Stefan Iskan, Peter Klaus

Transport, Logistics and Supply Chain Services in Turkey

Market Sizes, Market Players, Infrastructure and latest Trends in the Turkish Logistics Industry

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Dedicated Foreword by UTIKAD –
Association of International Forwarding and
Logistics Service Providers Turkey

DVV Media Group GmbH

Foreword by the International Freight Forwarders Association Turkey

Since the early 1980s, Turkey has been going through a rapid transformation both in economic and social dimensions. After a long period of instability and crises, Turkey has made great progress on its way to economic development and wealth since 2002. The world economic and financial crisis in 2008/2009 also hit Turkey very hard due to its very close manufacturing and trading ties to the European Union. 2013 has been another year of tough business conditions, especially in Europe. Despite these challenges, the Turkish economy has been proven as a sustainable success story with global reach.

Next to the automotive and textile industry, the transportation and logistics segment is one of the most dynamic industry sectors in Turkey. Turkey's strategic Eurasian bridging function is definitely a factor that will drive this development ahead. The Turkish government has set ambitious targets in the field of domestic logistics (Turkey Logistics Master Plan 2023). Thus, public and private sectors are in struggle for closing any gap that would hinder the growth of the entire Turkish industry. The level of efficiency needs to be increased.

Since its foundation in 1986, the Association of International Forwarding and Logistics Service Providers Turkey (UTIKAD) has been promoting the ongoing development of the transportation and logistics agenda on a domestic as well as international level. UTIKAD is representing about 400 freight forwarder members offering air, ocean, rail and land forwarding activities with a total workforce of about 50,000 employees. At the same time, UTIKAD is supporting the modernization initiatives in the Turkish logistics environment. UTIKAD's overall mission is to stress the importance of the freight forwarding industry's role in Turkey and help its members to offer solutions on an optimum standard level.

We like to thank Professor Stefan Iskan and Professor Peter Klaus for their commitment to our domestic logistics market. The study presents expert insights from a very dynamic market and delivers access to fundamental facts, challenges, and recent developments also to logistics professionals outside the Turkish market.

UTIKAD is supporting this study and we hope it will be also a helpful guide for you.

Turgut Erkeskin

President, Board of Directors

Cavit Uğur

General Manager

Istanbul, September 2013

Preface

The Turkish economy, over the last decade, has been growing at an average rate of more than 4% per year – faster than any other European economy! The Turkish transportation and logistics sector is growing at an even faster pace, as Turkey's trade relationships with the European Community and the rest of the world are developing rapidly. All indications are that both domestic and border crossing demands for logistics services in Turkey will continue to develop at a faster and more sustainable pace than in most other economies of the world. This is especially true for the trade relationships between Central Europe and Turkey.

As a consequence, German and other international service providers are expanding their presences in the Turkish logistics market, and Turkish providers expand into Central Europe. The country is undergoing major changes such as the increasing consolidation and professionalization among important Turkish transport and logistics service providers. Ambitious modernization targets for the Turkish railway system and other transport infrastructure investments are on the way, such as in the construction of the third Bosporus bridge, the new Istanbul 'mega' airport or the 'BALO' project. At the same time, political, ecological and economical risks and turbulences for the logistics industry are increasing and becoming less predictable.

This raises critical questions for all of those who want to leverage the opportunities of the fast developing Turkish logistics market, and those who need to successfully deal with its specific challenges. What are the data and facts about the Turkish transport, logistics, and supply chain services market? What should be known about the infrastructure, key players, trends, opportunities, challenges, and risks?

There is a need for a more solid, systematic, up-to-date 'inside' information. Turkey, so far, has not been covered by easily accessible and systematic market intelligence, such as the 'European Top 100 Logistics' studies published annually by the DVV Media Group.

This report will help to close this gap. It provides analyses of key data about the Turkish economy and logistics market as well as the related transport corridors between Central Europe and Turkey. It includes a listing of leading logistics service providers and assessments of drivers and trends that will impact transportation and logistics in Turkey in the coming years. The report as well as the estimates and assessments it contains are based on findings from research on German, English and Turkish sources since 2006 as well as own professional observations from first hand working experience in the Turkish logistics market. It should be useful to domestic and international shippers, the management of transport and logistics service providers in the Turkish market, and to transport analysts and administrators.

We like to thank the DVV Media Group for supporting the idea of a ‘German-Turkish logistics conference 2013’ as a platform for presenting and discussing the findings for the first time, as well as Mr Turgut Erkeskin and Mr Cavit Uğur from the Association of International Forwarding and Logistics Service Providers Turkey (UTIKAD) for giving their support to this dedicated Turkey project.

Prof. Dr Stefan Iskan

Ludwigshafen, September 2013

Prof. Peter Klaus, D.B.A./Boston Univ.

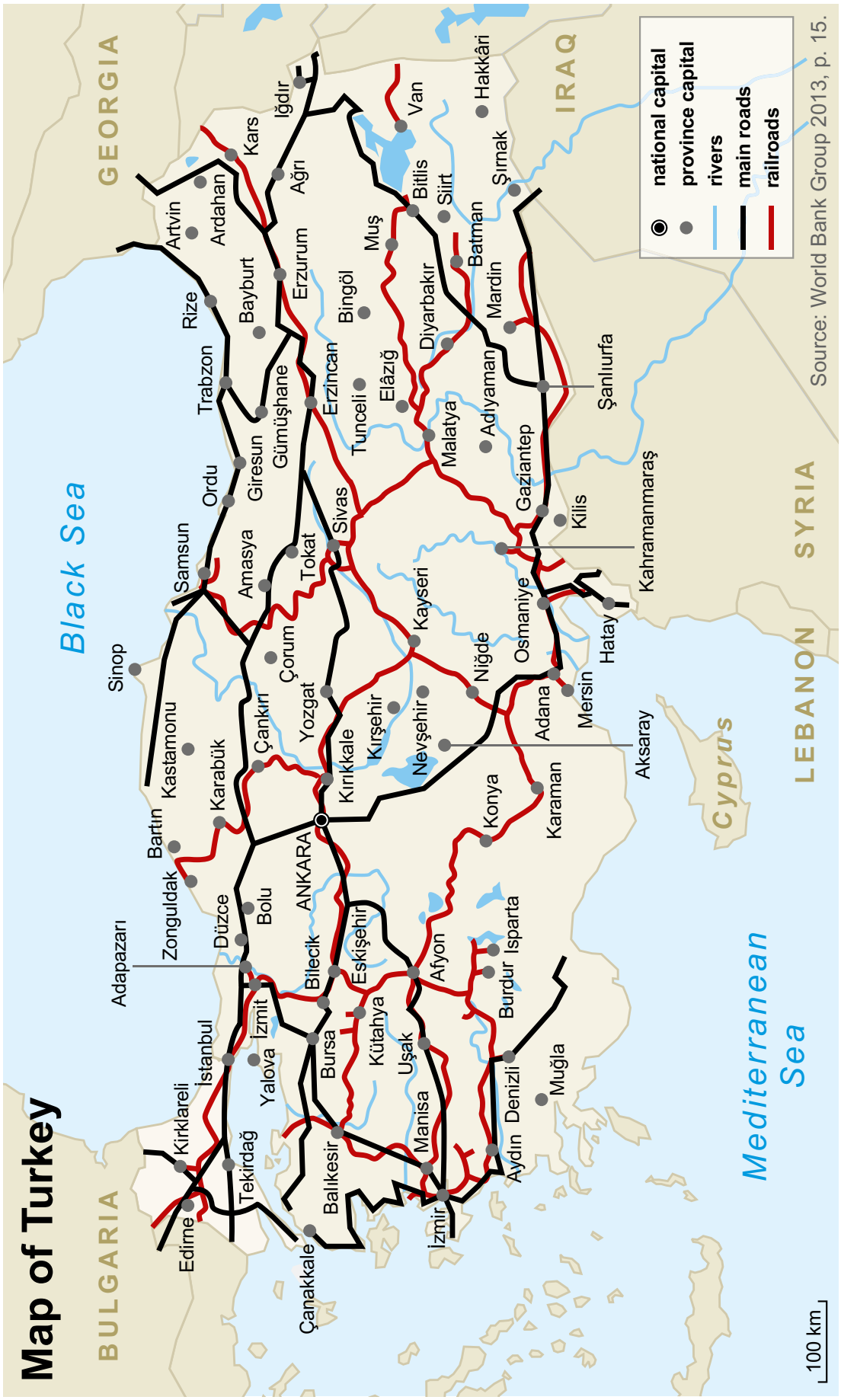
Nuremberg, September 2013

Authors

Professor Dr Stefan Iskan holds the new professorship for Supply Chain Management and E-Business at the University of Applied Sciences Ludwigshafen am Rhein, Germany. As senior advisor, he is serving leading international top management consulting companies in the practices transportation and logistics, automotive, and organisation transformation. He is working with international and Turkish logistics service providers and associations as well as for OEMs and Tier-1 suppliers in the automotive industry.

Iskan is dealing with the Turkish logistics and automotive industry since 2006, has worked in Istanbul and Intermodal Corridor IV and developed dedicated German-Turkish knowledge transfer and coaching approaches in the automotive logistics landscape. He is author of two books and around 15 articles on the Turkish logistics market. Previously, he worked for the Deutsche Bahn Group, Deutsche Post DHL, and Daimler AG. In his last position, he was a direct report to the member of Board of Management for Land Transport of DB Schenker Logistics and responsible for Strategic Projects & Business Development. He obtained his Ph.D. at the Erlangen-Nuremberg University and studied logistics at the former Chair of Professor Peter Klaus.

Professor Peter Klaus, D.B.A. / Boston Univ., M.Sc. (Transportation) / MIT Cambridge, Dipl.-Kfm., has been holding the Chair of Business Logistics at Friedrich-Alexander-University of Erlangen-Nuremberg, Germany, for about 20 years, from which he retired in 2009. He is the co-founder and the long-time head of the Fraunhofer Center for Applied Research in Supply Chain Services (SCS); now he is the Center's scientific advisor. Klaus started his professional life in the transportation and logistics industry. He serves on the boards of several international logistics service provider companies as well as non-profit professional associations and foundations. His primary publication, research and consulting activities are in the fields of logistics market intelligence, logistics service provider management, strategy, and organization development.


Map of Turkey
Black Sea
Mediterranean Sea
Cyprus
GEORGIA
BULGARIA
IRAQ
SYRIA
LEBANON
ANKARA
İstanbul
İzmir
Adapazarı
Aksaray
Kahramanmaraş
Şanlıurfa
Hakkâri
Van
Bitlis
Siirt
Şırnak
Batman
Mardin
Diyarbakır
Muş
Bingöl
Erzurum
Ağrı
Iğdır
Kars
Ardahan
Artvin
Rize
Trabzon
Giresun
Gümüşhane
Erzincan
Tunceli
Elâzığ
Malatya
Adıyaman
Gaziantep
Kilis
Hatay
Osmaniye
Mersin
Adana
Karaman
Konya
Niğde
Kayseri
Nevşehir
Kırşehir
Sivas
Tokat
Amasya
Ordu
Samsun
Sinop
Çorum
Yozgat
Kırıkkale
Çankırı
Karabük
Kastamonu
Bartın
Zonguldak
Düzce
Bolu
Bilecik
Eskişehir
Afyon
Burdur
Isparta
Denizli
Muğla
Aydın
Manisa
Uşak
Kütahya
Bursa
Balıkesir
Çanakkale
Edirne
Tekirdağ
Yalova
İzmit
Kırklareli
national capital
province capital
rivers
main roads
railroads
Source: World Bank Group 2013, p. 15.
100 km

Turkey: Key Facts 2012

Political System

Official name of country:	Republic of Turkey
Capital city:	Ankara
Government:	Parliamentary Democracy
President:	Abdullah Gül
Prime minister:	Recep Tayyip Erdoğan (AKP)

Labour Force

Population:	76m
Median age:	30 years
Labour force:	27m
Labour cost per hour (USD):	3.73*
Unemployment rate:	9%

Economy

GDP (bn USD):	786
GDP per capita (USD):	10,504
Inflation rate (CPI):	8.9%
Export volume (bn USD):	153
Import volume (bn USD):	237
Foreign direct investment (bn USD):	12.4
Companies with foreign capital:	33,041

Major Cities

Istanbul	13.9m	Ankara	4.9m	Izmir	4.0m
Bursa	2.7m	Konya	2.1m	Antalya	2.1m
Adana	2.1m	Mersin	1.8m	Şanlıurfa	1.8m
Diyarbakır	1.6m	Gaziantep	1.8m	Kocaeli	1.6m
Hatay	1.5m	Manisa	1.3m	Samsun	1.3m
Balıkesir	1.2m	Kayseri	1.3m	Van	1.0m

Source: TurkStat 2013, The World Bank 2013.

* = estimated by Prime Ministry Investment Support and Promotion Agency 2010a, p. 11.

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List of Abbreviations

ADR	European Agreement Concerning the International Carriage of Dangerous Goods by Road
BFAI	Bundesagentur für Außenwirtschaft
BLG	Bremer Lagerhaus-Gesellschaft
BRIC	Brazil, Russia, India, China
BSH	Bosch und Siemens Hausgeräte
BTC	Baku–Tbilisi–Ceyhan
BVL	Bundesvereinigung Logistik
CAGR	Compound Annual Growth Rate
CMR	Convention of the Contract for the International Carriage of Goods by Road
CSCMP	Council of Supply Chain Management Professionals
EEC	European Economic Community
EFTA	European Free Trade Association
FDI	Foreign Direct Investment
FMCG	Fast Moving Consumer Goods
FTL	Full Truck Load
ICOC	Istanbul Chamber of Commerce
IMF	International Monetary Fund
IRU	International Road Transport Union
JIT	just in time
LTL	less than truckload
OECD	Organisation for Economic Co-operation and Development
RCA	Rail Cargo Austria
RoRo	Roll-on/roll-off
TCDD	Türkiye Cumhuriyeti Devlet Demiryolları Isletmesi
TEM	Trans-European Motorway
TÜRKLIM	Türkiye Liman İşletmecileri Derneği
UTIKAD	Uluslar arası Taşımacılık ve Lojistik Hizmet Üretenleri Derneği
UND	Uluslararası Nakliyeciler Derneği

1. Economic Landscape of Turkey: the Big Picture

1.1 Economic and Political Developments, 1945–1980: Import Substitution Policy

The Republic of Turkey, founded in 1923, is one of the successor states of the former Ottoman Empire. Turkey has emerged as a major world trade partner since the 1980s and has an established free market economy in place. The pace of the country's economic development process is among the fastest in the world.

