Turkish
Civil Aviation Assembly
Sector Report 2012

May 2013

PREFACE

The Turkish Union of Chambers and Commodity Exchanges has undertaken work, looked for solutions and contributed to the development of the private sector, in accordance with its needs, as the sole official representative of the Turkish private sector.

"Regulations for the Establishment, Duties and Works of Turkish Sector Assemblies" has been prepared according to the 57th article of the Turkish Union of Chambers and Commodity Exchanges and Chambers and Commodity Exchanges Law numbered 5174, dated May 18, 2004, with the aim of providing a wider range of services and developing these services for our sector. 52 Turkey Sector Assemblies have been formed under our organization according to our regulations which came into effect in the Official Newspaper, numbered 25725, and dated February 12th 2005.

Turkey Sector Assemblies has been continuing its activities since July 2006. The number of lobbies has reached 59 because of the demand from the sector and the need in this process.

Turkey Sector Assemblies has been formed to provide a wider range of services than the other examples in the world, thanks to its strategy and vision for both today and the future, national and international point of view, and its integrated form consisting of all the aspects of the sector; as well as being an important unit with the potential of having benefits for our sector and economy.

Assemblies are an important meeting point which includes high level executives and representatives of the sector and related public institutions. Turkey Sector Assemblies represent a radical step for all the economic sectors. Unity and togetherness achieved within the assembly has helped to form and take mutual decisions. Thanks to the incentives taken as a result of mutual decisions there have been better results for the related authorities. Now we have formed a strong ground where we can achieve effective public-private sector partnership thanks to this process.

Sector reports have been prepared by our assemblies with the aim of informing the public about the current situation of the sector and its future expectations, getting more efficiency from the lobby works, harmonizing different opinions and ideas.

I am hoping that the sector reports will help the sector, our community and the persons concerned in an effort to form sector policies and strategies, as well as throwing fresh light on projects and market research about the future.

M. Rifat HİSARCIKLIOĞLU
President

PREFACE

Dear readers;

Turkey has made progress in public air transport and has become one of the leading countries in airway passenger transportation as well as airport construction and management both in Europe and in the world. Our airline companies have developed in capacity and improved their conditions in competition with others, and have been among the preferred companies for air travel. Airport terminal managers have set good examples with their successful performances in construction and management first in Turkey and then in other countries. Civil aviation in Turkey is improving every year and becoming well known in the world as well.

The necessary conditions of a liberal economy in every area of civil aviation have been available thanks to government policy in the last 10 years, and this has helped the sector and its spread across the country. As a result our people have started to use air travel extensively. Our domestic passenger transport is getting close to international passenger transport and this progress will continue in the future.

The upper branches of the sector are the airline companies; airport and terminal operators are the visual aspects of the sector, and lastly, the sub-branches include manufacturers and aircraft repair, maintenance and renovation companies. Ground service companies, food and catering companies, air-traffic control, and firefighting units are also integrated and complementary parts of the system. This description is not of course a hierarchical ranking but the first few important elements that come to mind according to their ratios in the sector.

The civil aviation sector is one of the sectors, which makes an important contribution to our country's economy in terms of the number of its employees and the flow of income. Today the number of employees is 150,000 and the revenue is over 15 billion USD and these are expected to increase even more in the years ahead. Istanbul, which has become one of the most important transit centers in the World, will host more flight and passenger traffic with the new airport expected to be built in the future.

The civil aviation sector is both the biggest supporter of trade activities for our country and a promoter for the tourism sector. However, this chain movement indicates a delicate situation. Fluctuations in the world economy and in the country, seasonal changes and some other factors bring about consequences that can immediately affect the sector. These factors also affect the related areas. As a result, the dynamism of the aviation sector is actually one of the most important determiners for the potential of the country in general terms.

The civil aviation sector with its dynamism should be considered privileged for the total benefit of all the sectors. Every person, whether they are in the sector or not, should be aware of that. The saying "The future is in the sky" is a fact not only for when it was uttered but for all times.

Şahabettin Bolukçu
Turkish Civil Aviation Assembly, President

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1. State of the Sector

1.1. Overview

One of the economic and social development factors in nations, civil aviation business has been increasing at annual rates of 4%-5% since 1980s, despite some negative factors like wars and economic crises. In Turkey, air transportation is developing faster than others, and thanks to the policies implemented by the Ministry of Transportation, Maritime and Communications, total number of passengers has risen 14,3%, and total air traffic (including overflights) has gone up 10% on average in the last decade. In the same period, the increase in the number of planes in airline fleets was 128%, in seat capacity 136%, and in cargo capacity 318%, while the total number of domestic and international destinations reached 241.

Our national air transportation has achieved the growth it deserves not only on national scale, but also at global level. In terms of number of passengers carried, Turkey ranked 12th in the world, and 6th in Europe in 2011. As of 2012, Turkey has been one of the highest daily air traffic addition capacity countries in Europe. According to EUROCONTROL data, Turkey moved up from 7th in 2006 to 1st spot in 2012. The 2013 flight plan projections ranks Turkey as the 9th.

Along with the faster, safer and more comfortable flights, improvement in ticket fares is another factor contributing to the increased share of air transportation among others. According to a study conducted by the Directorate General of Civil Aviation (DGCA), domestic air fare was about 100 TL in 2003, and while this would now be 225 TL adjusted for inflation, thanks to liberalization policies and competition, it is currently about 111 TL.

International companies and major aircraft manufacturers project that in the medium and long term, this current growth will continue into 2030s. According to data from International Civil Aviation Organization (ICAO), 5,8 billion passengers were carried in 2012 [1]. In Turkey, compared to other countries, there have been great increases in passenger and cargo transportation in 2012. From 892.139 in 2011, commercial air traffic went up 7,5% to 958.969 flights, and passenger traffic went up 10,4% to 130.630.154. Freight traffic rose by 6,6% from 2.249.473 tons to 3.397.788 tons, while cargo traffic increased 3,1% from 584.474 tons to 602.589 tons.

As of December 31, 2012, 15 airline companies (3 of them are cargo) are in operation with 370 planes, 55 air taxis, 43 general-purpose aviation, 21 air-balloons and 39 aerial agricultural companies are in operation with 765 aircraft. Total number of aircraft is 1.135.

In parallel to the expanding airline company operations, the domestic flight network has increased to 49 after 1 addition, and international flight network has reached 192, with 17 new additions. By the number of flight destinations, Turkey ranks among the top 10 countries.

Totaling 10 billion USD, civil aviation investments by Turkish companies in foreign countries keep soaring.

[1] ICAO Bulletin, December 18, 2012 .

1.2. International Relations

Turkey is a member of the International Civil Aviation Organization (ICAO), European Civil Aviation Conference (ECAC) and European Organization for the Safety of Air Navigation (EUROCONTROL). Turkey participates in many international and regional projects. In 2012, Turkey performed active administrative duties in ECAC (Vice Presidency), EUROCONTROL (Temporary Council Coordination Committee and SRC Safety Regulation Commission Vice Presidencies), ICAO (North Atlantic Regional Aviation Safety Group Co-directorship), JAA-TO (Training Organization Board Member and Vice Presidency), and D8 Civil Aviation Commission (Commission Chair).

With the bilateral and multilateral Air transportation agreements in recent years, the number of bilateral agreements increased 76,5% and reached 143, from only 81 in 2002. With the agreements made in 2012, our international flight network added 220 frequencies. So, the total agreements that Turkey has signed so far is 251. The list of countries with bilateral air transport agreements is presented in Appendix-1.

"Africa Civil Aviation Conference" was held in İzmir between May 29 – June 2 2012 and in this Conference air transportation agreements were signed with 13 countries, adding 2 destination points for each country (except Sao Tome and Principe), adding a total of 175 new frequencies to our flight network.

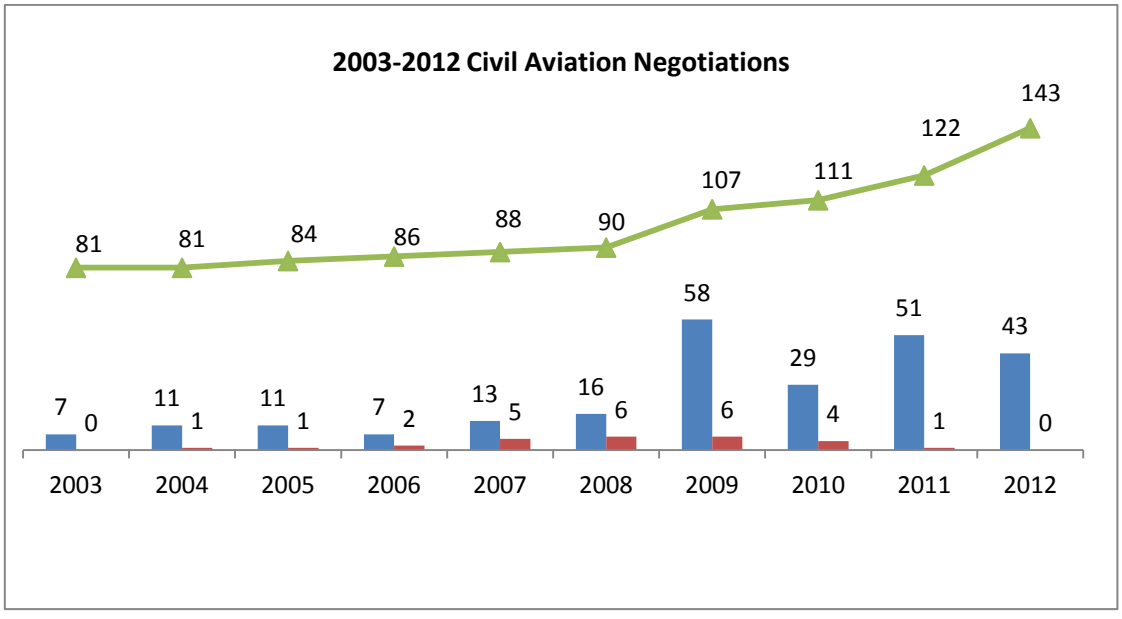


Figure-1.1: 2003-2012 Civil Aviation Negotiations (Source; DGCA)

1.3. New Regulations, Projects

To regulate civil aviation activities, DGCA issued 9 ordinances, 19 orders, 17 circulars, and 1 air navigation directive. In 2012, work on previous projects continued.

In order to meet the demand for qualified human resources and aviation training that are essential for the development of the aviation field in Turkey, DGCA and Higher Education Council (YÖK) signed a comprehensive Collaboration Protocol to establish necessary departments and curricula, specialization and sectoral analysis studies, covering all areas of civil aviation.

Additionally,

- Green Airport Project (22 businesses were awarded “Green Business” title),
- Disabled-friendly Airport Project (10 businesses were awarded “Disabled-friendly business” title),
- Disabled-friendly Balloon Project (Work for specifications for making modifications on balloon baskets was given a head start),
- Over-water Balloon Flight Project (Initially, operations over Eğridir Lake were deemed appropriate and the Directive on this was issued),
- Helicopter Night Flight Project (The Directive allowing emergency, ambulance, rescue, and relief flights to be conducted at night conditions was issued),
- Obstruction Control by TüRKSAT Project (Work to control building construction around airports was started),
- Mobilizing Inspections (Inspection services started to work in coordination with EASA database)

Besides, work on providing all DGCA services through e-state application, electronic document management system (EDYS), revenue tracking system, SAFA (the ramp inspection on foreign aircraft), mobile inspection system, digitally carrying out the ATCo (Air Traffic Controller) and ATSEP(air traffic safety electronics personnel) tests through scanner certification system, authorizing capacity for simulators, ensuring SHY 66 (Aircraft Personnel Licensing Directive) – Part 66 (EASA, aircraft maintenance license) continued.

Comprehensive regulations on legislation are projected for 2013, and especially the work on implementing Aviation Safety Law and Aircraft Registry Statute is expected to be completed.

