Transport Infrastructure Spending in Algeria: State of the Art

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Abstract

This article aims to present a state-of-the-art on transport infrastructure spending in Algeria during a period when the country recorded the highest revenues from the oil and gas sector. We analyses all available statistics on the transport sector with all its components and different costs. This analysis is very important for future development programs in Algeria, given the huge budgets consumed. The description of the sector leads us to conclude that the economic efficiency of investment in this sector will depend on the ability to master maintenance and technological and managerial innovation to cover growing demand and ensure sustainable development.

Keywords: Transport infrastructure, expenditure, development, Algeria.
Jel Classification Codes : H50 ; R42 ; R49

Introduction:

Transportation is a -value but extremely important service to the economy and is one of the pillars of the growth in all nations' production (Jiwattanakulpaisarn et al., 2012). The transport and communications sector remains a major contributor to the Algerian economy, representing 14% of GDP in 2017, compared to 13.4% in 2016, according to the National Statistics Office (ONS) (Oxford Business Group, 2018). Investment in rail, maritime, airport, road, and highway transport infrastructure, the link between these different modes of transport can unlock the growth potential of an economy. The Algerian economy occupies a prominent place within the OPEC family and holds a privileged place within the global petroleum industry. It is structured around the existing industrial fabric, supported by entrepreneurs' dynamism and the State's consistent support. All of this requires the provision of adequate transport infrastructure and services. This provision of transport infrastructure and services is shared between the Ministry of Transport and the Ministry of Public Works. The provision of infrastructure refers to all the tasks necessary to ensure an adequate supply of infrastructure services to meet society's

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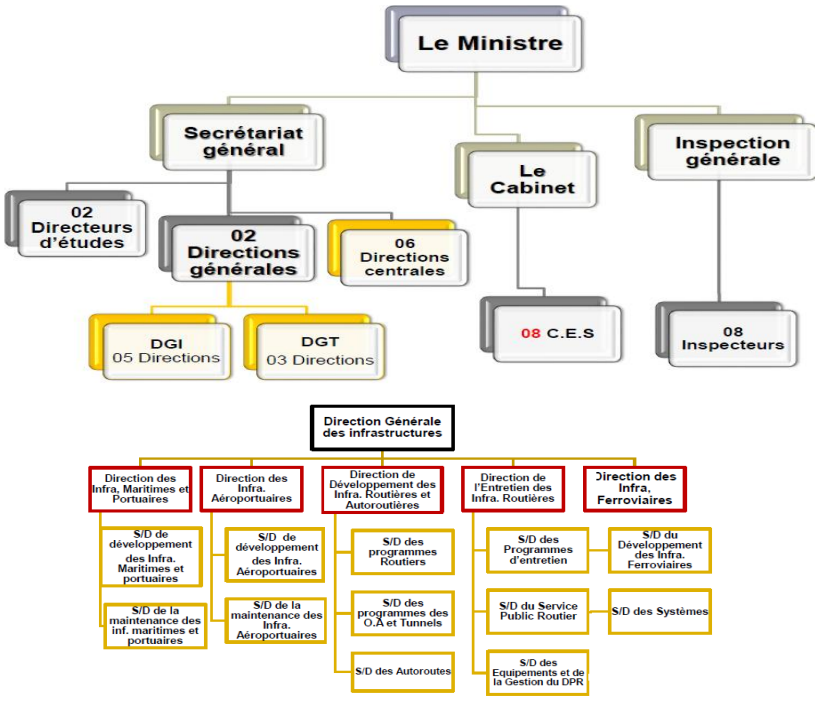
needs. Surface transportation infrastructure is the fundamental foundation for many, if not all, other social and economic activities. Indeed, the different elements can be produced by public, quasi-public or private entities, which gives rise to a multitude of different models (Nilsson, 2008, p: 236). This article provides an overview of the structure of the transport infrastructure supply sector in Algeria. There are policies such as restructuring the transport infrastructure supply sector, which has merged the Ministry of Transport (MT) with the Ministry of Public Works (MTP) into one ministry. This research aims to explore the potential structure of the transport infrastructure supply sector, which will stimulate economic growth in Algeria. This would highlight the relationship between the provision of transport infrastructure and economic growth in Algeria.

