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THE PERSPECTIVE OF TRANSPORT ROUTES IN TÜRKIYE BASED ON THE SWOT MODEL

Türkiye, the strategic bridge between Asia and Europe, has a unique geopolitical position that encourages cooperation with neighboring and regional partners. The purpose of this study is to identify the key transport corridors in Türkiye using the SWOT model and evaluate the potential of these routes. The purpose of this research is to discover the current transportation and communication capacities of Türkiye and how they are useful for neighboring countries and Central Asia. This study examines strengths, weaknesses, opportunities, and threats to address challenges and uncover opportunities.Issues such as lack of budget, imbalance in energy transfer and political instability of neighboring countries have affected the country and make it face challenges.

But the ports of Türkiye and the favorable geopolitical position of Türkiye, as well as the presence of extensive airline lines and important airlines company such as Turkish Airline, in this country, is a significant potential for commercial and economic growth in the transportation sector. If the challenges are resolved and attention is paid to the opportunities and privileged positions of Türkiye and the countries of Central Asia, they will be able to benefit from cooperation.

Key words: Türkiye, Transportation Corridors, Energy, SWOT model, Central Asian Countries.

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SWOT моделіне негізделген Түркиядағы көлік бағыттарының перспективасы

Азия мен Еуропа арасындағы стратегиялық көпір Түркияның көрші және аймақтық серіктестермен ынтымақтастықты ынталандыратын бірегей геосаяси ұстанымы бар. Бұл зерттеудің мақсаты – SWOT моделін пайдалана отырып, Түркиядағы негізгі көлік дәліздерін анықтау және осы бағыттардың әлеуетін бағалау. Бұл зерттеудің мақсаты Түркияның қазіргі көліктік және коммуникациялық мүмкіндіктерін және олардың көрші елдер мен Орталық Азия үшін қаншалықты пайдалы екенін анықтау болып табылады. Бұл зерттеу қиындықтарды шешу және мүмкіндіктерді ашу үшін күшті, әлсіз жақтарды, мүмкіндіктер мен қауіптерді зерттейді. Бюджеттің жетіспеушілігі, энергия тасымалдауындағы теңгерімсіздік және көрші елдердің саяси тұрақсыздығы сияқты мәселелер елге әсер етіп, оны қиындықтарға тап болды.

Бірақ Түркия порттары және Түркияның қолайлы геосаяси жағдайы, сондай-ақ бұл елде кең ауқымды әуе желілері мен Turkish Airline сияқты маңызды авиакомпаниялардың болуы көлік секторындағы коммерциялық және экономикалық өсу үшін маңызды әлеует болып табылады. Қиындықтар шешіліп, Түркия мен Орталық Азия елдерінің мүмкіндіктері мен артықшылықтарына назар аударылса, олар ынтымақтастықтан пайда таба алады.

Түйін сөздер: Түркия, көлік дәліздері, энергетика, SWOT моделі, Орталық Азия елдері.

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Перспектива транспортных путей в Турции на основе модели SWOT

Турция, стратегический мост между Азией и Европой, имеет уникальное геополитическое положение, которое поощряет сотрудничество с соседними и региональными партнерами. Целью данного исследования является определение ключевых транспортных коридоров в Турции с использованием модели SWOT и оценка потенциала этих маршрутов. Целью данного исследования является выявление текущих транспортных и коммуникационных возможностей Турции

и того, как они полезны для соседних стран и Центральной Азии. В данном исследовании изучаются сильные и слабые стороны, возможности и угрозы для решения проблем и раскрытия возможностей. Такие проблемы, как нехватка бюджета, дисбаланс в передаче энергии и политическая нестабильность соседних стран, повлияли на страну и заставляют ее сталкиваться с проблемами. Но порты Турции и благоприятное геополитическое положение Турции, а также наличие обширных авиалиний и важной авиакомпании, такой как Turkish Airline, в этой стране, представляют собой значительный потенциал для коммерческого и экономического роста в транспортном секторе. Если проблемы будут решены и будет уделено внимание возможностям и привилегированному положению Турции и стран Центральной Азии, то они смогут извлечь выгоду из сотрудничества.

Ключевые слова: Турция, транспортные коридоры, энергетика, модель SWOT, страны Центральной Азии.

Introduction

Transportation has a significant impact on the creation of various jobs. Also, due to establishing effective relations with other countries at the regional and international levels, transportation doubles the possibility of cooperation in the economic and political fields. Generally, in the definition of transportation, it is said that:

"Transportation can simply be defined as moving people or goods to fulfill any requirement in a way that would bring benefit in time and space". (Sevuktekin & Others, 2014, 101) Transportation is vital for enhancing a country's economic capabilities, enabling market expansion, access to international products, and energy exchanges. A well-developed network, including railways, airlines, highways, pipelines, and ports, facilitates goods movement, market creation, and resource transfer. The development of transportation and communication infrastructure significantly influences a region's development and shapes economic and political strategies.

Communication routes strengthen a country's economy and increase international interactions. The transportation sector is crucial for arranging low-cost products, generating employment, and ensuring sustainability. Improving transportation opportunities positively impacts macro-economic employment, investments, production levels, and micro-economic activities of enterprises, thereby enhancing their sales and distribution processes. (Ibid)

Recent developments in major transportation infrastructure, such as pipelines, railways, and airlines, have shown significant progress. However, challenges remain, such as lack of government support, unequal communication capacity, policy issues with neighboring countries, cooperation issues, domestic fluctuations, insufficient budget allocation, and inadequate private sector cooperation. These issues contribute to a country's economic goals.

Therefore, analyzing these challenges and opportunities in transportation and energy can provide insight into the country's prospects. Türkiye holds significant potential in transportation and communication routes. This article aims to assess Türkiye's transportation capacities and challenges using the SWOT model. A realistic approach is taken to address the question:

What are Türkiye's key transport corridors for connecting to the Central Asian region via its neighboring countries? The study also aims to determine the most efficient form of transport for the country and evaluate Türkiye's cooperation opportunities in the transportation sector with neighboring and Central Asian countries. The paper focuses on Türkiye's geopolitics and examines transport capacities in railways, highways, seaways, airways, and energy corridors. It will assess the strengths, weaknesses, opportunities, and potential threats in these sectors. Ultimately, the study aims to provide insights into the optimal investment in Türkiye's transportation sector and its implications for neighboring and Central Asian countries, as well as identify potential challenges.

Materials and methods

This study focuses on evaluating Türkiye's transportation capacities and challenges, with the aim of identifying better communication methods to enhance cooperation with neighboring and Central Asian countries. The research begins with a general examination of Türkiye's geopolitical position as a bridge between Asia and Europe. It then delves into the assessment of the transfer of energy, goods, and passengers through railway lines,

highways, airline routes, and sea lines. This evaluation involves reviewing articles, maps, authoritative sites, and government documents, followed by a separate SWOT analysis for each transportation sector. The main question addressed in this research is identifying key transport corridors in Türkiye to connect with the Central Asian region through neighboring countries. The overall purpose is to identify optimal communication routes for the transfer of goods and energy to strengthen multilateral cooperation. The study also focuses on the significance and potential of Türkiye's air and sea transmission routes. Additionally, it examines challenges and threats to Türkiye's international and domestic cooperation. The use of the SWOT analytical model allows researchers to identify suitable solutions, taking into account strengths, weaknesses, opportunities, and threats.

Literature review

The geopolitics of energy for a country or region is defined by its geographical location and role for supply, transit or demand for energy. Türkiye is Located strategically between two continents, Türkiye is an important oil and gas transit country, decisive to its own import dependence as well as to regional energy security. (Austvika, Rzayeva, 2017,539) Energy affects the quality of our lives significantly. Nowadays, we are addicted to continuous supply of energy for living and working. It is a leading actor in all sectors of modern economies. Energy demand in the world is increasing rapidly(Genç et al,2018, 1041).

Türkiye enjoys a strategic location, with the potential to play a pivotal role in regional and global integration. The important energy, trade and transport networks which connect west to east and north to south are keys to unleashing this potential.