1.4. Current Situation and Businesses in the Sector

As of December 31 2011, the civil aviation sector in Turkey can be summarized as follows (see Table-1.1. for detailed information):

- A total of 49 airports open to regular flights (Table-1.2) and 54 heliport,
- A total of 173 aviation companies, of which 15 are airlines
- A total of 1.135 aircraft, of which 370 in airlines,
- 30 flight training schools, 35 maintenance organizations,
- 47 ground handling companies, 3 of them A class

Table-1.1. 2011-2012 Sectoral Sizes (Source: Turkish DGCA)

2011 - 2012 SECTORAL SIZES

Air Transportation Companies	**2011**	**2012**
Airlines	15*	15*
Air Taxis	60	55
General Aviation	41	43
Balloon	16	21
Aerial Agriculture	39	39
Total	**171**	**173**
*1 passenger + cargo, 3 cargo only		

Number of Aircraft	**2011**	**2012**
Airlines	346	370
Air Taxis	244	198
General Aviation	241	242
Balloon	108	167
Aerial Agriculture	69	60
Business Jets	75	98
Total	**1.083**	**1.135**

Airports Open to Civil Aviation Traffic*		
Operated by DHMİ	43	44
Operated by Other	4	5
Total	**47**	**49**
*Pre-clearance military airports and private airports not included.		

Ground Handling Companies		
A Class	3	3
B Class	13	15
C Class	28	29
Authorization	1	-
Total	**45**	**47**

Private Sector Terminal Operators		
International	7	7
Domestic	4	5
Heliports	**44**	**54**

MRO and Training Businesses		
MRO Organization	35	35
Flight Training Organization	16	16
Type Rating-Training Organization	14	14
Total	**65**	**65**

Source: Turkish DGCA

1.4.1. Airports

Currently, of the 49 airports that are open to civil aviation, 44 are operated by General Directorate of State Airports (DHMİ) (Picture 1.1). Zafer (IC İçtaş Construction Industry and Trade Ltd.), Zonguldak Çaycuma (Zonguldak Civil Aviation Industry and Trade Ltd.) and Antalya Gazipaşa Airport (TAV Gazipaşa Investment Construction and Operation Ltd.) are the private companies under the supervision of DHMİ, İstanbul Sabiha Gökçen International Airport is run by a private company (HEAŞ; Airport Operations and Aviation Industries Ltd.), which operates under Defense Industries Undersecreteriat control, and Eskişehir Anadolu University Airport is operated by the University School of Aeronautics and Astronautics. 24 of the airports are used for domestic and international flights and 25 of them are used only for domestic flights.

Of the airport terminals;

- Antalya I. and II. International Terminal, CIP and Domestic Terminal are operated by Fraport IC İçtaş Antalya Airport Terminal Investment and Operations Ltd.,
- Atatürk Airport International & Domestic Terminal, and General Aviation Terminal are operated by TAV İstanbul Terminal Operations Ltd.,
- Esenboğa Airport International & Domestic Terminal is operated by TAV Esenboğa Investment Construction and Operations Ltd.,
- Sabiha Gökçen International Airport International & Domestic Terminal, is operated by İstanbul Sabiha Gökçen Airport Construction Investment and Operations Ltd.,
- İzmir Adnan Menderes Airport International Terminal, CIP, Domestic Terminal is operated by TAV EGE Terminal Investment Construction and Operations Ltd.,
- Dalaman Airport International Terminal is operated by ATM Airport Construction and Operations Ltd.,
- Milas-Bodrum Airport International Terminal is operated by Mondial Milas-Bodrum Airport International Terminal Operations and Investment Ltd.

within the framework of Public-Private Sector Collaboration.

In 2012, DHMİ reached 99,3% actualization by its own resources with 433.700.000 TL investment. The airports that were completed and put in service and those started construction are as follows:

- 27.01.2012; Esenboğa Airport General Aviation Terminal inaugurated.
- 21.02.2012; Mardin Airport new runway started service, the new terminal building construction started.
- 08.06.2012 Adıyaman Airport Runway- Aprons and Taxiways Fields Expansion and Repair work completed.
- 31.03.2012; Balıkesir Koca Seyit Airport new International Terminal construction started.
- 03.06.2012; Milas Bodrum Airport new International Terminal started service.
- 15.06.2012; Adnan Menderes Airport new Domestic Terminal construction started.
- 14.07.2012; Iğdır Airport started service.
- 22.10.2012; Elazığ Airport new Terminal building started service.
- 25.11.2012; As the first regional airport, Zafer Airport started service.
- 28.12.2012; Erzincan Airport fire simulation and training center construction started.

Also; constructions of State Aircraft Hangar at the Esenboğa Airport and Adıyaman Airport Terminal Building are still in progress and soon will start service. In view of airport investments, 2013 will be a very busy year. DHMİ has been allocated 450.000.000 TL for 2013. As the 2012 equity capital investments; Esenboğa Airport Foreign Guests' Mansion and Kars and Ağrı Airport Terminal Buildings will be completed in 2013.

In 2013, besides the Sinop and Çanakkale Airport Terminal Building constructions, various airport runway- aprons and taxiways field renewals and Technical Block and Tower construction and Fire station and Garage Building construction work will continue. Furthermore, for a variety of airports there will be investments regarding the provision of service vehicles, air navigation, communication and terminal systems, security systems, various equipment and energy supply projects. Kastamonu Airport Terminal building, under construction by the Kastamonu Governorship, will start service in 2013. Bingöl, Hakkâri, Şırnak airports, currently under construction by the Infrastructure Investments General Authority of Ministry of Transportation, Maritime and Communications, are also scheduled to start service in 2013.

In 2014, in addition to these ongoing construction projects, 4 new terminal buildings (Van Ferit Melen, Konya, Mardin ve Balıkesir Koca Seyit Airport Terminal Buildings) will be completed. 4 new runway- aprons and taxiways field construction and/or expansion projects are also in progress.

On July 23 2011, the foundation for Ordu-Giresun Airport – the first airport to be built on sea – was laid. Infrastructure investments for the project are still in progress and are coordinated by the General Authority of Ministry of Transportation, Maritime and Communications.

Within the framework of Public-Private Sector Collaboration model, which we often use in the projects that require enormous amount of financial resources and advanced technology, Samsun-Çarşamba and Nevşehir-Kapadokya Airports and Dalaman Airport passenger terminal leasing projects are in progress.

On the other hand, the biggest project of Turkish Republic, "İstanbul New Airport" project has been launched, and opened for bid on 24.01.2013, under Built-Operate-Transfer (BOT). The bid will be on 03.05.2013. When in full operation, İstanbul New Airport will be the biggest in the world by the number of passengers and taking into account the huge success and experience Turkey has had so far with the Public-Private Collaboration Projects, and the elements of high costs, the Higher Planning Council decided to build it through the BOT model.

Carrying out this project through the BOT model, to finance the , İstanbul New Airport project, the state will guarantee passenger revenue/tariff for a certain period and rent for 25 years will be competed.

According to the scheduled plan, the first phase of the İstanbul New Airport will start service in 2017. With the first phase investments, about 80.000 people will be employed annually during the construction period. After the airport starts operation, it will create employment for about 120.000 people annually.

For the Çukurova Airport Project (BOT), after financing is provided by the authorized company, the construction site will be assigned by the DHMİ and 36-month construction period will be launched.


İSTANBUL
TEKİRDAĞ-ÇORLU
ATATÜRK
SABİHA GÖKÇEN
ÇANAKKALE
GÖKÇEADA
BURSA-YENİŞEHİR
BALIKESİR-KÖRFEZ
BALIKESİR-MERKEZ
UŞAK
A.MENDERES
DENİZLİ-ÇARDAK
MİLAS BODRUM
DALAMAN
ANTALYA
GAZİPAŞA
ÇUKUROVA
HATAY
ADANA
GAZİANTEP
ŞANLIURFA-GAP
MARDİN
ŞIRNAK
HAKKARİ
SİİRT
BATMAN
DİYARBAKIR
KAHRAMANMARAŞ
ADIYAMAN
MALATYA
ELAZIĞ
BİNGÖL
MUŞ
VAN-FERİT MELEN
IĞDIR
AĞRI
KARS
ERZURUM
ERZİNCAN
TRABZON
ORDU-GİRESUN
SİNOP
KASTAMONU
ZONGULDAK
AMASYA-MERZİFON
TOKAT
SİVAS-NURİ DEMİRAĞ
CENGİZ TOPEL
ESENBOĞA
ESKİŞEHİR-ANADOLU ÜNİV.
ZAFER
S.DEMİREL
KONYA
NEVŞEHİR-KAPADOKYA
KAYSERİ
EXISTING AIRPORTS(49)
UNDER CONSTRUCTION (5)
PLANNED (2)

1.4.2. Air Navigation Services

As an essential part of civil aviation activities, DHMİ carries out the air navigation services [Air Traffic Management (ATM); Air Traffic Control (ATC), Air Space Management (ASM), Air Traffic Flow Management (ATFM)] within the 982.286 km² Turkish sovereign air space through 1.195 air traffic controllers.

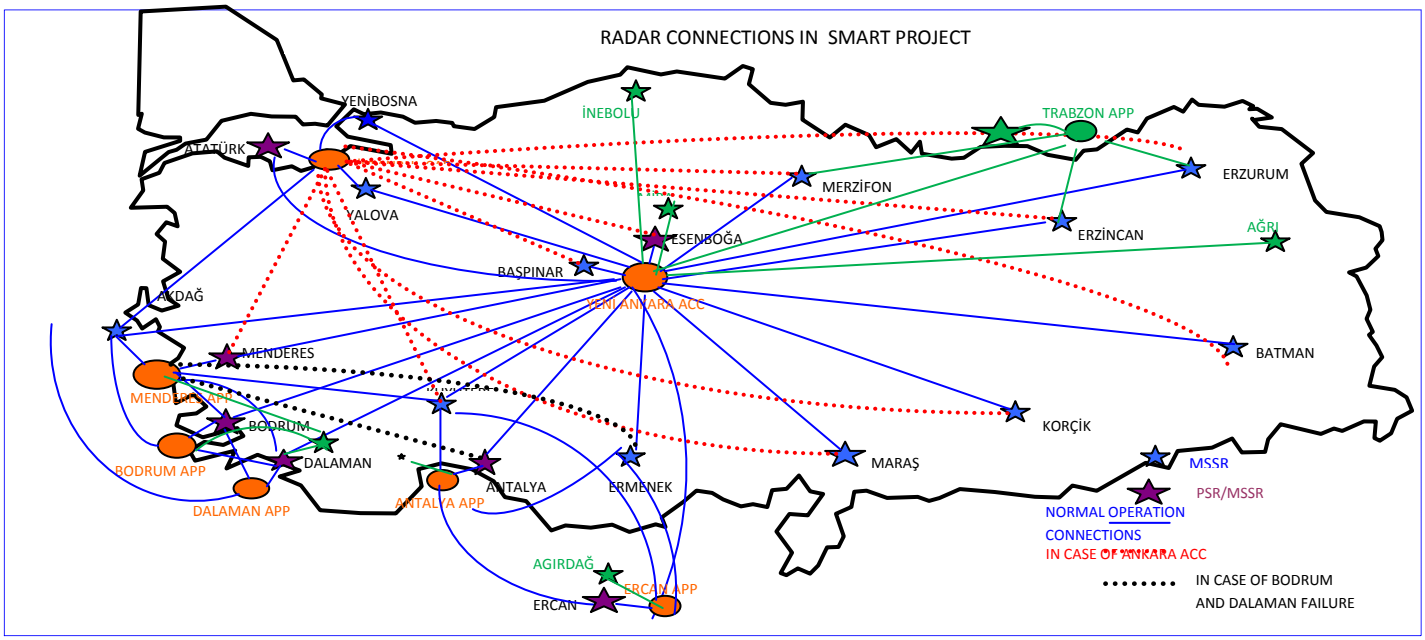
For the fly-over aircraft that use the Turkish airspace, there are 42 entry-exit points. Within the Turkish airspace, there are 145 flight routes that are used by land-takeoff or overflight aircraft. The length of these flight routes, which are supported by nationwide navigation and communication equipment, and regulated by route control centers to regulate the air traffic flow, has reached 63.136 km in 2012, from 60.907 in 2011.

