



UIC Map of Turkey’s High-Speed Rail Lines

Positioned as a bridge between Europe and Asia, Turkey has a long history as a major center of activity. Slightly larger in size than Texas, Turkey currently has 79.75 million people, which ranks it 17th in the world. Istanbul, with 10.38 million people, is the largest city; followed by Ankara, the nation’s capital, with 3.846 million. The country’s GDP of \$1.026 trillion ranks 17th in the world; and its GDP per capita of \$14,600 ranks 86th in the world. There are eight bordering countries, including Bulgaria,

Greece, Iran, Iraq, and Syria. Turkey currently has 447 km (278 miles) of high-speed rail lines, with an additional 758 km (471 miles) under construction, according to the International Union of Railways (UIC). The first line opened in 2009 and represents the country’s attempt to connect Ankara and Istanbul. One source indicates that 12 million journeys by road and rail per year are made between Ankara and Istanbul. The figure above is a map of the existing and planned high-speed rail lines.

## SYSTEM DESCRIPTION AND HISTORY

### International Union of Railways

The table below shows summary statistics of the high speed rail lines operating in operating, under construction or planned in Turkey according to the UIC in 2010. According to the table, 447 km (278 miles) of high-speed line were in operation and an additional 1,977 km (1,228 miles) is either planned or under construction. If all listed segments are completed, the Turkish high speed passenger rail network will be 2,424 km (1,506 miles) in length.

#### Turkey's HSR Line Segments

Stage	Speed		Year Opened	Length	
	km/h	mph		km	miles
<b>In Operation:</b>					
Ankara – Eskisehir	250	155	2009	235	146
Polatli – Konya	250	155	2011	212	132
<b>TOTAL</b>				<b>447</b>	<b>278</b>
<b>Under Construction:</b>					
Eskisehir – Istanbul	250	155	2011	298	185
Ankara – Sivas	250	155	–	460	286
<b>TOTAL</b>				<b>758</b>	<b>471</b>
<b>Planned:</b>					
Ankara – Kayseri	250	155	–	175	109
Ankara – Izmir	250	155	–	624	388
Bandirma – Bursa – Ayazma – Osmaniye	250	155	–	190	118
Halkali – Bulgaria Border	250	155	–	230	143
<b>TOTAL</b>				<b>1,219</b>	<b>757</b>
<b>GRAND TOTAL</b>				<b>2,424</b>	<b>1,506</b>

Utilizing seven trainsets designed for 419 seats each, 942,000 passengers utilized the high speed passenger rail service in 2009. The mean passenger distance was 252 km (157 miles).

The UIC document *High Speed and the City* describes the Turkish high-speed route between Ankara and Eskisehir, which was the only operational segment when report was written. It indicates that traveling between Ankara and Eskisehir on the high-speed rail service takes approximately 1 hour 30 minutes at a cost of €20 (\$24). Travel by car, by comparison, takes approximately 3 hours 40 minutes at a cost of €21 (\$25). There are 8 reported high speed services (each way) every day.

The Ankara Gari Station, located in central Ankara, serves high-speed, commuter, and subway services. A new station for the high-speed rail operations located adjacent to the current station is under construction. The UIC authors highlight the benefits to the passengers upon completion include easier access by foot, bike, public transit, and car.

The station is planned to offer restaurant, shopping, entertainment, and meeting space options.

Sources: *High-Speed Lines in the World; High Speed and the City; Table 20 – HS Rolling Stock; Table 50 – Revenue-Earning HS Traffic.*

### Turkish State Railway Projects

The Turkish State Railway (TCDD) identifies on their website three major high-speed line projects in the country: Ankara to Istanbul; Ankara to Konya; and Ankara to Sivas. Aspects of these projects are discussed below.

#### Ankara to Istanbul High Speed Line Project

Ankara and Istanbul are currently connected by a 576 km (360 mile) conventional electrified passenger rail network that takes approximately 7 hours to travel. TCDD's stated goals of the high speed line project are "to decrease the travel time between Ankara and Istanbul; to provide a faster, more comfortable and safer transportation; and to increase the railway's share in the transportation." When finished, the 533 km (340 mile) high-speed line will reduce the travel time down to approximately 3 hours. Connecting the two largest cities in Turkey is planned to be accomplished in nine separate phases.

As indicated in the UIC table to the left, the Ankara to Eskisehir segment was completed in 2009. The *International Railway Journal (IRJ)* reports that rail market share after opening increased from 10 percent to 75 percent on this corridor, with the capture mostly from road travelers. An additional section to get the high speed service all the way into Ankara was to be completed as part of an additional phase. The remaining phased segments between Eskisehir and Istanbul are under construction.



Ankara Central Station



High-Speed Rail at Eskisehir Station in Turkey

### Ankara to Konya High Speed Line Project

This completed project connects Ankara to Konya, described by TCDD as one of the largest cities in Turkey in terms of population, industry, and agriculture. TCDD indicates that the travel time is expected to be reduced from 10 hours 30 minutes to 1 hour 15 minutes compared to current conventional rail service. When all the segments are completed, high speed rail travel time between Konya and Istanbul is expected to improve from 12 hours 25 minutes to 3 hours 30 minutes.