Türkiye's role as a bridge between Asia and Europe through the straits and its strategic proximity to the Balkans, the Caucasus, the Middle East and North Africa strengthen its geopolitical position. The territorial waters stretching from the Black Sea to the Mediterranean and the transit route to the oceans passing through Anatolia also demonstrate Türkiye's exceptional position. (Yıldız,2024,65) The transportation sector accounts for nearly 19% of total energy consumption in Türkiye, where energy demand increases rapidly depending on the economic and human population growth. (Çodur and Ünal, 2019,151) Currently existing transportation routes connecting Asia with Europe can be examined in three groups, First, there is the Northern Route, which includes routes running across the territories of China, Kazakhstan and Russia and connecting with the EU. Second, there is the Middle Corridor, which includes Türkiye's initiative with the same name; this group of routes connects China to Europe through Kazakhstan, the Caspian Sea, Southern Caucasus, and Türkiye. Thirdly, there is the Southern Route, which runs from China through Kazakhstan and Iran. All of these routes are directly related to the economic progress of the countries in question and therefore there is high demand for all of them. (Atli, 2018, 119)

In recent years, Türkiye has been making significant efforts to become a transport hub, both in the East-West and North-South directions. (Gabrielyan,2022,12**)** Around 3% of the world's daily oil consumption passes via the Turkish Straits and the country has a strong potential to become an important gas transit country. (Bozkus,2018, 13) Although due to Türkiye's geopolitical position, the import and export of oil and gas through pipelines is effective in Türkiye's economy, but the contribution of energy, goods and people transfer through rail, air and sea lines cannot be ignored.

the length of the seacoasts, and the fact that a large part of the population and industry is located on the shores, Türkiye has the potential to meet its resource needs. The geostrategic location of Türkiye dictates the utilization of this productive resource. Freight transport on sea routes, which are the veins of the economy, has a special importance for Türkiye with its 8,333 km of coastline and 180 port. (Erdogan, Çetin,2021,1) In Türkiye, aviation has become a dynamic, innovative, adaptive, and fast-growing sector, with an increasing share in both domestic and international air-transport demand and supply. Türkiye's aviation market has been called 'successful' and part of the nation's 'soft power. (Tsiotas et al ,2018,2)

It is worth noting that Türkiye's future geopolitical orientation, as well as its industrial and trade strategies, is tied to the country's energy policies. (Siccardi,2024,27). This research contributes to Türkiye's transportation field by comprehensively assessing all modes of transportation, including energy, goods, and passenger transfer, with the aim of identifying effective methods for regional and international collaboration.

Table 1 – Türkiye's Major Oil and Condensate Pipelines

Facility	Status	Capacity (million b/d)	Length (Miles) (m	Details	Supply region	Destination
Baku-Tbilisi-Ceyhan	Operating	1.2	1.100	Started operation in 2006	Azerbaijan	Ceyhan oil port
Kirkuk-Ceyhan	Operating	1.6	600	Started operation in 1976	Turkmenistan	Ceyhan oil port
Basreh	Not operating	1.5	200	The Iraqi portion was the target of militant attacks and stopped operating in 2014.	Kazakhstan	Effective capacity
No project name found	Operating	1.5	400		Kirkuk	Ceyhan oil port
Kurdish Regional Government (KRG) pipeline	Operating	0.7	250	In 2013, the Kurdistan Regional Government of Iraq completed a pipeline from the Taq Taq oil field to Pesh Khabur, connected to the Kirkuk-Ceyhan pipeline on the Türkiye-Iraq border.	Northern Iraq	Ceyhan oil port via connection to the Kirkuk-Ceyhan pipeline at Fishkhabur
Samsun-Ceyhan	Canceled	Up to 1.5	340	It would allow oil to bypass the congested Turkish straits, but the project was canceled in 2013 because it was deemed uneconomic.	Russia and Central Asia	Ceyhan oil port

(Country Analysis Brief:Türkiye, 2023)

Table 2 – Türkiye's Major Natural Gas Pipeline

Facility	Status	Capacity (Tcf)	Length (Miles) (m	Details	Supply region	**Market**
Trans Balkan natural gas pipeline	Operating	0.5	More than 600	First deliveries to Türkiye in 1987:transits Ukraine, Moldova, Romania and Bulgaria	Russia	Southeast Europe and Türkiye
Tabriz Dogubayazit	Operating	0.5	1,600	Started operation in 2001	Iran	Türkiye
Blue Stream	Operation	0.6	750	Started operation in 2003	Russia	Türkiye
South Caucuses Pipeline (SCP)	Operation	0.3	430	First delivered to Türkiye in 2007, it follows the route of the BTC oil pipeline from Azerbaijan, through Georgia and connects to Türkiye's domestic transmission pipeline system	Azerbaijan	Georgia and Türkiye
Interconnector Türkiye-Greece-Italy	Operating	0.4	180	Türkiye-Greece interconnector started operation in 2007, but little progress has been made on extending the line through Greece and to Italy.	Azerbaijan, Russia and Iran	Greece

Continuation of the table

Facility	Status	Capacity (Tcf)	Length (Miles) (m	Details	Supply region	**Market**
Arab Gas Pipeline (AGP)	Idled	0.4	630	Started operations in 2003, an extension to allow deliveries to Türkiye and Europe had been planned but sabotage and declining Egyptian exports have idled much of the pipeline.	Egypt	Jordan, Lebanon, and Syria
South Caucasus pipeline (expansion)	Construc-tion	0.6	430	Expected to start operations in 2019	Azerbaijan	Georgia, Türkiye and Southeast Europe
Turkish Stream	Proposed	Up to 1.1	More than 500	Plans were cut from four lines to two lines.	Russia	Türkiye and Southeast Europe via the Black Sea
TANAP (Trans-Anatolian Natural Gas Pipeline	Operating	The pipeline's initial capacity is 16 billion cubic meters per year, with potential for expansion to 23 billion cubic meters by 2023 and 31 billion cubic meters by 2026.	1,144	TANAP, originating in Türkgözü, Türkiye, travels through 20 provinces and ends in Edirne, Greece, connecting to the TAP Natural Gas Pipeline for European gas transportation.s.	Azerbaijan's Shah Deniz Region	Türkiye and then to Europe
Eastring	Proposed	Up to 1.4	More than 500	Would be open access, per EU regulations, would run from Eastern Slovakia, across Hungary and Romania, connecting to an upgraded Trans Balkan line in Romania or Bulgaria.	Bidirection-al between Northeast, Europe, Southeast Europe and Türkiye	----
South Stream	Canceled	2.2	560 (offshore)	Canceled in late 2014 and replaced with a Turkish stream.	Russia	Türkiye and Southeast Europe
Iraq-Türkiye	Proposed	0.4 -0.7	---	Türkiye is negotiating with the Kurdish and Iraqi governments, but no agreement has been reached, and BOATS is working to extend its domestic natural gas transmission system to the Iraqi border.	Northern Iraq	Türkiye and southeast Europe
BTE (the Baku–Tbilisi–Erzurum Pipeline)	Operating	8.8 billion cubic meters (310 billion cubic feet) of gas per year. For the second stage of the Shah Deniz development, the capacity was increased to 24 billion cubic meters (850 billion cubic feet)	430	BP closed the South Caucasus Pipeline (SCP) in 2008 due to the 2008 South Ossetia War, and its commercial operation was transferred to SOCAR in 2015, following a Production Sharing Agreement.	Azerbaijan sector of the Caspian Sea	Türkiye

Continuation of the table

Facility	Status	Capacity (Tcf)	Length (Miles) (m	Details	Supply region	**Market**
NABACCO Türkiye–Austria gas pipeline	Canceled	31 billion cubic meters per year	2,419	The pipeline aimed to reduce European dependence on Russian energy, supported by EU and US states, with Iraq as the main supplier. Constructed by six companies, preparations began in 2002. Intergovernmental agreement signed in 2009.	Erzurum, Türkiye	Baumgarten an der March,

(Country Analysis Brief:Türkiye, 2017)

Results and discussion

The Geopolitics of Türkiye

Türkiye, a unique country at the crossroads of the Balkans, Caucasus, West Asia, and eastern Mediterranean, is among the largest in the region with a land area greater than any European state, bounded by the Black Sea, Georgia, Armenia, Iran, Iraq, Syria, and Greece. (Malcolm, 2024)

Türkiye has eight main drainage basins, with the Aras River being the smallest in the Far East, The Euphrates and Tigris rivers drain eastern Türkiye, two basins are located in west-central Anatolia, with Lake Tuz and Konya basins as the main centers. The rest of the country drains go to the Black Sea, Marmara, Aegean, and Mediterranean seas (Hydraulic, 2016)

Türkiye, a mountainous country with steep slopes and flat land, is home to Mount Ararat, the highest mountain in the country, and is divided into four main regions. (Ibid)

Türkiye boasts a diverse array of natural resources, including coal, iron ore, copper, chromium, antimony, gold, barite, celestite, emery, feldspar, limestone, magnesite, marble, perlite, pumice, pyrites, clay, arable land, and hydropower (The World Factbook, 2024)

Since WWII, Turkish economy heavily relies on foreign trade, with Germany as the main trading partner, Russia, China, the Middle East, UAE, Iraq, Algeria, and Israel (Dewdney, 2024.)

