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# Aspects of the evolution of transportation of goods through the Suez Canal in the context of the modernization of canal

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**Abstract:** In the context of the modernisation of the Suez Canal, I considered important to conduct a study regarding the evolution of goods transport through the Suez Canal. This paper presents a comparative analysis in terms of new technical specifications and rules of sailing, as well as the evolution of maritime traffic, Net Tonnages and the decreasing of shipping routes.

**Keywords:** Suez Canal, modernization, maritime traffic, vessel, rules of sailing.

## 1. Introduction

The Suez Canal is a canal without locks located in Egypt, which links the Mediterranean Sea to the Red Sea, allowing the shortening of shipping routes by ships in transit to Europe and Asia without the need to bypass through West Africa. At the entrance from the Mediterranean Sea is the Said Port, that is to the north, and at the entrance from the Red Sea is the Suez Port, the distance between the two ports being 164 km in length and the width less than 300 m.

The idea of the canal construction belongs to the engineer Ferdinand de Lesseps but the construction was slowed down by the British Government, who did not want to liberate Egypt from the Turkish domination nor to diminish the English domination in India. The inauguration of the canal took place in 1869 and in the same year the first transcontinental railway was used. The canal could be crossed by ships with a maximum tonnage of 500 dwt and a maximum draft of 22 feet. Between 1956 and 1957 channel traffic was suspended and 10 years later the channel was closed again for a period of 8 years. The canal was reopened in 1975. Five years later the canal was modernized, being able to be transited by vessels with a maximum draft of 53 feet and a displacement of 150,000 dwt.

Nowadays the project for the modernization of the canal was finished in 2014 and followed the development of the Said, Suez and Ismailia ports, with seven new tunnels being built between the Said Port, Ismailia and the Sinai Peninsula, of which 3 in Port Said and 4 in Ismailia, as well as a floating bridge that allows a faster passage between Port Said and Port Fouad, this one having a length of 420 m, the inauguration taking place in 2016. The new channel was put into use in 2015, allowing the simultaneous transit of ships coming from opposite directions on a second shipping lane, parallel to the existing one with a length of 72 km, and the total length of the Suez Canal being 193,30 km[4].

Compared to the new Panama Canal, the traffic and dimensions of the vessels transiting the Suez Canal is higher, so that the maximum draft allowed for the vessels transiting the new Suez Canal is 66 ft and the maximum displacement is 240,000 dwt and a maximum beam of 77.5 m.



Before [1]



After [2]

Suez Canal

## 2. Rules of navigation and maritime traffic.

The traffic runs daily on the canal in three convoys, two from the north and one from the south. On average, a ship transits the channel in about 18 hours, with a speed of 8 knots.

The pilotage is compulsory and 24 hours before the arrival of the ship in the special anchorage area, the information requested by Port Control Said will be communicated for the ships coming from the Mediterranean Sea and by Port Said by the ships coming from the Red Sea. Even if the ships have pilots on board, all responsibility in the event of an accident rests with the commander. In case of necessity, to ensure the safety of the ship as well as the navigation through the canal, tugs can be used. The marking of the canal is very well ensured, the channel being marked along its length with headlights and buoys as well as with signs for mileage, kilometer 0 being marked at the entrance from the Mediterranean Sea. Great Bitter Lake and Small Bitter Lake are salt lakes that are found on the canal and have the role of giving the possibility of changing the position and stationing of the vessels. They have different signalling from the rest of the channel. Initially there was only Great Bitter Lake that was used to allow ships to move in one direction.

The channel authority imposes the navigation rules.

The passing through the canal is allowed for ships of all nations but the management has the right to refuse access on the channel of ships considered dangerous for navigation. As far as the imposed navigation rules regarding pollution prevention are concerned, they mainly refer to the quantity of sulphur from burned fuel, technical problems of the vessels, sandstorms, garbage, ballast water and tank washing as well as deteriorating signalling buoys. [6]

If up to the modernization the channel could be crossed daily by 47 ships in 16 hours, in 2017 it reached a daily traffic of larger ships by about 6.9% and in 2018 it increased by about 4%. Regarding the year 2019, it registered the largest ship traffic, 75, in the channel's history, representing an increase of 12% compared to the previous year. The containerships are the most numerous being followed by the oil tanks. The largest containership that crossed the Suez Canal in 2019 has a length of 399.8m and a width of 61.04m.

