



Express Electric Trains in Egypt and Their Impact on Development

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ABSTRACT

The express electric train is a newly introduced means of transport in Egypt's railway system. Its study began in 2015, and the decision was implemented in 2021. It is an integrated network of express trains which will connect all parts of the Republic together. The estimated cost of the project is 360 billion Egyptian pounds and its aim is to increase financial revenues from the consumer and commercial sides. The goal of establishing the express electric train is to introduce modern means of transportation in Egypt in order to provide distinguished services to passengers, in addition to faster cargo transportation, and to make steady progress in developing all areas of transportation.

Keywords: Express Electric Train, Monorail, Development, Blue Line, Green Line, Red Line.

Introduction

The express electric train project is one of the newly introduced means of transportation according to Egypt's 2030 vision. It connects the various means of transport in Egypt, and the old and new cities through pivotal interchange stations. It involves the construction of four lines of high-speed electric railway for the transportation of people and goods in Egypt, with a total length of around 2000 km. It is a safe, fast, and sustainable means of transportation, desiring to provide the best and most sustainable solutions.

First: The Idea of Establishing the Express Electric Train

The establishment of the high-speed train project, which began to be studied in 2015, was approved and the decision was implemented in 2021; hoping to create an integrated system linking all Egyptian ports on the Mediterranean and Red Sea coasts, industrial cities, new development areas of different locations, and the administrative capital.

The express train project, called El Alamein Train, is an integrated network of high-speed trains which will connect all parts of the Republic

to each other. This project is the beginning of a new system called the express electric train network. This system will represent a quantum leap in the path of local and commercial means of transport inside Egypt.

The estimated cost of the project is 360 billion Egyptian pounds, with the possibility of increasing or decreasing the amount according to the proposed agreements with Egyptian and foreign companies.

An agreement was reached with three companies to implement the project, namely; the Arab Contractors, Orascom, and German Siemens. Arab Contractors and Orascom are responsible for planning the basic route of the train by completing soil research, building bridges, and constructing and installing stations; while Siemens is responsible for communication works, control rooms, electricity systems as well as manufacturing 35 passenger trains and 15 cargo carriages. This means that the high-speed electric train in Egypt is not limited to passenger transportation only, but is also used for cargo transportation, providing business opportunities for industrial, agricultural, and other sectors.

The project aims to increase financial revenues from both consumption and commercial sides in addition to reducing the travel time between governorates by half or more. It also aims to promote tourism in the Red Sea and Mediterranean cities. Finally, it aims at stimulating the commercial sector in the Egyptian ports through the speed of cargo transportation.

Second: Differentiating between the Express Train, Electric Train, and Monorail:

In order to develop the railway organization in Egypt, three new types of trains were introduced, with each type allocated according to its speed and the characteristics of the area it will serve as follows:

1- The Express Train:

It was constructed to connect all governorates in

Egypt with the aim of transporting passengers and goods together. It is considered the best in terms of speed, and it is one of the safe means of transportation that is completely separate from the traffic axes in cities (Abdo, 1994, p. 154). The high-speed train route is characterized by being the shortest route and shortens the distance between all governorates to the extent that it makes the distance between northern and southern Egypt take only 5 hours.

2- The Electric Train:

The electric train is similar to a great extent the old trains as it also runs on railway tracks, but it operates on electricity and can reach a speed up to 120 km/h (Al-Shami, 1976, p. 78). It is allocated to connect the new cities and the east of Cairo.

3- Monorail:

It is operated automatically without a driver and is designed to transport passengers in air-conditioned and safe carriages. It can reach a speed up to 80 km/h. Its trains run on iron bars fixed on overhead bridges that have stations for passengers (Ezz El-din, 1981, p. 259).

Third: High-speed Electric Railway Lines in Egypt:

The express electric railway project involves the construction of four lines of an electric high-speed railway for transporting individuals and goods in Egypt, with a total length of approximately 2,000 km. The first line connects the two cities of Ain Sokhna and Marsa Matrouh. The second connects the two cities of Sixth of October and Abu Simbel. The third connects the city of Qena to the two cities of Hurghada and Safaga. The project is being implemented by a consortium of the companies of Siemens, Arab Contractors, and Orascom.

Siemens will carry out all electrical, mechanical, control, and monitoring systems of the project as well as manufacturing and supplying electric trains, and building maintenance workshops and fixing their tools. Arab Contractors and Orascom

will be responsible for building earth bridges, bridges, industrial track works, passenger stations, and fences (Ministry of Transport, Egyptian National Railways Authority, 2021).

The construction cost is approximately 11 billion US dollars. The high-speed electric railway project is part of Egypt's clean transport system for individuals using electric trains, which includes the Cairo Metro, Alexandria Metro, Monorail, and the Light Electric Train (LRT). It also works in parallel with the Egyptian Railways to transport passengers and goods from and to major Egyptian cities and ports. The consortium of Deutsche Bahn and El Sewedy Electric will manage and operate the four lines for 15 years, renewable for another 15 years, for a total contract of 30 years.