1. Structure of the transport sector in Algeria:

The Department of Transport is responsible for the overall direction, planning, regulation, and supervision of activities aimed at transporting goods and passengers by land (roads or railways), by sea, or by air. It is also responsible for the planning, design, construction and maintenance of railway infrastructure (Ministry of Transport, 2015; World Bank, 2007); The Ministry of Public Works is responsible for the planning, design, construction and maintenance of road, port and airport infrastructure (Ministry of Public Works, 2015; World Bank, 2007). Until the reshuffle carried out by the government on June 11, 2016, to unify these two ministries (Official Journal, 2016a), we can represent the merged Ministry of Public Works and Transport (MTPT) by Figure 1, which also illustrates the constitution Of the Directorate General of Infrastructure (DGI) which is the objective of our research.

Figure n ° 1: Organization chart of the Ministry of Public Works and Transport



Source: Ministry of Public Works and Transport, 2017

As a result, considerable efforts have been made in less than two decades, the Algerian transport networks have developed as the results of notable investments in the sector. According to Oxford Business Group (2018), Between 1999 and 2017, the government spent more than 10 trillion dinars (72.6 billion €) on transport infrastructure; these investments represent nearly 3% of GDP each year. This made it possible to repair 73,000 km of the 110,000 km of the country's road network. Regarding large-scale road projects, around 1,132 km of the 1216 km east-west road and 1,600 km of the trans-Saharan road have been built and the construction of this highway 48 toll centers at the interchanges Are being carried out. The country has 24 urban communication routes, 13 of which are under construction, totaling 1,009 km. The objective of these road improvements is to facilitate the transport of people and goods. Since 1999, around 220 billion dinars (1.6 billion euros) have been allocated to security programs along the country's land borders in the south, ensuring a total length of 16,500 km, of which 9,500 km are covered by " asphalt (Cherifi, 2018; Oxford Business Group, 2018).

Meeting the country's growing transport needs remains a priority for the Algerian government. According to Oxford Business Group (2018), the 2015-19 national development plan allocates 832.7 billion dinars (6 billion euros) to upgrade, modernize and develop air, rail, road capacity And maritime sector, and significant progress having already been made on each of these fronts. Foreign Direct Investments (FDI) are actively sought because they seek to integrate the latest technologies and know-how into the modernization process.

The ministry’s strategy is to safeguard existing infrastructure capital and invest in non-existent or obsolete infrastructure. For the implementation of this strategy, the State uses master plans by 2025, namely (Cherifi, 2018):

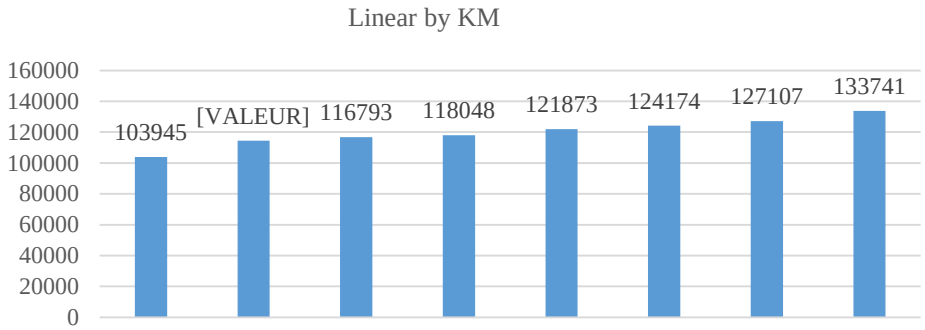
- The road and motorway master plan 2005-2025.
- The 2005-2025 airport infrastructure master plan.
- The master plan for maritime infrastructure 2005-2025.
- The IT master plan 2005-2012.

Meeting the country's growing transport infrastructure needs remains a priority for the Algerian government given the country's geographic location, relief, and size. The 1999-2018 national development plan for upgrading, modernizing, and developing the capacity of the country's airport, rail, road-motorway and port infrastructure, significant progress having already been made on each of these fronts. Transport infrastructure can be presented on a national scale as follows:

2.1. Road and motorway infrastructure consistency and operating report :

Algeria has one of the most modern and dense road networks in Africa, with a length of 133,741 km, dense in the north of the country, reasonably loose on the highlands and reduced to a few axes in The south. The national development plan aims to extend road infrastructure by 5,600 km. The following figure gives us an idea of the remarkable development of the road and motorway networks from 2009 to 2016 in Algeria.

Figure n ° 2: Evolution of the road and motorway network 2009-2016



Source: Ministry of TPT, vice-director of highways, 2017

We note that seven years of investment have increased road and motorway capacity by 29% of the national network's consistency; This confirms the determination of the public authorities to connect the country's spatial units. Nevertheless, the evolution of the Algerian car fleet during the period 2000 to 2016 has amply doubled in volume and that half of this increase is established in the country's central region. This proves that the government maintain and grow the road and motorway network in relation to population growth on one side and the dynamization of the country's primary, secondary, and tertiary sectors.