Regarding the way of calculating the transit charges through the channel, they have not undergone modifications after the modernization of the channel being further conditioned by the net tonnage of the ships.

The shortening of the navigation routes through the channel is significant ranging from 19% to even 88%.

### 3. The comparative analysis of wares traffic through the Suez Canal.

In the following will be presented the comparative analysis of the transit of goods through the Suez Canal.

Criteria based on the type of ships that transited this channel, the direction in which the transit took place and Net Tons for the period 2015-2019 are taken into account.

Starting with 2015, a gradual development of the eastern part of the Suez Canal is desired, estimated to start in 2030.

Both in 2015 and in 2016 it is observed that the highest ship traffic was recorded by container vessels followed by oil tankers, bulk carriers, cargo ships, LNG, Roll on-Roll off, passenger ships and other types of specialized ships. It can be observed that the number of tanks and bulk carriers coming from the north was predominant compared to those passing through the canal coming from the south.

Regarding the transit of oil tankers through the canal in both directions, the year 2016 did not register a significant increase compared to 2015. When it comes to percentages, in 2016 an increase of approximately 2.3% was recorded compared to 2015.

In 2016, the fees charged to container vessels for the transit of the canal decreased.

Taking into account the type of ships that transited the channel, a comparative analysis for the years 2015 and 2016, will be illustrated in table 1, by the number of ships that passed through the canal each year. [3]

These are drawn in figure 1.

2015	General Cargo	Ro-Ro	Container Ships	Tankers	LNG	Bulk Carriers	Passanger Ships	Others
S/N Wares	490	175	2894	1796	284	846	34	339
N/S Wares	761	186	3000	1701	88	1648	27	386
S/N Ballast	179	20	17	532	60	376	1	12
N/S Ballast	97	6	30	287	238	8	6	18

Table 1.1

2016	General Cargo	Ro-Ro	Container Ships	Tankers	LNG	Bulk Carriers	Passanger Ships	Others
S/N Wares	532	220	2724	1907	229	754	33	338
N/S Wares	817	226	2617	1572	108	15993	28	288
S/N Ballast	217	6	34	495	57	444	4	21
N/S Ballast	96	9	39	318	181	10	5	36