Figure 1 – Türkiye's geographical location, (Dewdney, 2024.)

A. Türkiye's Capacity in Energy Transportation

Türkiye, the fastest-growing energy market among OECD countries, faces a 4-6% annual increase in energy demand until the end of 2020s, indicating a need for increased production . (Erdin, Ozkaya, 2019, 23) According to OME projections, energy demand in Türkiye is set to double by 2030 in the conservative scenario. Fossil fuels will still largely dominate the energy mix accounting for over 85 percent of the total in 2030. (Haussmann, 2014)

Energy transmission through pipelines is influenced by geographical, technical, political, and economic factors. The South Caucasus region, historically a bridge between Asia and Europe, has been a source of competition between Iran and Türkiye, and Moscow's role in energy transfer routes.

Yilmaz & Bozkus define a transit country as a country that connects energy pipelines, allowing exporters and importers to connect and receiving a transit right from the parties involved. (Yilmaz & Bozkus, 2019)

Türkiye's strategic focus on energy is influenced by its proximity to oil and gas-rich countries and its role as a transit country, enabling it to effectively achieve its foreign policy objectives. Türkiye aims to secure its energy supply, establish commercial partnerships with Europe, strengthen regional ties, and enhance its energy companies' global presence amid challenges in energy supply security. (Yilmaz & Bozkus, 2019)

In this section, we are discussing various oil and gas transmission projects in Türkiye, and then we will analyze the challenges and opportunities facing Türkiye in the field of energy pipelines.

A.1 Oil and Gas

Türkiye's oil and refined oil products are its second source of energy, driven by transportation. The country relies heavily on oil imports, with local production covering less than 10% of annual consumption. Foreign oil supplies are sourced through pipelines and ships, with Russia, Iran, and Iraq being the main suppliers. The Turkish Straits contribute to a more diverse oil market than its gas market.) Siccardi,2024,9). In the table (1), we take a look at the oil transfer projects in Türkiye.

Türkiye has an important role in natural gas transportation due to its position between the world's second-largest natural gas market – continental Europe – and the sizeable natural gas reserves of the Caspian Basin and West Asia. (EIA. 2017, February 2) Many gas pipelines pass through countries around Türkiye and Türkiye participates in these projects.

Türkiye's Major Natural Gas Pipeline

Türkiye, the sixteenth-largest global consumer of natural gas, has been increasing its consumption since 2009, with provisional figures showing an 11% increase in 2023, primarily imported through pipelines or LNG. (Siccardi,2024,6) In the table (2), we take a look at the gas transfer projects in Türkiye. (see table 2)

Türkiye aims to boost its influence and profit in Central Asia and the South Caucasus after the Russia-Ukraine war. President Erdoğan plans to transport Turkmenistan's natural gas through the Caspian Sea, establishing itself as a natural gas hub and diversifying its foreign policy. (Mikovic, 2023) Ankara aims to

become transit point for Kazakh oil and rare-earth metals destined for the European Union, and establish an energy corridor linking Türkiye and Central Asia. This aligns well with Kazakhstan's plans for the Middle Corridor or Trans-Caspian International Transport Route, this corridor would bypass Russia, making Türkiye a key transit country. However, building the necessary corridors, and pipelines will take time. Türkiye anticipates leaders using all available means to achieve economic and energy objectives in Central Asia.) Ibid)

In the following, some of the strengths, weaknesses, opportunities, and threats of Türkiye in the field of oil and gas transmission are examined:

Strengths:

- Strategic position as a bridge between Europe and Asia
- The existence of multiple routes for importing oil and gas reduces dependence on a single supplier
- Strong expertise and experience in the energy industry in managing oil and gas pipelines
- The existing pipeline infrastructures that connect Türkiye to major oil and gas production areas

Weaknesses:

- Vulnerability to geopolitical tensions and conflicts in the region that affect the supply of oil and gas
- The needs upgrading and maintenance of the old pipeline infrastructures
- The political and regulatory challenges in the management of cross-border pipeline projects
- The limitations in domestic oil and gas reserves and the dependency of the country on energy imports

Opportunities:

- Being in a strategic position and getting the opportunity for oil and gas transit
- Increasing demand for energy in the region and creating opportunities to expand oil and gas business

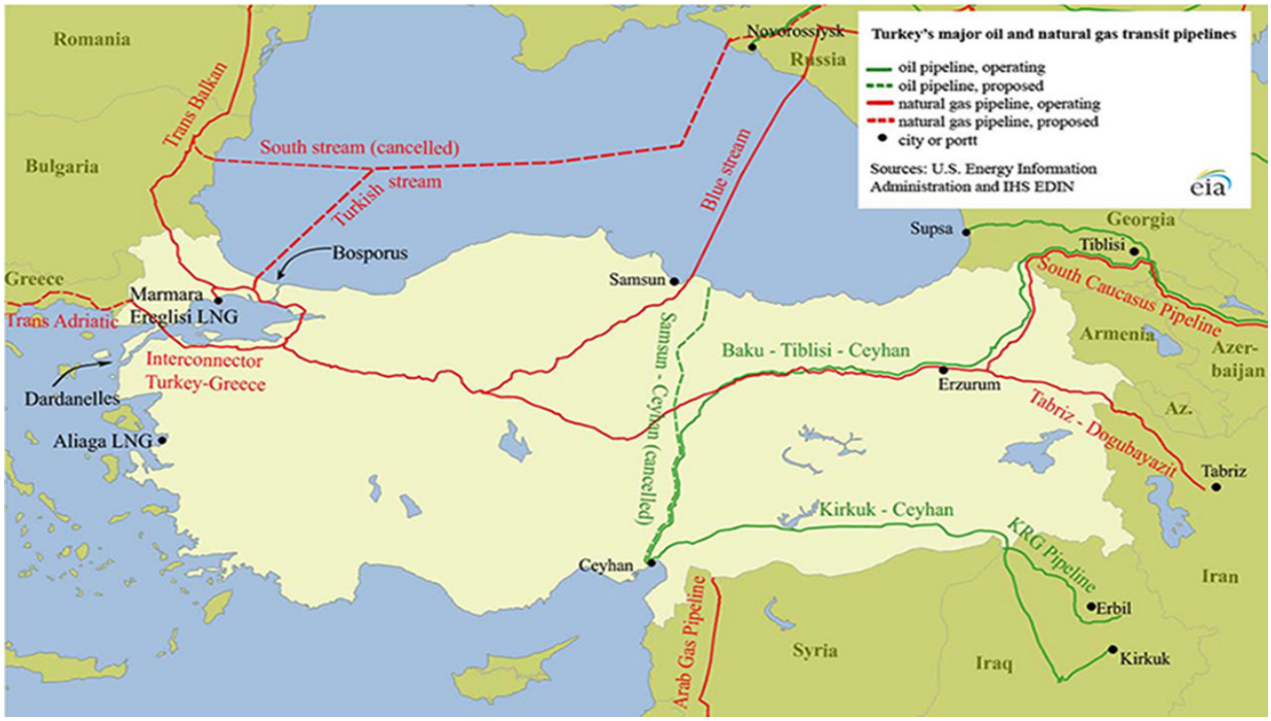

Figure 2 – An overview of oil and gas pipelines in Türkiye, (International Energy Outlook 2017, 2017)

Threats:

- The impact of global oil and gas price fluctuations on Türkiye's energy import costs
- The environmental concerns and regulations affecting the development and operation of oil and gas pipelines
- Disruption in the oil and gas supply chain due to natural disasters as well as conflicts or geopolitical changes
- The impact of the competition of alternative energy resources and technologies on oil and gas demand
- Lack of cooperation with neighboring countries to develop new pipeline projects and increase energy security

B. Türkiye's Railway Routes

Railway transportation in Türkiye dates back to the Ottoman Empire and progressed with the establishment of the Turkish Republic in 1923. By 1929, 1000 km of railway construction had been completed and put into operation, and nearly 200 km of railway construction was completed by 1940. (Murat and Şahin, 2010, 75-76).