The First Line (the Green Line):

It connects the city of Ain Sokhna on the Red Sea coast in Suez Governorate and the city of Marsa Matrouh on the Mediterranean coast in Matrouh Governorate, with a length of 660 km. The cost of the line is about 4.45 billion US dollars. The line will include 15 express trains with a design speed of 230 km/h, 24 regional trains with a speed of 160 km/h, and 15 freight locomotives with a speed of 120 km/h. The travel time of the express train from its start to its end will be about 4 hours. The train will intersect with the light electric train (LRT) at the central train station in the New Administrative Capital, with the second line of the express train at an exchange station in the city of Hadayek October, and with the second line of the Cairo Monorail at the Engineers Syndicate station in Sixth of October City. Construction began in May 2021, and it is scheduled to start operating in December 2024.

Soil research, cadastral elevation, and route planning have been completed. The construction of earth bridges, overpasses, and industrial track

works for the route is underway as well as stations and fences, by major Egyptian companies specialized in these fields, and industrial works on roads intersecting with the train route.

The Second Line (the Blue Line):

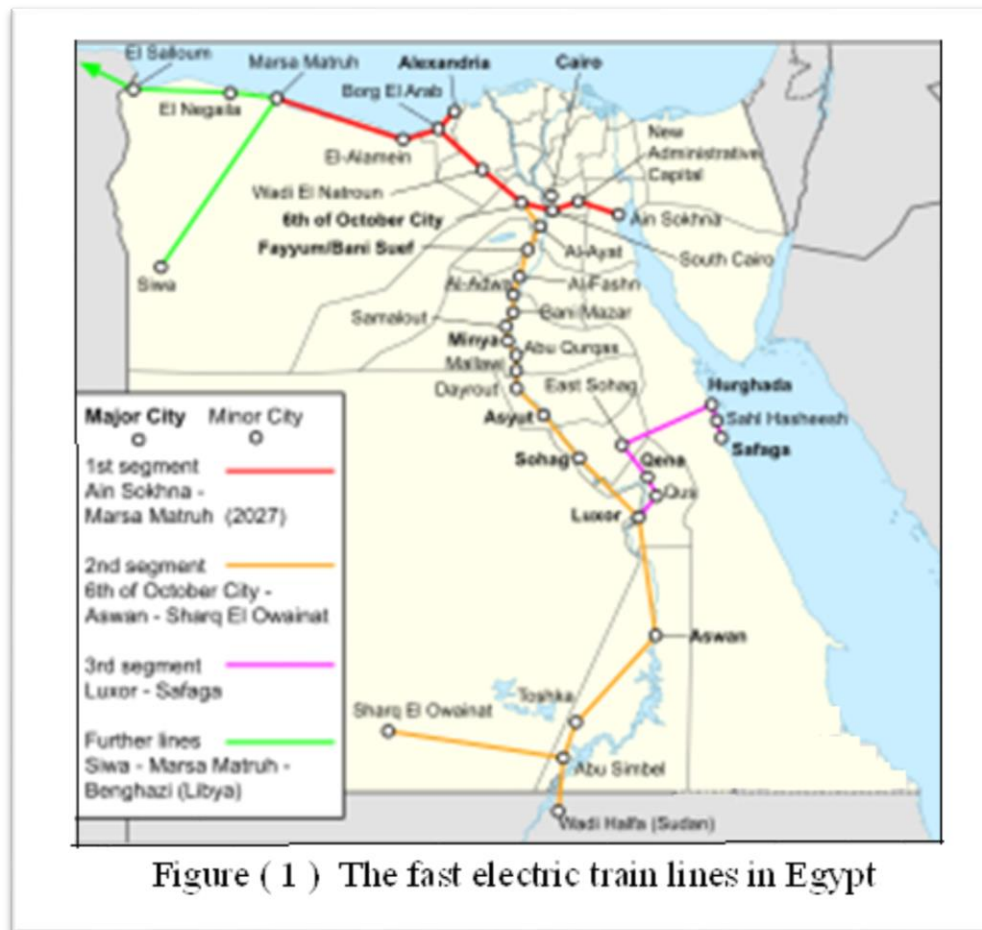
This line connects the city of Hadayek October in the Giza Governorate to Abu Simbel in Aswan Governorate, passing through the governorates of Upper Egypt along the direction of the Nile River in the west, with a length of 1100 km. The initial cost of the project is more than 6 billion US dollars. It is estimated that the line will include 19 express trains with a design speed of 230 km/h, 45 regional trains with a speed of 160 km/h, and 20 freight locomotives with a speed of 120 km/h. The travel time of the express train from its start to its end will be only 5 hours. The train will intersect with the first line of the express train at an interchange station in the city of Hadayek October, and with the third line of the high-speed train at an interchange station in the city of Qena. Construction began in March 2022.

The Third Line (the Red Line):

It connects the city of Qena in southern Egypt on the Nile River to the two cities of Hurghada and Safaga on the Red Sea coast in the Red Sea Governorate, with a length of 225 km. The line will include 6 express trains with a design speed of 230 km/h, 16 regional trains with a speed of 160 km/h, and 6 freight locomotives with a speed of 120 km/h. The train will intersect with the second line of the high-speed train at an interchange station in the city of Qena.

