



RAIL PASSENGER TRANSPORTATION IN BORDER PROVINCES IN TURKEY

Selcuk Duranlar

Trakya University, Edirne Vocational School of Social Sciences, Turkey
<https://orcid.org/0000-0001-7743-5916>

Nina Gergova

Todor Kableshkov University of Transport, Sofia, Bulgaria
<https://orcid.org/0000-0001-7153-8017>



JEL Category: **L92, O18, R41, R42**

Abstract

Transportation plays a crucial role in the movement of information, capital, goods, and services between different points, impacting both the environment and human society. It encompasses the economic, fast, and secure movement of people and goods to yield spatial and temporal advantages. The advent of the steam engine led to the introduction and continued utilization of steam locomotives in railway transportation. In Turkey, despite the need to establish economic opportunities, resource allocation between the two main transportation subsystems, namely railways and roads, remains an issue. Railway transportation is a highly efficient mode of mass transportation, capable of transferring large numbers of passengers and cargo with minimal energy consumption and air pollution, making it environmentally friendly. It generates less noise compared to other modes of transportation, relative to the freight and passengers it carries, and requires less land and urban space. However, the efficient utilization of railway resources is contingent upon sufficient demand. Turkey's strategic location as a gateway between Europe and the Middle East underscores the need for further development of rail passenger transportation. This would optimize infrastructure resources, enhance environmental sustainability, and promote economic and social benefits through cross-border mobility. This paper examines the challenges hindering the expansion of passenger railway transport and offers solutions and recommendations for the future.

Keywords: Turkey railway border gates. Railway transportation. Freight transportation. Passenger transportation. Environmental sustainability

Address of the author:
Selçuk Duranlar
selcukduranlar@trakya.edu.tr

1 INTRODUCTION

The history of transportation dates back to 7000 BC, when mankind began to use domesticated animals, especially horses, for transportation. Humanity had to wait another four thousand years



for the invention of the wheel. By the 1960s, the weight of the highway began to increase, and polishing, material handling, and transportation activities were considered together under the heading of physical distribution.

The world population has exceeded 8 billion. According to United Nations studies, the population is projected to reach 8.6 billion in 2030 and 9.8 billion in 2050 (Alatas & Somunkiran, 2008). While 54% of the population lives in cities, it is estimated that 10 new metropolitan areas with populations exceeding 10 million will emerge in the next two decades and that this proportion will reach 68% by 2050 (Alatas & Somunkiran, 2008). In line with expectations for population and income, transportation demand will increase for all regions of the world.

Attempts for railway transportation in the Ottoman Empire started for the first time in 1851 with the concession of the 211 km Cairo-Iskenderiye railway line. The first railway line within today's borders was constructed between Izmir and Aydin (130 km) in 1856 with the concession granted to the British and opened for operation in 1866. Afterward, many railway projects were initiated under the concession principle including length (km), operation of all kinds of regional resources on the railway line, etc., in the absence of economic rationality, based on a "national" basis in the Ottoman Empire. In 1869, the construction concession was awarded to Baron Hirsch, and the 336 km line sections between Istanbul - Edirne and Kırklareli - Alpullu amounting to 2000 km Eastern Railways within the national borders were completed and open for operation in 1888, connecting Istanbul to the European railways.

In the VIIIth Development Plan of Turkey (2001-2005), the "restructuring of the railway system is planned". The 2023 Vision Document for railways enhances the following:

- Increasing the railway network to 31,000 km.
- The share of railways in freight and passenger transportation should reach 20% and 15%, respectively. The increase of the share of railways in the freight and passenger transportation markets is a priority target stated as a political measure.
- Other supporting measures offer the completion of connections to major logistics centers, thus enabling the increase of the

load-carrying capacity to 50 million tons; through construction of 1,213 km HSR and HT lines will reach 12,915 km and 11,395 km, while conventional railway lines should be increased by 12,115 km, reaching a total railway length of 25,030 km in 2023 (Karaismailoglu, 2022).

2 RAILWAY TRANSPORTATION

"If you want to be rich, build a railway. If a train comes here, then the treasure follows". Government officials or ordinary people always think that "you can get rich as long as you build a railway". (Banerjee, Duflo, & Qian, 2009) According to those beliefs, the development of the traffic network can significantly increase the per capita GDP growth rate, which has a great positive impact. The railway is a nationally important infrastructure, it's comprehensive transportation, it's one of the daily and popular means of transportation, it's essential for the people who frequently travel somewhere in daily life, and it's the important carrier of the national economy operations. It plays an irreplaceable role in promoting the sound and fast development of the economy and society of Turkey. According to Benjamin Faber (2014) (Faber, 2014), the impact of connecting the national system network is relatively high on the GDP growth, industrial added value, government revenue, and non-agricultural added value, so the county-level cities connected to the national system network have an obvious positive impact, unlike the other without access to the national system network. The study results show that high-speed railway construction can improve transportation conditions and the convenience of inter-city contacts. However, everything has advantages and disadvantages.