Until the 1980s, central principles of the Turkish economic policy were directed towards the substitution of imports by domestic production, efforts in promoting the international competitiveness of domestic industry, as well as towards infrastructure enlargement and modernization of the agriculture sector. Most aspects of the Turkish economy then were managed and run by centrally developed five-year plans. This resulted in annual economic growth rates of about 6.3% between 1965 and 1980, which was higher than the growth rates of many OECD countries in this period (Öymen 2001, pp. 94 and 102; Celasun/Rodrik 1989, p. 621; Schubert 1996, p. 33; Arslan 1995, p. 72; Bertelsmann Stiftung 2012, p. 3).

Politically, this was a period of many changes and turbulences. Turkey was under the Democratic Party's rule during the 1950s. This decade was characterised by a multiparty parliamentary landscape and economic growth. But inflation, public debt and inner political tensions were rising by the end of the 1950s. A military takeover in 1960 led to the replacement of prime minister Adnan Menderes by General Cemal Gürsel. In 1961, Turkey was under civilian government again. An Association Agreement was signed with the EEC in 1963, as well as the Additional Protocol in 1970, which laid the foundation for the Customs Union with the EEC in 1995 (Celasun/Rodrik 1989, p. 620; Bertelsmann Stiftung 2012, p. 3; Öymen 2001, p. 95).

In the 1970s and 1980s, inner political tensions lasted on, and Turkey experienced not only an up and down in the economic development but also external shocks and a public debt crises. The two oil crises in 1973 and 1979 influenced the Turkish economy negatively, and, again, the military took over government twice, in 1971 and in 1980. Finally in 1983, a civilian government was built around the Motherland Party (Anavatan Partisi) under the leadership of Turgut Özal (Celasun/Rodrik 1989, p. 629; Bertelsmann Stiftung 2012, p. 4).

1.2 Economic Developments, 1980–2001: Shift towards an Export-focused Policy

Beginning in 1980, prime minister Turgut Özal launched several economic reforms. These reforms constitute the basis of Turkey's liberal economic policy until today (see also State Planning Organization 2007, p. 5).

The government led by Özal refocused economic policies from import substitution towards export orientation. A free market regime was firmly established with liberalised imports and exports, accompanied by the development of free trade zones for attracting foreign investments. Especially by treating foreign and domestic capital equally, the strategic goal of an export-orientated industrialisation and a facilitation of the privatisation of the Turkish economy were pursued. Turkey's economy grew with an average growth rate of about 4% (CAGR) between 1981 and 2001 (figure 1). If the effects of several heavy recessions in 1994 and of natural disasters are excluded – for example, the 1999 earthquake in Turkey – growth rates of up to 10% were reached in several years (Nas/Odekon 1998; Öymen 2001, p. 100; Bertelsmann Stiftung 2012, p. 4; Macovei 2009, pp. 5 and 32; Eder 2003, p. 223; Schubert 1996, p. 47; Senses 1998, p. 11; Togan/Ersel 2005, p. 6).

Real GDP Development, 1981–2001

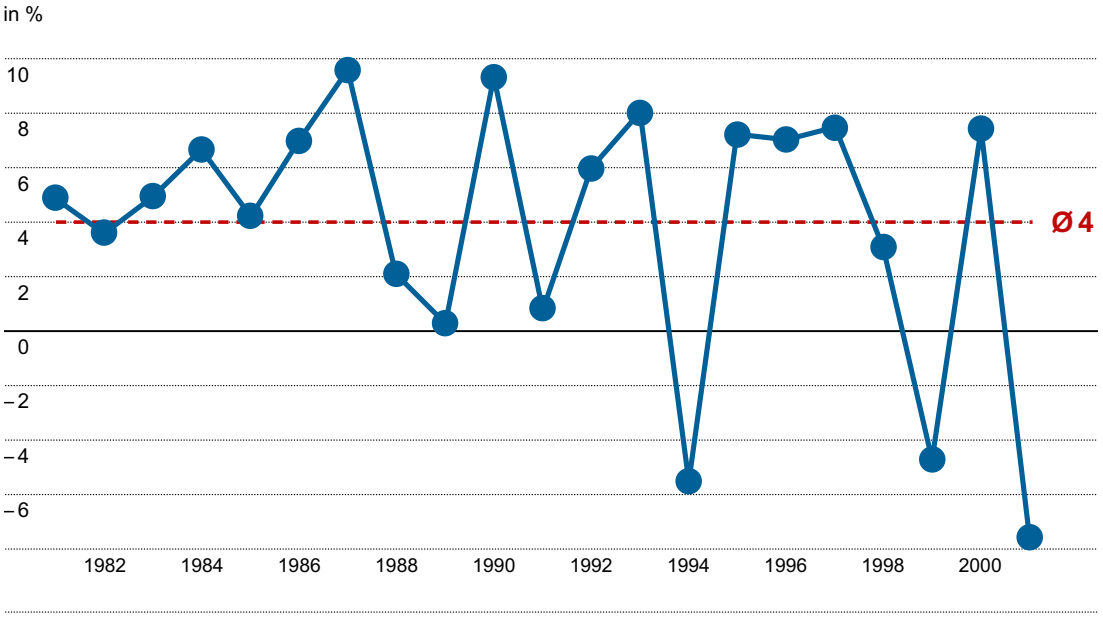

Figure 1: Real GDP Development, 1981–2001
Source: analysis based on TurkStat 2013a.

The macroeconomic developments between 1981 and 2001, in a nutshell, are summed up: An underlying strong development was frequently interrupted by deep crises – some political inflicted, some caused through natural disasters – and accompanied by

high inflation rates (e.g., 120% in 1994), a growing public debt ratio, a weak currency as well as an increasingly negative trade balance. The crisis of 2001 proved to be worse for Turkey than even as the world financial crises of 2008/2009 after the 'Lehman collapse'. The national industry production contracted by almost 8% in real terms and the Turkish Lira currency experienced severe depreciation compared to the US dollar (ICOC 2007, p. 15, Macovei 2009, pp. 2 and 4).

Turkey's international trade grew continuously between 1981 and 2001 (figures 2 and 3). A CAGR of about 8% was reached between 1991 and 2001.

Import and Export Share in Foreign Trade, 1981–1991
in bn USD

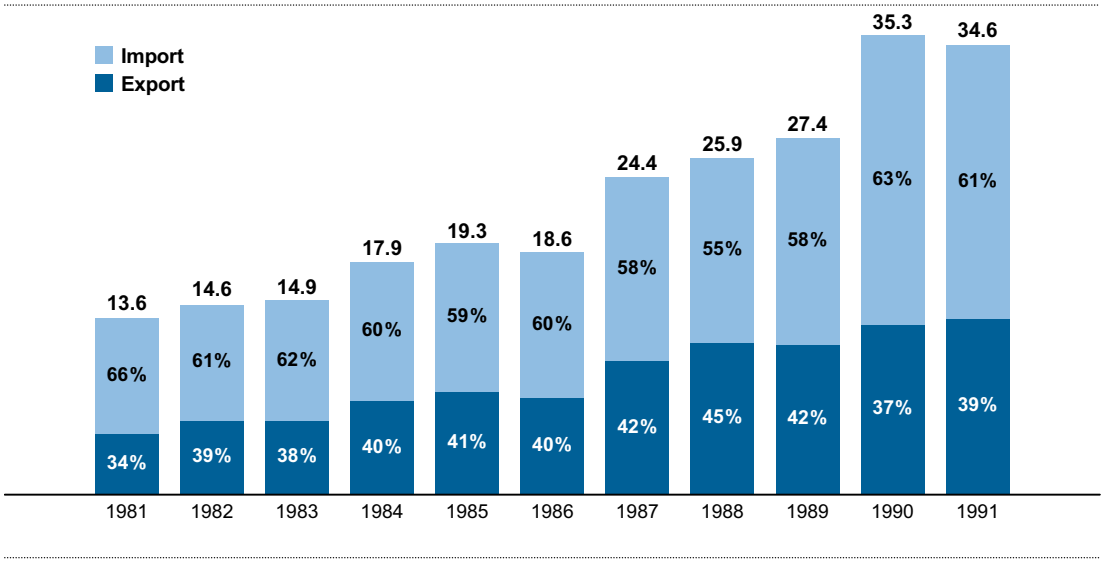

Figure 2: Import and Export Share in Foreign Trade, 1981–1991
Source: analysis based on TurkStat 2013a.

The foreign trade expanded even faster when Turkey joined the Customs Union in 1996 (figure 3). Turkey's trade balance, however, remained negative until today.

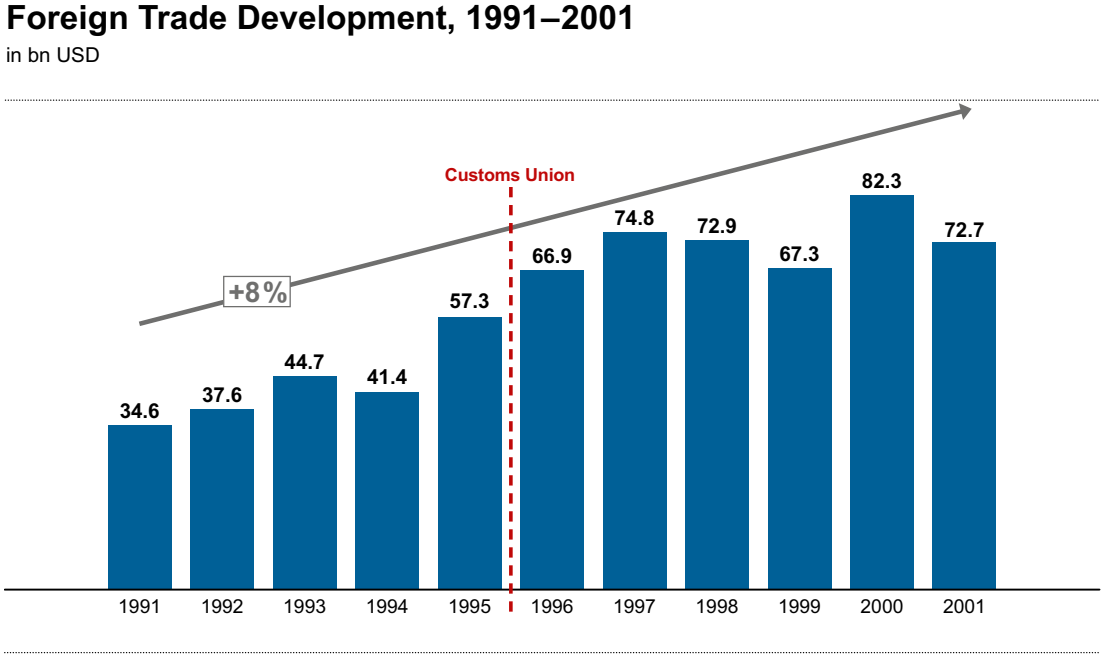

Figure 3 Foreign Trade Development, 1991–2001
Source: analysis based on TurkStat 2013a.

Beyond the Customs Union and the EFTA, Turkey established numerous other free trade agreements up to now: with Israel, Macedonia, Croatia, Bosnia-Herzegovina, Serbia, Morocco, Montenegro, Chile, South Korea, Jordan, Palestine, Tunisia, Syria, Egypt, Georgia or Albania. In addition, Turkey has initiated free trade agreement negotiations with further countries such as the United States, India, and Vietnam (Ministry of Economy 2013a).

In parallel to the successful expansion of international trade, Turkey's economic structure shifted from a dominant base in agriculture to a manufacturing- and service-based industry focus. The share of the agriculture sector in Turkey's GDP dropped down from about 40% to 12% between 1968 and 1998, whereas the share of the manufacturing sector reached about 24% in 1998 for the first time (Macovei 2009, p. 3; ICOC 2007, p. 17; Iskan 2009a, p. 110; Togan/Bayener/Nash 2005, p. 39; TurkStat 2013b).

1.3 Recent Economic Developments, 2001–2013: Striving for Macroeconomic Stability and Growth

The crises in 2001, as mentioned before, was an economic disaster for Turkey. New ways in structuring and guiding the economy were needed. As a consequence, Turkey started to set up an economic stability program corresponding to the stand-by agreement with the International Monetary Fund (IMF). The reform program mainly

aimed at establishing macroeconomic stability and to reduce Turkey's vulnerability towards external shocks. Reform program parameters as the following were put on the agenda: fiscal policy, labour and financial market regulation, tax policy, infrastructure, privatisation as well as foreign direct investments. Also the process of Turkey's membership negotiation with the European Union having officially started in 1999 helped in motivating the government to address these topics and to get the domestic system aligned with European standards.

By 2011, Turkey is ranking as the seventh largest economy in Europe (figure 4).

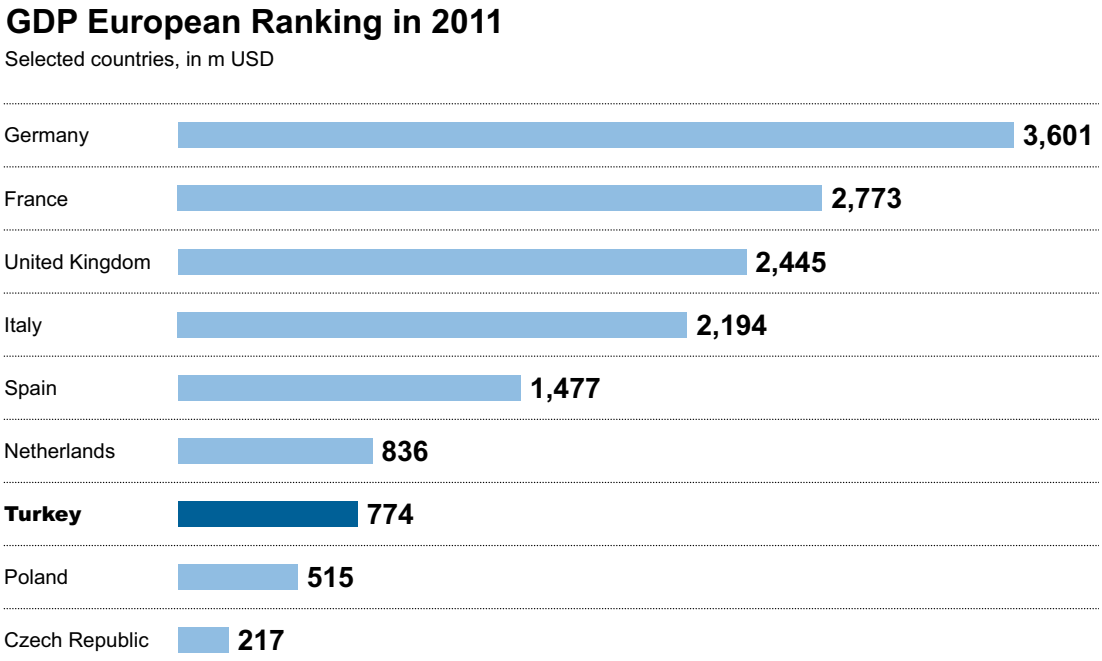

Figure 4: GDP European Ranking in 2011
Source: analysis based on The World Bank 2013 online database.