Table 1.2

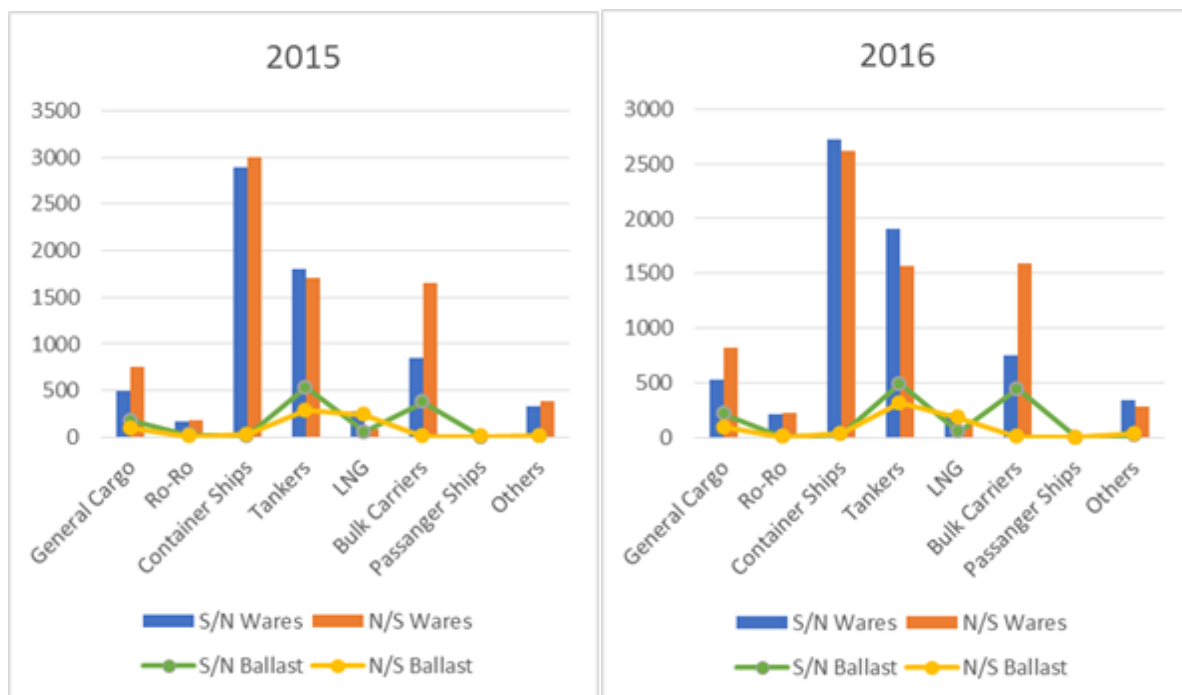


Figure 1

Regarding 2017, it can be seen that compared to 2018 there were no significant increases in traffic, however the container vessels continued to occupy the best place in the transit hierarchy in both directions, followed by oil tankers, bulk carriers, passenger ships, cargoes and LPGs.

The data in table 2 presents a comparative analysis for 2017 and 2018 for the most representative types of vessels and the direction in which they operated through the Suez Canal. [5] As a percentage, 2017 would present an increase of approximately 4% compared to 2016.

In 2018, at a global level, there was an increase of approximately 70% in the transport of goods through Egypt, China being the country that ranks 1st in terms of transport of goods by sea.

2017	General Cargo	Ro-Ro	Container Ships	Tankers	LNG	Bulk Carriers	Passanger Ships	Others
S/N Wares	510	172	2628	1989	232	834	42	336
N/S Wares	759	180	2883	1822	104	1909	27	322
S/N Ballast	224	11	22	493	71	536	7	15
N/S Ballast	58	7	35	233	160	9	6	38

Tabel 2.1

2018	General Cargo	Ro-Ro	Container Ships	Tankers	LNG	Bulk Carriers	Passanger Ships	Others
S/N Wares	462	146	2699	2086	233	961	45	315
N/S Wares	661	153	2964	1816	141	2226	36	263
S/N Ballast	153	12	20	516	125	630	8	12
N/S Ballast	54	4	23	306	192	4	7	33

