average of 41% of the total transported quantity by coastal tankers. On the contrary, Alexia 3 transported only 2.3 mmt, representing on average only 10% of the transported quantity. The Albom tanker transported only 0.4 mmt as it started operations in FY 2018/19, contributing by only 2%.



### Petroleum Products Quantities Transported per Coastal Tanker



### LEADING INDICATORS

The costs and quantities of transporting petroleum products are two leading indicators to be considered for an efficient transportation process. The total transported quantities of crude oil, condensates, LPG, and other petroleum products were the highest in FY 2015/16, according to the CAPMAS.

In FY 2015/16, the total transported petroleum quantities increased by 2%, reaching 150.4 mmt. The SUMED pipeline transported the greatest amount of petroleum quantities in FY 2015/16, which was 65.8 mmt, representing about 43.8% of total transported quantities. However, the other pipelines transported about 61.1 mmt in the same year, representing about 40.7% of total quantities. For railway tankers, which are the least means used for petroleum transportation (as well as the cheapest), recorded 0.45 mmt in FY 2015/16, representing a negligible percentage of the total transported quantities.

On the other hand, the total transported petroleum quantities in FY 2017/18 were the least within the period from FY 2014/15 to FY 2018/19. In FY 2017/18, the total transported petroleum quantities decreased by 7%, recording 136.9 mmt compared to 147.1 mmt in FY 2016/17. Similar to FY 2015/16, the SUMED pipeline was the most used transportation means, where the pipeline transported 58.4 mmt, representing about 42.7% of total transported quantities in FY 2017/18. Furthermore, all other pipelines contributed about 40.5%, and trucks contributed 12.71%. Moreover, railway tankers and coastal tankers transported about 0.3% and 4%, respectively. In FY 2017/18, the transported quantities by all channels, except for condensates pipelines, decreased by 5% compared to the previous year. The reduction in quantities transported can be explained by the decline in demand that happened as a result of the increasing prices of petroleum products after reducing energy subsidies. Meanwhile, petroleum quantities transported through condensate transfer pipelines increased by 45%, reaching 2.5 mmt in FY 2017/18 instead of 1.7 mmt in FY 2016/17.

Total petroleum transportation costs during the period from FY 2014/15 to FY 2018/19 have been facing an increasing trend, with the highest growth rate of 28% occurring in FY 2015/16. The total petroleum transportation costs increased by 10%, reaching EGP 21.9 billion in FY 2018/19 up from EGP 19.9 billion in FY 2017/18.

In FY 2014/15, transportation costs for petroleum products pipelines, which are the most expensive means of transportation, reached EGP 7.84 billion, representing 55.5% of total transportation costs. In addition, transportation costs for petroleum pipelines represented 22.7% of total cost by recording EGP 3.2 billion in FY 2014/15. Transportation costs for railway tankers were the least among all other channels, representing combined 0.07% of total transportation costs. All other means of transportation recorded EGP 3.1 billion representing 21.8% of the total transportation costs.

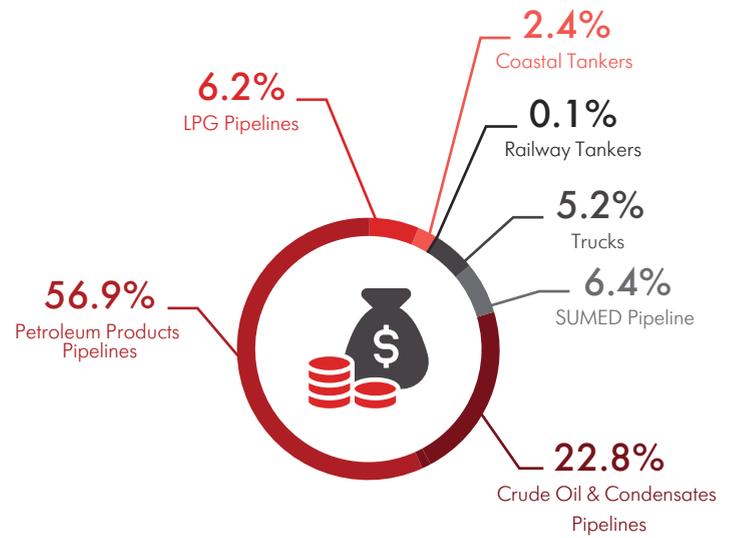
In FY 2018/19, transportation costs by petroleum products pipelines reached EGP 12.1 billion, representing a share of 55.4% compared to 62% in FY 2017/18.

Also, FY 2018/19 witnessed a record of 26% of the transportation costs for petroleum pipelines. All other means of transportation recorded EGP 4.1 billion, representing 18.6% of the total transportation costs.

The Ministry of Petroleum and Mineral Resources (MoP), exhibits efforts to enlarge the infrastructure needed for the storage and transportation of petroleum products in order to deliver a quality service to the final users while taking safety, security, and environment protection into account. These efforts can be viewed in the results as the transported quantities increased from 146.9 mmt in FY 2014/15 to 149.8 mmt in FY 2018/19, representing a 2% increase in the total transported quantity.



### Transportation Channels' Share for Total Cost



## FEELING CONFIDENT ABOUT THE NEW NORMAL? We think you should be.

The Covid-19 pandemic and its effects have changed the way the oil and gas industry needs to work. This has put intense pressure on businesses to ensure the health of people and operations without compromising safety.

DNV GL supports its customers in safely restarting their businesses to be ready and more resilient.



Find out more at: [dnvgl.com/webinars/business-as-unusual](https://dnvgl.com/webinars/business-as-unusual)

Contact us: [cairo.oilandgas@dnvgl.com](mailto:cairo.oilandgas@dnvgl.com)

Follow us on social media @dnvgl



[www.dnvgl.com/oilgas](https://www.dnvgl.com/oilgas)