The transport of goods in millions of tones transported is shown diagrammatically in Figure 3 to give an overview of the evolution of the use of road and motorway infrastructure for the transport of goods in the country from 1970 to 2011.

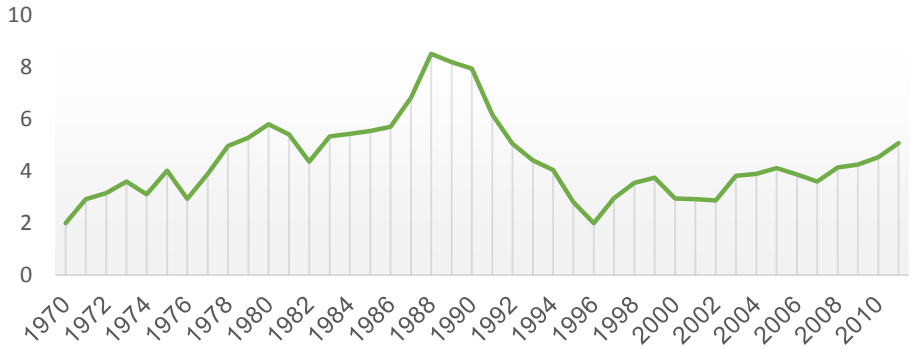


Figure n ° 3: Road freight transport 1970-2011

Source: Adapted from data from the National Statistics Office (ONS)

The figure3 shows the period before the year 2000 increased from 1970 to 1989 mainly due to the stability experienced by the country in this period. From 1989 to 2000, we noticed a collapse of the road transport of goods and this is due to the instability and the security crisis that affected the country in this period. However, from the end of the years 2000 to 2011, there has been massive re-use of road

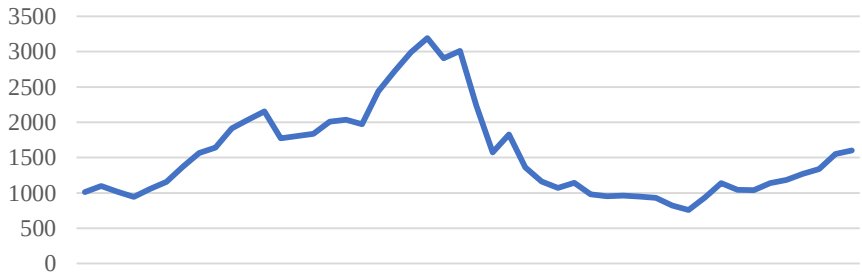
transport of goods, and this is mainly due to the rehabilitation of road confidence which is in turn due to a secure, stable climate for the fluctuation of trade Between regions of this country.

2.2. Rail infrastructure consistency and operating record:

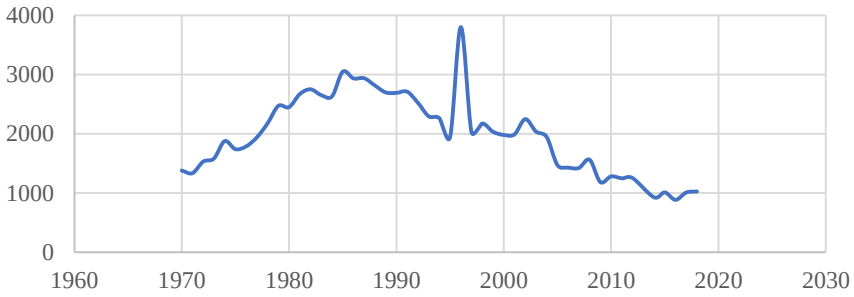
The railway infrastructure went from 1,800 km in 1999 to more than 4,000 km in 2017 to reach on receipt of projects under construction, 6,300 km. Upon completion of the entire rail program with the entire north's network, The linear will total 12,500 km according to the government's strategy for 2025-2030. The SNTF manages a rail network that spans 4,560 km, including 3,840 km of operated lines, 522 km of double track lines, and 324 km of electrified lines (Ministry of Public Works and Transport, 2017). To carry out its missions; The SNTF has (MTPT, 2017): (i) A fleet of line engine equipment consisting of 230 diesel and electric locomotives, 45 shunting vehicles, a fleet of passenger equipment consisting of 424 1st, 2nd class passenger coaches and berths, 17 Diesel railcars; 64 Electric multiple units. (ii) A fleet of goods equipment made up of 11,510 wagons. Algeria has set ambitious targets for rail development, aiming to increase its annual capacity to 17 million tons of goods and 60 million passengers by 2021. About 43 million passengers traveled by train in the first 11 months of 2018, increasing from 29 million in 2015. Simultaneously, the total freight volume amounted to around 5 million tons, compared to 3.8 million tons in 2017 (Oxford Business Group, 2018).