Once on a path towards macroeconomic stability, Turkey's economy demonstrated increasing dynamism and potential. A comparison with the BRIC countries (Brazil, Russia, India, China) shows that Turkey is among the world's fastest developing economies, outpacing Russia, Brazil, and the eurozone (figure 5). Based on the OECD Economic Outlook – May 2013, a real GDP growth is forecasted of about 3.1% for 2013 and of 4.6% for 2014 (OECD 2013a).

Real GDP Growth Rates, 2007–2014f

in %

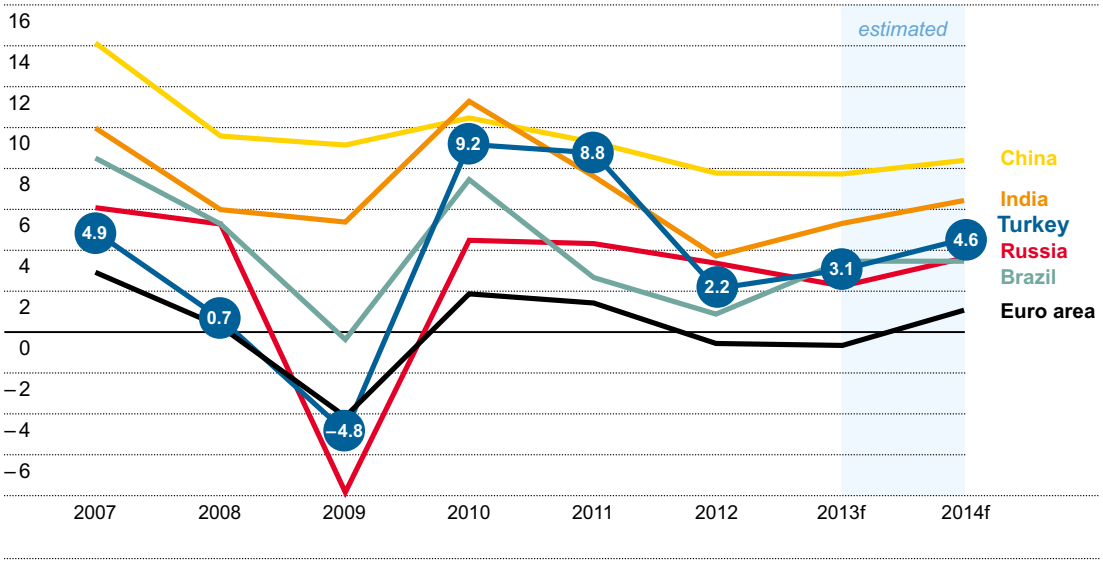

Figure 5: Real GDP Growth, 2007–2014f

Source: analysis based on OECD Economic Outlook – May 2013a.

In absolute numbers Turkey's GDP tripled between 2002 and 2008 to reach about 742 billion USD in 2008 and 786 billion USD in 2012 (figure 6). During the same period, GDP per capita increased from 3,492 USD in 2002 to 10,504 USD in 2012 (TurkStat 2013c). As a candidate state to the European Union, one of Turkey's prior objectives is to raise its living standards and to catch up with those levels of the member states.

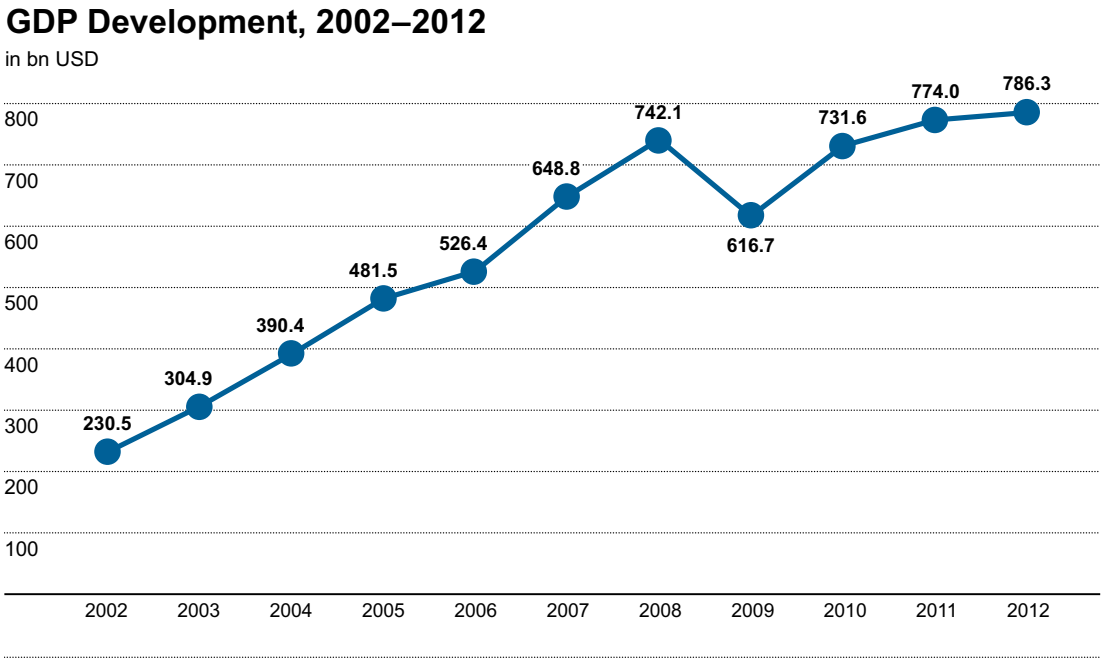

Figure 6: GDP Development, 2002–2012
Source: analysis based on TurkStat 2013c.

The foreign trade grew even faster during that period, quadrupling between 2002 and 2008 (figures 7). In 2012, the foreign trade reached about 389 billion USD while the share of imports in the foreign trade remained high with around 61%.

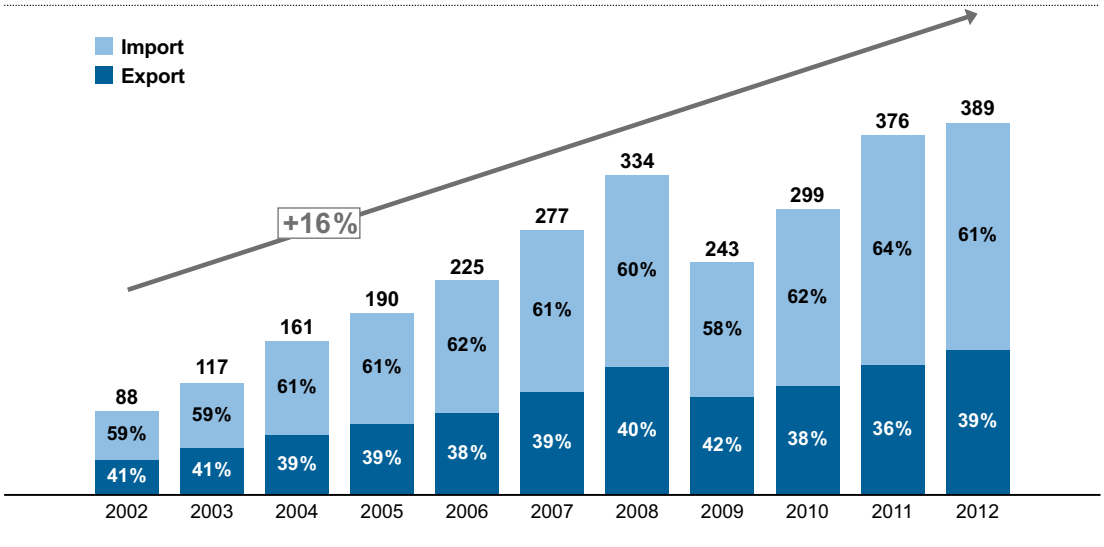

Figure 7: Foreign Trade Development of Turkey, 2002–2012
Source: analysis based on TurkStat 2013d.

The European Union is the most important foreign trading partner of Turkey covering about 40% of total import flows and 46% of export trading in 2010. It is worth mentioning that Russia (12%) outpaced Germany (10%) as biggest import market (figure 8). This fact, however, is mainly due to heavy imports of energy resources like oil and natural gas. A 'trading zone' promising more and more commercial opportunities to Turkey is Central Asia (CIS markets). Turkey has established close trading relations with the Turkic Republics of the former Soviet Union and is supporting them in developing democracy and free market economic structures (see also ICOC 2007).

Turkey's Major Foreign Trade Partners in 2010

in %

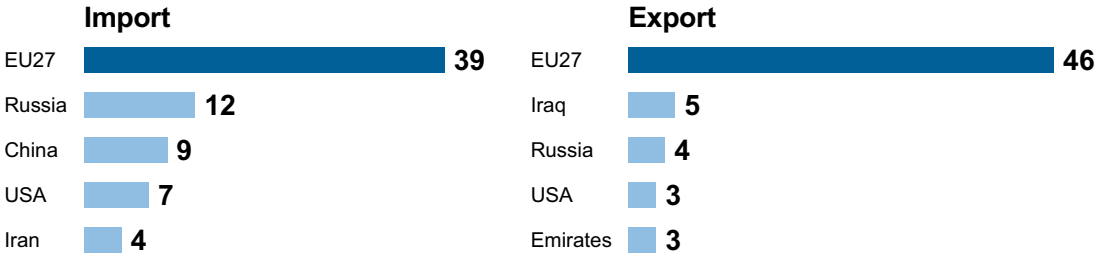

Figure 8: Turkey's Major Foreign Trade Partners in 2010
Source: analysis based on TurkStat 2013e, TurkStat 2013f, TurkStat 2013g.

The automotive and textile industries are the biggest export sectors of the Turkish economy, followed by industry segments like steel / tubes, food, electronics (incl. white goods) or chemicals and furniture.

Besides, Turkey became an attractive site for Foreign Direct Investments (FDI) with major capital inflows coming from the European Community (83%, for example from the United Kingdom, Austria, Luxembourg, the Netherlands, Germany). Other important regions with significant FDI inflows are (Central) Asia as well as the Near and Middle East with Azerbaijan, Iraq, Iran, and the States of the Persian Gulf like Saudi Arabia or the United Arab Emirates. In 2011, the FDI capital inflows reached about 15.6 billion USD (figure 9).

Foreign Direct Investments by Region, 2008–2012

Capital inflows exclusive real estate, in m USD

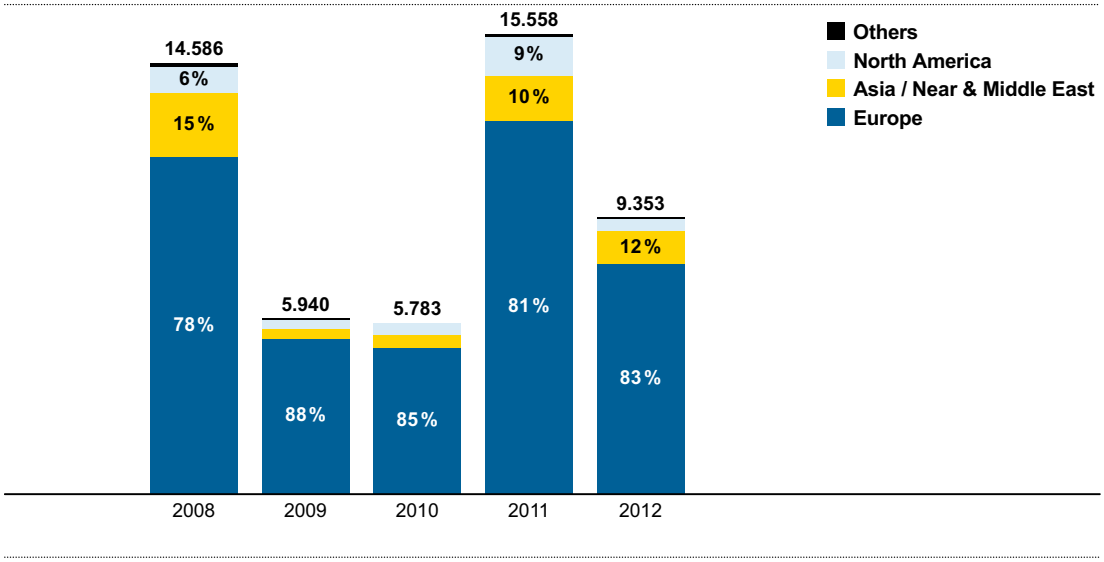

Figure 9: Foreign Direct Investments by Region 2008–2012

Source: analysis based on Prime Ministry Investment Support and Promotion Agency 2013.

Last but not least, the unemployment rate came down to a level below the average in the euro area (figure 10).

Development of Unemployment Rate, 2007–2014f

in %

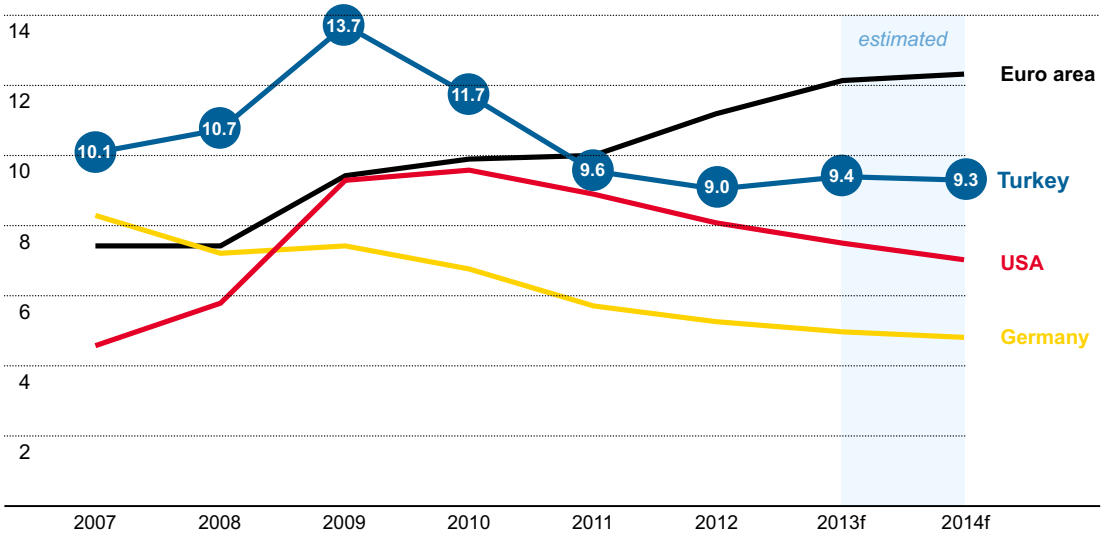

Figure 10: Development of Unemployment Rate, 2007–2014f

Source: analysis based on OECD 2013.