As of 2012, the number of air navigation aids is a total of 309; with 44 ILS (Instrument Landing System; 28 airports), 63 VOR, 107 DME, 69 NDB, 6 PSR, and 20 SSR . The number of specialized and general service cars like fire trucks, ambulances and snowplowers that are used in airports open to civil aviation traffic has reached 1.463. In 2012 62 new snowplowers were put in service.

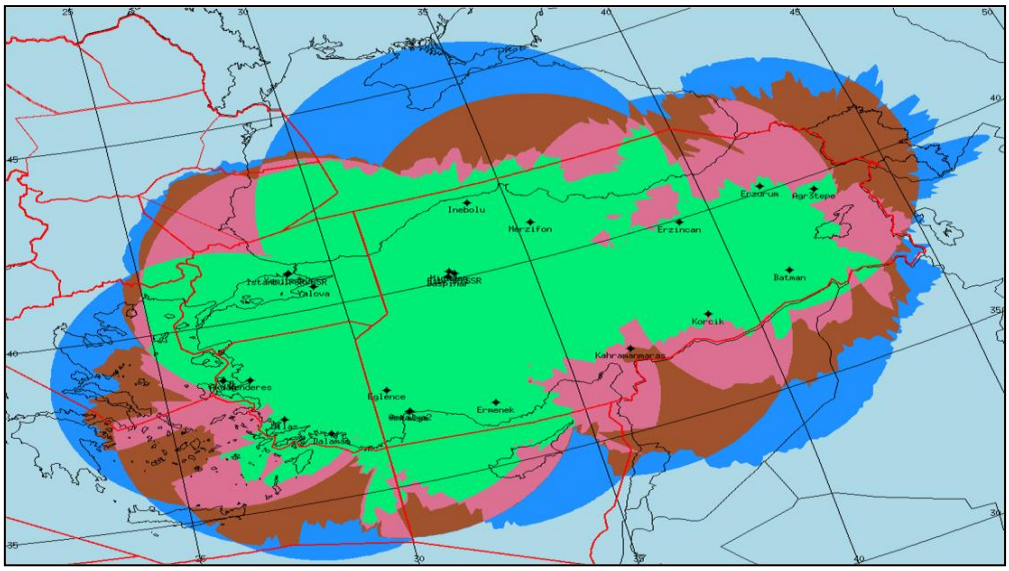
In order to increase the safety and quality of air traffic services and in compliance with the single airspace concept of EUROCONTROL Organization, SMART (The Systematic Modernization of Air Traffic Management Resources) Project; air traffic control infrastructure is being renewed, ensuring modern controller functions and thus enabling capacity increases for the future. The Turkish Air Traffic Control Center Building in Ankara Esenboğa Airport started its operations on March 8, 2011. Serving the entire airspace in Turkey, The Turkish Air Traffic Control Center covers an area of 42.000 m² and includes 75 air traffic controller work stations [25+5 ACC (Airspace control center) sector, 3 APP (approach control unit) sector, 2 Supervisors, 2 military sectors, 3 FDA (flight and data assistance)]. The facility has a capacity to allow 500 air traffic controllers and 200 technical staff to work. Testing of the systems and equipment that have been installed within the SMART Project is still in progress.

Another important development in 2012 was the December 13, 2012 launch of the RNP system, which allows satellite-based very sensitive approach, in Van Airport. This system was first used by the SunExpress Airline. Being simultaneously used with the rest of the world, thanks to this system, cancellations due to bad weather will decrease and airlines will be able to have a considerable amount of cost reduction. Considering the initial results from the Van implementation, in order to design similar descend methods for Dalaman, Trabzon, Kahramanmaraş, Siirt, Erzincan, Gazipaşa, and Iğdır, analyses are planned for 2013.
Furthermore, plans are in progress to expand the use of P-RNAV STAR and SIDs and RNP approach methods to the other airports.

Picture-1.2. DHMİ Esenboğa Airport SMART Building (Source; DHMİ)



Picture-1.3. Turkey Radar Connections Map (Source; DHMİ)



Picture-1.4. Turkey Radar Coverage Map (Source; DHMİ)

1.4.3. Airline Companies

There are 15 airline companies operating in the Turkish civil aviation sector, 3 of which are cargo companies. The number of airline aircraft rose from 349 in 2011 to 370 in 2012, with a 6,1% increase. Of those 346 are passenger aircraft and 24 are cargo aircraft. The total seat capacity of the airline fleet is 65.208, and the load capacity for the cargo aircraft is 1.152.013 kgs. Airline companies and the fleet structure are presented in Table-1.2.

Table 1-2. Airline Companies and the Fleet Structure, 2012 (Source; DGCA)

COMPANIES	FOUNDATION YEAR	PASSENGER A/C	SEAT CAPACITY	CARGO A/C	LOAD CAP. (kg)	TOTAL A/C
TURKISH AIRLINES (THY)	1933	186	34.708	5	252.000	191
ONUR AIR	1992	32	7.583	-	-	32
PEGASUS	1990	40	7.522	-	-	40
SUN EKSPRESS	1989	32	5.814	-	-	32
ATLAS JET	2001	15	2.994	-	-	15
SIK-AY HT	2001	8	1.491	-	-	8
CORENDON	2004	8	1.429	-	-	8
FREE BIRD	2001	7	1.340	-	-	7
İZAIR	2005	3	558	-	-	3
TAILWIND	2009	5	840	-	-	5
SAGA	2004	3	585	-	-	3
BORA JET	2008	6	344	-	-	6
MNG (CARGO)	1996	-	-	7	315.902	7
ACT (CARGO)	2004/2011	-	-	6	330.536	7
ULS (CARGO)	2004/2009	-	-	6	253.575	6
TOTAL		346	65.208	24	1.152.013	370
Note; The aircraft used for purposes other than passengers-cargo (ex. training) are not included.						

TURKISH AIRLINE COMPANIES	FOUNDATION YEAR	PASSENGER A/C	SEAT CAPACITY	CARGO A/C	LOAD CAP. (kg)	TOTAL A/C
TURKISH AIRLINES (THY)	1933	186	34.708	5	252.000	**191**
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SIK-AY HT	2001	8	**1.491**	-	-	**8**
CORENDON	2004	8	**1.429**	-	-	**8**
FREE BIRD	2001	7	**1.340**	-	-	**7**
İZAIR	2005	3	**558**	-	-	**3**
TAILWIND	2009	5	**840**	-	-	**5**
SAGA	2004	3	**585**	-	-	**3**
BORA JET	2008	6	**344**	-	-	**6**
MNG (CARGO)	1996	-	-	7	**315.902**	**7**
ACT (CARGO)	2004/2011	-	-	6	**330.536**	**7**
ULS (CARGO)	2004/2009	-	-	6	**253.575**	**6**
TOTAL		**346**	**65.208**	**24**	**1.152.013**	**370**
Note; The aircraft used for purposes other than passengers-cargo (ex. training) are not included.						

In 2012 2 new domestic and 21 new international destination points were launched. This way, the total flight destinations rose from 7 to 49 for the domestic flights, and from 15 to 192 for the international flights provided by 6 companies. In 2012, for the domestic flights, Turkish Airlines (THY) served 49,5% of the market. Pegasus (PGT) 25,5%, SunExpress (SXS) 9,7%, Onur Air (OHY) 8,2%, AtlasJet (KKK) 5,9% ve Borajet (BRJ) 1,1 % share of the market.

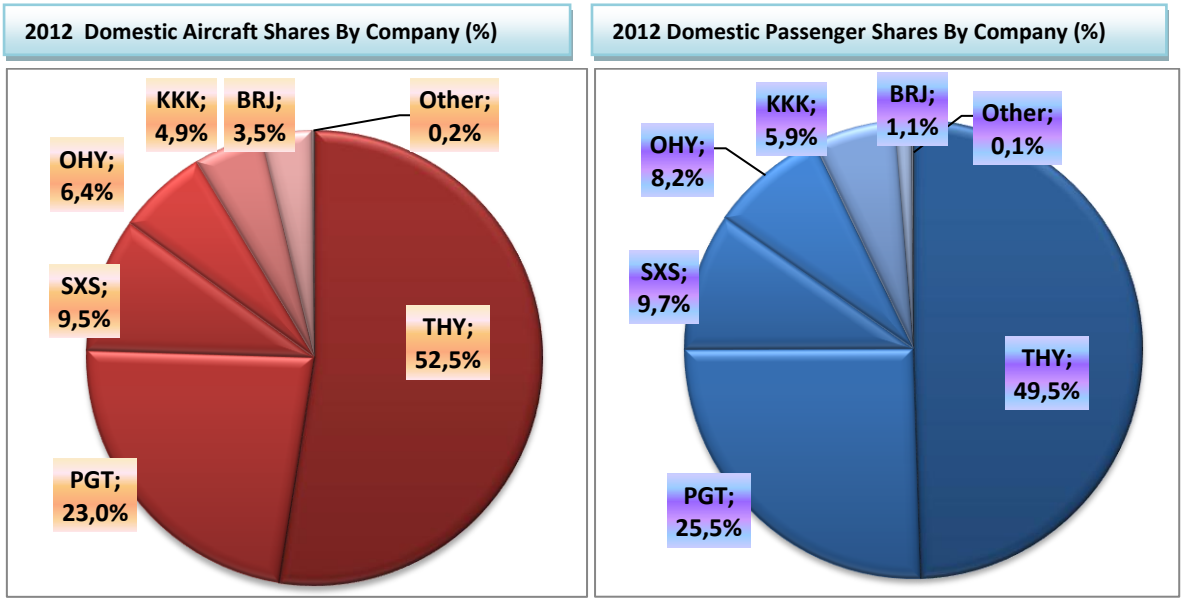
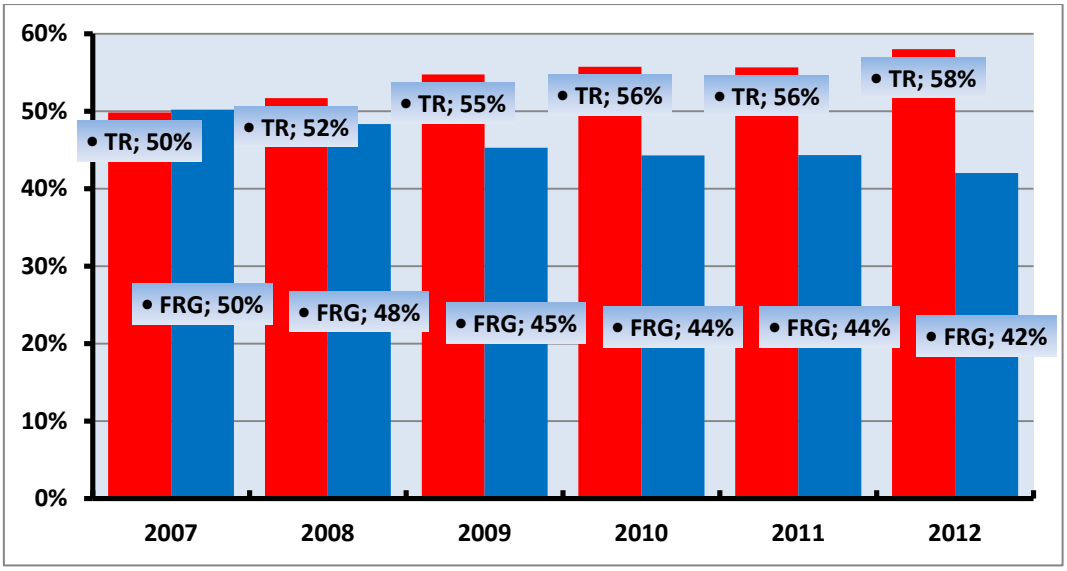


Figure-1.2. 2012 Domestic Aircraft and Passenger Shares by Airline Company (Source; DHMİ)

The momentum in the Turkish aviation sector is also reflected in the total international flight shares of the Turkish companies. While the International commercial flight/passenger transportation was 50%/50% (local/foreign) in 2007, in 2012 this changed to 58% local to 42% foreign, favoring the local airline carriers.