In addition, it plans to electrify and double the northern ring road to allow the circulation of high-speed trains between the main cities of the country before gradually extending it to other links; Modernize railway signaling and telecommunications; And to rehabilitate and acquire new trains and locomotives.

Figure 4: Rail transport from 1970 to 2018 (rail traffic)
Rail transport millions of passengers per Kilometer



Rail freight transport Tons / Kilometers (T / km)



Source: ONS, 2011; Railisa, International Union of Railways, 2019.

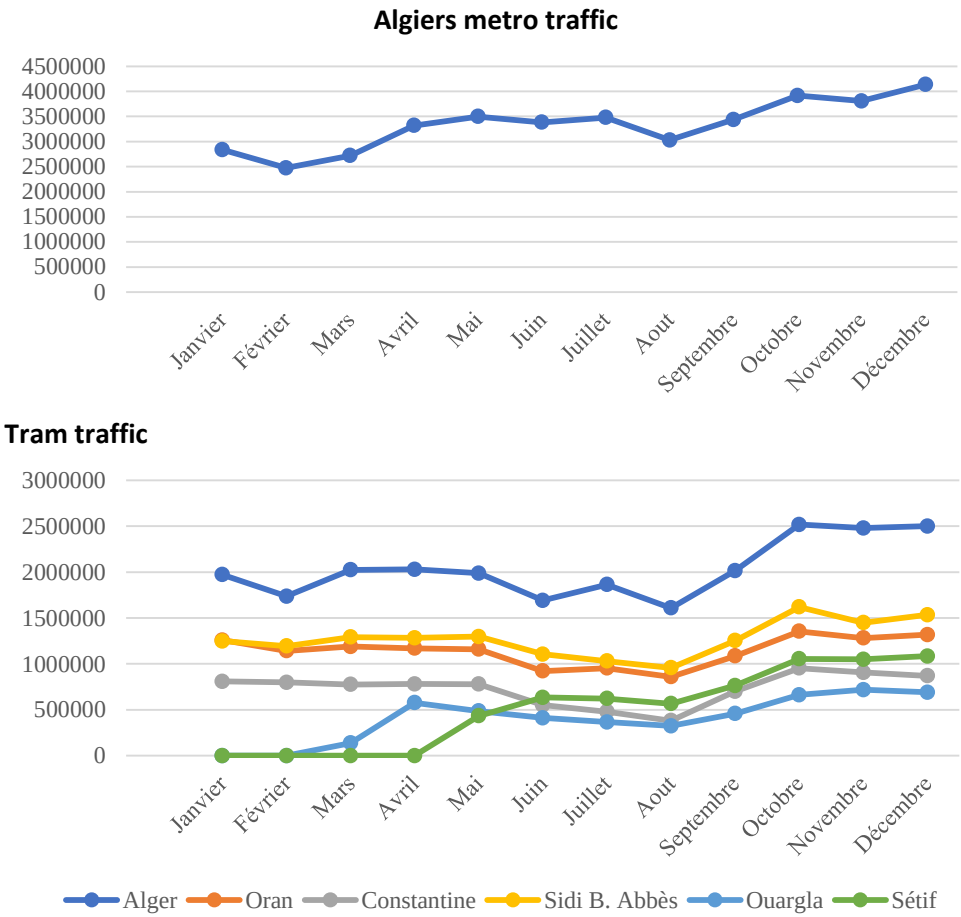
Thanks to the database of the national office of statistics and also to that of the international union of railways, we could not design two graphs, which show us the evolution of rail transport of goods and passengers During the period 1970 to 2018. That of freight transport shows us an upward use of rail transport from 1970 to 1985 where it begins to go the other way, until the mid-1990s where there was increased use of this means of transportation. The business reason for a short period; That said it started again declined during the period 2000-2018. This decline is explained by the use of other modes of transport owned by the Algerian government. Unlike rail freight, passenger transport underwent an impressive development from 1970 to 1991. It turned back in decline until 2006, similar to the mode of road transport that experienced the same causes of decline, that of stability. And security. Government investments in the sub-sector have helped regain the place that previously occupied it from 2006 to 2018.