The Turkish railway transportation industry experienced a decline in the 1970s due to growth in motor vehicles, highway construction, and the opening of the Bosporus Bridge.

international railway connections in Türkiye:

- Istanbul to/from Bucharest, Budapest, Vienna, Munich, Paris & London
- Istanbul to/from Sofia, Belgrade, Zagreb, Munich, Paris & London
- Türkiye, to/from: Greece, Cyprus, Syria, Iran, Georgia, Armenia, Azerbaijan, Iraq & Ukraine

B.1 Trans Asia Express

A weekly train known as the Trans-Asia Express began operating between Ankara and Tehran.

Due to security incidents in Eastern Türkiye, the train service was suspended indefinitely in August

2015. In June 2018, a weekly service was restored, and in June 2019, the service resumed, including ferry across the Lake Van. The border between Türkiye and Iran was closed in 2020 due to Covid-19 and remains closed.

B.2) Kars–Gyumri–Tbilisi

The Kars-Gyumri-Tbilisi railway line, completed in 1899, connects Türkiye to the city of Gyumri in Armenia, and from there to Tbilisi in Georgia. It was the only railway line operating as a direct route between Türkiye and the Soviet Union (Kars-Gyumri)) (DBPEDIA BLOG, 2024)

The Kars-Gyumri railway section has been non-operational since 1993 when Türkiye closed its borders with Armenia in support of Azerbaijan during the first Karabakh war. With the last freight train crossing the border on July 6,1993.

Figure 3 – Istanbul to/from European countries, (www.seat61.com)

B.3) Baku–Tbilisi–Kars

The Baku–Tbilisi–Kars (BTK) railway, 826-kilometer-long trans-continental transport corridor linking Azerbaijan to Türkiye through Georgia, was first proposed in July 1993, after the closure of the Kars-Gyumri-Tbilisi railroad. (Lussac, 2008, 213)

The BTK railroad, a 2007 Georgian-Azerbaijani-Turkish agreement. initially planned for 2019 passenger train. However, due to the Covid-19, economic downturn, inflation, energy, and other crises, delay plans. According to expert estimations it can transport 3 million passengers annuall((Akhundov, 2023).

The BTK project, crucial for linking Caspian basin with Europe is attracting interest from Kazakhstan, Afghanistan, Uzbekistan, and Turkmenistan regular ferry links will connect Aktau (Kazakhstan) and Turkmenbashi (Turkmenistan) to Baku (Shahbazov, 2017).

The Central Asian region is leveraging the Belt and Road Initiative (BRI) led by China to boost its economy and diversify its trade routes. The Baku-Tbilisi-Kars (BTK) railway is seen as an extension of this project, aiming to revive the historical Silk Road and reduce Russia's overland transportation monopoly, thereby enhancing travel between Asia and Europe (Abdullayev, 2017)

The Baku-Tbilisi-Kars railway project, a continuation of the Kars-Gyumri-Tbilisi project, faces challenges due to financial decline from the US and EU. Despite these obstacles, efforts are underway to restore the line and establish it as a crucial route (Papatolios, 2024)

B.4) Trans-Caspian Corridor

Kazakhstan's national railways predict four million tons of cargo will be transported along the Trans-Caspian Transport Corridor in 2024, a 86% increase from 2023, due to Russia's invasion. (the times of central Asia, 2024)The Trans-Caspian East-West Middle Corridor Initiative aims to establish cooperation mechanisms among Afghanistan, Azerbaijan, China, Georgia, Kazakhstan, Kyrgyzstan, Türkiye, and Turkmenistan, establishing complementary and multi-modal connections between Asia and Europe.

- Baku-Tbilisi-Kars Joint Railway Project of Azerbaijan, Türkiye and Georgia
- Turkic Council Joint Protocol on Development of Transport
- Memorandum of Understanding on Sister Seaport among the ports of Baku, Aktau and Samsun
- Memorandum of Understanding signed between China and Türkiye in November 2015 on "Aligning the BRI and the Middle Corridor Initiative"
- Memorandum of Understanding on the prospects for development of the Trans-Caspian International Transport Route (TITR)
- Tri-partite Cooperation Committee among Azerbaijan, Türkiye and Turkmenistan
- Lapis Lazuli project

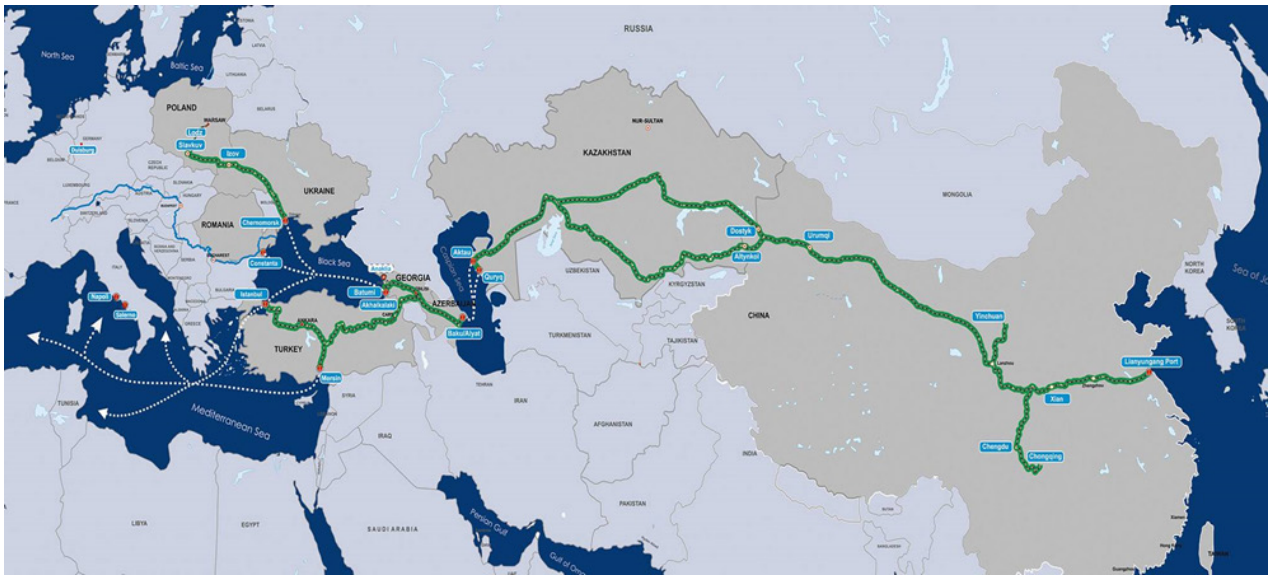

Figure 4 – Trans-Caspian Corridor (Middle Corridor), (the times of central Asia, 2024)

All these efforts are dedicated to ensuring the efficient operationalization of the Trans-Caspian East-West connection in the Eurasia region. (Aslan, Günel Susuz, &Bodur Gümüş, 2017, 41)

B.5 (Trans-Asian Railway Network (TAR)

The Trans-Asian Railway Network (TAR) is a crucial Asian rail network, signed in 2006 by 17 Asian nations as part of a UNESCAP project to build a Transcontinental Railway Network between Europe and China's Pacific ports. (Karim, Zayed, Afrin, 2020, 133)