Table-1.3. 2007-2012 Local (TR)-Foreign(FRG) Airlines International Commercial Flight/Passenger Shares (Source; DHMİ)



1.4.4. Other Aircraft Companies

5 air taxi companies ended their operations in 2012. 2 general aviation and 1 balloon companies were licensed and started business. Currently 55 air taxi (197), 43 general aviation (231), 17 balloon (187) and 39 aerial agriculture (60) companies have a total of 675 aircraft[2].

Of the air taxi companies, only 8 have 7 or more aircraft and 37 have only 1 or 2 aircraft. Companies with a high number of aircraft (Turkish Air Association, Tarkim, AyJet) are usually for training. 1 company (Skyline) provides health services with 25 helicopters. Those having 1 or 2 aircraft use them essentially not for commercial but personal/corporate purposes (Appendix-2).

8 general aviation companies have more than 7 aircraft and 27 have only 1 or 2. Those with higher number of aircraft (THK, THY Flight Academy, Anadolu University Civil Aviation School, Top Service), use them for training purposes (Appendix-3).

Since the aerial agricultural has almost come to a complete halt, most aircraft used by agricultural spraying companies have been put out of service. The number of such aircraft dropped from 69 to 60 in 2012 (Appendix-4).

Balloon companies heavily concentrate in Nevşehir Cappadocia region and the number of balloons rose from 108 in 2011 to 187 in 2012 (Appendix-5).

[2] Total aircraft number.

1.4.5. Airport Ground Handling Service Companies

In the airports of Turkey, 3 A Class[3][Çelebi Air Service Ltd., Havaş (Airport Ground Handling Services Ltd.), TGS Ground Handling Services Ltd.], a total of 47 companies provide ground handling services (catering included) with more than 15.000 staff. 15 companies (B Class), provide their own ground handling services for their aircraft.

29 companies (C Class) provide representation, screening, management, flight operation, catering and flight security services for airline companies. 25 companies provide representation, surveillance and management. Of these, 3 also provide flight operation service. In addition to these, there are 5 companies licensed for catering service.

Further, the number of authorizations granted by the Turkish DGCA to cargo agencies has reached 146.

Companies	Total Personnel	No. of Serviced Companies			No. of Serviced Aircraft			2012/2011 % Increase
		Turkish	Foreign	Total	Turkish	Foreign	Total	
ÇELEBİ	4.334	11	225	236	111.694	58.568	170.262	0,09
HAVAŞ	3.355	62	134	196	78.381	38.611	116.992	0,01
TGS	7.046	15	153	168	392.064	14.745	406.809	0,01

Table-1.4. 2012 A Class Ground Handling Service Providers' Personnel and Service

1.4.6. Maintenance Organizations

There are 35 maintenance organizations that are authorized by the DGCA and of these only 3 provide comprehensive service as maintenance-repair-overhaul for the commercial aircraft [THY Technic, MNG Technic, MRO Technic (myTECHNIC)]. Also, 1 company (TEC) is in active operation in the field of engine and 1 company (Prima) in components. 10 airlines are authorized to carry out a certain degree of maintenance for their own aircraft.

Carrying out 85% of the maintenance-repair- overhaul services, THY Technic has a very advanced maintenance capabilities for aircraft engine-fuselage and components. Considering the rise in the number of aircraft in the world, aiming to provide a more comprehensive service for the regional market, THY has started the procedures to build "Aviation Maintenance Repair and Modernization Center (HABOM)" that will employ 3500 staff and serve 11 narrow-body and 3 wide-body aircraft simultaneously. HABOM facilities are designed to save energy and they will utilize solar power, rain water and even underground water resources. The entire heating, cooling and power systems will be environment-friendly.

Scheduled to start operation in the 3rd quarter of 2013, THY HABOM is planned to have narrow-body hangar in the first phase and wide-body hangar in its second phase.

More than 1000 new engineers and technicians have been employed and they have been going through orientation, training and certification for 1,5 years at the THY Technic. When HABOM is in

[3] A Class; are the companies that provide all ground services for airlines.

full operation, THY shareholder companies will come together under this central structure, and thus HABOM will become an aviation campus.

Picture-1.5. THY HABOM (Aviation Maintenance Repair and Modernization Center)(Source; THY)

Another important company in the maintenance sector, with their versatile capabilities, MNG Technic serves many local/foreign aircraft and components, and myTECHNIC serves aircraft, engine and components.

All three of the maintenance companies give type training for technicians and/or technician candidates, and with their collaboration with the training providers, greatly contribute to raising work power in the field.

Considering the capacities and activities of the maintenance companies in Turkey, of the expected 700 million USD passenger/cargo aircraft maintenance, 85% is provided by the local companies. A significant number of the maintenance services are provided by THY Technic.

Compared to 2011, in 2012 there was a 12% rise in the number of total aircraft that were provided maintenance by the 3 companies.

Table-1.5. Major Maintenance-Repair-Overhaul Organizations 2012 Abilities and Services (Source; Turkish DGCA and Related Institutions)

Companies	Main Authorizations	Total Personnel	Engineer Technician	Hangar Position	Total Area Use (m²)	No. of Serv. Aircraft	No. of Serviced Component
THY Technic	EASA Part 21-J.418 EASA/SHY Part 145 EASA/SHY Part 147 ABD/DOT - FAA	2.021	230+1.390	4	93.500[4]	481	70.564 [5]
MNG Technic	EASA/SHY Part 145 EASA/SHY Part 147 SHY-33A FAR CFR-49	840	648	4	25.000	98	7.145
MRO Technic	EASA/SHY Part 145 SHY Part 147 SHY-33A	550	265	1	35.000	78	2.125

1.4.7. Civil Aviation Training Organizations

In the 2012 academic year, 3.456 students at 26 higher education institutions (university and technical colleges) and 350 students at 9 secondary education institutions (technical/vocational high schools) were trained in aviation.

Detailed information about this issue is presented in the 6th chapter.

1.5. Aircraft (and Component) Design and Production

1.5.1. Turkish Aviation and Space Industries Ltd. (TAI)

For more than 20 years, TAI has been working at maximum performance and harmony with the global players of aviation industry in both civil and military, fixed and rotary platforms of structural component and main assembly units (including design), and in most of them has been the single source producer. One of the top 100 global players in aviation and space industry, TAI – depending on the project topics – is organized around 5 work centers: structural, aircraft, helicopter, unmanned aircraft, space and special programs. Also, TAI provides integrated logistics support for all designed/manufactured products.

Since its inception, including the design of A400M military transport aircraft (which it was one of the project partners), in all the production and logistics processes and important structural components and main assemblies and the systems, it has played a critical role. As one of the "Risk

[4] HABOM excluded.
[5] In 2012 total number of service aircraft was 2.297, 481 is the number of C, D, S, delivery and the A ve B class maintenance total of wide-body aircraft.

Share Partner," TAI is designing and manufacturing the flaps for A350XWB wide-body passenger aircraft that is being developed by Airbus, and also it is the single-source supplier of rear fuselage (Section 18) for Airbus A319/320/321 series single-aisle passenger aircraft. Designing and manufacturing for many aviation giants like Boeing, Agusta Westland, Sikorsky, Eurocopter and Bombardier, TAI is annually awarded for its superior supplier performance. As one of the most critical components of the F-35/JSF allied attack aircraft, the mid-body section is also produced by TAI for Northropp Grumman, as the single-source supplier. With its sustainable performance improvements, TAI has become one of the limited number of 1st level subcontractors in the global aviation industry.

With its strong foundation, ever-increasing experience, self-confidence rooted in its successful performance, well-deserved reputation in the global aviation industry, and considering the national and global needs; TAI has launched technical and administrative preparations for programs aiming to produce original combat aircraft, original helicopters and middle-level passenger aircraft that will be needed in the future.

With its vision of having original products, being competitive at the global level, and becoming a well-recognized global brand, TAI presents cost and efficiency advantages by using external resources without extra investment and employment for the non-basic processes. TAI aims to expand with its auxiliary industries by increasing both its external resource use and use volume. Mainly metallic detail component manufacture, cable equipment, chemical surface processes and structural design and analysis services, over 150 auxiliary industries are involved in its operations. TAI also provides theoretical/ practical training and certification for the auxiliary industries, acting as an aviation leader and a school.

Moreover, the number of companies that provide subcontractor design and manufacture support for the main equipment corporations is rapidly rising.

Picture-1.6. Airbus Fuselage Delivery at TAI Facilities (Source; TAI)

Constituting a basis for Turkish civil aviation manufacturing sector, information about three important projects by TAI are presented below:

- **Hürkuş – Beginner and Basic Training Aircraft**

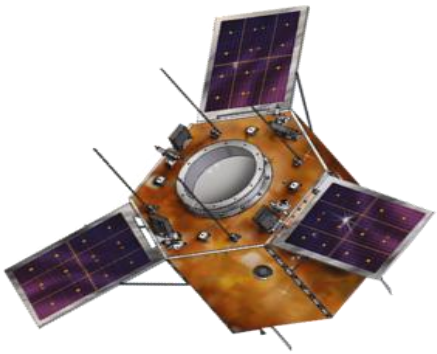
Developed in accordance with the international certification regulations and planned to be certified by EASA with "CS-23 Suitable for Flight Certification," HÜRKUŞ is designed as a basic training aircraft to address the beginner level and basic training needs of both Turkish Armed Forces and also the global market. With its 1600 BG turboprop engine, full-digital cockpit and advanced level OBOGS type special systems that can only be found in advanced combat aircraft, HÜRKUŞ is a candidate to become the most competent player in the beginner/basic training aircraft market.

Picture-1.7. Hürkuş (Source; TAI)

- **Anka Unmanned Aerial Vehicle System**

Developed by TAI, ANKA system is an Unmanned Aerial Vehicle (UAV) designed to carry out intelligence, screening, target detection and recon. ANKA is a MALE class (Medium Altitude Long-range Endurance) system that is composed of 4 x Aircraft, 1 x Ground Data Terminal, 1 x Ground Control Station, 1 x Automatic Landing/Takeoff System and 1 set Ground Support Equipment. Optional systems such as Portable Visual Assessment System and Remote Vision Terminal can also be developed. System configuration can be varied depending on the needs.

While limited in its use in the civil aviation, these UAVs will become an indispensable part of our lives with their civil applications. From public services to fire-fighting, from energy to agriculture, forestry and fishing, and from earth observation and remote sensing to communications and broadcasting, in numerous fields, there is serious work in progress to meet the great expectations in their civil use.



Picture-1.8. ANKA Unmanned Aerial Vehicle (Source; TAI) **Picture-1.9.** Göktürk 2 (Source; TAI)

- **Göktürk 2 – Recon Observation Satellite**

In accordance with the satellite development principles that are being implemented in the world, and produced as Structural Proficiency Model, Proficiency Model and Flight Model at TAI facilities, after completed integration and testing, 2,5 m resolution Visual-Purpose Scientific Research and Technology Satellite (GÖKTÜRK-2) was launched into its orbit on December 18, 2012 by the TÜBİTAK (The Scientific and Technological Research Council of Turkey) Aerospace – TAI Partnership. Its early activities are successfully progressing and the visuals taken by the satellite from various parts of the world are being recorded by the ground stations. Through GÖKTÜRK-2 Project, it is aimed to meet the needs for developing technology, human resources and infrastructure in space and satellite systems, and the needs of public institutions for observation and research, with national resources. In the present situation, these objectives have been met, specialized human resources have been obtained and design, analysis, production, assembly, integration and test infrastructure and abilities at satellite and equipment level have been acquired.