2. The Turkish Transport, Logistics, and Supply Chain Service Market

2.1 A Vision for 2023: Turkey as a Eurasian Logistics Hub

A well-developed, efficient transportation and logistics sector is the backbone for any economy. As the markets in Asia, Central Asia (CIS), and the Middle East are likely to become further integrated into the European and worldwide trade networks, an increase in transit flows passing through Turkey is expected.

Turkey's longer term economic policies are all directed towards 2023 – the year of the 100th anniversary of the modern Republic of Turkey. A target of reaching an export volume of about 500 billion USD – more than doubling the 2012 volumes (see figure 7) – has been set by the Turkish government. An enabler and an important factor in realising this goal will be the development and massive modernisation of the transport and logistics infrastructure. Since 2003, when a new transportation policy was passed, about 20 billion EUR were invested already in the modernisation of the transportation and communication sectors between 2003 and 2009 and two core approaches have been followed with respect to the logistics sector. Next to the investments into the domestic infrastructure, a strategic shift is pursued in the transportation modal mix: from rail to road. In this regards, projects for expanding the hinterland connections between container seaports and inland rail terminals as well as roadway development have a high priority (Ministry of Economy 2013b, p. 1; State Planning Organization 2007, pp. 26; TINA Vienna Transport Strategy 2007; Iskan 2009a, p. 23; o.V. 2009, p. 10; Soluk 2011, p. 2; Ergün 2011, p. 3).

These efforts, as outlined in the Turkish Industrial Strategy paper 2011–2014 (Ministry of Industry and Trade 2010, p. 105), will strengthen Turkey's evolution as a major industrial power based on its modest labour cost as well as a young, growing, and increasingly well-trained labour force, and, last but not least, because of its world-class quality in manufacturing (see also Iskan 2009b, p. 27; Basev 2011, pp. 49). Even more so, they will support the country's ambitions in growing transport and logistics sector on the basis of its unique geo-strategic position, i.e. of its closeness to the European, (Central) Asian, North African and Middle Eastern markets.

2.2 Measuring the Turkish Logistics Market Today: a 39-billon-euro Market

The measurement of the logistics market volumes at the national level is a challenging task everywhere (for a thorough discussion of this challenge see Rantasila/Ojala 2012).

Regarding Turkey, this proves to be especially difficult due to the rapid economic transition and the limited availability of internationally compatible statistics. There have been a few publications on the Turkish logistics market covering selected aspects, such as 'Verkehrsmittelwahl für internationale Lieferbeziehungen' by Iskan (2009a), the 'Transportation & Logistics Industry Report 2010' prepared by Deloitte and the Investment Support and Promotion Agency of Turkey, the 'Turkish Logistics Sector Analysis 2011' by the Istanbul-based Quattro Business Consulting, an issue on Turkey of the Council of Supply Chain Management Professional's (CSCMP) 'Global Perspectives' series (Cakanyildim/Haksöz 2012) and the previous country reports by the German Bundesagentur für Außenwirtschaft. Among transport industry magazines, the Deutsche Verkehrs-Zeitung (DVZ), Ost-West Contact Magazine (OWC) and Intermodal (Turkish Transport News) published by Aysberg Media occasionally have been reporting data and observations on the Turkish logistics market.

However, according to the authors' knowledge, so far there has not been undertaken any systematic and sufficiently documented effort to assess and track the 'national cost' of Turkey`s logistics systems and, correspondingly, to identify the revenue potential of the Turkish market for transport, logistics, and supply chainservices. Among other things, this situation results from language barriers, the patchiness of publicly accessible statistics, and a lack of consensus that exists regarding an appropriate market definition and an estimation methodology.

As preliminary steps towards closing this gap, we recommend to launch a four-step process to develop a plausible estimate of the national market.

Step 1: Defining market boundaries, data sources, and the principal estimation approach

The principal estimation approach and the market definition are based on earlier works by Klaus/Kille/Schwemmer (2011/2012, p. 12) and Distel (2005). The cost elements included in the logistics definition are illustrated in figure 11. It is consistent with the definition used in the US 'State of Logistics' reports (CSCMP 2013). The most basic data in the estimation is the national GDP statistics as provided by the Turkish Statistical Institute (TurkStat). In addition, the estimation considers an 'officially' reported share of the Turkish logistics sector on Turkey's GDP by the Turkish Ministry of Industry and Trade (2010). For a breakdown in transportation, logistics, and supply chain costs, the Davis (2004) benchmarking data model, as adjusted by Klaus/Kille/Schwemmer (2012, p. 12), is applied. Foreign currency translations from TL to EUR and from USD to EUR are based on OANDA closing rates by December 31st 2011 and 2012, respectively.

Step 2: From government reported economic sector data to an internationally comparable market assessment of the national logistics expenditure

The Turkish economy's sector of all transportation, storage, and communication activities – including passenger transportation and telecommunications – has been reported to account for about 14% of Turkey's GDP in 2012 of 607 billion EUR (TurkStat 2013b). According to the Turkish Ministry of Industry and Trade the cargo logistics share within the sector accounts for only 4% of GDP (Ministry of Industry and Trade 2010, p. 106). This would mean that the contribution of the Turkish logistics sector to the total GDP output is significantly lower as assumed in other studies on Turkey (e.g., Deloitte / Investment Support and Promotion Agency of Turkey 2010, p. 3, with a 8–12% share). A likely reason for this apparent inconsistency is in a very narrow definition of logistics applied by the Turkish Ministry, which is not compatible with those in established international studies.

The logistics sector of Germany, for example, as defined by the total national expenditure for all business related domestic and outbound freight transportation, all warehousing, picking/packing, related cargo handling expenditures and national inventory carrying cost represents about 8.5% of the German GDP, a total volume of around 210 billion EUR in 2011 (Klaus/Kille/Schwemmer 2012, p. 39). The national expenditure on logistics in the US, which has been estimated annually for the past 24 years on the basis of a well-published methodology is currently also set at 8.5% of GDP (compare the most recent US 'State of Logistics' report by CSCMP 2013 and Heskett/Glaskowsky/Ivie 1973 for the methodology).

The following considerations lead to a most likely current assessment of Turkey's national logistics expenditure, based on a definition and estimation approach comparable to the US, Germany, and other countries (Rantasila/Ojala 2012).

Basic premises are that the absolute levels of logistics activity of a country are determined primarily by the total population to be supplied with material goods, the level of economic development as measurable by GDP per capita, and the geographical expansion of a country. Comparing populations, Germany's 81 million inhabitants are quite comparable to Turkey's 76 million. Germany's GDP at 42,000 USD is still about four times higher than Turkey's at 10,504 USD nominally (about three times higher if purchasing power parity is applied). Higher levels of development are associated with more division of labour and deeper integration into international trade, which drive up the level of logistics activities, A growth of the service sector does not raise the levels of physical transport and warehousing activities. But then, Turkey's geographic expansion at 780,000 km² is about twice Germany's at 357,000 km² – leading to longer average transport distances and lower population density per square kilometre, which tend to raise national distribution costs. Finally, the comparative levels of labour cost

need to be considered: lower GDP per capita is always associated with lower average labour cost per capita.

Based on a weighted assessment of these facts, a most likely estimate of Turkey's current national logistics expenditure will be in the range of 6–7% of GDP – i.e. about 51 billion USD (equivalent to 39 billion EUR) or about 670 USD per capita. A geographical representation of this assessment, which is arrived by interpolation from national logistics data of about 40 countries, is included in the publication by Klaus (2008 p. 346). In 2008/2009, the Turkish industry and trading companies performed 75% of their logistics activities 'inhouse' (according to the Turkish Ministry of Industry and Trade 2010, p. 106; see also indications in Iskan 2009b, p. 25 and 2009c, p. 11). The expert interviews with Turkish logistics professionals and representatives of transportation logistics associations in Turkey, which were conducted by one of the authors between 2006 and 2013, and international comparisons suggest that by 2012 outsourcing is higher, probably at a still relatively modest share of 33% (equivalent to about 13 billion EUR in absolute terms) compared to a 49% outsourced share estimated with some confidence for Germany and other countries of the European Community (Klaus/Kille/Schwemmer 2011, p. 55). This is plausible, if the relatively low labour costs in Turkey are considered, which tend to reduce the incentives for outsourcing. An indication of the outsourcing levels by the activity segments is given in figure 12.

Step 3: From the total logistics market volume to a breakdown of logistics revenues by activity segments

In a third step, a breakdown in domestic transportation, logistics, and supply chain market revenues can be attempted. As previously mentioned, currently there is no statistical data source known in Turkey, which allows to easily subdivide the national expenditure by specific logistics activities in the 'European Top 100'. The results from a broad international study of company level logistics cost by the US consulting company Davis/Establish are being used as indication for a typical split between the core logistics activities (see figure 11, based on Davis 2004 and adjustments by Klaus/Kille/Schwemmer 2011/2012, pp. 28f):

(1) Transportation costs

(2) Warehousing / picking and packing costs

(3) Inventory holding capital costs

(4) Administrative and order related activities (related to core logistics activities)

(5) Company-wide supply chain planning and control costs

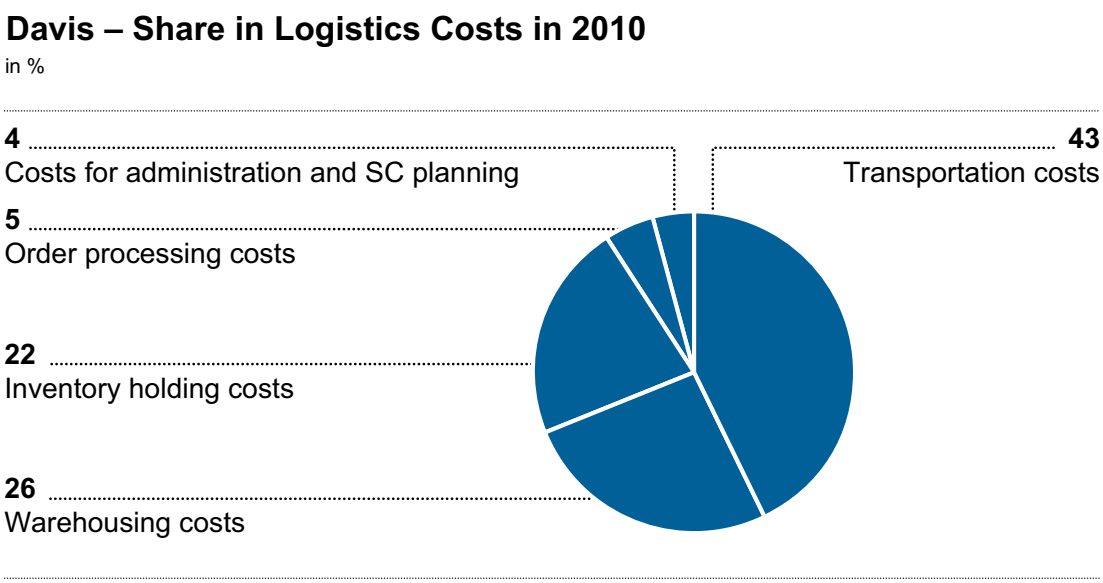

Figure 11: Share in Logistics Costs in 2010
Source: based on Klaus/Kille/Schwemmer 2011/2012, p. 29.

If this breakdown of total national logistics cost is applied to the estimated total logistics market volume in Turkey, a rough, but plausible revenue breakdown in transportation, logistics, and supply chain services can be arrived at. It leads to an estimate for the total transportation cost/revenue volume of about 16.8 billion EUR in the Turkish market. A share of about 90% of transportation spending is on domestic land transport – a relatively high value compared to Germany or other European markets (Iskan 2009a, p. 142; Bektas 2008, p. 1; Bundesagentur für Außenwirtschaft 2006a, p. 2; Deloitte / Investment Support and Promotion Agency of Turkey 2010, p. 7).

The authors' experience from comparisons of outsourcing patterns between mature industrialised countries and threshold countries further suggests that the outsourcing of transportation activities is advancing earlier and faster than the outsourcing of warehousing and value-added logistics activities, leading to the assessment shown in figure 12.

Segment	Total logistics market volume	Thereof estimated outsourced volume
Transportation costs	16.8 bn EUR	about 7–8 bn EUR
Warehousing costs / Contract logistics	10.1 bn EUR	2–3 bn EUR
Inventory holding costs	8.6 bn EUR	low
Order processing costs	1.9 bn EUR	low
Costs for administration and SC planning	1.6 bn EUR	low
Total logistics expenses	**39 bn EUR**	**about 13 bn EUR**

Figure 12: Tendencies in Logistics Outsourcing – Estimate for Turkey in 2012
Source: own assessment.

Based on the assumption of a 7–8 billion EUR share of total transport activities currently being outsourced to third parties, the Turkish market for truck transport service providers now is estimated to have a volume of more than 6 billion EUR.

Regarding border-crossing truck moves from and to Turkey, about 70% have been estimated to be full truckloads (FTL). The remaining 30% are assumed to be groupage and less-than-truckloads (LTL) moves. This split is based on several evaluation rounds with market professionals and industry association representatives in Turkey between 2006 and 2013 (see also Iskan 2008, p. 6; Iskan 2011, p. 10; Iskan/Klaus 2012, p. 11).

Step 4: Plausibility check – comparison to other reported results

It is difficult to assess the accuracy of the estimates that have been made about the national Turkish logistics market. Among the few publications accessible for comparisons and cross-checking only two offer some help (compare the sources quoted at the beginning of this section 2.2).

In 2011, a study by Quattro Business Consulting suggested an outsourced logistics business volume of about 37% (equivalent to 22 billion USD or 17 billion EUR) of a total national logistics expenditure of 59 billion USD (45 billion EUR) (see Basev 2011 and also www.quattrobc.com 'Global logistics industry'). These figures, which are also reported by a government commissioned report on the Turkish Transportation and Logistics Industry of 2010 (Deloitte / Investment Support and Promotion Agency of Turkey 2010), appear to be high, if not completely out of range, compared to our current estimate summarized in figure 12.