According to the risk calculations made at a scale of 1 billion/km, railway transportation is 243 times safer than highways in terms of fatal accidents and 500 times safer in terms of injured accidents. It is also considerably lower than highway transportation costs (Cekerol, 2007). Railway transportation is preferred for both long and short-distance passenger transportation, low energy consumption due to low friction, and comfortable and fast travel (Kurt, 2010).

2.1 Railway Border Gates in Turkey

Customs border gates and ports with railway connection and border stations connecting our country with neighboring countries are the following

- To Syria : Nusaybin, Islahiye, Cobanbey
- To Greece : Uzunkopru
- To Bulgaria : Kapikule
- To Iran : Kapikoy
- To Armenia: It can be listed as Eastern Gate.

Dogukapi border gate is closed due to the problems with Armenia, while Nusaybin, Islahiye, and Cobanbey border gates are closed due to the civil war in Syria. There are also railroad connections to 11 ports (Haydarpasa, Derince, Izmir, Bandirma, Mersin, Samsun, Iskenderun, Tekirdag, Zonguldak, Yilport and Evyap).



Figure 1 Railway Gates of Turkey

Source: (Uysal, Türkiye'nin demiryolu sınır geçişleri: Hangileri açık?, 2015)

Turkey shares its borders with a total of 8 countries, 6 in the east and south and 2 in the northwest. Turkey borders Georgia (276 km) to the northeast, Armenia (316 km), Nakhchivan Autonomous Republic (18 km) and Iran (454 km) to the east, Iraq (331 km) to the southeast, Syria (877 km) to the south, Greece (212 km) and Bulgaria (269 km) to the northwest.

Table 1 Turkey's Railway Border Gates

	City	Name	Country Border	Ministers Board Opening Date
1	Edirne	Uzunkopru	Yunanistan (Pityon)	04.09.1953
2	Edirne	Kapikule	Bulgaristan (Svilinograd)	01.04.1988
3	Gaziantep	Islahiye	Suriye (Ekbez)	04.09.1953
4	Kilis	Cobanbey	Suriye (Akderun)	04.09.1953
5	Kars	Akyaka	Ermenistan (Aktif Degil)	04.09.1953
6	Mardin	Nusaybin	Suriye (Kamislî)	04.09.1953
7	Van	Kapikoy	Iran (Razi)	07.10.1971

Source: (Uysal, 2017)

Due to its geographical characteristics, Turkey has border gates that allow for all types of transportation systems. The majority of these are sea, air, and road border gates, with a limited number of railway border gates. According to data from the Border Management Bureau of the Ministry of Interior, Turkey has 138 border crossings, 102 of which are permanent and 36 temporary. Of these border gates, 57 are sea-, 50 are air-, 25 are land-, and 7 are railroad-border gates. On Turkey's land borders with 8 countries, there are railroad connections with 5 countries, except for the Akyaka (Armenia) railway border gate, which is now closed, crossings are provided at 6 railway border gates, 3 of which are on the Syrian border and one each with Greece, Bulgaria and Iran (Bakirci M. , 2013).

2.2 Railway Assets

Today, the increasing world population and global crises due to pandemics and climate change have led to the search for alternative energy sources in the logistics sector. In this context, there is a tendency towards integrated solutions and transportation modes allowing door-to-door transportation to reduce greenhouse gas emissions going to the environment as a result of the transportation process.

Although rail freight transportation is not the leading mode of transportation worldwide, increasing the use of railways due to both cost and environmentalist approaches is among the priorities of governments and the private sector (Tumenbatur, 2021).

Table 2 Passenger Transportation by Railways (in Thousands)

Passenger number	2017	2018	2019	2020	2021
	182.790	185.010	246 013	148.314	191.600
Suburban	160.544	160.721	219 999	141.868	181.580
The main line	22.246	4.289	26 014	6.446	5.650
HST	7.163	8.104	8 274	2.833	4.370
Passenger km	8.465.000	8.938.000	14 259 106	8.297.000	10.665.456
Suburban	4.782.000	4.564.000	9 347 106	6.819.000	8.414.915
The main line	3.683.000	4.374.000	4 912 000	1.478.000	723.497
HST	2.218.000	2.551.000	2 678 000	941.000	1.527.044

Source: (T.R. Ministry of Culture and Tourism, 2023)

While the railway infrastructure in Turkey has developed more in freight transportation, it has not been the same with passenger transportation and the number of passengers decreased due to the Covid-19 outbreak in 2020, not being able to catch up with the numbers in 2019.