1.5.2. TAI Aircraft Engine (TEI)

Being the single source in many components it produces, currently TEI serves the leading main engine producers of the world by producing 709 different components for 38 different type military and commercial engine programs. Since TEI is specialized in jet engine production, it heavily utilizes metallurgy and material sciences in its production processes. Thus, it very heavily uses advanced materials, chrome-nickel, titanium and advanced aluminum-based super alloys. In turning these materials into final products, advanced production methods are employed.

Picture-1.10. TEI Engine Production (Source; TAI)

Current production portfolio of TEI includes hot and cold area components of the engine: Fan, HPT, LPT Shaft and Disc + Shaft combinations; HPT, LPT, HPC, LPC Seal, Spacer Seal; HPC, LPC and HPT, LPT Disc; Blisk and Multi Level Spool parts; Exhaust Module and Combustor parts; Actuator, Manifolds, Honeycomb Seals; Casing, Frame, Housing, Support Ring part families. TEI has 42 competence certifications in non-destructive and special processes. Of these, 29 have 8 different NADCAP special process group certified and Merit competent and the rest are customer-certified.

With its advanced technology equipment and processes, TEI carries out the new product intakes with simultaneous engineering and since it has the technical and technological infrastructure to meet the design change demands in these engine programs, it is preferred by customers.

TEI has an advanced technology engine assembly facility and two test cells that can conduct engine tests with maximum 100.000 turbofan capacity and maximum 2500 shp capacity turboprop and turbo shaft engines. Assemblies are carried out by using sensitive equipment and toolkits. As part of the initial I-II and IV projects, assembly and test processes of F110 engine of the F16 planes were completed at TEI. Recently speeding up its Depot Level Maintenance (DSB) activities, TEI has started SLEP (Service Lengthening Program) and ENSIP (Engine Structural Integrity Program) maintenance on the modules of Bahrain Air Force F110 engines.

DSB activities for Pratt & Whitney TF33 engines of NATO AWACS aircraft have been carried out since 1997. As part of the General Purpose Helicopter Program for the Turkish Armed Forces (TSK), all the engines to be produced under TEI license will be assembled and tested at TEI. Also, as long as the program lasts, T700 type engines on the inventory and maintenance-repair support and spare part supply of all TEI-licensed T700 engines will be handled by TEI.

One of the long-term goals of TEI is to be able to reach the gas-turbine engine designing ability at a level to compete at the international platforms. With the ongoing projects, on the one hand infrastructure work has been done, and on the other it is aimed to meet the demands arising for the country. Several examples are presented below.

- Core Engine Technology Development and Display Project,
- TP400-D6 Turboprop Engine Development Project,
- TP38 Turboprop and TJ35 Turbojet Engine Development Project,
- TJ90 Turbojet Engine Development Project,
- Operative Unmanned Aircraft Engine Development Project.

Also, there have been significant developments in the cabin equipment and seat manufacturing by THY, and detailed information is presented below.

1.5.3. TCI Turkish Cabin Systems Ltd.

Founded by the THY A.O., THY Technic, and TAI partnership in 2011, TCI company undertook the mission of designing and producing the cabin systems on board. The initial objective of TCI was to design and produce galleys certified for Boeing 737NG and Airbus A320 series single-aisle passenger aircraft. In medium and long term, it aims to penetrate the global market with a wide range of products, and become one of the three major players in the market.

Picture-1.10. Galley Production (Source; TCI)

Picture-1.11. Seat Production (Source; THY)

1.5.4. Aircraft Seat Production Industry and Trade Ltd.

Founded by THY, THY Technic, and one of Kibar Holding subsidiaries, Assan Hanil Automotive Industry and Trade Ltd, to design, manufacture, provide logistics, carry out maintenance-repair-modification and marketing, Aircraft Seat Production Industry and Trade Ltd. plans to start its serial production activities in May 2013.

The company has made serious progress in the certification processes that are one of the most important requirements of the civil aviation sector and has obtained the advanced design output approval (ADOA).

Production approval certification (POA) and product-specific type certification (ETSO) are planned to be obtained in May 2013.

1.6. Inspections

Responsible for the regulations, inspections and enforcement activities, Turkish DGCA continued its intensive inspections in 2012, without any sacrifices from its safety and security principles and conforming with the international standards and with utmost sensitivity towards environmental issues, focusing on its target to stay as the leader in the region.

As in 2011, in 2012 as well, with an efficient, effective, fast and reliable inspection philosophy, the SAFA-SANA inspections were intensified to reduce the national finding averages to 0,8 and by determining the national target, and launching a monitoring system, the sector was urged to achieve this target by taking preventive measures.

The modernization of the data bank that holds the SAFA inspection records, of which effectiveness is accepted by EASA is also in progress. The airline companies with higher than 0.8 SAFA finding average are required to undergo 20 SACA inspections monthly, and in accordance with this new requirement, a total of 4483 inspections, of which 2260 were SACA, were conducted in 2012. Thanks to these measures, the SAFA score for our airlines dropped to 0,62, which is a much better figure than the European Union countries' average of 0,97.

Implemented in Turkey for the first time, the mobile inspection system project has been launched and EASA compliance and adaptation work is in progress.

Table-1.6. Civil Aviation Sector 2012 Inspection Statistics

Aviation Sector 2012 Inspection Statistics	
Airworthiness Inspection	664
Maintenance Organization (SHY/JAR-145) Inspection	54
Maintenance Responsibility (SHY-M) Inspection	69
Maintenance Training Organization Inspection	9
FTO Inspection	31
TRTO Inspection	15
Special Authority, Wet-Lease and En-route Inspections	492
Commercial Aircraft Organization (AOC) Inspection	140
SAFA Inspection	275
SANA Inspection	114
SACA Inspection	2.260
Hospital Inspection	3
Airport Inspections (SHY-14)	32
Ground Service Provider Inspections	
- Based on Airport	22
- Based on Service Type	108
Heliport Inspections	7
Number of Non-Sanitary Enterprise Inspection	16
Number of Sanitary Enterprise Inspection	90
Inspected Agencies	6
Airports Inspected for Safety	9
International Inspections (ICAO, ECAC, etc.)	1
ATM / IS Inspections	20
CNS Inspections	46
GRAND TOTAL	**4.483**

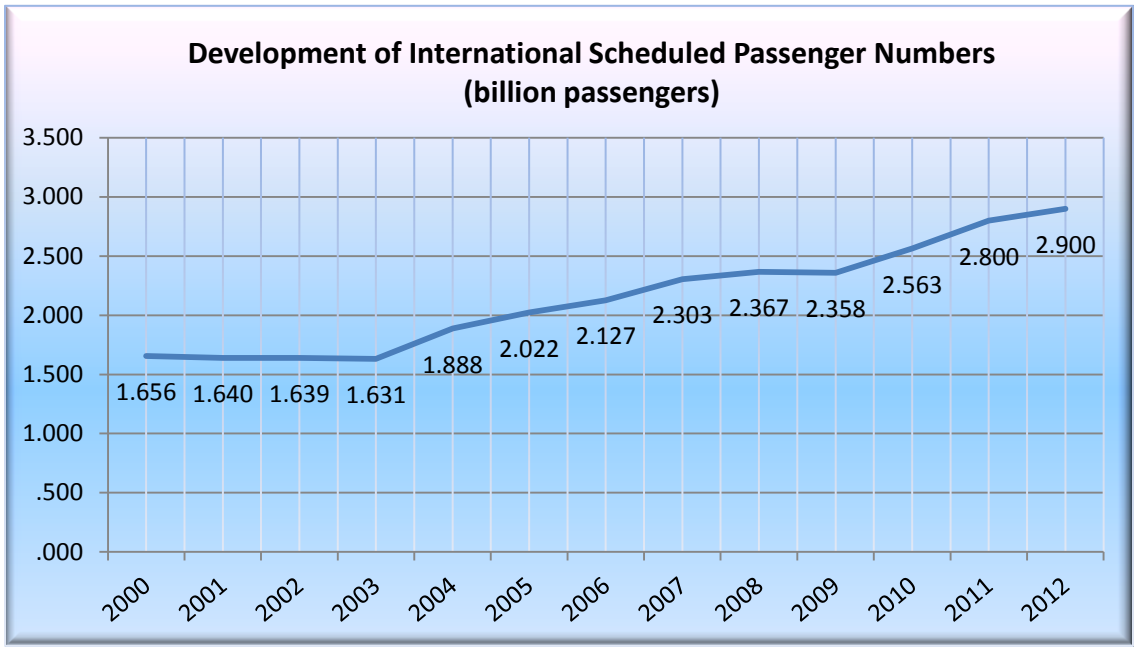
2. Air Transport Activities in 2012

2.1. Air Transport in the world

Commercial civil air transport operations/activities celebrated the 100th anniversary of their establishment in 2013. 28.000 aircraft made flights to 35.000 destinations, contributing 2,2 trillion USD to the world economy. It is estimated that 5.5 million people were employed directly and 57 million people were employed in total by the civil aviation sector[1].

According to the ICAO (International Civil Aviation Organization), scheduled passenger operations were about 100.000 worldwide in the 1950s while this number rose to 1 billion in 1976, and 5.126 billion in 2010. Although this should be thought of as bi-directional traffic, the number of scheduled passenger was around 2,8 billion in 2012. According to data for 2012, the number of passengers was about 2,9 billion (Graph 2-1).

The total domestic and international scheduled passenger numbers increased by about 7.29% annual compared to passenger numbers between 1960 and 1999. The rate of increase was 4.5% between 2000-2012.



Graph 2-1. Development of International Scheduled Passenger Air Traffic, 2000-2012 (Source; ICAO Statistics[2])

[1] IATA Press Release; 9 January 2013.

[2] Data from annual/periodic published statistics by ICAO.

According to the 2012 ICAO data, the rate of passenger traffic increased 6.5% in domestic flights and 3.9% for international flights totaling 5.5% for 2012 compared to 2011. In the same period, available seat-kilometers (ASKs) increased by 4%, with the passenger load factor at 78%.

With regard to regional developments, passenger traffic increased most significantly in Middle Eastern countries (17.3%). Latin America and the Caribbean are also noteworthy with increases (11.7%). The highest growth for international traffic was in the European region (5.6%) with this region being the highest ranked in international flight traffic at 39%. The highest growth in domestic flight traffic is 8.8% in the Asia-Pacific Region. The European domestic market declined 0.7%.