### Ankara to Sivas High Speed Line Project

The TCDD identifies the importance of this east-west running high-speed line segment by saying that the “Ankara to Sivas route, on one hand, is a part of the longitudinal main arterial line of the railway network extending from the western border of our country to the eastern border, and on the other hand, it is situated on the railway connections of Europe-Iran, Europe-Middle East, and Caucasus countries. Moreover, it is on the continuation of the 4th corridor of Pan-Europe.” The high speed project will reduce the travel length between Ankara and Sivas from 602 km to 461 km and the travel time from 12 hours to 2 hours 51 minutes. When all segments are completed, high speed travel time between Sivas and Istanbul will be reduced from 21 hours to 5 hours 49 minutes.

Projected Turkish High-Speed Projects to be Completed by 2015

Project	Length		Comments
	km	Miles	
Ankara – Istanbul	533	331	Ankara – Eskisehir open Eskisehir – Istanbul under construction
Ankara – Konya	212*	132	Open
Ankara – Sivas	405	252	Ankara – Yerkoy tendering Yerkoy – Sivas under construction
Bilecik – Bursa	106	66	Bursa – Yenisehir under construction Yenisehir – Bilecik tendering
Polatli – Izmir	527	327	Polatli – Afyon contract awarded Afyon – Usak tendering
Sivas – Erzincan	235	146	Project design stage
<b>TOTAL</b>	<b>2,018</b>	<b>1,254</b>	

\*Polatli - Konya

### Rail Network Revitalization

A 2012 *International Railway Journal* article highlights Turkey’s commitment in revitalizing the country’s rail network, including the development of high speed lines. In 2003, poor financial and operational performance forced the country to evaluate the future of the network. The decision to upgrade the network resulted in increasing levels



**View of Levent district, Istanbul**

of investment from approximately \$500 million in 2003 to approximately \$4 billion in 2012. This investment resulted in the opening of the country’s first two high-speed lines and construction on additional segments. In total, Turkey has plans to spend over \$32.5 billion between 2005 and 2023 on the high-speed rail network. The table below contains the high-speed rail projects expected to be completed by 2015 discussed in the IRJ article.

**Current High Speed Train Operations**

The *Turkish State Railways Annual Statistics* displays on a rail map the completed high-speed rail lines between Ankara and Eskisehir and between Polatli–Konya. Additionally, the map displays the planned and under construction segments discussed above. The table to the right contains the high speed train operations statistics located in the *Turkish State Railways Annual Statistics*.

*Sources: “High Speed Line Projects”; “High Speed at Centre of Turkish Revival”; Turkish State Railways Annual Statistics.*

Measure	2009	2010
Length of Line	397 km (247 mi)	888 km (552 mi)
Trainset Stock	7	12
Number of Cars per Trainset	6	6
Number of Seats per Trainset	419	419
Total Capacities	2,933	5,028
Maximum Operating Speed	250 km/h (155 mph)	250 km/h (155 mph)
Train-km (train-mi)	666,908 (414,397)	1,711,836 (1,063,686)
Seat-km (seat-mi)*	279,435 (173,633)	717,259 (445,684)
Number of Passengers	942,341	7,889,666
Passenger-km (passenger-mi)*	236,813 (147,149)	476,068 (295,815)
*Values in thousands		

## **BIBLIOGRAPHY**

### **“Ankara-Istanbul High-Speed Train Project, Turkey”**

Railway-Technology.com website

URL: <http://www.railway-technology.com/projects/ankara-istanbul/>

Date Accessed: July 12, 2012

### **High Speed and the City**

Prepared for the International Union of Railways (UIC) by BB&J Consult, September 2010

URL: [http://www.uic.org/IMG/pdf/20101117\\_highspeed\\_thecity\\_finalreport.pdf](http://www.uic.org/IMG/pdf/20101117_highspeed_thecity_finalreport.pdf)

Date Accessed: June 20, 2012

### **“High Speed at Centre of Turkish Revival”**

David Briginshaw. International Railway Journal, Volume 52, Issue 7, July 2012, pp. 25-27.

### **“High Speed Line Projects”**

Turkish State Railways website

URL: [http://www.tcdd.gov.tr/tcdding/hizlitrenprojesi\\_ing.html](http://www.tcdd.gov.tr/tcdding/hizlitrenprojesi_ing.html)

Date Accessed: July 12, 2012

### **High-Speed Lines in the World**

International Union of Railways (UIC), Updated November 1, 2011

URL: [http://www.uic.org/IMG/pdf/20111101\\_a1\\_high\\_speed\\_lines\\_in\\_the\\_world.pdf](http://www.uic.org/IMG/pdf/20111101_a1_high_speed_lines_in_the_world.pdf)

Date Accessed: May 30, 2012

### **Table 20 – HS Rolling Stock**

International Union of Railways (UIC), 2009

URL: [http://www.uic.org/IMG/pdf/201101\\_hs\\_rollingstocks\\_tab\\_20\\_-\\_2009.pdf](http://www.uic.org/IMG/pdf/201101_hs_rollingstocks_tab_20_-_2009.pdf)

Date Accessed: July 12, 2012

### **Table 50 – Revenue-Earning HS Traffic**

International Union of Railways (UIC), 2009

URL: [http://www.uic.org/IMG/pdf/201101\\_hs\\_traffic\\_\\_tab\\_50\\_-\\_2009.pdf](http://www.uic.org/IMG/pdf/201101_hs_traffic__tab_50_-_2009.pdf)

Date Accessed: May 31, 2012

### **The World Factbook**

United States Central Intelligence Agency

URL: <https://www.cia.gov/library/publications/the-world-factbook/>

Date Accessed: May 31, 2012