2.3. Guided transport infrastructure consistency and operating report

2.3.1. Subway: There is only one metro line in Algeria in the capital Algiers inaugurated in October 2011, with 9.5 km, which includes 10 stations from the main post office to Hai El Badr. Today, Algiers has 17 metro stations, three of which opened in 2018, located along 18.5 km of railways. In January 2018, the average number of passengers using the Algiers metro was 100,000 to 200,000 passengers per day (Oxford Business Group, 2018). According to data from the EMA (2018), the completion of the extension works saw these figures drop from 2.8 million passengers in January 2018 to 3.5 million in May of the same year. The extended line includes 14 trains with six wagons of construcciones y Auxiliar de Ferrocarriles (CAF) in Spain, and 12 other CAF Inneo metro trains were ordered in 2017. To keep pace with new development challenges, the authorities aim to extend the line to include 34 km of tracks and 34 stations by 2022. El Harrach's expansion to the capital's international airport was expected to be completed in 2019 (Oxford Business Group, 2018).

2.3.2. Trams: Algeria is also working on developing its tram network and, in March 2018, a new 9.7 km line was inaugurated in the city of Ouargla. The French company Alstom and the Compagnie Industrielle des Transports ALgériens (CITAL) were selected in 2013 to deliver the country's tram network, currently in operation in six wilayas. According to Oxford Business Group (2018), before completing the Sétif line, Algiers trams received around 70,000 passengers per day; Oran 40,000; Sidi Bel Abbès 40,000; Constantine 26,000; And Ouargla 12,000.

Figure n ° 5: Frequentation of the Algiers metro and trams across the national territory (January-December 2018)



Source: Algiers Metro Company, 2019

We note through these curves representing the evolution of the operation of the two urban modes of transport, in particular the Algiers metro and the trams of the various wilayas during the year 2018, that the number of metro passengers practically doubled between January and December of the same year; Totaling traffic for the whole year, which is around 40 million passengers. This is explained by the need for this urban transport mode and the time and mobility so coveted by these users. For the tramway, it notes that the wilayas of Algiers, Oran, and Sidi Bel Abbès have a higher annual attendance (respectively, 24 million, 13 million and 15 million) compared to the wilayas of Constantine, Ouargla, and Sétif, which has recently benefited from This infrastructure (respectively, 4 million, 4 million and 6 million). This can be explained by the commercial and societal dynamism of these reference wilayas. However, there is also a general drop in the use of trams between June and August, during the summer season; This can be explained by the mobility of populations towards other country regions.

2.4. Port infrastructure consistency and operating report:

Algeria has a coastline over 1280 km long and a port infrastructure comprising forty-seven (47) ports in service, including 11 mixed commercial ports (trade, fishing, and hydrocarbons); 02 ports specialized in hydrocarbons (Skikda east and Bethioua-Oran west); 33 fishing harbors and shelters, six of which are inside commercial ports; 01 marina in Sidi Fredj, 215 maritime signal lights; Coastal defense works (Ministry of Public Works, 2015). The government has ambitious plans to increase the nation's market share for port traffic from 3-4% to 25% by 2025, starting with the acquisition of 26 new ships, 10 of which were received in November 2018. However, according to local operators, it is necessary to invest in skills and training to have the personnel to manage ships, particularly for the positions of sailors and managers (Oxford Business Group, 2018). The other big challenge is the absence of deep-water ports. Currently, large cargo ships dock in foreign ports and transfer their cargo to smaller vessels before heading to Algeria. The El Hamdania port project, approved in early 2017 and expected to cost $ 3.3 billion, is intended to make up for this shortfall. Still, construction has been delayed, mainly because China and Algeria have failed to agree on the deal, such as interest rates and exclusivity. While negotiations were not yet finished at the end of 2018, the investment in the Algerian terminal supports China's initiative for the so-called 'Silk Roads' project commonly known as the BRI « Belt and Road Initiative », which the country joined in September 2018, it should have a significant impact on world trade. The port would provide an essential maritime link to the Trans-Saharan Route (Oxford Business Group, 2018).