A final plausibility check can be derived from a comparison of relatively recent freight-tonne-kilometres (tkm) data and national transportation expenditure data – the biggest chunk in the national logistics cost bill. Figures reported in the OECD Factbook (2013b) suggest that there were 5,605 tkm of transportation output per capita required to service the population and industry in Germany, and 2,432 tkm (respectively 43%) per capita in Turkey. This reflects the differences in the levels of population, industrialisation, and economic development, hence the demand for goods transportation, quite appropriately. Due to much lower wage levels, the production of 1 tkm of transportation output is significantly cheaper in Turkey than in Germany – with a ratio of about 1 : 7 between the two countries, on a labour cost per hour basis (see also DIW 2011, p. 4). This results in a transportation cost relationship of about 1 : 2 for the production of a tkm-transport output, averaged across all modes. It follows, that Turkey's 38% of Germany's total transportation demand and output in tkm, produced at about half of the production cost per tkm, can be estimated to be about 19% of Germany's national freight transportation cost of 89 billion EUR – i.e.

16.8 billion EUR (Klaus/Kille/Schwemmer 2012, p. 46). This matches and confirms the estimate presented in figure 12.

2.3 The Biggest Logistics Service Providers in Turkey

There is limited transparency regarding revenues and business lines of companies in Turkey's market for transportation, logistics, and supply chain services. The situation is gradually improving, though (compare this report with Iskan 2009a). Figure 13 lists reported and estimated 2011 revenues of the biggest logistics service providers in Turkey, converted into EUR.

The information on revenues and employees in 2011 was drawn primarily from the following sources: official company homepages, Fortune 500 Türkiye 2011, company annual reports, and company press releases. In case of Barsan, CEVA Turkey, and Gefco only historic revenue data were available (e.g., 2008 data). To estimate the 2011 revenue figure, a pragmatic approach was applied by using growth rates of -7% for 2009 as well as +14% for each of 2010 and 2011 (based on the sector development according to TurkStat). Foreign currency translation from TL to EUR and from USD to EUR is based on OANDA closing rates by 31 December 2011.

Deliberately excluded from the list are companies with a focus on airport related handling (e.g., Havas) or passenger transportation such as the Istanbul sea bus operator IDO as well as the leading domestic passenger bus network operators like Kâmil Koç, Pamukkale, Metro and Özkaymak (Bundesagentur für Außenwirtschaft 2006b, p. 1; Iskan 2009a, p. 120). Also private port operators like the subsidiaries of Borusan Holding, ocean freight fleet operators like Arkas Holding and private cargo airlines like Pegasus Airlines were not fully considered due to missing data or share of cargo. Some large logistics service providers like the DHL Group, DB Schenker Arkas or Ulusoy Holding, of which there is only very sketchy information available, are listed at the end of figure 13.

Ranking	Company	Data quality	Cargo and logistics related revenues 2011 (in. m EUR)	Total company group employees	Main sources for revenue estimation
1	Turkish Airlines Cargo	+++	490	15,978	Fortune 500, website
2	Borusan-Balnak Lojistik	+++	463	4,000	Fortune 500, website
3	Barsan Global Lojistik	+	367	n.a.	assessment based on 2008 estimation
4	Ünsped Global Lojistik (UPS subcontractor)	+	312	2,500	assessment based on 2008 data, UPS website
5	Netlog Lojistik	+++	272	3,500	Fortune 500, website
6	Aras Kargo (25% Austrian Post)	++	250	5.400	press release of Austrian Post (30.7.2013)
7	Turkish State Railways	+++	239	35,642	Fortune 500, company information, website
8	Ekol Lojistik	+++	222	4,000	Fortune 500, website
9	OMSAN Lojistik	+++	215	1,250	Fortune 500, website
10	Horoz Lojistik	+++	212	1,000	Fortune 500, website
11	Fasdat Gıda	+	182		DVZ-Report 2011, Capital Turkish Vol. 8/2012
12	Mars Logistics	+++	129	1,000	Fortune 500, website
13	CEVA Turkey	+	114	5,500	assessment based on 2008 data, Logistics Partner website
14	Reysaş	++	101	n.a.	Fortune 500, website
15	Yurtiçi Cargo (Geopost/ DPD-Partner)	+	believed >> 100	11.000	website
	Ulusoy Lojistik Holding	+	believed >> 100	n.a.	diversified holding with significant transport and logistics operations
	DHL Group Turkey	+	believed >> 100	n.a.	DHL website – biggest foreign based provider
	DB Schenker Arkas	+	believed > 100	n.a.	press releases (DVZ 28.8.2012), capitalisation of 84 m EUR
	Gefco Türkiye	+	91	n.a.	assessment based on 2008 estimation, Hürriyet online
	Alişan Lojistik	++	90	n.a.	Fortune 500

Figure 13: The Top Logistics Service Providers in Turkey in 2011

Source: own assessment based on listed sources.

The total sales of the 15 largest logistics service providers amount to 3.5 billion EUR, about 4 billion EUR for the 'Top 20', respectively. This corresponds to a current market share of 27% on the estimated volume of the total outsourced logistics business in Turkey of 13 billion EUR. Just like in other parts of Europe, the big providers tend to grow faster than the very large number of smaller ones.

The most dynamic growth developments by Turkish logistics service providers are among those who focus on international transportation, as Turkey's participation in the global economy is rapidly advancing (see figures 7 and 8). Just one example is Ekol, who consider themselves 'the fasted growing transport company in Europe' (see Ekol homepage www.ekol.com as of July 2013). Ekol not only doubled their revenues to about 284.4 million EUR and increased their number of employees up to about 4,000 in 2012 (Ekol 2013). While the growth of transportation services clearly contributed most to the logistics service provider industry's growth so far, in coming years domestic based contract logistics and integrated supply chain services will become more important.

The development of integrated national networks with full geographic coverage is an aspect where the Turkish transport industry is still lacking. Especially the operations of the international logistics service providers are mostly concentrated in the industrial clusters of Istanbul, Bursa, Izmir, and in some cases – for example, DHL – in the Greater Ankara area.

2.4 Service Provider and Shipper Interrelationships in the Turkish Market

The role of powerful Turkish family holdings, such as Koç, Oyak, Sabanci, Ülker, Doğuş, Enka, Zorlu, Borusan, Anadolu, Tekfen, Ulusoy or Arkas, is a notable characteristic of the Turkish logistics service provider market. This means that there is not only a concentration among the providers of logistics services going on, but there exists also a thick network of relationships between the shipper and the logistics provider sectors in the economy. In 2010, the consolidated revenues of the 'Top 10 Turkish Holdings' counted for about 14%, or 72 billion EUR, on Turkey's GDP (Iskan/Klaus 2012, p. 11). Based on an analysis of their annual reports, Koç Holding is the biggest Turkish holding with revenues of about 27 billion EUR followed by Oyak (11 billion EUR), Sabanci (9.7 billion EUR) and Ülker (7.8 billion EUR). These Turkish holdings do not only have a deep footprint in the automotive industry (e.g., Ford Otosan, Fiat Tofaş, Renault Mais or Temsa), the financial and insurance sectors (e.g., Oyak Anker Bank, Yapıkredi/UniCredit, Arkas or Ulusoy Insurance) or in the media and press landscape (e.g., Doğuş with newspapers and broadcasting media), but do also have major shares in leading Turkish logistics service providers.

Among the most interlinked logistics service providers are DB Schenker Arkas, CEVA Turkey, OMSAN Lojistik, Netlog Lojistik, Yurtiçi Cargo or Ulusoy Lojistik. Taking the example of Arkas holding, this group is represented with about 40 subsidiaries in the Turkish market. Next to activities as official importer of Volvo or Ford cars, Arkas is the leading private port operator (Marport) in Turkey and is running the biggest ocean freight fleet under Turkish flag. CEVA Turkey, to mention another good example, arouse 2000 from a Joint Venture between Koç Holding and the TNT Group, which lasted until 2004. OMSAN Lojistik was founded by the Turkish military pension fund Oyak; Yurtiçi Cargo and the Netlog Group are essentially financed by the Arıkanlı Holding (together with the French Geopost) and Ülker holding, respectively.

Last but not least, there are multiple relationships and alliances between Turkish transportation and logistics companies and their international counterparts. In the less-than-truckload segment Sertrans is a member of Germany-based System Alliance. In the parcel segment, leading international service providers have subcontractor links with domestic distribution networks: FedEx with Coneks, UPS with Ünsped Global Lojistik, Geopost/DPD with Yurtiçi Cargo.

The Turkish business activities of international logistics service providers, such as Rhenus, Dachser, Geis, Militzer & Münch or DB Schenker Arkas, are, in similar ways, often based on cooperative relationships with domestic Turkish companies: Rhenus, for example, collaborates with its Turkish partner Balnak Lojistik; in the past, Dachser had access to the Turkish network of Ran Lojistik; in 2012, Militzer & Münch acquired the Turkish ATC Group, and Japan Hitachi Logistics recently bought a 51% share of Mars Logistics (see Lojistik Hatti 2013). Furthermore, Geis uses the network of Horoz Lojistik; the German logistics service provider Meyer & Meyer, specializing in fashion logistics solutions between Germany and Turkey, is collaborating with Borusan, and also, there exists an cooperation between Willi Betz and Borusan/Gefco to distribute finished vehicles in the Turkish market. Willi Betz not only imports finished vehicles from Bulgaria to the Borusan/Gefco compound in Kocaeli but also uses Turkey as a freight hub for its Turkey and Central Asia related full loads. The former PSA Peugeot Citroën daughter Gefco also offers finished vehicle transportation in Turkey and is believed to manage revenues of about 90 million EUR since its market entry in 2003.

Several international logistics serivce providers have developed strong Turkish activities on their own. Due to their former close ties to Koç Holding, CEVA Turkey operates a significant business in land transport as well as contract logistics with Koç related companies in the market, such as Ford Otosan, Fiat Tofaş or Migros. DHL Freight, for example, is developing Turkey to a land bridge for supplying the Near and Middle Eastern markets as well as the Central Asian and CIS markets (see also Siegmund 2009, p. 8).

With respect to the automotive segment, about 15 finished automobile distributers are operating dealership supply and compounds in the Turkish market with a basis in the Marmara and Bursa cluster. Passenger cars are moved by Agaçlı, Gefco/Borusan, Willi Betz, Gürsoy, Ilce, Mertur, OMSAN, Reysaş and Hödlmayr, whereas commercial vehicles are carried predominantly by specialists like Matrix, Mobi-Taş or Vega. Gefco, for example, not only owns a dedicated truck fleet for finished vehicles distribution but also uses the Turkish based forwarders ANT, Tirsan Lojistik (TLS) or Matrix as subcontractors. Agaçlı, OMSAN and Mertur are likely to be one of the market leaders in this special segment in Turkey, as they hold business relationships to mass manufacturers in Turkey. Mertur, for example, is operating for Doğuş Otomotiv – the general importer of finished vehicles and spare parts of the Volkswagen Group in Turkey.

3. A Detailed View of the Land Transport Sector in Turkey

3.1 Infrastructure

In Turkey, land transport is the main mode for freight and passenger transportation – representing about 90% of the country's total transportation spending of about 16.8 billion EUR. Of this sum, according to the estimates discussed in section 2.3 and summarized in figure 12, about 7–8 billion EUR are currently outsourced to third-party transport companies. Despite the modernisation and expansion of the road network during the last ten years, its density and capacity are still behind the level needed. The Turkish government continues to invest in the modernization and extension of the existing road infrastructure to improve the connection of the main industrial zones like Istanbul, Bursa, Izmir, Samsun, or the Greater Ankara area. Especially the Istanbul area with its estimated 14–20 million population suffers under a chronically and heavy traffic flow around the clock. In addition to the existing Bosphorus bridges Boğaziçi (1973) and Fatih Sultan Mehmet (1988), a third one is planned in the North of Istanbul. This bridge will be embedded in the Black Sea Ring Highway, passing through Turkey, Georgia, Armenia, Azerbaijan, Russia, Ukraine, Moldova, Romania, Bulgaria, Serbia, Albania, and Greece with a total length of about 7,000 km (IRU, International Road Transport Union 2013).

Figure 14: Black Sea Ring Highway
Source: IRU 2013.

Today, the E5 motorway between Istanbul and Ankara as well as the Trans-European Motorways (TEM) are the heart of the Turkish road network with a total length of about 85,748 km, comprising only 2,127 km of motorways and around 31,375 km of state highways (TurkStat 2013h). The Trans-European motorways pass through Poland, Austria, Bosnia-Herzegovina, Bulgaria, Croatia, the Czech Republic, Hungary, Italy, Latvia, Romania, Slovakia, and Turkey.

Figure 15: Road Network in Turkey
Source: General Directorate of Highways 2013.

The road network is still hold and managed by the Republic of Turkey, but the privatisation of parts of the domestic road infrastructure, including bridges, has already started. In 2004, first initiatives were introduced like the passenger car check by TÜV Süd. 189 stationary and about 80 mobile check stations were established with an investment of 600 million EUR (Deutsche Türkei Zeitung 2009). With the support of the Turkish Doğuş Holding and the construction company Akfen, TÜVTÜRK was founded and assigned for the new passenger car checks.

3.2 The Domestic Land Transport Market: More Facts and Figures

The total land transport expenditure volume of about 15 billion EUR (90% of the estimated 16.8 billion EUR for transportation of all modes) is split up between shipper operated 'private carriage' and an outsourced share of 7–8 billion EUR each. The outsourced market is believed to be divided into about 2/3 of full-truckload (FTL) and 1/3 of less-than-truckload (LTL) services, as pointed out in 2.2. Turkey is the home of one of the biggest land transportation fleets in Europe (about 5-7m units like: minibuses, buses, small trucks, heavy trucks, special purpose trucks and tractors; TurkStat 2013i). Thanks to this, Turkey has become the biggest production location for coaches and the third biggest manufacturing market for light commercial vehicles in Europe. Turkey is also one of the biggest European sales markets for commercial vehicles, especially for medium and heavy trucks as well as for long-distance coaches (Yüzal/Sari 2008, p. 2; Iskan 2009a, p. 111).

The third-party segment of the land transport industry comprises 3,216 companies with around 400,000 professionals. An estimated international heavy truck fleet of about 50,000 truck units and 49,000 trailers is available for international services (O.V. 2011a, p. 62; Iskan 2009a, p. 143; Iskan 2008a, p. 6; Iskan/Klaus 2012, p. 11). This truck fleet operates across the European, (Central) Asian, and North African continents. Transportation solutions are mainly offered in the automotive industry and other branches like electronics, furniture, textiles, FMCG, and (fresh) food (o.V. 2011a, p. 62).