Table 2-1. Regional passenger traffic and capacity growth, market shares and load factors throughout the world, 2012 (Source; ICAO)

Regional passenger traffic and capacity growth, market shares and load factors, 2012								
REGIONS	INTERNATIONAL		DOMESTIC		TOTAL		CAPACITY GROWTH	LOAD FACTOR
	Traffic Growth %	Market Share %	Traffic Growth %	Market Share %	Traffic Growth %	Market Share %	ASKs	LF %
AFRICA	7,4	3	2,3	1	6,7	2	5,2	67,8
ASIA AND PACIFIC	5,5	27	8,8	35	6,9	30	5,9	76,6
EUROPE	5,6	39	-0,7	8	4,9	27	2,5	79,4
LATIN AMERICA AND CARIBBEAN	11,7	4	5,3	7	8,4	5	6,1	74,6
MIDDLE EAST	17,3	13	7,9	1	16,8	8	11,6	79,4
NORTH AMERICA	1,3	14	1,2	49	1,2	27	0,7	82,5
Total %	6,5		3,9		5,5		4	78,8

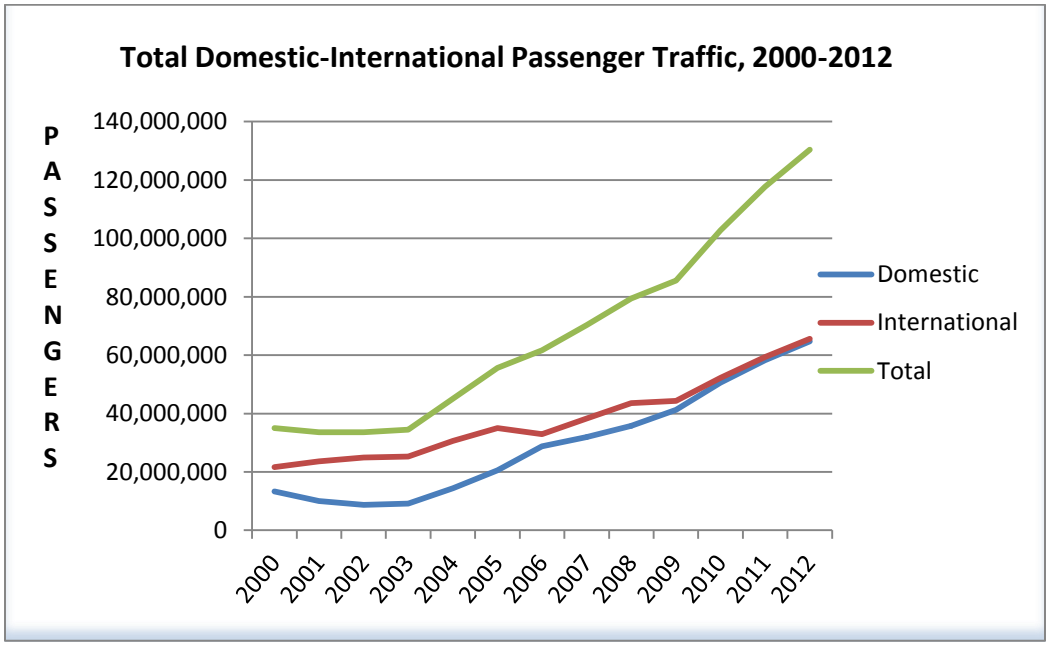
2.2. Air Transport in Turkey

Even though air transport has the lowest growth rate among the transport systems until the 1980s in Turkey, air transport grew rapidly in 2003. The number of flights increased by 196%, passenger numbers increased by 280% and the amount of cargo increased by 126% in the last decade. In 2012, the number of domestic and international flight passengers numbered 131,029,516 having grown by 10,8 per cent over the 2011 figure when it was 118.292.000 (Table 2-2.). The market share of domestic flight passengers was 49.4% in 2012.

Total annual passenger arrivals at Atatürk Airport had the highest (21%), followed by Adana Şakir Paşa Airport (16%), Adnan Menderes Airport (10%) and Esenboğa Airport (9%). New regulations to increase the number of slots at Atatürk Airport contributed a significant increase to the number of passengers. Certain airports with intense tourist traffic, such as Antalya (0%), Milas Bodrum (4%) and Muğla Dalaman (2%) experienced stagnation in passenger traffic.

Turkey ranked 7th based on the passenger numbers for 2011. However, Turkey ranked 6th after the Netherlands in 2012[3]. According to reports of the Airports Council International (ACI), Atatürk Airport is placed 4th in Europe[4] and 1st in the world with growth of 21% among airports that have a capacity of over 10 million passengers[5]. Adana Airport ranked 2nd with a remarkable increase in the passenger numbers. Atatürk Airport ranked 5th increasing two levels for the number of take offs in 2012[6].

When considering the two legs of a flight route, Turkey ranks 9th among countries having developed new routes[7]. According to reliable market reviews, the United States, England and Germany maintained their positions as the first three.

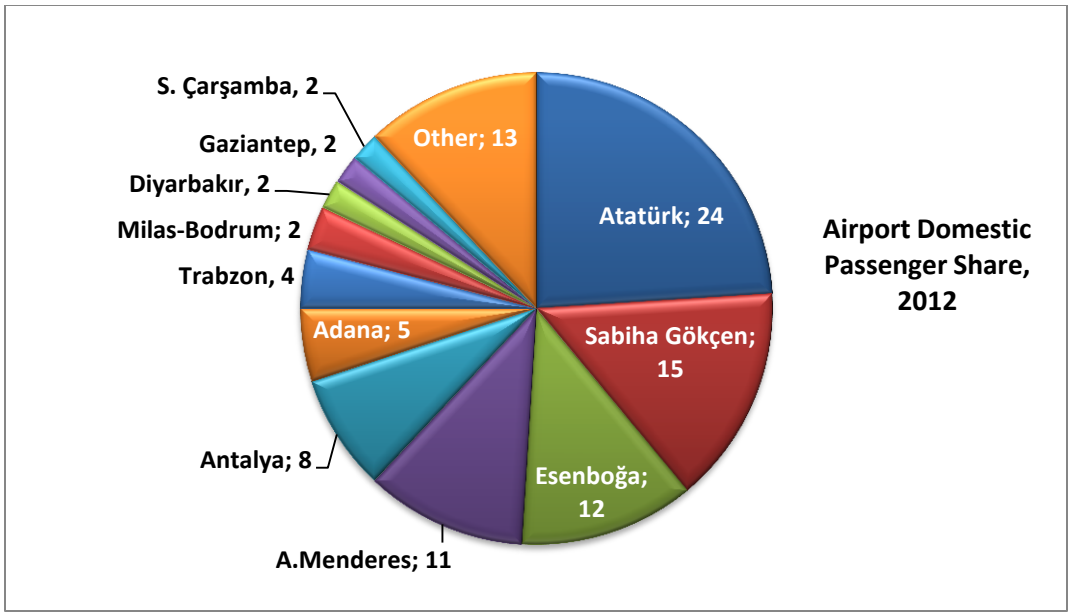


Graph 2-2. Total Domestic-International Passenger Traffic 2000-2012 (Source; DHMI)

Domestic passenger traffic was 58.258.324 in 2011, this is 64.71.316 by 11,1% and international passenger traffic was 65.630.304 by 10.6% in 2012.

The most important part of the domestic passenger traffic was at Atatürk (24%), Sabiha Gökçen (15%), Esenboğa (12%), Adnan Menderes (11%) and Antalya (8%) (Graph 2-3).

[3] Turkey ranked 12th in the world, results of 2012 have not been published.
[4] ACI EUROPE, Airport Traffic Report December Q4.
[5] ACI Pax Flash Report (2012, for 11 months, unascertained).
[6] EUROCONTROL Interactive Dashboard data.
[7] http://www.oagaviation.com/Solutions/Aviation-Data/OAG-Top-100/



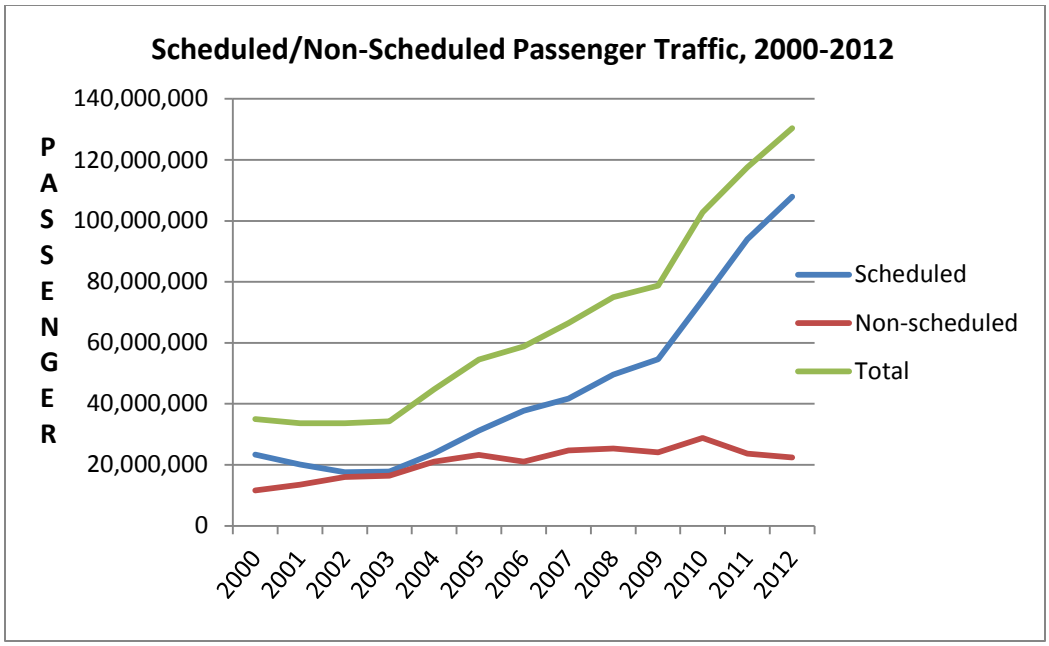
Graph 2-3. Airports Domestic Passenger Shares, 2012 (Source; DHMI)

As mentioned earlier, the increase of domestic passenger traffic is in line with the slogan of the Ministry of Transport, Maritime Affairs and Communication: 'Every Turkish citizen will board an airplane at least once in his lifetime.' In the line with these studies, building new airports, regional aviation applications and developing regional airport projects will cover all parts of Turkey.

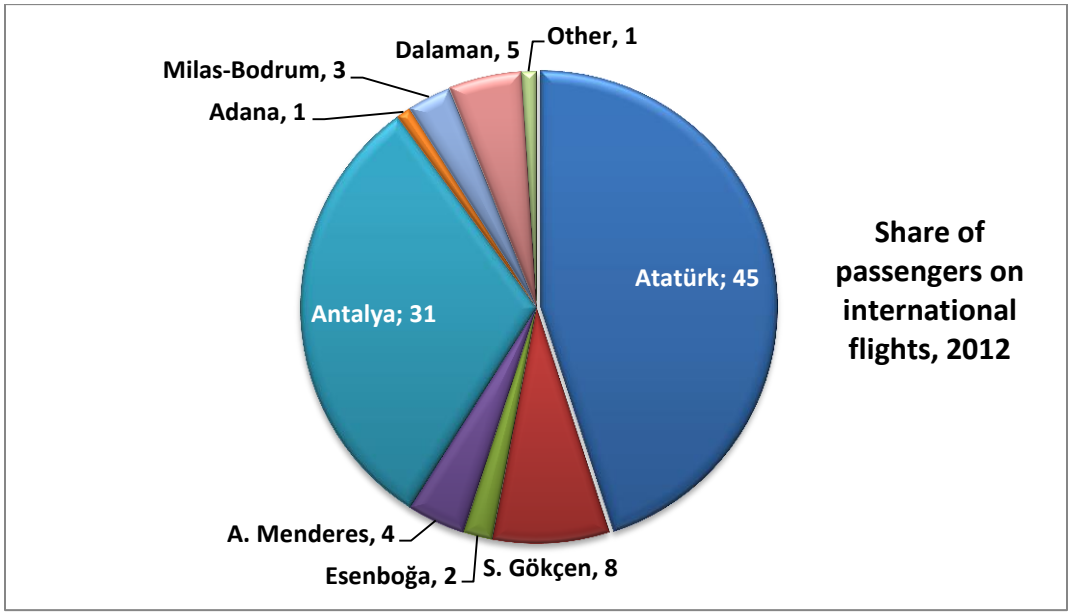
Crucial factors in the increase of international passenger traffic are the growth in international centers and developments in frequency thanks to tourism.

The distribution of scheduled and non-scheduled passenger traffic is shown in Graphs 2-4. The rate of incoming scheduled passengers is 83% and non-scheduled passengers is 17%.

The most intensive passenger traffic has been at Atatürk (45%), Antalya (31%), Sabiha Gökçen (8%), Muğla Dalaman (5%), and Adnan Menderes (4%) in 2012. Non-scheduled flights are usually at airports in tourist centers such as Antalya, Dalaman, and Milas Bodrum.