The Fourth Line:

It connects Port Said to Abu Qir and is planned to be implemented in partnership with the private sector, covering a total length of 2,250 km.



Fourth: Express Train Stations:

The electric high-speed train project provides a means of transportation for passengers and goods from one place to another in the shortest possible time, which serves a large segment of citizens. This is what this type of trains does (El-Zouka, 1988, p. 163). Train stations are implemented in an organized and controlled manner to cover all parts of the Republic, within the framework of the comprehensive development carried out by the Egyptian state to provide means of comfort for citizens.

First Line Stations:

The line consists of 22 stations including 10 express train stations and 12 regional stations: Ain Sukhna, the Administrative Capital, 15th of May, Mohamed Naguib, South Giza, Hadayek October, Sixth of October, New Sphinx, Sadat City, Wadi El-Natron, New Nubaria, Amreya.

Alexandria, Burj Al-Arab, Al-Hamam, New Alamein, Sidi Abdel Rahman, El Dabaa, Swan Lake, Ras El Hikma, Almaza, and Marsa Matrouh.

Second Line Stations:

The line comprises 35 passenger stations including 9 express train stations and 26 regional train stations: Hadayek October, Fayoum/Bani Suef, Al-Fashn, Al-Adwa, Bani Mazar, Samalut, Minya, Abu Qarqas, Mallawi, Dayrout, Al-Qusia, Manfalout, Assiut, Abu Tig, Al-Ghanayem, Tahta, Sohag, Gerga, Abydos, Farshout, Naga Hammadi, Qena, Qus, Luxor, Armant, Esna, Sebaea, Edfu, Toshka, and Abu Simbel.

Third Line Stations:

The line consists of 5 stations including 3 express train stations and two regional train stations: Qena, East Sohag, Hurghada, Sahl Hasheesh, and Safaga.

Fifth: The Advantages of the High-Speed Electric Train in Egypt:

1- Linking Production Areas to Export Ports:

The express electric train in Egypt aims to establish integrated logistic axes that connect industrial, agricultural, mining, and service production areas to maritime ports through clean, fast, and safe transportation means to transform Egypt into a center for global trade and logistics (Cooper. C, Lambert.M. & Pagh, J.D., 2014, p. 124). Hence, the importance of the high-speed electric train lies in connecting industrial production areas to export ports as well as linking modern agricultural development areas such as the New Delta, West Minya, Toshka, and the future of Egypt to consumption areas and export ports.

2- Time-saving:

It connects all governorates of Egypt and is considered a safe transport means which is completely separate from the existing urban traffic axes. Therefore, it takes the shortest routes to shorten the distance between all governorates to the extent that it has made the distance between northern and southern Egypt no more than five hours.

3- Linking Egypt to the Neighboring Countries:

The high-speed train network contributes to connecting to the neighboring countries with Sudan from Abu Simbel to Jami, from there to Dongola, and with Libya from Matrouh / Salloum to Benghazi, and with Chad from Abu Simbel—east of Owainat to N'Djamena.

4- Achieving Development:

The high-speed electric train in Egypt leads to the creation of a green land development axis that connects the Red Sea and the Mediterranean Sea to stimulate the movement of internal and external trade and link logistical ports on both seas.(folabi, O.J. & Ademiluyi,, I.A, 2016 p . 54

) The movement is no longer limited to only Port Said ports or Damietta ports, but access to all ports easier will be for transporting goods between different ports. It is also one of the pillars of the sustainable development plan being implemented by the state to serve the urban sprawl in the cities it passes along the route (the New Administrative Capital, Sixth of October City, Alexandria, Borg El Arab, Alamein, Matrouh, Minya, Sohag, Assiut, Luxor, Aswan, Toshka, Abu Simbel, Hurghada, Safaga), where it facilitates movement between them and thus eases the burden on the Nile Valley and Delta.

5 - Larger Transport Capacity:

The express train has a higher transport capacity which reduces traffic congestion, achieves higher safety for passengers, has a better impact on the environment, helps economic development, and enhances the region infrastructure in the region. After the completion of the electric train lines, it is expected to transport more than 30 million passengers annually, reducing traffic congestion, achieving higher passenger safety, and also transporting 8 million tons of goods by 2024, which is planned to reach 22 million tons of goods by 2040.

6- Boosting Tourism:

The express electric train contributes to the development of tourism between the Red Sea (Hurghada) and southern Upper Egypt (Luxor-Aswan-Abu Simbel), which allows tourism companies more flexibility in diversifying tourism programs.

7- Providing Job Opportunities:

According to preliminary estimates, the first line of the project is expected to provide more than 15,000 direct job opportunities in Egypt in addition to 3,800 job opportunities for Egyptian suppliers and indirect job opportunities within the local economy system in general.

8- Preserving the Environment:

On the other hand, the fully electric train system will contribute to reducing energy consumption and thus reducing air pollution by reducing carbon emissions by 70% compared to current fuel-powered cars and buses, which means better preservation of the environment.

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