Unfortunately, Turkey's revised freight transport legislation, which was introduced with about 40 different certificates in 2003, forms an obstacle to the market entrance . This policy can be considered as an indirect market adjustment among the transportation companies (Iskan 2006, p. 85; Iskan 2008, p. 6; o.V. 2011a, p. 62). The certificates must be renewed every five years. For cross-border and international freight operations, Turkish transportation companies need a C2 certificate, whereas international and domestic logistics operations require a L2 certificate, for example. Logistics service providers, running an asset-light business model, are expected to have the highest certificate costs. Since 2003, about 1,600 C2 certificates were distributed by the Turkish Ministry of Transportation and Communication (o.V. 2011a, p. 62; Iskan

2009a, p. 144). In addition, Turkey introduced further road transport regulations in 2005, which banished by law commercial vehicles being older than 22 years and led to a vitalisation of commercial vehicle production in the Turkish market (Iskan 2009a, p. 144).

Changes of this sort generate both, opportunities and risks for the Turkish and international companies in this segment. It can be assumed that the run of the smaller transport companies without a diversified service portfolio will be increasingly exposed to risks, including ones of a financial nature (Iskan 2009b, p. 27).

3.3 Cross-Border Land Transport Operations

As previously mentioned, Turkey's economic objectives are directed towards 2023, the 100th anniversary of the Republic of Turkey. For this occassion, the Turkish land transport industry has set ambitious targets. According to UND, the Turkish Transporters' Association, land transport carriers aim at gaining a share of about 50% of the given export target of 500 billiion USD (o.V. 2011a, p. 62). In 2011, Turkish cross-border land transportation had a share of 44% in Turkey's total export transports, which means 80,000 transit movements, 1.1 million export trips (or 24 million tons) as well as about 310,000 import runs (or 8.5 million tons) (o.V. 2011a, p. 62). By using 20 border gates, out of which eight are RORO, the following main export destinations are serviced: Germany, Romania, France, Italy, Iraq, Iran, Syria, Jordan, Saudi Arabia, Azerbaijan, Georgia, and Turkmenistan (o.V. 2011a, p. 62).

The authors' experience between 2006 and 2013 says that Turkish carriers like OMSAN and Ekol operate cross-border runs on the basis of highly professional fleet management practices. Cross-border orders are serviced with own trucks and trailers, whereas domestic business is mostly outsourced to small subcontractors. European destinations are serviced by RoRo ports, such as Çeşme (Izmir) and Triest (Italy), for example. When 'pure' land transport is used for European destinations, however, cross-border runs are routed via the Turkish-Bulgarian border gates Kapikule-Svilengrad and Hamzabeyli-Lessowo. With respect to fleet management activities, cross-border runs are managed tough and straight. For each international run, a detailed schedule and routing with defined stops, driver breaks, required gas, and fees is calculated. Turkish trucks are only filled with gas to reach the Turkish-Bulgarian border gate, where gas is less expensive than in Turkey itself. Their drivers receive monetary penalties when using gas stations out of the defined route. In general, drivers with more than 5–8 years of work experience in their company are ordered for cross-border runs.

In 2007, the Turkish land transport carriers had a share of 82–84% in both, import and export runs (Iskan 2009a, p. 146; Bektas 2008, p. 5). The modal split in Turkey's foreign trade 2007 is summed up in figure 16.

Exports 2007

	Turkish logistics service providers	Foreign logistics service providers
Land transport	82%	18%
Sea freight	23%	77%
Airfreight	55%	45%
Total	50%	50%

Imports 2007

	Turkish logistics service providers	Foreign logistics service providers
Land transport	84%	16%
Sea freight	34%	66%
Airfreight	75%	25%
Total	50%	50%

Figure 16: Modal Split in Foreign Trade 2007
Source: Iskan 2009a, p. 146.

With respect to international agreements in land transportation, Turkey is part of the most important conventions like the Land Transportation Agreement (1949), the Customs Agreement on International Transportation / TIR Agreement (1975), the International Convention on Harmonization of Border Control (1982), the Convention on the Contract for the International Carriage of Goods by Road (CMR) as well as the European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR, o.V. 2011a, p. 62).

3.4 Challenges in Cross-Border Road Operations: Quotas and Processes

The Turkish land transport carriers face several specific challenges in cross-border operations, especially with respect to the European Union. Currently, 24 member states of the EU-27 have quotas and visa obligations for Turkish land transportation carriers in place, which is considered as a serious bureaucratic challenge between the European Union and Turkey (Özmen 2011, p. 9). The IRU estimates, that these complicated border-crossing processes lead not only to increased paper work on a shop-floor level but also result in costs of about 3.5 million USD, created by waste of time at the border gates (Nuhoglu 2011, p. 7). The following example shows how political tension can immediately turn into operational challenges for the Turkish transportation business: in April 2010, a new RoRo short sea line was established between Turkey and France connecting Tekirdağ and Toulouse. Subsequently, the line was closed for a certain time in 2011 and 2012, when the former French government under

Sarkozy initiated a law during his election campaign dealing with the former Ottoman Empire and its military past in the 1920s.

Europe's biggest border entry gate is the Turkish-Bulgarian station Kapikule-Svilengrad (see Iskan 2009a, p. 161). As this border gate plays an important role in the cross-border movements of Turkish carriers, the Edirne General Office of Customs and Enforcement conducted a study dealing with processes and infrastructure at this border (see in detail o.V. 2011b, p. 24). In May 2011, 1,920 truck drivers, having crossed that border gate more than three times in the past (thereof 80% were Turkish drivers), were interviewed.

The interviews delivered findings, which definitely need to be put on an international political agenda. According to this study, the most severe and urgent topic is seen in 'payment without any legal basis' on the Bulgarian, Romanian, and Serbian sides. This means, there are still in common former daily practices, which are well-known from the 1970s, 1980s, and the post-Balkan-war times in the 1990s. In those days, even private families were subjected to such illegal practices on the way along the so called Balkan Route leading from Central Europe to Turkey. Besides, it should not be forgotten that the above-mentioned three countries recently became official members states of the European Union. Their customs and police controls concerned, for example, claim missing documents or incomplete border processes and demand 'motivation fees' between 5 and up to 250 EUR per truck. Finally, a spot light was given to the question what causes long waiting lines at the Kapikule border. The main reasons for this inefficiency were seen in slowly performed processes on the Bulgarian border side Svilengrad as well as in the insufficient number of fuel pumps at the gas stations on both, the Bulgarian and Turkish sides.

4. Rail Freight in Turkey

4.1 Infrastructure

After having been rather neglected by government policy and investment for more than 50 years, now railways in Turkey experience an increased attention and revitalisation. In 1960, their domestic modal share was about 30% and declined in the 1980s to less than 10% (Beyer/Solak 2008, p. 24; Iskan 2009a, p. 146). Since 2003, however, important steps have been initiated to enhance and modernise the existing railway network. The Turkish State Railways (TCDD) plan to invest about 23.5 billion USD until 2023, again, the year of the 100th anniversary of the Republic of Turkey (BFAI 2008, p. 4). The first railway lines date back to 1856 when the line between Izmir and Aydin was started and, finally in 1888, Turkey was connected to 'Europe' via the lines Istanbul-Edirne and Kirklareli-Alpullu (TCDD 2007, p. 3; Iskan 2009a, p. 148).

In 2012, the Turkish rail network had a total length of 11,400 km. Thereof about 22% were electrified, 28% signalised, and 5% are double lines (TCDD 2013; TurkStat 2013k). Cargo trains can be generated up to 550 m of length and with a maximum train load of 650 tons and up to 2,400 tons when using diesel traction or 1,200 tons when having electrified lines in place (TCDD 2013). In the domestic rail network, cargo can be moved with a speed of 65 km/h. Electrified traction opportunities only exist between the Turkish-Bulgarian border station Kapikule and the Bosphorus train station Sirkeci on the European side as well as between Eskişehir and Irmak. A catenary is missed on most of the Turkish lines resulting in operations with cost expensive diesel-based traction instead of e-traction (TCDD 2013).

The Turkish railway network has a total capacity of about 35 million tons annually (TCDD 2013). Day-to-day business, however, proves that TCDD's rail lines have a high utilisation degree which is a consequence of the insufficient infrastructure with single line operations (TCDD 2013). As mentioned above, 95% of the rail network are single lined. This critical situation can only be solved by a second line (TCDD 2013). Besides to the public rail network, TCDD also offers direct railway connections to manufacturing plants. Despite this opportunity, so far only two companies have a noteworthy direct rail access to the TCDD rail network: Bosch und Siemens Haushaltsgeräte (BSH) in Çerkezköy and the Turkish tube producer Noksel. Cross-border transportation is run via the following gates (TCDD 2008): Bulgaria (Kapikule–Svilengrad), Greece (Uzunköprü–Pythio), Syria (Nusaybin–Qamishli, İslahiye–Meydan Ekbaz and Çobanbey), Iran (Kapıköy–Razi) and Armenia (Doğukapı–Ahuryan).

Figure 17: Rail Network in Turkey
Source: TCDD 2013.

■ Istanbul-Halkalı Railway Terminal

In Turkey, railway terminals are managed by TCDD. Bonded warehouses in customs areas are administrated by TCDD and rent to domestic and international logistics service providers as in case of the Turkish railway hub Istanbul-Halkalı on the European side. The chronically crowded Instanbul-Halkalı railway terminal comprises an open area of about 135,000 m², 100,000 m² warehousing space, and about 17,000 m² TIR parking opportunities for import and export land transportation handling (TCDD 2013). Bonded warehouses operated by the state authorities like TCDD do not need customs permission but it is obligatory for any domestic and international logistics service providers. In Istanbul-Halkalı, Barsan Lojistik established two new major warehouse facilities in 2009. The existing warehouses, which partly have trans-shipment opportunities for rail and land flows, are in poor conditions. Besides to Barsan Lojistik, bonded warehouses are operated by Express-Interfracht belonging to Rail Cargo Austria (RCA), DB Schenker Arkas, Nunner Lojistik and Handerhan Lojistik.

Istanbul-Halkalı railway terminal still suffers from the heavy flood in 2009 that has significantly damaged most of the bonded warehouses with rail-land transshipment access. An ‘environmental zone’ was established that makes operations and renewals of bonded warehouses in this area more complicated due to several challenges with State Authorities’ paper work and Central City Planning (for example missing construction permissions of former times).

Figure 18: İstanbul-Halkalı Railway Terminal
Source: TCDD 2013

■ Current Construction Work and Line Renewals

The Turkish government and TCDD aim to increase the modal split by constructing and renewing of about 14,000 km lines until 2023. With financial and technical support from the Republic of China extensive efforts have already been started to modernise the Turkish rail network (TCDD 2013). About 1.7 billion USD will be invested in line renewals and approximately 2,500 freight wagon units are planned to be purchased. A further 2 billion USD will be spent for electrification and locomotives; 12.5 billion USD are used for about 70 high-speed train sets (TCDD 2013).

The following lines will be renewed and constructed: Ankara–Istanbul (533 km), Ankara–Konya (202 km), Ankara–Sivas (460 km), Ankara–Izmir (606 km), Bursa–Osmaneli (106 km), Ankara–Kayseri (150 km) and Halkalı-Kapikule (230 km).

Since TCDD started its modernisation works between Çerkezköy and the Istanbul railway terminal and between the industry zones Gebze and Köseköy in 2012, rail-based freight carriers and operators like Express-Interfracht, Gartner, Reysaş, Eksper, Adria Kombi / Kombiverkehr or Transfesa (DB Schenker Rail) face severe obstacles when operating conventional wagons, 40ft and 45ft containers or mega trailers in the corridor IV / X. Despite these necessary developments, the railway has become a bottleneck and challenge in the day-to-day business. To make matters worse, TCDD is known for an unpredictable information flow. Consequently, obstacles are predicted until 2014. As lines are fully closed or closed for a minimum of four days per week, most of the operators have booked time slots for their loading and unloading operations in the Çerkezköy terminal. This terminal, however, is a combination of a passenger and freight station and has no appropriate infrastructure to handle these block train volumes at all. A delay of up to four days (during peaks) is seen there actually.

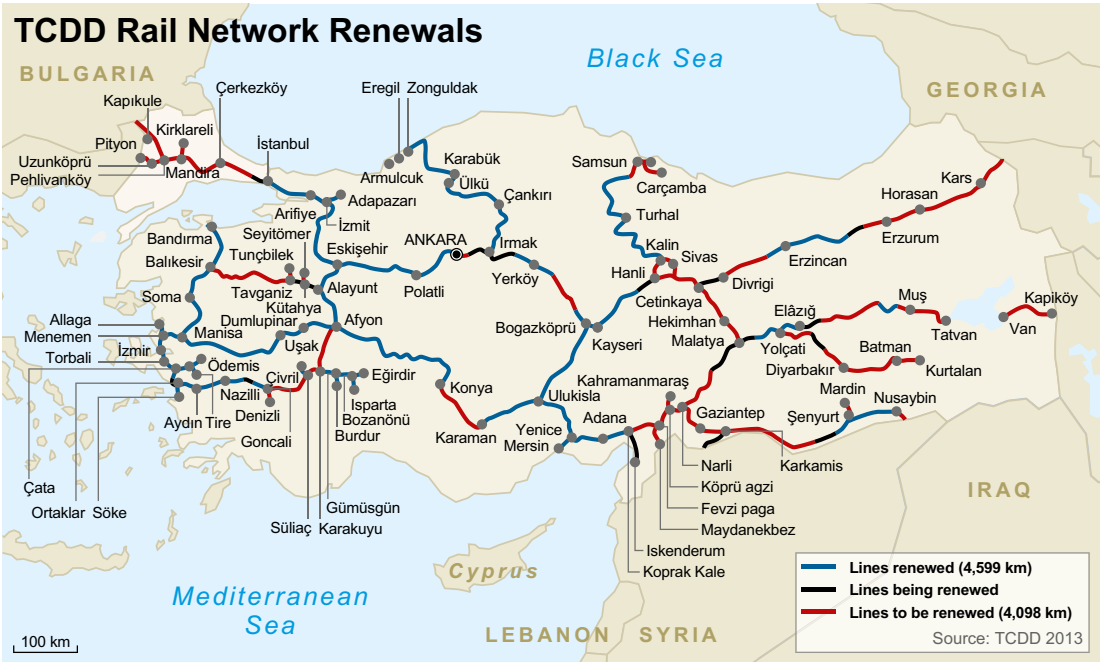

Figure 19: TCDD Rail Network Renewals
Source: TCDD 2013.