The Trans-Asian Railway network, comprising 117,500 km of railway lines in 28 member countries, has been unified through an Intergovernmental Agreement for standard harmonization and regional discussion. (ESCAP, 2024) in the 1950s TAR project aimed to establish a 117,500 km rail link between Asia and Europe, aiming to reduce shipping times and costs. Despite political and economic obstacles, the end of the Cold War improved the prospects, and Türkiye has initiated significant railway projects to improve its infrastructure. (Karim, Zayed, Afrin, 2020, 134)

B.6) Istanbul-Sofia Express

The Istanbul-Sofia train, which operates daily between Istanbul, Türkiye, and Sofia, Bulgaria, connects the two cities via a 571.2 km route. (ENSON HABER, 2017) The Istanbul-Sofia Express is the successor to the Balkan Express, which operated between Istanbul and Belgrade, Serbia until June 2013. (Uysal & Onur, retrieved on 24 November 2017) The Istanbul-Sofia Express, a nightly train service between Bulgaria and Türkiye, resumed operations in 2023 despite a COVID-1 (Railaway, 2023)

B.7) Bosporus Express

The Bosporus Express, operated by TCDD, BDZ, and CFR, is an international passenger train connecting Istanbul, Türkiye, and Bucharest, serving major cities in Bulgaria and Romania. (www.interrail.eu, Retrieved on 2023-08-12) The train departs from Halkali station in Istanbul and passes through various cities before returning to Kapıkule. Passengers must disembark and cross rail tracks to clear passport control.

B.8) Adana–Aleppo Railway

The Adana-Aleppo railway, a 297.4 km electrified railway in southern Türkiye, runs through Osmaniye, crossing the Nur Mountains, and into Syria. (trainsofTürkiye.com, retrieved on 5 May 2023) The Adana-Aleppo railway, part of the Mersin-Adana-Gaziantep high-speed corridor, was crucial during World War I for transporting men and materiel to fronts in Mesopotamia and Palestine. (tcdd.gov.tr, retrieved on 5 May 2023.)

B.9) Istanbul–Tehran–Islamabad Railway

The ITI Train, an international freight train service between Islamabad, Pakistan, and Istanbul, Türkiye, via Tehran, Iran, was launched in 2009 and became an important project of the Economic Cooperation Organization (ECO). The train covers 6,500 kilometers, with a 15-day journey. The project was reinstated in December 2021, with plans to resume operations in 2021. (Business Recorder, Retrieved on 19 December 2020).

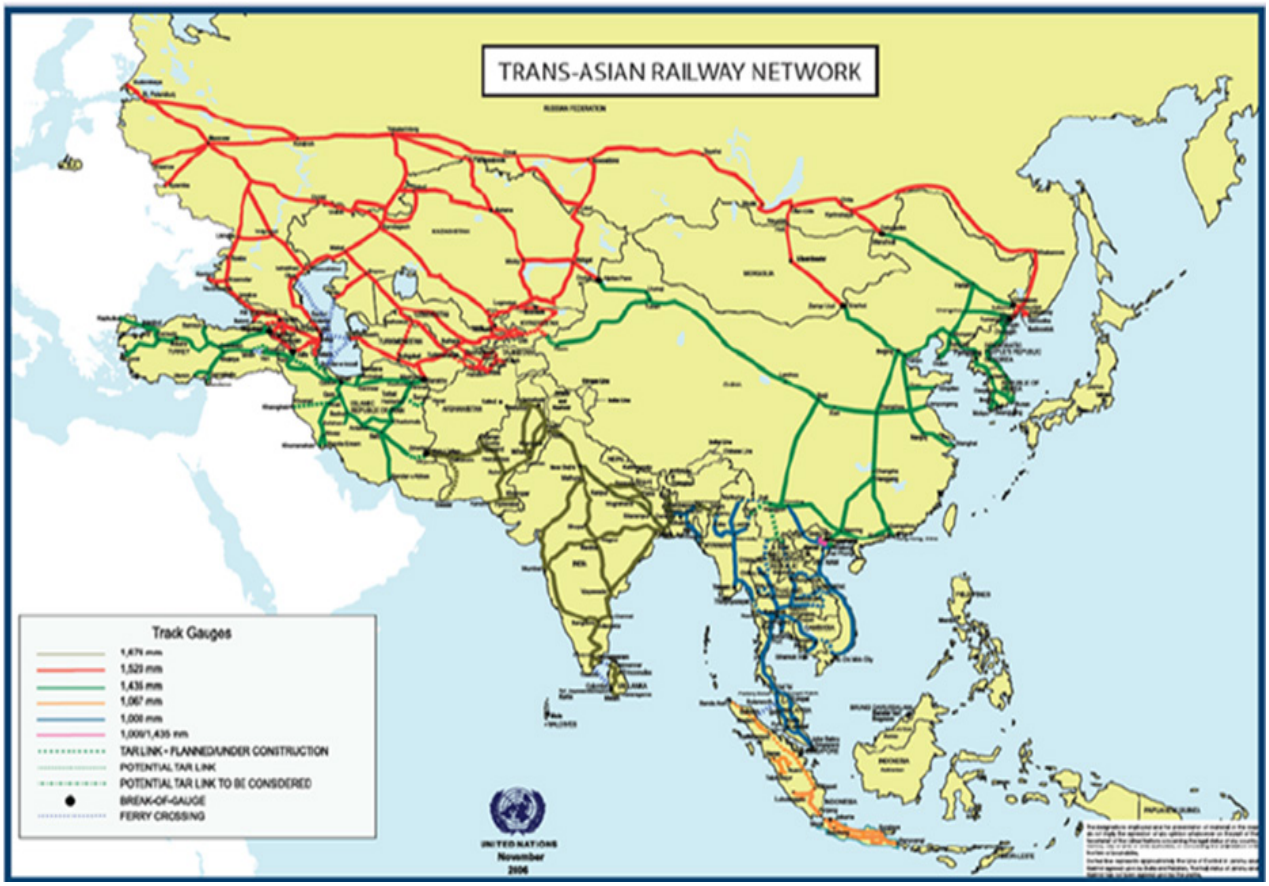

Figure 5 – Trans-AsianRailwayNetwork (Hajizadeh, 2015)

The ECO Railway, an international corridor for Iran, Pakistan, and Türkiye, is recognized by the international organization as a short, safe, and affordable route for goods transfer between Asia and Europe. It also provides economic benefits for the three countries, including regional connections, commercial and public transportation facilitation, and long-term economic benefits. The Marmara underwater tunnel connects the corridor (Pars Today, 2021)

B.10) Road of Development (also known as the Dry Canal)

The Iraqi Ministry of Transport plans to construct a 1,175 km railway to the Turkish border in early 2024, linking Grand Fau and Mersin. The electrified railway will pass through major Iraqi cities and carry freight and high-speed passenger trains. The project also includes restoring the railway section from Mosul to Gaziantep. Annual freight traffic is expected to reach 13.8 million people. (Railway Supply, 2023)

The transit route between Türkiye and the Persian Gulf could be an alternative to the current Suez Canal and Red Sea route, especially due to conflicts between the American military and Yemeni Houthis. The project, estimated to cost 17 billion dollars, connects Türkiye's southern region with Iraq and the Persian Gulf via land roads and a railway network. The project is expected to create 100,000 job opportunities in the initial phase and one million upon completion (Tin News, 2022)

Strengths:

- The existence of a wide railway network in Türkiye that connects the main cities and regions
- Being in a strategic position as a gateway between Europe and Asia for international railways
- Creating a multifaceted logistics network using the expansion of the railway network using integration with other transportation methods such as ports and highways

Weaknesses:

- The presence of limitations in the high-speed rail network compared to other European countries
- Aging infrastructure in some areas, which causes concern about maintenance issues and lack of trust and security