The total number of visitors to Turkey slowed down due to Covid-19. The increase continued in the following years. In 2017, the number of passengers arriving by train was 0.03% of the total, while this ratio remained unchanged at 0.036% in 2022.

Table 3 Total Number of Visitors to Turkey

Year	Number of people	Travelling by train
2018	39.488.401	15.464
2019	45.058.286	29.291
2020	13.092.545	4.785
2021	24.12.266	1.587
2022	51.387.513	18.738

Source: (T.R. Ministry of Culture and Tourism, 2023)

Table 4 Distribution of Foreign Visitors to Turkey by Provinces to which Border Gates

Border gate	2022		2021		2020		2019		2018	
	train	total	train	total	train	total	train	total	train	total
EDIRNE	17.185	4.636.437	1.324	2.599.609	3.005	1.804.051	19.612	4.348.565	13.318	3.835.131
KAPIKOY	133	436.387	114	54.126	1.530	19.652	9.673	328.326	2.275	23.2202
KILIS										
COBANBEY	1.420	64.725	149	89.413	0	14.964	3	137.987	1	136.638
TOTAL	18.738	5.137.549	1.587	2.743.148	4.535	1.838.667	29.288	4.814.878	15.594	4.203.971

Source: (T.R. Ministry of Culture and Tourism, 2023)

Edirne Kapikule Customs Gate serves both road and rail transportation. The number of foreign visitors to Turkey entering through Edirne Kapikule Station Customs Directorate was 0.34%

in 2018 and 0.37% in 2022. It is higher than the other two train customs gates. In 2022, 0.36% entered by train.

Table 5 Distribution of Foreign Visitors leaving Edirne by Train

Foreign visitors	2018		2019		2020		2021	
	train	total	train	total	train	total	train	total
	12.336	3.75.2166	16.921	4.290.478	3.225	1.830.550	2.283	2.518.268

Source : (T.R. Ministry of Culture and Tourism, 2023)

If we look at the rate of departures of foreign visitors from Turkey in their vehicles, it was 0.32% in 2018, and in 2022 it increased to 0.38%.

With an area of 785,347 km², Turkey has a total border length of 11,236 km. In this respect, Turkey is among the countries that can be considered

large in terms of both area extent and border lengths. While the majority of the total border length is maritime borders (75%), 25% is land borders with different countries.

When evaluated in terms of maritime borders, it is seen that Turkey has coasts with 4 different seas,

the maximum coastal length is with the Aegean Sea (38%), while the shortest maritime border is located in the Marmara Sea (17%) (Bakirci & Aydogdu, 2019)

3 CONCLUSIONS

The transportation of large loads on railways was first carried out in 1738 in a mine in Cumberland, England. The Industrial Revolution, which started with the emergence of steam engines, led to great developments in railways and railways have become the most reliable, economical, innovative, and environmentally friendly transportation system in human and freight transportation, which continues to this day.

The development of railways in Turkey started with the nationalization of 4,559 kilometers of railway, which was inherited from the Ottoman Empire and concessioned by foreign companies, after the War of Independence.

In 1932, in the First Five-Year Industrial Plan and especially in the Second Five-Year Industrialization Plan prepared in 1936, Turkey followed a conscious railway policy to solve the problem of passenger transportation and to

transport the bulky and dense loads of basic industrial inputs such as iron and steel, coal and machinery with the cheapest cost by railways.

Policymakers should also take into account the feeder role of railroads for sectoral structures such as agriculture, industry, and tourism, which are subject to warm relations between urban and rural areas. Moreover, the methodology used in this study aims to provide more empirical support for policymakers on rail transportation and infrastructure. One of the most important aspects of this support is that it allows for dynamic monitoring of the period under analysis as a process.

When evaluated based on carbon emissions, railway transportation infrastructure should be preferred within the scope of green logistics, if possible, and necessary infrastructure works should be carried out.

The share of railways in the total number of visitors entering and leaving Turkey by train is very low. Due to infrastructure works and insufficient demand, train services opened from time to time at customs gates have been canceled.