Table n ° 1: Projects carried out by year and by section of the port infrastructure 1999-2016

Year	Comfort and Extension of Port Capacity	Making Fishing Ports and Shelters	Development, Extension, and Adaptation of Ports and Fishing Shelters	Protection from sepsling and Draging Ports	Shore protection	Total
1999	3	1	/	1	/	05
2000	2	2	/	1	/	05
2001	5	1	1	5	1	13
2002	2	2	/	1	4	09
2003	6	2	/	2	3	13
2004	7	1	/	/	3	11
2005	7	/	2	/	7	16
2006	1	/	3	2	6	12
2007	2	1	1	/	9	13
2008	6	1	3	2	3	15
2009	9	2	5	2	4	22
2010	2	/	1	/	3	06
2011	3	1	3	2	2	11
2012	4	1	5	1	4	15
2013	6	1	/	6	4	17

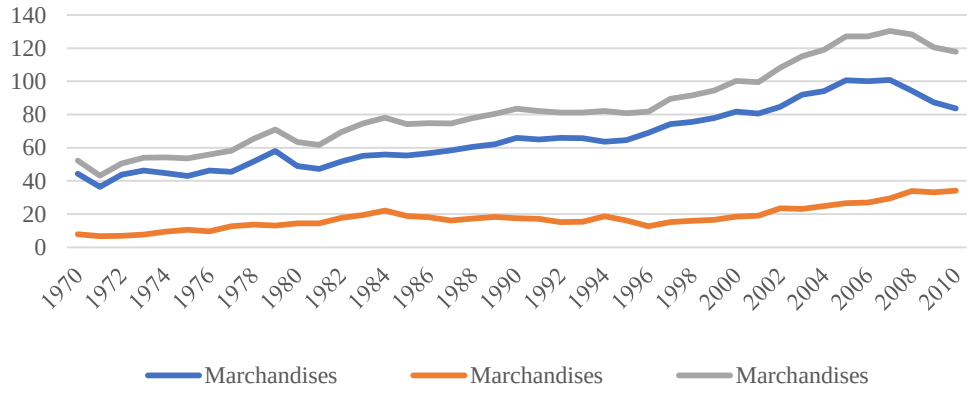
2014	/	2	3	3	9	17
2015	4	1	1	5	3	14
2016	2	1	/	/	2	05
Total	71	20	28	33	67	219

Source: MTPT, Port Infrastructure Department, 2017

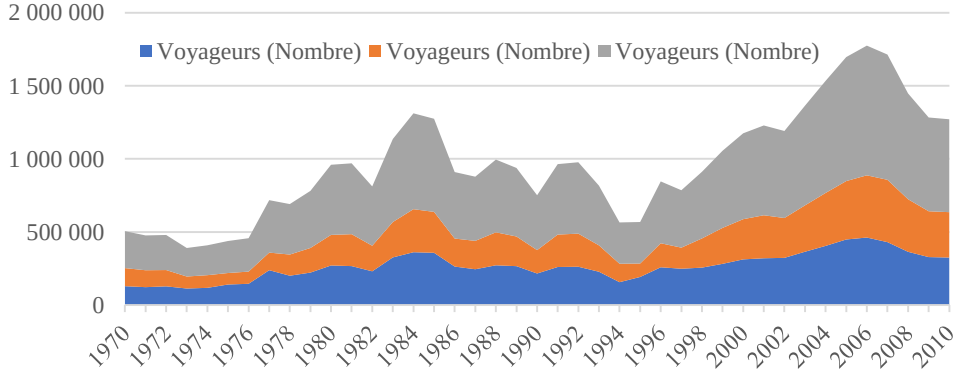
It can be seen from table1 that efforts were made by the government during the period 1999-2016 in terms of port infrastructure; 71 projects to carry out reinforcement and extension of the capacity of port structures (which consisted of fitting out container terminals, reinforcing jetties and quays, widening the port pass, replenishing quays, lining the embankments (ports,…), 20 projects for the construction of fishing harbors and shelters, 28 development projects, extension and adaptation of fishing harbors and shelters, 33 protection projects against silting up and dredging of harbors, and 67 protection projects From shore, a total of 219 projects during the reference period.

Figure n ° 6 : Maritime transport from 1970 to 2010 (port traffic)

Marchandises (10^6 T)



Voyageurs (Nombre)



Source: Adapted from data collected from the ONS

We note the difference existing on the one hand between the superiority of the goods embarked and the inferiority of the goods unloaded on the national territory, in 1970 a variation of at least 25 million tons which widens overtime where it will

make a difference of more than 65 million tonnes between goods loaded and unloaded in 2006. On the other hand, we note the increase in the increased use of this mode of transport for goods, in 2007 port traffic experienced its highest Level at 130 million tonnes of goods unloaded and shipped. The figure also shows the transport of travelers by sea lets us say that port traffic did not stop increasing during the reference period, this is due to the flexibility and the practice of this mode of transport.