Graph 2-4. Scheduled and Non-scheduled Passenger Traffic in Turkey 2000-2012 (Source; DHMI)

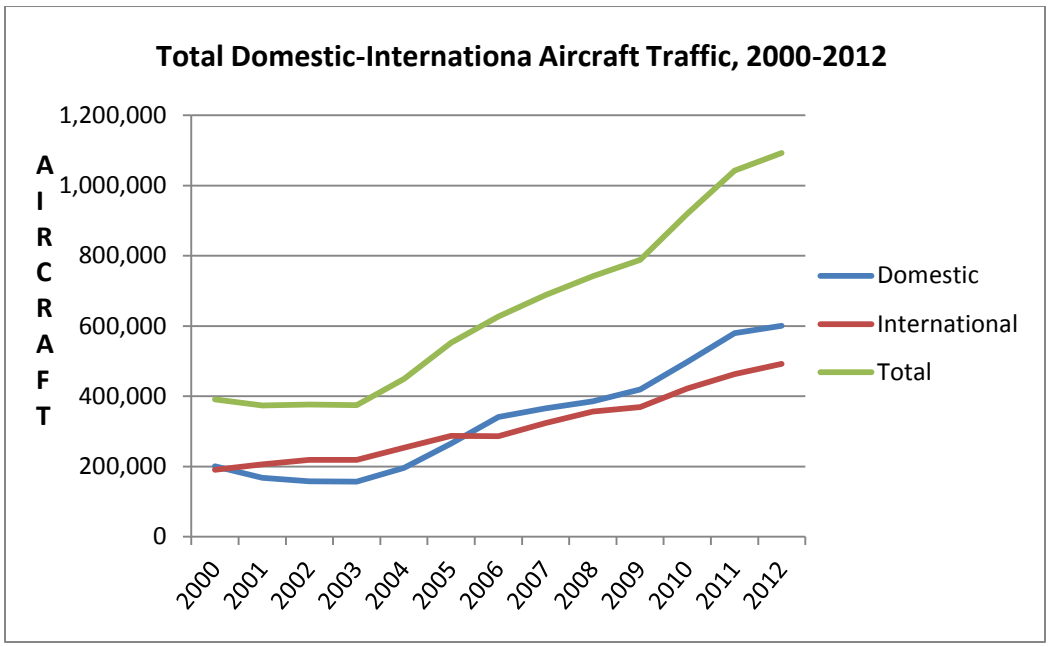


Graph 2-5. Shares of International Passengers, 2012 (Source; DHMI)

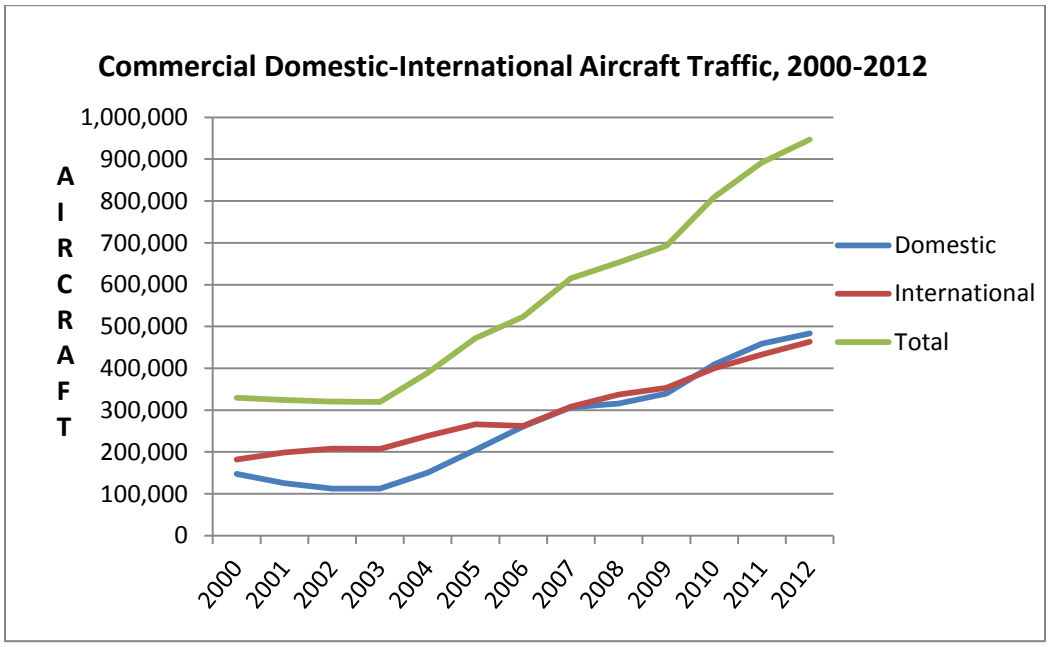
Air carrier traffic in Turkey has revealed development parallel to the developments in the Turkish aviation sector in 2012 when compared to previous years. The total number of air carrier traffic (take-off + landing) was 1,042,369 in 2011, but this increased to 1,093,047 (4.9%) in 2012 (Graph 2-6.).

Domestic flight traffic was 579,488 in 2011, it increased to 600,818 (3.7%) in 2012; international flight traffic increased from 462,881 to 492,229 (6,3%).

Commercial air traffic is set to increase to 946,897 (6.1%) in 2012, from 892.139 in 2011. Domestic air traffic is 483.441, with commercial international traffic at 463.456 (Graph 2-7).

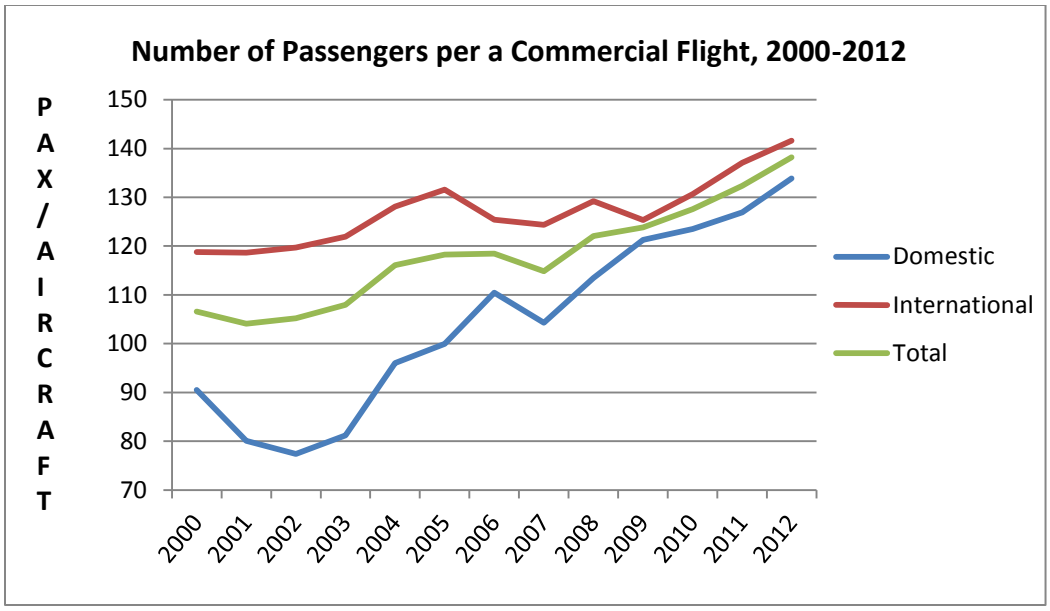


Graph 2-6. Total Domestic-International Aircraft Traffic, 2000-2012 (Source; DHMI)



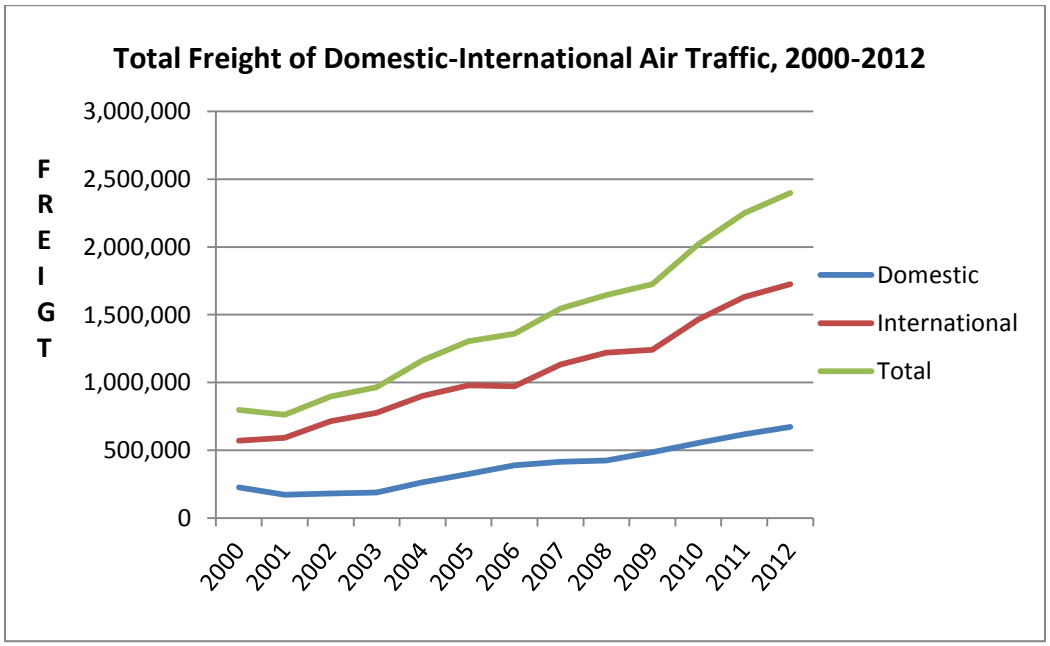
Graph 2-7. Commercial Domestic-International Aircraft Traffic, 2000-2012 (Source; DHMI)

A remarkable increase in the commercial air traffic reveals differences in passenger numbers. As shown in Graph 2-8, this situation derives from an increasing number of passengers per aircraft due to passenger demand.



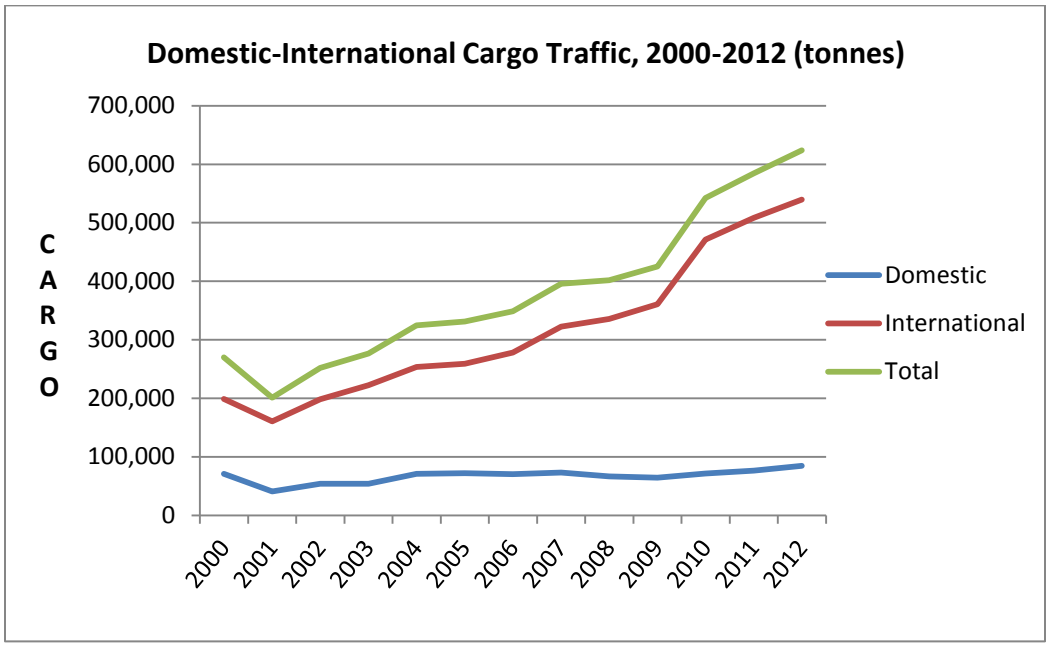
Graph 2-8. The Number of Passengers per Aircraft in Turkey, 2000-2012 (Source; DHMI)

It can be stated that developments in freight traffic is due to increasing developments and demands (Graph 2-6). Total freight traffic (cargo-mail-baggage) was 2,249,473 tonnes in 2011 and increasing to 2,249,134 tonnes in 2012. Domestic freight traffic was 617.835 tonnes in 2011 and rising to 633,076 (2.5%) tonnes; however, international freight traffic declined by (1%) from 1,631,639 tonnes to 1.616.057 tonnes.