Tabel 2.2

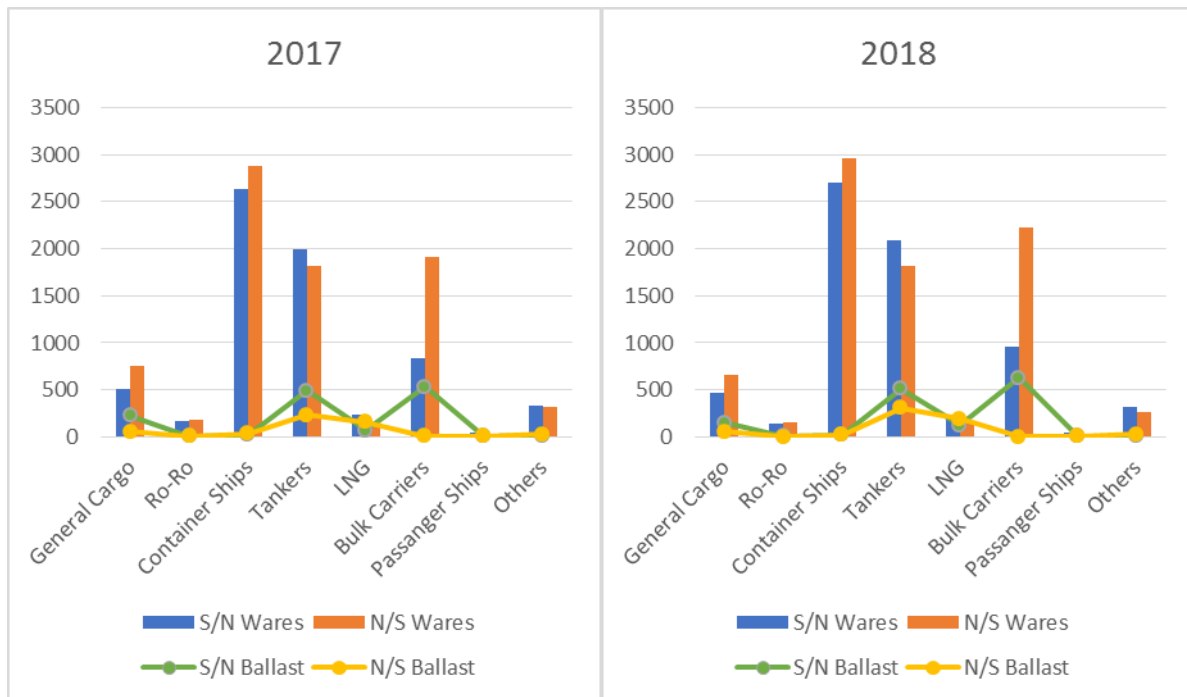


Figure 2

Regarding the years 2018 and 2019, it can be seen that the container vessels remained in the first place, followed by the oil tankers, instead in 2019 there was a sharp increase in the bulk transit compared to 2018. It is also noted that the ballast ships that transited the canal were much more numerous than those loaded.

From a constructive point of view, in 2019 the oil tankers that can transit the new Suez Canal have displacements of 120,000 to 200,000tdw. The data is presented in tables 3.1 and 3.2. [3]

2018	General Cargo	Ro-Ro	Container Ships	Tankers	LNG	Bulk Carriers	Passanger Ships	Others
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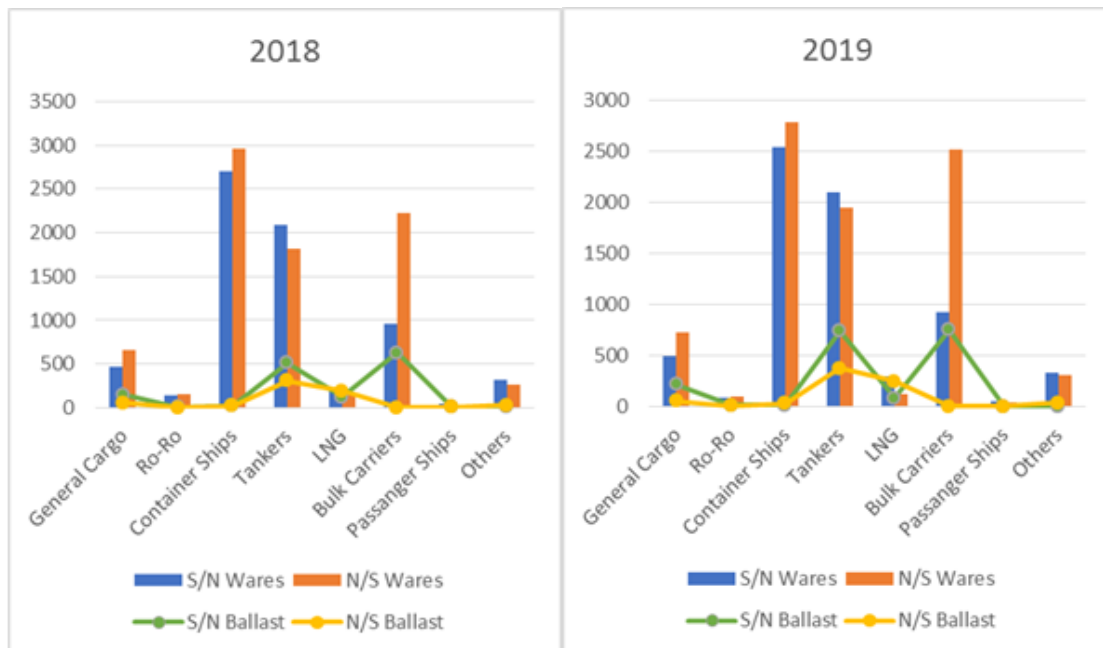


Figure 3

From the point of view of the total net tonnage of the ships that transited the Suez Canal, in the 2011 – 2019 period, both from the north and from the south, it can be said that after the modernization, the year 2019 represented the maximum while 2014 did not show significant change compared to 2013 but the biggest difference is 2019 compared to 2018.