WORKS CITED

- Alatas, T., & Somunkiran, E. (2008, Feb 23). *Türkiye'de Demiryolu Ulaşımının Sorunları ve Çözümleri*. Retrieved from İnşaat Mühendisleri Odası: <https://eski.imo.org.tr/resimler/ekutuphane/pdf/10165.pdf>
- Bakirci, M. (2013). Türkiye'nin Uluslararası Ulaşımında Demiryolu Sınır Kapılarının Yeri Ve Etkinliği. *Marmara Coğrafya Dergisi*(28), 370-407. Retrieved from <https://dergipark.org.tr/tr/pub/marucog/issue/475/3938>
- Bakirci, M., & Aydogdu, M. (2019). Türkiye'de uluslararası yolcu ulaşımının sınır kapılarına göre yoğunluk analizi (Engl. The density analysis of international passenger transportation according to border gates in Turkey). 1. *İstanbul Uluslararası Coğrafya Kongresi Bildiri Kitabı 20-22 Haziran, 2019*, (pp. 790-810). İstanbul.
- Banerjee, A., Duflo, E., & Qian, N. (2009, Mar). *On the Railroad: Access to Transportation Infrastructure and Economic Growth in China*. Retrieved from ThReD - Theoretical Research in Development: https://thred.devecon.org/papers/2012/2012-013_Banerjee_On-the-Road.pdf
- Cekeroğlu, S. (2007). *Lojistik Açısından İntermodal Yük Tasımacılığı ve Türkiye'de Hızlı Tüketim Ürünleri Dağıtımına İlin Bir Uygulama (PhD Thesis)*. Kutahya, Turkey: Dumlupınar Univ.
- Faber, B. (2014). Trade Integration, Market Size, and Industrialization: Evidence from China's National Trunk Highway System. *The Review of Economic Studies*(81), 1046-1070. doi:10.1093/restud/rdu010
- Karaismailoğlu, A. (2022, Apr 04). *2023 Vision Document - 2053 Ulaştırma Ve lojistik ana planı*. Retrieved from T.R. Ministry of Transport and Infrastructure:

<https://www.uab.gov.tr/uploads/pages/bakanlik-yayinlari/20221025-2053-ulastirma-ve-lojistik-ana-plani-tr.pdf>

Kurt, C. (2010). *The Significance of Logistics in Transport Sector in Turkey (Master's Thesis)*. Istanbul: T. C. Istanbul University.

T.R. Ministry of Culture and Tourism. (2023, Nov). *Kasim 2023*. Retrieved from T.R. Ministry of Culture and Tourism - Biorder Statistics Monthly Bulletin: <https://yigm.ktb.gov.tr/TR-249702/sinir-istatistikleri.html>

Tumenbatur, A. (2021). Iron Silk Road Route and Logistics Center Location Selection on the Middle Corridor. *Cukurova Universitesi Sosyal Bilimler Enstitusu Dergisi*, 30(3), 102-110. doi:10.35379/cusosbil.977922

Uysal, O. (2015, Oct 08). *Turkiye'nin demiryolu sınır gecisleri: Hangileri acik?* Retrieved from Rail Turkey Tr: <https://tr.railturkey.org/2015/10/08/turkiyenin-demiryolu-sinir-gecisleri-hangileri-acik/>

Uysal, O. (2017, Nov). *Turkish rail border crossings: Which are open?* Retrieved from Rail Turkey En: <https://railturkey.org/2015/10/08/turkish-rail-border-crossings-which-are-open/>

Received for publication: 29.11.2023
Revision received: 30.12.2024
Accepted for publication: 08.01.2024.

How to cite this article?

Style – APA Sixth Edition:

Duranlar, S., & Gergova, N. (2024, 01 15). Rail Passenger Transportation in Border Provinces in Turkey. (Z. Cekerevac, Ed.) *MEST Journal*, 12(1), 13-18. doi:10.12709/mest.12.12.01.03

Style – Chicago Sixteenth Edition:

Duranlar, Selcuk, and Nina Gergova. "Rail Passenger Transportation in Border Provinces in Turkey." Edited by Zoran Cekerevac. *MEST Journal* (MESTE) 12, no. 1 (01 2024): 13-18.

Style – GOST Name Sort:

Duranlar Selcuk and Gergova Nina Rail Passenger Transportation in Border Provinces in Turkey [Journal] // MEST Journal / ed. Cekerevac Zoran. - Belgrade – Toronto : MESTE, 01 15, 2024. - 1 : Vol. 12. - pp. 13-18.

Style – Harvard Anglia:

Duranlar, S. & Gergova, N., 2024. Rail Passenger Transportation in Border Provinces in Turkey. *MEST Journal*, 15 01, 12(1), pp. 13-18.

Style – ISO 690 Numerical Reference:

Rail Passenger Transportation in Border Provinces in Turkey. **Duranlar, Selcuk and Gergova, Nina**. [ed.] Zoran Cekerevac. 1, Belgrade – Toronto : MESTE, 01 15, 2024, MEST Journal, Vol. 12, pp. 13-18.