2.5 Airport infrastructure consistency and operating report:

Algeria has developed its air transport sector in such a way as to make it a real means of integration at the regional and international level, through modernization and safeguarding. It has 36 airports, including 11 international airports. The efforts made from 1999 to 2015 resulted in 04 new airport runways; 06 airport runway extensions; Reinforcement of 31 airport runways and annexes. In addition, a renewal and an increase in the Air Algérie fleet, which went from 42 to 59 aircraft to improve, among other things, the services on the domestic air transport network, especially in the south of the country, in the highlands. And internationally.

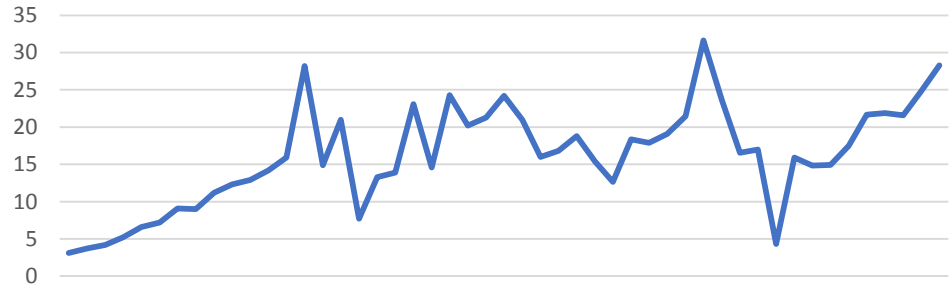
China State Construction Engineering Corporation (CSCEC) has been hired to oversee the construction of the new 80 billion Algerian Dinars (580.8 million euros) international terminal at Houari Boumediene Airport, which is expected to begin operations in early 2019. This will include the construction of a control tower and the renovation of the existing airstrip. The site occupies 20 ha and consists of a 4,500-space car park, three aircraft parking spaces, 424,000 square meters of the runway, 120 registration banks, and 84 control centers. The new terminal is expected to increase annual passenger capacity by 10 million to 16 million (Oxford Business Group, 2018).

For its part, ENNA has carried out several projects aimed at improving standards, notably the construction of five new control towers adapted to the requirements of the International Civil Aviation Organization in Algiers, Oran, Constantine, Ghardaia, and Tamanrasset. As part of these modernization efforts, in February 2018, ENNA signed a contract with the Spanish Indra Sistemas for the modernization of air navigation equipment in the south of the country. With the enabling infrastructure and the implementation of international standards in place, Algeria is now focusing on improving its competitiveness to attract more airlines and open new destinations (Oxford Business Group , 2018).

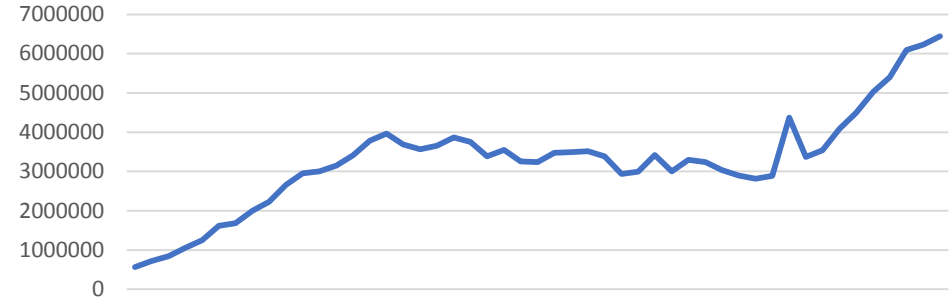
Figure 7 shows air passenger and freight traffic evolution over a wider panel from 1970 to 2018, for all Algerian aerodromes.

Figure n ° 7: Air transport from 1970 to 2018 (airport traffic)

Freight (million tons per kilometer)



Travelers transported



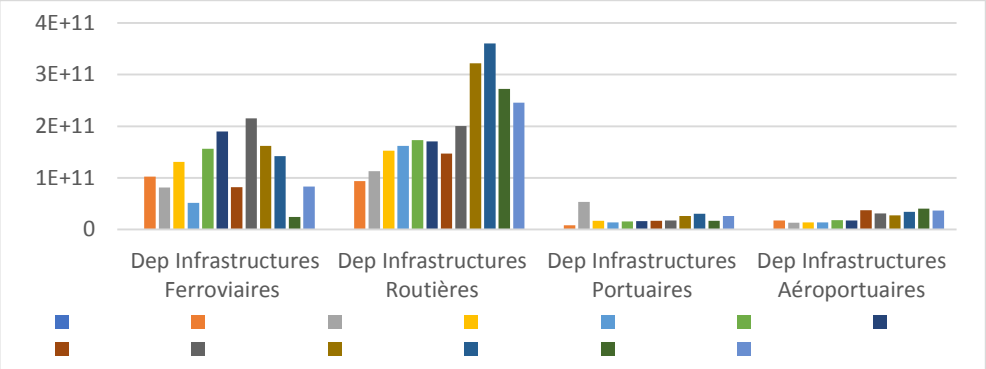
Source: World Bank database, accessed 10/2019