Figure 4 shows the total annual traffic for all vessels, by net tonnage for the period 2011-2019. [3]

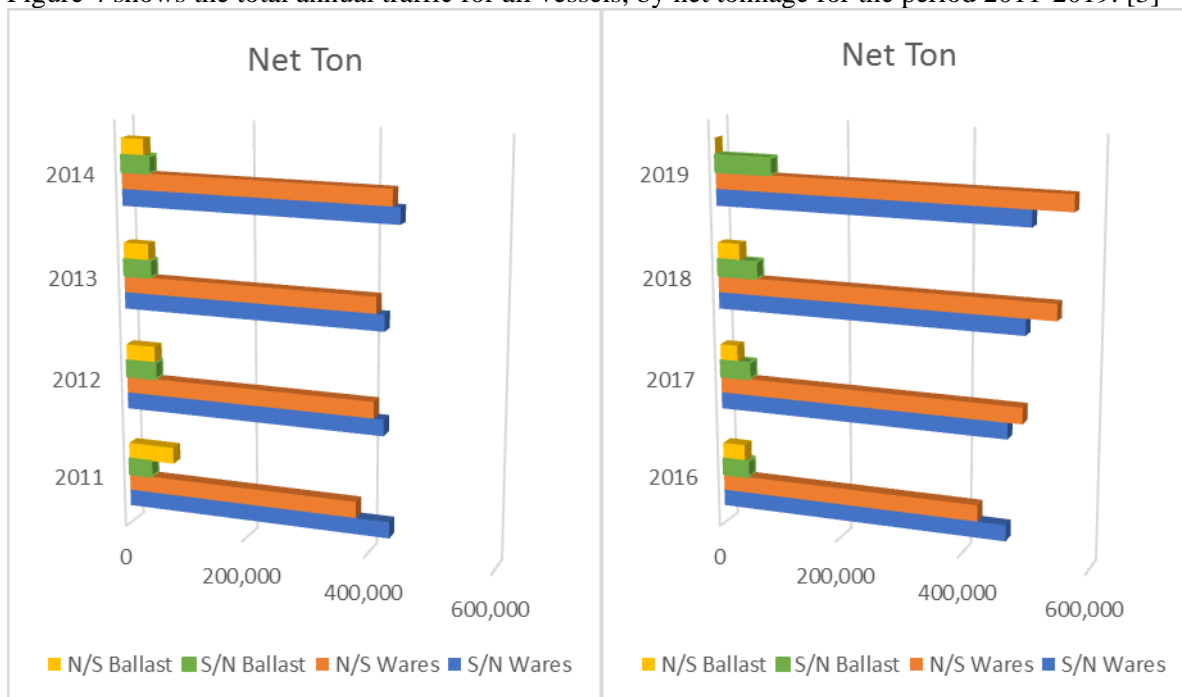


Figure 4

#### **4. Conclusions**

This paper could be finished with some conclusions which I highlighted in the furthered.

The expansion of the Suez Channel has made it possible to optimize ship traffic and optimize maritime transport.

One of the greatest advantages brought by the modernisation of the Suez Canal is found in the economic development of Egypt, given that it was and still is one of the most important sea routes for transporting petroleum products from the largest exporting areas to the most frequent importing areas and last but not least the importance of the appearance of Suez max tanker ships of 200,000tdw must be specified.

The local authorities intend a continuous modernization of the eastern part of the Suez Canal until 2030.

The Suez Canal has an uninterrupted traffic throughout the day and does not present navigation hazards, being the longest canal that is not equipped with locks.

The comparative analysis presented for the 2015-2019 period reveals a significant technical and economic evolution.

I consider that this paper can be used to follow the further technical and economic evolution of the Suez Canal both by students and other specialists interested in this subject.

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