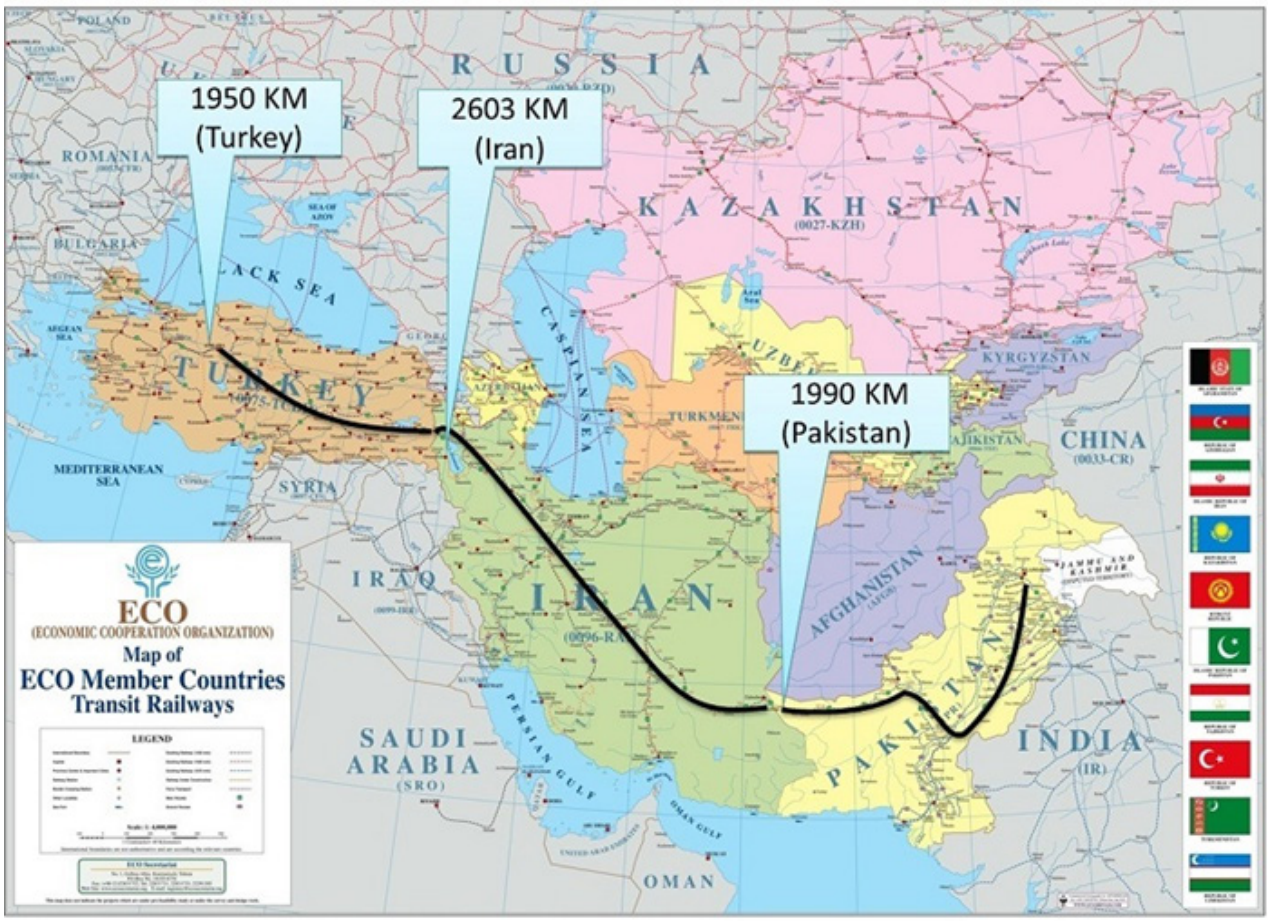

Figure 6 – Türkiye –Iran- Pakistan Railway route, (UIC, 2024)

- Capacity limitation in some specific railway lines that affects the efficiency and quality of services

- Delay in the approval and implementation of the projects due to the existence of regulatory and bureaucratic obstacles

- Financing and funding constraints for railway infrastructure development and modernization

Opportunities:

- Carrying out reforms to expand high-speed rail services to improve connectivity and travel time between neighboring regions

- Using digital technologies to integrate road systems for tracking, planning, and better passenger services

- Investing in new railway construction and development projects, such as freight corridors and intermodal terminals, to increase transportation efficiency

- Establish cooperation with neighboring countries to develop international rail corridors and strengthen regional trade

Threats

- The sustainability goals that require greener and more efficient railway operations and environmental concerns

- The security threats that can cause problems for the railway lines

- The fundamentalist groups and regional wars in the Caucasus region cause concern about the regional railway lines.

C. Türkiye's Highways

The transport sector in Türkiye is expanding rapidly in parallel with the country's strong economic and population growth. (Thomas, Rooks & Calise, 2015) Türkiye's road transport has significantly developed since the 1950s, now the dominant mode of transportation, with 65,909 km of highways under General Directorate of Highways control.(dlca.logcluster.org) Turkish transportation system operates in 70+ countries, with bilateral agreements with 59, including 20 OIC members. With 1.6 million trips, it can reach 28 out of 57 OIC countries.

(Aslan, Günelsusuz, Bodur Gümüş, 2017, 21) Türkiye's highways are vital communication routes, facilitating trade, connectivity, and economic growth, connecting Asia and Europe, and are essential for the country's political and economic stability.

C.1) Asian Highway

The Asian Highway project, initiated in 1959, aimed to revive trade, improve living standards, and promote social progress in the Asia-Pacific region, endorsed by ESCAP in 1992. (Introduction to the Asian Highway , 2015, p. 15)

The Asian Highway Network, signed in 2003 by Türkiye, spans 5,268 km from Bulgaria to Georgia and Iran, ending at ports in Izmir and Mersin, with a mix of asphalt and concrete surfaces. (Aslan, Günel Susuz, & Bodur Gümüş, 2017, 46) .

C.2) The Black Sea Economic Cooperation Highway Network (BSEC)

The Summit Declaration on Black Sea Economic Cooperation established transport networks in 1992, with Türkiye's 4,472 km BSEC highway implementing a Memorandum of Understanding in 2003 to facilitate transport on BSEC member countries' highways) (Bsec, 2024)

Türkiye plans to establish a new Black Sea Ring Highway, transforming two-lane highways into higher-standard routes, connecting Türkiye's arterial road network to Black Sea countries, Caucasus, and Central Asia.) (ulustirma, 2018)It is noteworthy that Ukraine is the Coordinator for the Working Group on Transport from 1 January 2023 until 31 December 2024.

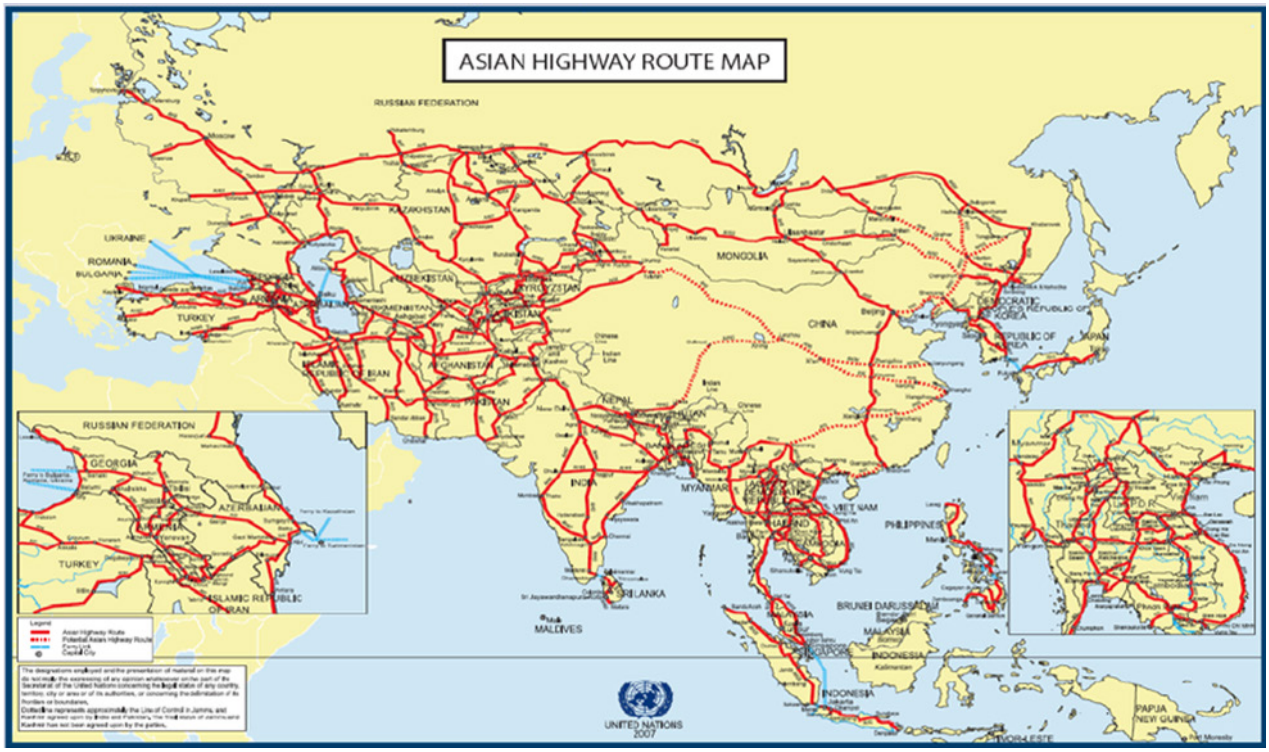

Figure 7 – Asian Highway Route (researchgate.net)