■ Muratlı–Tekirdağ Line

With the Muratlı-Tekirdağ line (31 km), TCDD has launched a strategic freight route. By this, two routings will be available for European import and export flows: besides to the existing Kapikule–Çerkezköy–Istanbul (Halkalı) line, in future times, freight flows can be routed directly to the Tekirdağ seaports (Akport). Rail wagons will be forwarded to the ports of Bandırma and Derince by ferryboats. However, there are still no ferryboats available for crossing the Marmara Sea. Actually, this is a serious topic, as, up to now, TCDD has corrected its announcement several times to start the operation of the ferry line. This given fact has already led to a business loss for several logistics service providers who depend this line due to the closed Çerkezköy–Istanbul (Halkalı) rail line and the closed Bosphorus ferryboat service in Istanbul (Sirkeci–Haydarpaşa). Therefore, at the moment, railway operations are quite unpredictable not only in Turkey but also across the entire transportation corridors IV and X. A reliable ferry connection for freight wagons, crossing the Bosphorus, is needed urgently. This becomes even more obvious, when one considers that the intended midnight time slots are not sufficient for freight trains in the Marmaray Tube (crossing the Bosphorus underwater) and hazardous goods like airbags for the Turkish automotive industry will be transported through the tube not at all.

■ Marmaray Project – Bosphorus Tube

The Marmaray project was initiated in 2001/2002 and aims to connect the European and Asian parts of Istanbul up to the industry zone of Gebze by a Bosphorus underwater tube by the end of October 2013. The time frame of the project has been adjusted already several times – among others, due to important historical founds. Marmaray is considered to be the biggest and one of the most complex infrastructure projects for both, passenger and freight transportation worldwide. This is also due to the geographical position of the Istanbul area. The Marmara Sea and southern parts of Istanbul are situated in one of the most active seismic zones of Turkey. The Turkish investments of about 3.5 billion USD are financed by loans of the Japan Bank for International Cooperation, the European Investment Bank, and the European Council of Development Bank. Avrasya Consult, a joint venture of Yüksel, Pacific Oriental Consultants, and Japan Railway Technical Service (JARTS), was appointed as the overall project management. The assigned consulting companies are specialised in earthquake-related constructions (o.V. 2007, pp. 26; Railway Gazette International 2008a, 2008b, and 2008c; Turkish Ministry of Transport and Communication 2008; Marmary 2013).

In the total construction of the Marmaray project line comprises about 70 km with 37 stations. Thereof, a Bosphorus tube has already been constructed with a length of 1.4 km and at a depth of 56 m under the sea. The underground stations in Yenikapı, Sirkeci, and Üsküdar are newly constructed. The total length of 76 km can be passed in 105 minutes. Passenger transportation will be available in a 2–10 minutes frequency. The passenger system has a total capacity of about 76,000 inhabitants per direction and hour. The passenger trains will run with a maximum speed of 100 km/h, whereas freight trains are limited to 45 km/h. Hyundai Rotem won the tender to supply 440 passenger wagons with an order volume of 580 millio EUR. The wagons will be supplied until 2014 (see also Marmaray 2013; Iskan 2009a, p. 154).

■ Kars–Tbilisi–Baku Railway Line

In 2007, Turkey, Georgia, and Azerbaijan agreed on the development of the railway line Kars–Tbilisi–Baku (KTB project), which is part of the Silk Road revitalisation plans. The KTB line will be embedded in the railway connection between Central Europe and Asia. The planned railway line has a total length of 105 km. Thereof, about 76 km will be laid in Turkey and 29 km in Georgia. According to TCDD, over 50% on the Turkish side has been completed. The annual freight volume is planned to increase from 5 million tonnes p.a. up to 30 million tonnes p.a. over the next 15 years (TCDD 2013; Media Monitoring WPS Agency 2008).

4.2 Turkish State Railways (TCDD): Facts and Figures

Turkish State Railways (TCDD) was founded in May 1927 and keeps a monopoly in rail traction until today (TCDD 2008, 2013); a liberalisation process has not been started yet. Laws concerning the liberalisation of the Turkish railway market, however, have been drafted and are dealing with regulations on safety, interoperability, licensing as well as infrastructure access ('General Railways Framework Code'). The Turkish Ministry of Transportation and Communication plans to restructure TCDD which, for example, will finally separate freight and passenger transportations as well as the infrastructure.

Today, TCDD is a fully state-owned company with 35,642 employees and a fleet of 18,167 freight wagons, 944 passenger coaches, 542 diesel locomotives, 56 electric locomotives, 108 electric railcars, and 67 diesel railcars (TurkStat 2013l). Since 2006, the Turkish freight volume has developed by a CAGR of 3% up to 11.7 million tkm in 2012 (TurkStat 2013i). Thereof, private operators like Eksper, OMSAN, or Arkas had a share of about 20% of the total Turkish freight volume; they own 2,458 freight wagons (TCDD 2013). Block trains are operated from/to Europe via Turkey, Germany, Hungary, Austria, Bulgaria, Romania, Slovenia and Serbia and lead to Iran, Syria, and Iraq in the East as well as via Turkmenistan, Kazakhstan, and Pakistan towards the Central Asian and CIS markets. On the top, several ferry services are offered, for example, between Turkey and Ukraine (TCDD 2013).

Turkish State Railways (TCDD) Freight Development, 2006–2012

in m tkm

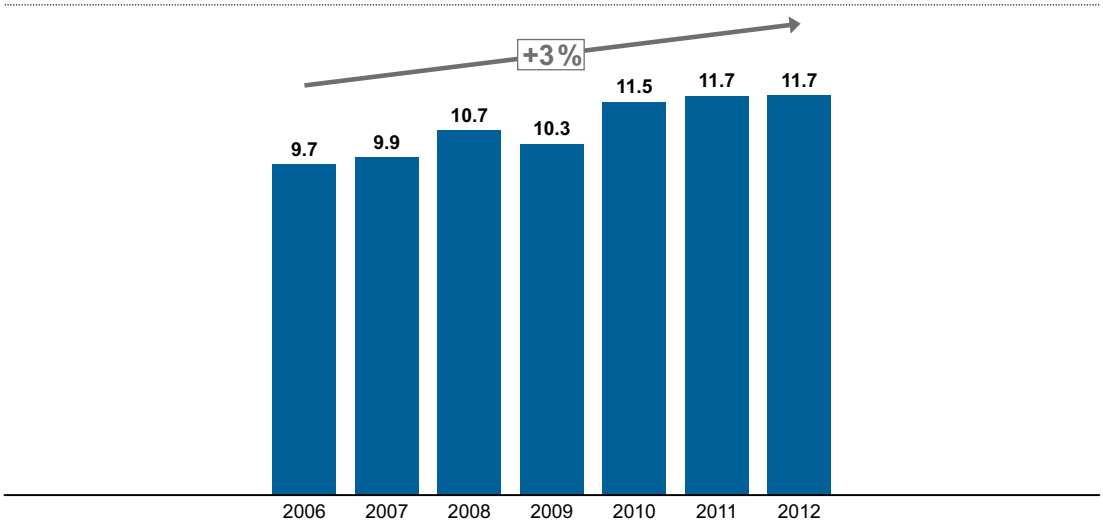

Figure 20: TCDD Freight Development, 2006–2012

Source: TurkStat 2013f.

4.3 Development of 11 Intermodal Freight Centres

The Turkish logistics infrastructure shows a high density in the industry clusters Istanbul, Gebze/Kocaeli, Bursa, Izmir, and Ankara. An integrated transportation and logistics strategy, however, was missing in the past. In order to meet the own economic objectives until 2023 and to meet the expectations on being a true Eurasian hub, Turkey needs to increase the efficiency in the transportation sector and has to close gaps in the trans-shipment infrastructure as soon as possible (see also Basev 2011, e.g., the study results).

In 2005, the idea to implement 11 intermodal freight centres accordingly to the German-European based Güterverkehrszentrum (GVZ) was put on the official agenda by the Turkish Ministry of Transportation and Communication and TCDD. With support of private equity loans, an amount of about 300 million USD will be invested in the construction of these freight centres which are considered to contribute significantly towards an additional transportation potential of about 25 million tons p.a. In addition, 5.6 milliion m² of logistics space will be ramped up for warehousing and value-added service offerings (TCDD 2013; Iskan 2009a, p. 152; o.V. 2008a, p. 32).

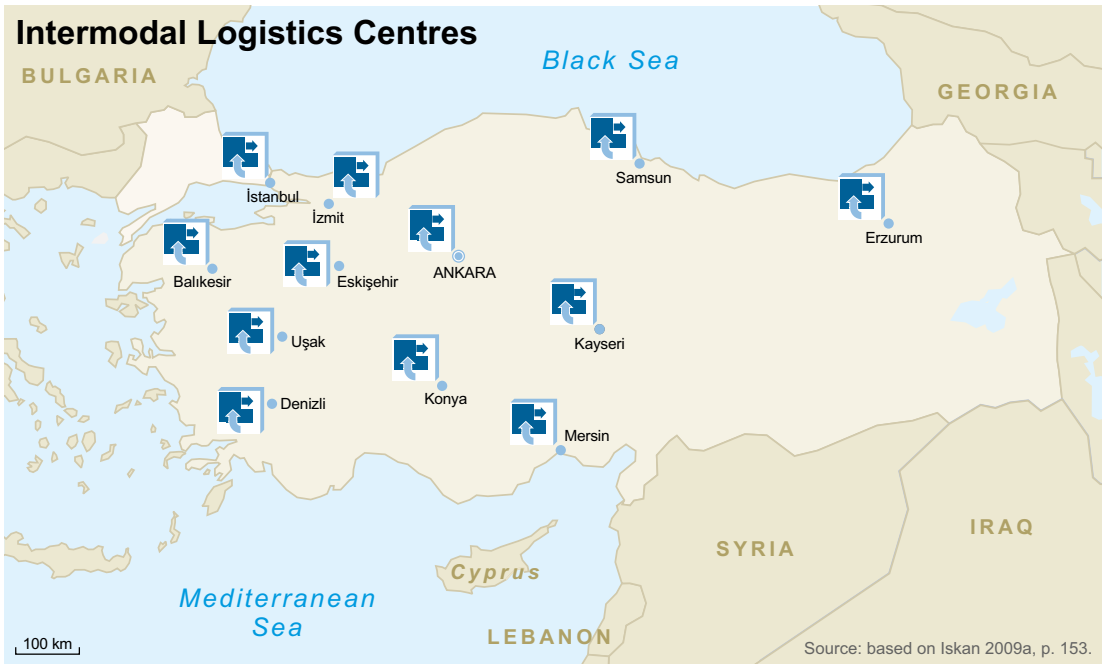

Figure 21: Intermodal Logistics Centres
Source: based on Iskan 2009a, p. 153.

The 11 freight centres will be implemented in Istanbul (Halkalı), Izmit (Köseköy), Samsun (Gelemen), Eskişehir (Hasanbey), Kayseri (Boğazköprü), Balıkesir (Gökköy), Erzurzum (Palandöken), Uşak, Konya, Kaklık (Denizli) and Mersin (Yenice). Besides to these 11 intermodal freight centres, the Ankara logistics centre without a railway

connection has been already opened in 2010. About 60,000 m² were let to CEVA, Gefco, and DHL Freight. Also Barsan rent about 27,000 m² of warehousing capacity in the new Ankara logistics centre. With about 1,100 employees, 80 domestic and international logistics service providers run the warehousing, related value-added services, customs brokerage, cross-docking, and about 600 transportation movements for the Ankara zone per day (see also TCDD 2013).

	Location	Area [in m²]	Investments [in m TL]
1	Istanbul (Halkalı)	1,060,000	48
2	Izmit (Köseköy)	765,000	37
3	Samsun (Gelemen)	333,000	-
4	Eskişehir (Hasanbey)	630,000	55
5	Kayseri (Boğazköprü)	511,000	48
6	Balıikesir (Gökköy)	200,000	52
7	Erzurzum (Palandöken)	327,000	31
8	Uşak	–	–
9	Konya	300,000	44
10	Kaklık (Denizli)	120,000	3.5
11	Mersin (Yenice)	640,000	45
12	Ankara	700,000	–

Figure 22: Freight Centre Capacity and Investment
Source: based on Iskan 2009a, p. 152.

Besides the Ankara logistics centre, intermodal freight centres have already been established in Samsun (Gelemen), Kaklık (Denizli) and Izmit (Köseköy).

4.4 Assessment of Rail Freight in Turkey and Corridors IV/X

Performance and service offering, and thus, the quality have been significantly improved by TCDD in recent years. The Inefficiency of the overall railway system, however, is still apparent in the domestic rail network on a day-to-day business level. The capacity management, for example, is mainly handled manually by phone and e-mail. The liberalisation plans will help to make further progress in professionalising Turkish freight rail management for the future.

■ Domestic

From a domestic perspective, TCDD is not performing single wagon traffic. The same development can be more and more observed in the German and Central European markets (see Xrail model). As pointed out, the Turkish truck load market is a dominant

one. Due to the negative trade balance of Turkey, a high pressure on the cross-border-related truck load market results in price wars among Turkish and international carriers. This situation directly forces the railway companies, especially intermodal operators, to be efficient and 'lean in costs' as much as possible. The Turkish freight rail will experience improvements by the infrastructure already initiated by the Turkish Ministry of Transportation and Communication and TCDD. Nevertheless, the current situation remains tense, especially on the decisive lines between Kapikule, Çerkezköy, and Istanbul (Halkalı) as well as due to missing ferryboats that could transfer rail wagons between Tekirdağ and Derince. Both routes are serious bottlenecks in today's railway operations between Central Europe and Turkey. It is important to give TCDD support and transfer experience from mature railway markets for this future logistics gate.

■ Pan-European Corridors IV/X

The pan-European railway corridors IV and X connect Turkey and Central Europe. The railway line of about 2,200 km between Germany and Turkey is a very sensitive route in the matter of just-in-time (JIT) rail-based transports for sectors like the automotive industry (see the automotive example in Iskan 2009b as well as the CREAM final project report 2012). Today, block train services with an 'official' one-way lead time of 5.5 up to 8 days are run in these corridors, for example, by Transfesa (DB Schenker Rail), Eksper, Adria Kombi / Kombiverkehr, Express-Interfracht, Inter Ferry Boat (IFB), Reysaş and Gartner. Ekol and İnci Lojistik use RoRo lines between Çeşme (Izmir) and Triest and, furthermore, forward trailers with intermodal train shuttles to Germany. In general, the provided block trains are mainly company trains and depend on volumes of a few key customers, for example, from the automotive, chemical, or electronic and white goods sector. Besides, the summer shutdowns of manufacturing plants directly stop the operation of those customer-focused trains. That's why, it is a difficult to develop a scheduled-based rail business along the pan-European corridor. In addition, most of the mentioned shuttle trains show only two loading and distribution points on their route. On top, the lack of further loading and unloading points is a challenge for the acquisition of further train volumes (see also the CREAM final project report 2012 by Behrends et. al. 2012). A systematic Corridor management model with a production setup in line with customer requirements and coordinated sales activities need to be on the agenda of operators and forwarders being interested in a profitable development of intermodal railway business in this corridor.