It can be seen that air traffic increased significantly between 1970-1985, at least seven times the number recorded in 1970, from 1985 to 2007 there was a decline of one million travelers. The following year saw air traffic take off, which continued to grow to 6,442,442 travelers in 2018, more than eleven times the number of travelers in 1970. On the one hand, this demonstrates the increased use of air transport and, on the other hand, the growing capacity of airport infrastructure. Unlike passenger air traffic, the transportation of goods by air shows an increase in air freight capacity, from 3 million tons per km in 1970 to 28 million T / km in 1983; That said, freight air traffic showed a lot of disruption between 1983 to 2009. Nevertheless, from 2009 to 2018, air freight traffic recovered an extraordinary evolution from 4 million T / km to 28 million T / km. This confirms the government's effort to modernize and strengthen the country's infrastructure and air fleet.

3. Public spending on transport infrastructure in Algeria :

Between 2001 and 2004, public investment in the transport sector in Algeria amounted on average to 1.4% of GDP (or 2.1% of GDP excluding hydrocarbons), the fiscal policy having found an expansionary trend with the PSRE (Special Economic Recovery Program), public investments have resumed strongly in the transport sector (World Bank, 2007). As shown in Figure 8.

Figure 8: Evolution of public spending on transport infrastructure from 2005-2017



Source: Adapted from data provided by the Central Treasury Accounting Agency, Ministry of Finance, 2017 (sum in Algerian dinars)

This figure shows the evolution of public expenditure on investment in transport infrastructure from 2005 to 2017; We can see that the government has favored some subsectors. This is because of their importance in economic recovery and the spatial dimension of the country. The road and motorway subsector had the lion's share with an accumulative amount from 2005 to 2017 of 2,412,119,013,641.81 Algerian dinars, followed by the rail subsector with a share of 1,422,773,689,294.71 Algerian dinars; And finally the two port and airport sub-sectors with an accumulative sum from 2005 to 2017 of 563,579,651,023.67 Algerian Dinars. Although lower public spending was budgeted for the transport sector in 2019 compared to the previous year, road and rail projects are nevertheless ready to receive a financial boost. The 2018 budget allocated to the sector 380.8 billion dinars (2.8 billion euros), an increase of 50% compared to 2017. These funds were aimed at large-scale projects such as the port of El Hamdania (150 billion dinars, 1.1 billion euros); Maintenance of roads, ports, airports and railways (65 billion dinars, 471.9 million euros); The construction of new roads in remote areas (28 billion dinars, 203.3 million euros); And transport improvements in Algiers (6.5 billion dinars, 47.2 million euros). It is estimated that 178.2 billion dinars (1.3 billion euros) were allocated to complete existing projects.

In comparison, the draft budget for 2019 allocated 279 billion dinars (2 billion euros), a decrease of 26.6% compared to 2018 (Oxford Business Group, 2018). Most of these funds (250 billion dinars, 1.8 billion euros) are reserved for existing projects, particularly for 'strategic road and rail projects'. Rail projects will receive 76.1 billion dinars (552.5 million euros), extensions to the Algiers metro 68.8 billion dinars (499.5 million euros), and roads 100.3 billion Dinars (728.2 million euros). Some 29 billion dinars (210.5 million euros) will be devoted to new projects. The 2019 finance law also exempts customs duties from any spare or repair parts of aeronautical engines and equipment required by national airlines. The aim is to reduce operating costs and make national airlines more competitive (Oxford Business Group, 2018).

Conclusion

The colossal investments undertaken by Algeria to boost the economy of the country through in particular, a revival of road-motorway, rail, sea and air transport which also participate in sustainable development insofar as they intervene directly on economic revitalization and Societal of the country. This article has dealt with the transport supply sector in Algeria. The structure of transport infrastructure has been reviewed, emphasizing the actors and how to meet effective demand. He also highlighted the government's involvement in transport infrastructure, its contribution, and what it aims to achieve in the sector. Historical trends in the supply and demand of transport services were examined. The results showed that the Department of Public Works and Transportation has provided many modes of transportation infrastructure to the country since 1999. Count the consistency of each infrastructure and its operation. Finally, this study highlighted the public investment expenditure necessary to maintain, upgrade, and construct these different transport infrastructures.

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