C.3) TRACECA

The European Union initiated the Transport Corridor Europe-Caucasus-Asia (TRACECA) in 1993 to enhance economic relations, trade, and transport in Black Sea basin, South Caucasus, and Central Asia, with a total 8,365 km section in Türkiye. (Aslan, Günelsusuz, Bodur Gümüş, 2017, 60) The Organization of TRACECA, a multi-mode regional transport network, aims to develop economic relations, commerce, and transport linkages in countries like Armenia, Azerbaijan, Bulgaria, Georgia, Iran, Kazakhstan, Kyrgyzstan, Moldova, Romania, Tajikistan, Türkiye, Ukraine, Uzbekistan, Lithuania, and Turkmenistan) (traceca, 2012) TRACECA highway routes in Türkiye connect ports to border gates, connecting to Europe's main corridor, Kapıkule, and the high-standard Black Sea coastal road, reaching Sarp Border Gate.

C.4) ECO Transit Road

The Economic Cooperation Organization (ECO) aims to accelerate transport services through the Transit Transport Framework Agreement, promoting harmonization and modernization through the ECO Summit.

Figure 8 – The transit routes between ECO member countries (ECO, 2019)

Strengths:

- An extensive network of highways in Türkiye connects different regions and facilitates trade and tourism
- Being in a strategic position like a bridge between Europe and Asia, which makes highways vital for international transportation
- Significant investments by the government in the modernization and development of highway infrastructure

Weaknesses:

- Expectations to optimize and conform to international standards of some parts of the highway system for maintenance and improvement
- The presence of heavy traffic in big cities like Istanbul can lead to delays and increased pollution
- Dependence of the highways on the unstable revenue of tolls

Opportunities:

- Access to smart road technologies that increase efficiency and safety
- Increasing highway amenities to boost domestic and international tourism
- Further development of the highway system by encouraging private investment

Threats:

- Being in an active seismic zone that puts the highway infrastructure at risk
- Regional conflicts or political uncertainties that affect highway budgets and safety
- Expansion of highways in case of lack of proper management and destruction of the environment

D) Maritime Transport

Türkiye's strategic location links Europe and Asia, enhancing maritime transportation. With an 8,483 km coastline, 85% of Turkish foreign trade

is maritime, with private ports handling the largest volume. (Aslan, Günel Susuz, &Bodur Gümüş, 2017, 29) There have been important developments in the Turkish shipbuilding sector in recent years and the sector has proved its ability in the international arena in many areas. Turkish shipyards became trademark throughout the World, especially in the construction of chemical tankers, container ships, tug boats yachts, etc. (Ibid, 2017, 30)

Türkiye's strategic location in the Mediterranean, Aegean, and Black Sea regions, along with its

8,333 km coastline and 180 ports, plays a crucial role in sea transport and trade. (Erdogan & Çetin, 2021, 22-31)

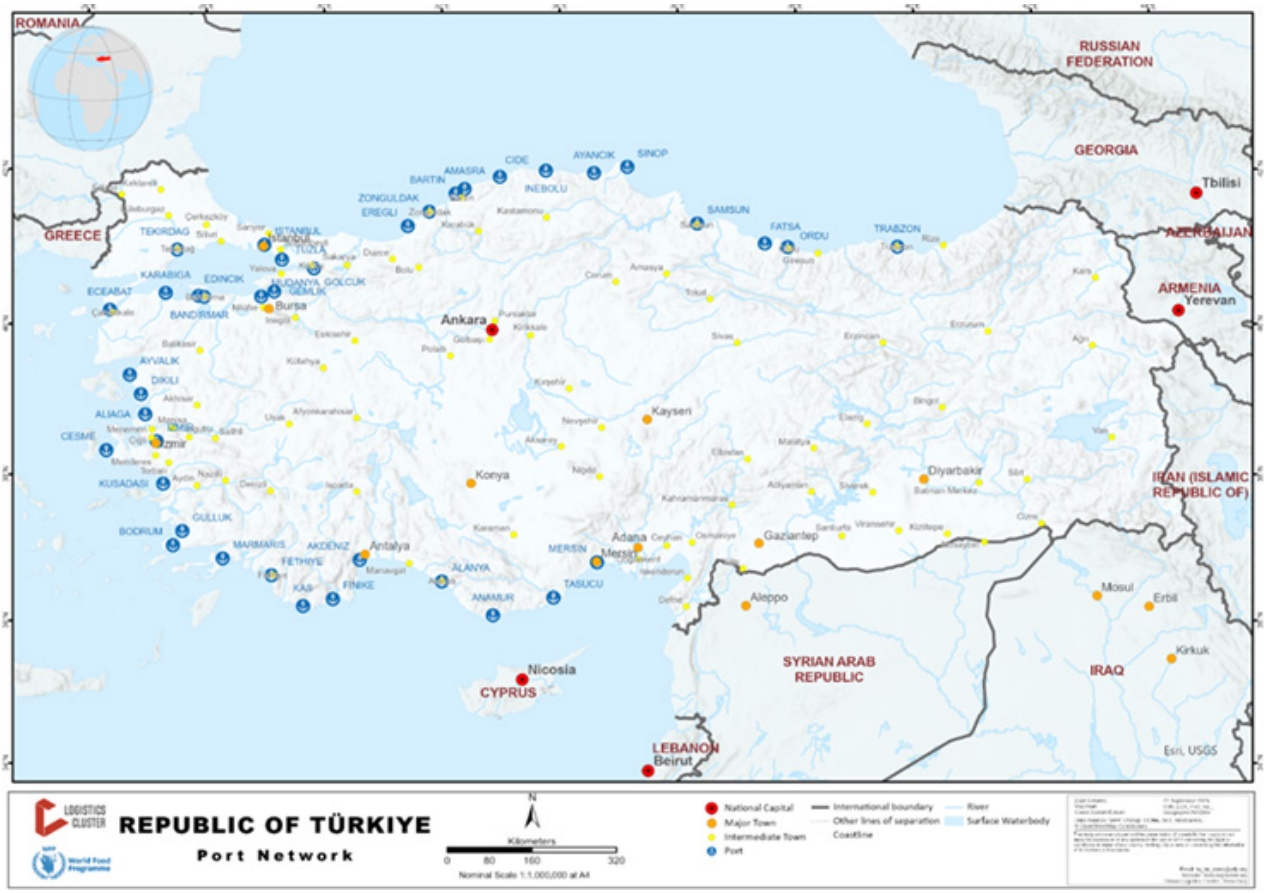

Figure 9 – The sea transit routes and ports of Türkiye (dlca.logcluster.org)

Marine transportation remains crucial given the volume of Türkiye's ports. The government of Türkiye has prioritized improvements to the marine sector by:

- Increasing existing 219 ports to 255 and constructing dry ports to Tekirdag, Mersin, Iskenderun, and Kocaeli by 2053
- Increasing the number of logistics centers from 13 to 26 by 2053
- Increasing combined/multimodal/intermodal types of transportation
- Increasing the number of marinas
- Emphasizing sustainability and efficiency through projects like "Green Port". (Türkiye Country Commercial Guide, 2022) The Turkish maritime trade sector, with substantial economic value, is expected to thrive with government support and national aid, significantly contributing to the economy.