From an operational perspective, today's lead times of partly up to 8–11 days (one way), caused by unpredictable border stops and delays, are definitely unacceptable. The provided services need to be improved in both corridors, especially the locomotive provisioning processes in Bulgaria, Romania, Serbia, and also Turkey. Own observations of the authors in Bulgaria (Svilengrad border) and Turkey as well as interviews with experts who operate in these corridors, displayed there is hardly any reliable

train schedule in place. As locomotives must be changed at any country border, each delay leads to a disruption in further processes. Therefore, the information exchange need to be improved on both, personal and technical levels. A customer information system with train tracking opportunities and preliminary information is only one option to improve the processes and the information exchange in the entire system (see also the CREAM report). The World Bank concludes that Bulgaria and Romania need a wake-up call to speed up their reform processes. According to them, the institutional management structures and operational performance in place are not acceptable. The World Bank points out, culture needs to be changed and that a more business-driven approach is required in these railway markets (The World Bank 2011, p. 113).

5. Ocean Freight in Turkey: an Overview

The Turkish seaports have been managed by TCDD from the very beginning of its existance, and they are connected with the domestic railway system. The most volume-handling seaports are located in Istanbul (Haydarpaşa, Ambarlı) and Izmir, the last of which is Turkey's biggest export hub for ocean freight. Further important seaports are found in İskenderun and Mersin, which are the central ocean freight gates for Turkey's Near and Middle East trade. In addition, Samsun on the Black Sea coast covers significant transport flows, like Derince, Tekirdağ and Bandırma on the Marmara Sea. These three ports are closely situated to the Istanbul area and become more and more important for the intermodal transportation offering to Russia, Romania and crossing the Bosphorus.

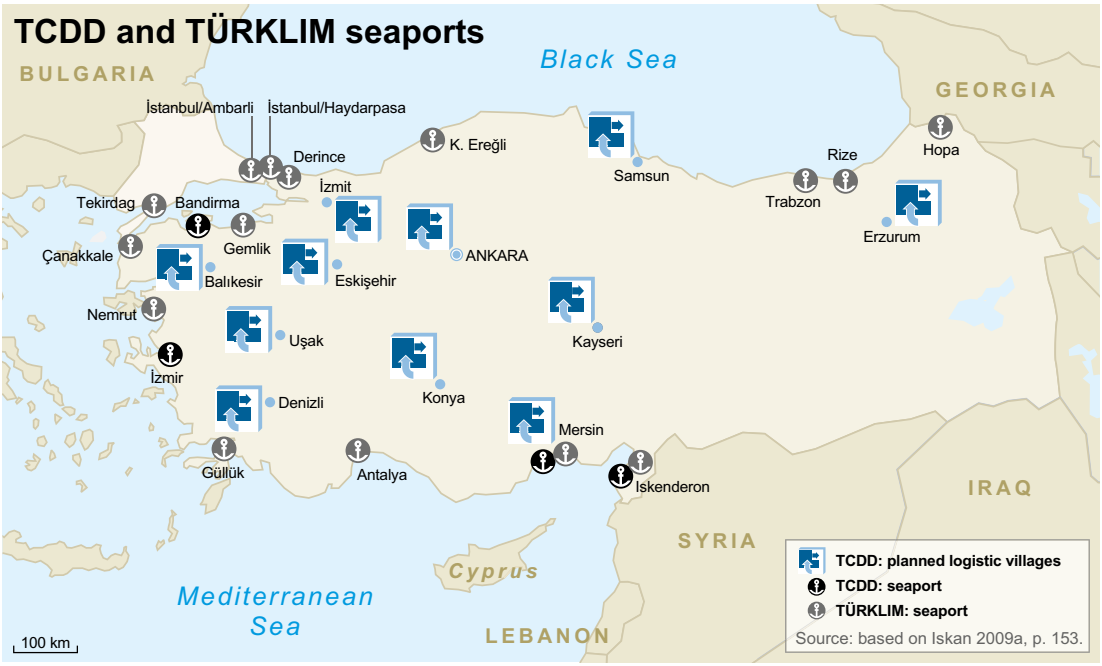

Figure 23: TCDD and TÜRKLIM Seaports
Source: Iskan 2009a, p. 153.

In contrast to TCDD itself, the privatisation process of the TCDD ports has already been started. Since 1996, when private operators like Borusan or Arkas received the permission to invest in the Turkish port infrastructure, a significant increase in performance, quality, and total capacity has been achieved. Today, about 40 private port investors are represented by the TÜRKLIM association which also was founded in 1996 (TÜRKLIM 2013). In 2007, Mersin port became the first TCDD port which was privatised. In 2010, Samsun and İskenderun seaports followed and were tendered to the CEY Group and Limak Yatirim Enerji, respectively (TCDD 2013).

The container handling was increased from 2.5 million TEU to 4.7 million TEU between 2003 and 2007. The TÜRKLIM port operators achieved a growth of almost 120% in this period while the ocean freight volumes handled by the TCDD ports decreased steadily. Meanwhile (status as of 2012), TÜRKLIM ports are handling about 87% of the total container volume in Turkey (Türklim 2013).

Ocean Freight Container Handling Development, 2006–2012
in m TEU

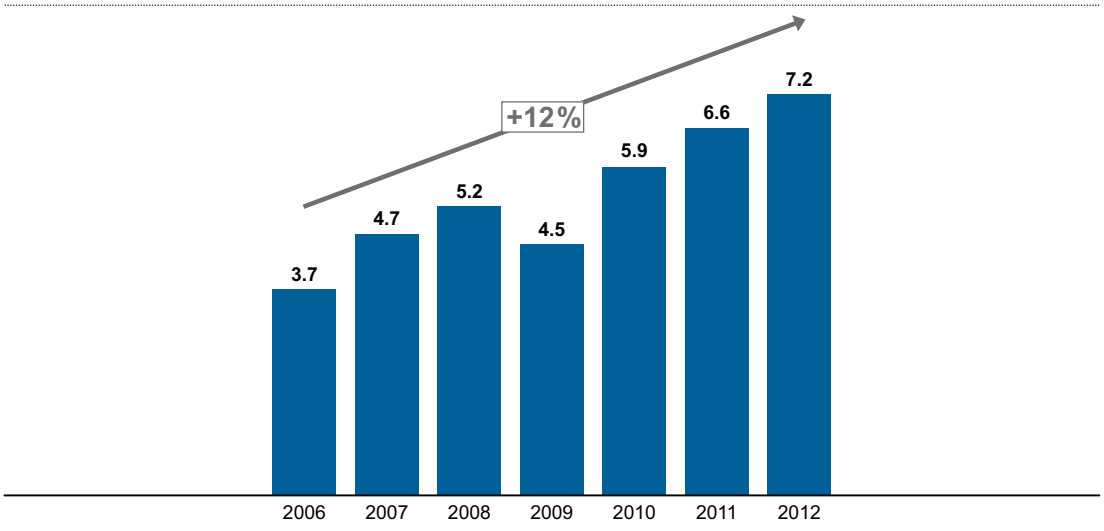

Figure 24: Development of Container Handling in Turkish Seaports
Source: TÜRKLIM 2013

Besides the container, bulk, or liquid trans-shipment, intermodal capabilities are becoming more and more important for Turkish ports. For example, the ferry connection between Kavkaz (Russia) and Samsun is trying to cover the intermodal needs in this region because the mountainous areas through Georgia remain challenges for land transport carriers. The capacity of ferry boats with rail gauges is between 40 and 50 wagons per direction, with a gross weight of 90 tonnes. In addition to the long time existing intermodal operations between the Çeşme (Izmir) and Triest ports, rail ferry

services have been started connecting Constanța in Romania and Derince in Turkey. They are operated by ferry boats being capable to carry 40 trucks and 40 rail freight wagons simultaneously or 80 trucks and 85 wagons without any combination (TCDD 2013).

With respect to the Turkish automotive industry, the total import and export flows of finished vehicles had been handled in the Derince, Izmir, and Gemlik ports until 2008. Ford Otosan is operating an own seaport which is connected with its manufacturing plant in Kocaeli. In 2008, Arkas Holding established toge of its existance ther with its Japanese partner Mitsui & Co. the first dedicated finished vehicle Autoport. This port is located in Yeniköy (Izmit), it has a capacity for about 400,000 units and offers value-added services like pre-delivery inspections (PDI) or advanced quality and light-assembling services which, up to now, had only been offered by established special car logistics service providers like Bremer Lagerhaus-Gesellschaft (BLG) (Arkas 2008). Due to an internal policy decision concerning pricing and market approach, Autoport, however, has not yet reached a significant footprint in the automotive industry.

6. Airfreight in Turkey: an Overview

As Turkey is becoming an active participant in the global economy, the country's air cargo transport is also growing rapidly. 7% of all Turkish exports, expressed in monetary value, and 10% of imports are moved by air (o.V. 2008b, p. 17). The total outbound international air cargo tonnage is reported to have reached about 1.6 million tonnes in 2012 (total moves of about 2.3 million tonnes, TurkStat 2013m), which makes Turkey the sixth largest shipper of airfreight in Europe. As a consequence, Turkish Airlines as the national carrier is become one of the fasted growing and most successful international airlines, earning revenues with cargo services of some half a billion EUR (see figure 13). Turkish Airlines handles about 50% of Turkey's total air cargo (see also Siegmund 2008a, 2008b). However, private air carriers based in Turkey, such as MNG or Pegasus Airlines, as well as the businesses of international air cargo forwarders and integrators (e.g., DHL, UPS, FedEx, DB Schenker Logistics, and Kühne + Nagel) and those of smaller Turkish forwarders are also growing fast.

There are more than 40 significant regional airports in Turkey, the most active ones are located in Antalya, Dalaman, Isparta, Milas-Bodrum, Nevşehir-Kapadokya and Trabzon. The Greater Istanbul area is currently served by two major airports: Atatürk International Airport as the main international air cargo and Sabiha Gökçen. The construction of a very large third airport for the Istanbul region is about to start 60 km west of Atatürk International; the new airport will extend the air cargo handling capacity by two million tonnes per year (see, for example, Verkehrs-Rundschau 2013).

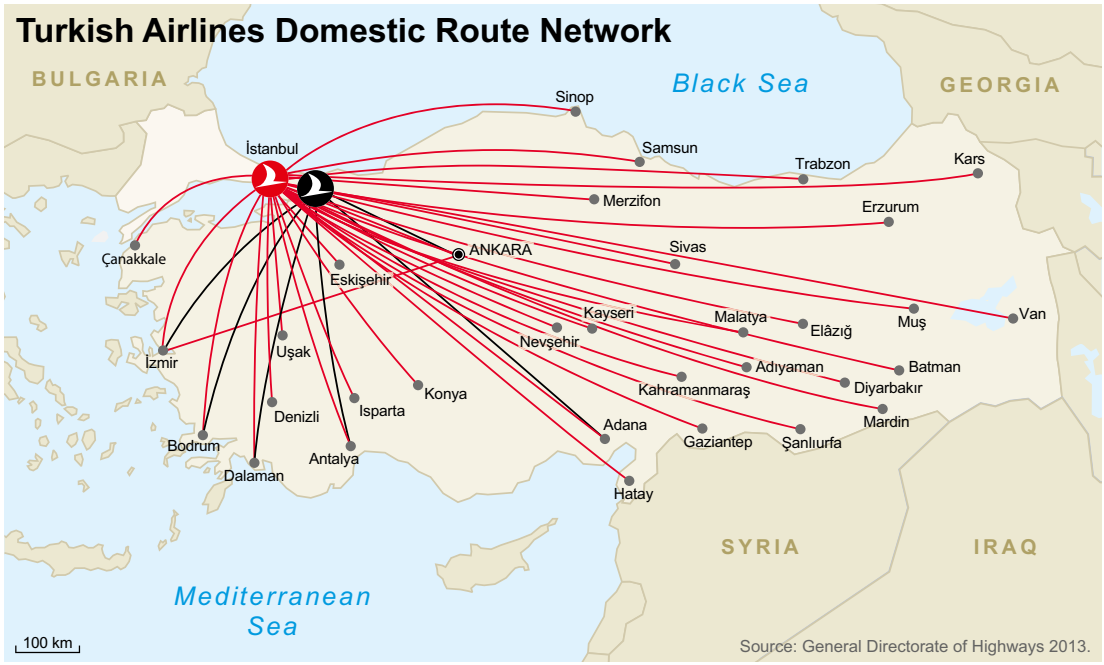

Figure 25: Turkish Airlines' Domestic Route Network
Source: Overseas Property Plus 2013.

7. Turkey's Logistics in the Future: Strategic Outlook

'Turkey – the China of Europe?',
'The second fasted growing major economy in the world',
'A New Silk Road connecting Europe and the Far East', and
'Turkey as a critical linking pin between the Western and Islamic world'.

These and similar headlines and slogans refer to Turkey's future role and perspectives in the context of an ongoing process of economic globalisation. Turkey has a unique geo-strategic location being the Eurasian bridge between Asia and Europe and a departure gate to the Near and Middle East. Besides, bordering Middle East and CIS / Caspian Region in the East, the richest part of world in primary energy resources by the way, Turkey will likely become an important energy transmitting hub, as recent pipeline projects, such as the Nabucco-West and the Baku–Tbilisi–Ceyhan pipelines, indicate. Turkey, currently the 17th largest economy worldwide and ranked position seven within Europe, has set targets to belong to the Top Ten economies in 2023. The country is aiming at leveraging opportunities in the Middle Eastern, North African, Mediterranean, and Central Asian markets. The importance of Turkey's logistics systems and infrastructure, both domestic and international (with respect to its linkages to main trading centres in Europe, the Middle East, North Africa, the Far East, and the Americas) cannot other than grow dynamically.

This means that there are tremendous opportunities for the growth of logistics services within and beyond the boundaries of Turkey, for both domestic and international logistics service providers – a growth in business volumes, and a growth in professionalism, the ranges and qualities of services. The rates of growth and the time frames, within which those opportunities can be realised, will depend on the ability of Turkish politics to support commensurate improvements in the transport and logistics facility infrastructure, and in their success to overcome political, ethnic, and religious conflicts. A stable economic development within Turkey, the gradual abolition of foreign trade imbalances, and the achievement of a more balanced growth between booming regions (like Istanbul and Bursa) and the rural eastern parts of the country will help to meet successfully the challenges beyond economics.

This report on the transport, logistics, and supply chain service industries and activities in Turkey might offer some help in understanding and leveraging the opportunity.

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