Strengths:

- Türkiye's location in the strategic position of the coastlines along the Black Sea, the Aegean Sea, and the Mediterranean Sea and access to the main shipping routes
- Developed port infrastructure including container terminals, bulk cargo facilities, and cruise terminals
- Connecting Türkiye to international maritime trade routes and facilitating trade with Europe, Africa, and Asia
- The growth of the tourism industry, attracting visitors to the coastal cities and ports of Türkiye

Weaknesses:

- The limited internal water transport infrastructure that limits the connection to certain areas
- Environmental concerns related to pollution and destruction of the marine ecosystem
- Lack of proper enforcement of maritime regulations and safety standards in some areas

Opportunities:

- Expansion of existing facilities to accept larger ships and increase the volume of cargo and development of new port projects
- Digital technologies for smart port operations and efficient logistics management
- Promoting marine tourism and cruises that boost the local economy and attract foreign visitors
- Cooperate with international shipping companies and maritime organizations and strengthen maritime business partnerships

Threats:

- Geopolitical tensions and security risks in the region that affect maritime operations and trade routes
- Failure to comply with international maritime regulations and environmental standards and harming sustainable maritime practices
- Creating challenges for the workforce in skill development needs with technological advancements and increased automation in the maritime industry
- Competition with neighboring countries has caused the creation of maritime centers and affects Türkiye›s market share

Türkiye can enhance its maritime sector's role in trade, tourism, and logistics by modernizing infrastructure, investing sustainably, and fostering cooperation with shipping partner nations.

E) Türkiye's aviation

Türkiye's geopolitical position as a bridge between Europe and Asia influences its air transport routes, with legislative changes allowing private enterprises and legal changes providing subsidies. (Battal–Kiraci, 2015, 3)

The most important progress in the development process of the Turkish Air Transport Industry was the liberalization in 1983. The current Turkish Air Transport Industry owes its existence to a large extent to this liberalization (Gerede, 2010, 64) The privatization of Turkish aviation enterprises began in the 1990s, influenced by the 1988-1989 economic crisis and the Persian Gulf War. (Ibid, 4)

Togan (2016) stresses that that 70% of catering services were privatized in 1989, 30% in 1993, 60% in 1995, and 40% in 1998, while the economy faced major milestones in 1997 and 1999. (Tsiotas, Erdem & Cubukcu, 2020, 16)

Starting in the 2000s, neo-liberalization policies came to the fore, a process fostered by the neoliberal agenda being pursued across the world. (Togan, 2016) In 2003, the aviation market underwent deregulation, restoring old airports and constructing new ones, expanding the sector to all parts of the country, boosting domestic flight demand. (Orhan–Gerede, 2013, 56).

Türkiye's aviation sector is growing with the investments made in the field after its rapid recovery post-pandemic.Türkiye's position as an aviation hub for European, Middle Eastern, North African, and the Caucasus markets contributed to the development of the sector. The average number of daily flights at Istanbul Airport in 2023 increased 19% year-on-year, reaching 1,375.Istanbul Airport also broke the airport network record with 1,684 flights on June 22, 2023. Istanbul Airport hosted 17.6 million passengers in the first three months of 2024, 3.5 million of which were domestic flights and 14.1 million of which were international flights. (aa.com.tr,Retrived on 23 April 2024) Hence, air transport services in Türkiye have experienced rapid growth. Every year, millions of tons of goods are exported from Türkiye's borders or imported into the country from its neighboring regions

Strengths

- The leading airline (Turkish Airlines) with a significant market share and a strong brand reputation
- Istanbul's location is advantageous for connecting flights between Europe and Asia
- More than 300 destinations in more than 120 countries flown by Turkish Airlines
- Efficient cost and modern airline fleet structure.

Weaknesses

- Periods of financial losses due to various external factors
- Compared to its competitors, Turkish Airlines has a smaller network in the Asia Pacific region.

Opportunities

- Branding and high-quality service and Istanbul New Airport
- The potentiality for optimizing the use of aircraft and improving load factors

Threats

- Economic and geopolitical context (The Turkish Lira crisis and regional conflicts can impact the industry)
- Significant competition from low-cost carriers and the Persian Gulf-based airlines

Figure 10 – A general look at the routes and domestic and international airlines of Türkiye (dlca.logcluster.org)

Conclusion

Türkiye's geopolitical significance stems from its strategic location at the intersection of Asia and Europe, acting as a bridge between the East and West. Its proximity to key regions like the Middle East, Caucasus, and Balkans makes it a pivotal player in regional and international politics. Türkiye's youthful population, growing economy, and efforts to boost its influence further underline its geopolitical importance. Türkiye's strategic position within China's Belt and Road Initiative (BRI) presents opportunities to enhance relations with neighbors, meet fuel and consumer goods demands, increase exports, and boost economic prosperity. The country has invested approximately 42.5 billion Turkish Lira in the transportation and communication sector, with numerous transportation-related projects underway or in the pipeline.

Türkiye's strategic position between Europe, West Asia, and Central Asia has led to significant investments in transportation infrastructure, including high-speed trains, sea and energy corridors, highways, and one of the world's largest airports. These developments are expected to create a seamless transportation network, bolster economic strength, expand regional and extra-regional markets, and reduce travel time between Asia and Europe, reducing air pollution and reliance on private vehicles.

Strengths

Regarding Türkiye's strengths in the field of transportation systems in general, it can be said:

- – Türkiye acts as an important communication bridge between Asia and Europe, and for this reason, it is located in a very strategic region.

- – Strong and experienced international companies in this field are working in Türkiye thanks to the phenomenon of globalization and the hardening of borders, countries are more willing to cooperate and trade with each other.

- – The EU, the West Asian, and the Central Asian countries have a great desire to cooperate with this country due to Türkiye's strategic position. International companies have rich experience in the

field of international transportation construction and have the necessary resources to supply Türkiye's projects.

- – Türkiye has a cargo fleet with high capacity and high capability in transportation.

- – Türkiye has been working to reduce its dependence on fossil fuels and increase its use of renewable energy sources, reducing greenhouse gas emissions has become a crucial part of Türkiye's energy policies.

Weaknesses

Regarding the weaknesses or challenges facing Türkiye in the field of regional transportation, it can be said:

- There is no balance between the methods of transfer and transportation and their contribution to this issue.

- Highways and railway networks have an average lower than the average of the European Union.

- The national budget for the development of transportation routes has been decreasing due to the economic recession.

- The railway system is relatively old and less developed, and most of its projects have either been closed or only one line is working.

- There is no proper and efficient pricing system and this issue is very harmful.

- More than one government official is responsible for transportation investment and necessary coordination in this field; the lack of cooperation and the large number of responsible people causes the work to be delayed.

- There are problems in funding, which cannot be solved even with the existence of private companies.

Opportunities

Türkiye's opportunities regarding the regional transportation are as follows:

- Türkiye has many ports, and as explained earlier, its ports are among the most important ports in the Mediterranean Sea.

- The European Council of Ministers has a suitable investment in the high-speed railway network of Türkiye. The existence of the mentioned railway network and corridors provides the possibility of connecting Asia to Europe via Türkiye.

- Türkiye has a suitable capacity in the field of sea routes and is in the middle position of China's BRI project, which is a special benefit for Türkiye.

- Türkiye's oil and gas pipelines currently have a suitable capacity for transmission, and the fuel needed by this country is well supplied through neighboring countries.

Threats

- Türkiye also faces some threats regarding the regional transportation:

- Some quarrels and conflicts in Türkiye can lead to the termination of relations with this country.

- The general budget of some projects is very low and insufficient.

- The TRACECA corridor can cause challenges for Türkiye because this corridor connects Romania and Bulgaria to Georgia and Central Asia through the Black Sea, and this issue can reduce Türkiye's transit position to some extent.

- There is competition between different countries in the region

- Political instability in neighboring countries can cause different problems for cooperation in the field of transportation.

- Economic downturns can affect the transportation industry.

- The country is heavily dependent on imports of natural gas. This dependency makes Türkiye vulnerable to price fluctuations and supply disruptions

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