Graph 2-9. Total Domestic-International Freight (Cargo + Mail + Baggage) Traffic in Turkey, 2000-2012 (Source; DHMI)

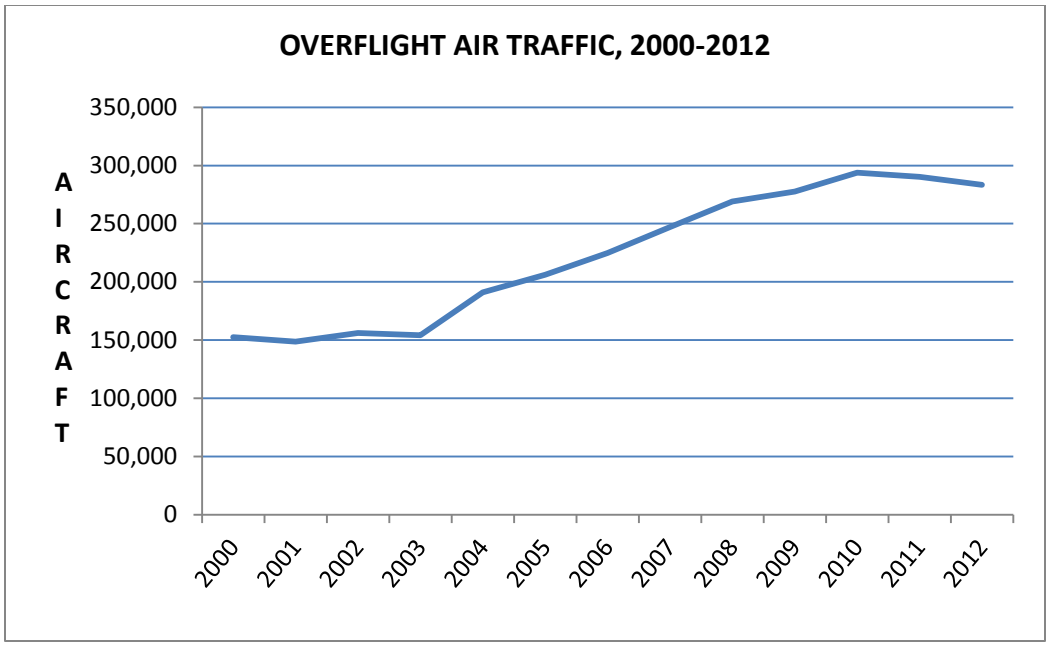
The increase in passenger traffic began to be reflected in cargo traffic. Of total cargo traffic, 84,431 tonnes was in domestic lines with 539,627 tonnes in international flights in 2012. The growth rate is 6.8% in the years 2011 and 2012. International cargo traffic is on the continuous increase. Domestic cargo traffic is also on the increase compared to total air traffic.



Graph 2-10. Domestic/international Cargo Traffic Operations (Source; DHMI)

In 2011, overflight traffic decreased 0,31% with 292.816 aircraft compared to 2010. This continued to decrease with 283,439 aircraft. (Graph 2-8). Political unrest in Southern Africa and the Middle East not only affected these areas, but also affected the countries associated with them during 2010 and 2011. After this period, a problematic process started and overflight air traffic in Turkey declined due to this problem. According to a forecast by Eurocontrol, it is recorded that overflights in Turkey declined by 6%[8]. After the crisis in Southern Africa and the Middle East, overflight air traffic numbers are expected to increase.

[8]Eurocontrol, Medium-Term Forecast, Flight Movements, 2011-2017, October 2011.



Graph 2-11. Overflight Air Traffic in Turkey, 2000-2012 (Source; DHMI)

2.3. Short-term forecasts for Turkey

According to DHMI, air traffic forecasts for the next 3 years are given below. As indicated, passenger air traffic increased by 10% in 2013/2012, it will increase by 7% following 2 years. As estimated, the total aircraft traffic will increase 7% between 2013 and 2015.

PASSENGER AIR TRAFFIC FORECAST				
	Domestic lines	**International lines**	**Total**	**Growth %**
2012	64.721.316	65.630.304	130.351.620	
2013	73.856.371	69.292.806	143.149.177	**0,10**
2014	80.620.020	72.204.574	152.824.594	**0,07**
2015	88.679.357	75.341.851	164.021.208	**0,07**

Table 2-12. Passenger Traffic Forecast for Short-term in Turkey (Source; DHMI)

TOTAL AIRPORT AIR TRAFFIC FORECAST				
	Domestic lines	**International lines**	**Total**	**Growth %**
2012	600.818	492.229	1.093.047	
2013	663.139	512.216	1.175.355	**0,10**
2014	716.455	556.339	1.272.794	**0,08**
2015	769.938	609.806	1.379.744	**0,08**

Table 2-13. Air Traffic Forecast for Short-term in Turkey (Source; DHMI)

3. Aviation Sector in the Turkish Economy

The Ministry of Transport, Maritime Affairs and Communication's Project called 'Turkey is Ready, Target set for 2023'says that "airlines will be public airlines, the current airports will be modernized, boarding a plane will be like boarding a bus or minibus, boarding a plane will be a need not a privilege, and we will be one of the most reputable air carriers in Europe. This clearly means that the Turkish civil aviation sector has entered into a period of rapid growth and that the aviation sector has generated important economic benefits to the Turkish economy[1]. Air transport activities had an annual improvement of 10%, with this contribution increasing all the time. This indicates that Turkey has a remarkable role in commercial activities and that Turkey is a country making rapid development in the world economy.

When the budget of the Ministry of Transport, Maritime Affairs and Communication was presented in 2013, Turkey's purchasing power parity (PPP) for 2012[2] was shown as 1.125 billion USD. Therefore, Turkey remarkably ranked 16th in the world and 6th in Europe. In the presentation, the share of transportation sector was 15.4%[3]. In addition, it is stated that transport and communication investment rose from 2,376,798,000 TL to 13,898,150,000 TL, meaning 134 billion TL in total with the share of air transport at 5%. The investment of the Ministry is 16% corresponding to 20,993,161,000 TL in a build-operate-transfer model. A total of 728,000,000 TL was spent on an air transport. Another remarkable indicator for the development of the transport and communication sector is spending of 42% for this sector.

In the presentation of the Ministry of Transport, Maritime Affairs and Communication's budget, the share of Turkey's civil aviation sector is 15 billion USD, and employment area is amounting to more than 150, 000. The data accorded with the results of the TOBB studies of 2011.

According to the study conducted by the TOBB, the amount of sales revenue is given as follows: airline companies is 72%, airport and terminal operators 18,6%, ground handling companies 4,4%, maintenance, repair, and revision companies 3% and catering companies 2%. Turkish Airlines is the most important company in both sales revenue and flight activities. The market share of Turkish Airlines is approximately 64%, but when considered with its partner companies Sun Express, THY Technic, TGS and Turkish DO&CO, the share market of Turkish Airlines is about 50%[4].

On consideration, Turkish Airlines' most important source of income is exogenous. This entry is of important value to Turkey's purchasing power parity and total exports. As it is known, purchasing power parity is calculated using a ratio derived from the price of goods and their real value. Regarding this, using purchasing power parity in the aviation sector is the flight itself as a final product and airport operations such as ticketing, ground handling services, fueling expenses paid by the airlines. The income of airlines is as shown;

- Sale of national airline tickets (including additional services),
- National airlines cargo revenues from services,

[1] Transport and Communication Strategy of Turkey, target for 2023, Ministry of Transport.
[2] IMF, estimated data, October 2012.
[3] Ministry of Transport, Maritime Affairs and Communication, Budget, 2013.
[4] TOBB, Civil Aviation Sector Report, 2011.

- Revenues from sale of goods and services at airport terminal (buildings /stores, food and beverages),
- Revenues given at Turkish airport to international airlines (ground handling, catering, aircraft maintenance),
- Revenues from general directorate of state airports authority and international airlines (air navigation facilities, stopovers and housing),
- Other revenues from passengers and customers (cargo).

These contents can be detailed.

During consideration of the Civil Aviation Sector Report, not all income statement items were studied in detail. Therefore, the share of the aviation sector's purchasing power parity could not be clearly determined. However, it is thought that a unit fund value of 1.3% can be accepted[5].

As mentioned in previous parts, a total of 130.6 million passengers were carried. The number of destinations was 241 in total, being 49 in domestic flights and 192 in international flights.

In Turkey, when transport shares are considered, air transportation was at 2,5% for a long period but now it has risen to 7,82%. The contribution of regional aviation policies after 2003 cannot be ignored in the improvement of the aviation sector. In the concept of Targets for 2023, it is estimated that the share of domestic lines will rise by 14%. (Target for 2023)

Air cargo transport now stands at 0.44% and this percentage should be increased[6].

On the other hand, international enterprise prefers Turkey for investment and holidaying due to developing flight destinations. 32 million tourists visited Turkey in 2012 and their contribution to the Turkish economy was about 30 billion TL.[7] 75% of visitors travel with airlines and these travellers' contribution to the Turkish economy was about 22,5 billion TL. The role of the civil aviation sector cannot be ignored.

[5] The value of 1,3% is assumed and should be considered a result of an incomplete study (the value of PPP for 2012 has not been published).

[6] Ministry of Transport, Maritime Affairs and Communication estimates that, " at least 2 regional airports will be operated as cargo airport, and these airports will be important transit cargo centers from east to west, and south to north in the world (Target for 2023).

[7] TUIK Tourism data.

4. CIVIL AVIATION SECTORAL SWOT ANALYSIS

The SWOT Analysis carried out to identify;

- Internal strengths of the sector,
- Internal weakness of the sector and projections to eliminating them,
- External opportunities for the sector,
- Current and future threats to the sector and measures that may taken to overcome these threats and/or opportunities that may be helpful,

to the Turkish civil aviation sector is presented in the table below, and its details are given in the following chapters. In the study, only sectoral issues are considered, and individual problems are excluded.

Table-4.1. Civil Aviation Sector SWOT Analysis General Table

INTERNAL STRENGTHS OF THE SECTOR
A rapidly growing and unsaturated civil aviation transport sector
Geographical location of Turkey and İstanbul's being a very important hub
The competitive atmosphere in the aviation sector and the positive impact of public-private sector partnerships, market entry-exit flexibility and increasing "know-how"
Being faster and safer, the absolute advantage aviation has over other modes of transportation
Ongoing work to popularize air transportation in community
Political support given to air transport and the road map having been determined at the 10th Transportation Council
Rising and sustainable aviation sector revenues
Increasing international market share due to the investments and developments in the maintenance-repair and overhaul (MRO) field
Advanced production and modernization infrastructure in the air platform and systems design and manufacture industry; advanced level global experience and quality export realizations reinforced by international projects
Rapid development in the civil aviation training organizations and programs

INTERNAL WEAKNESSOF THE SECTOR AND PROJECTIONS TO ELIMINATING THEM
Lack of communication and collaboration among the organizations in the sector
Problems stemming from national legislations
Lack of a Master Plan for the sector and not having a Strategic Plan
High operation costs, narrow profit margins and over-competition in the air transportation business
Problems in obtaining and assessing sectoral data
That the most frequently needed spare parts, equipment and tools for the sector are exported

Not having a pricing system that is based on technical analysis and taking demand flexibilities into account
The need for clarification for the situation after the operation-lease period in the Public-Private Sector Collaboration Projects
Problems in finding qualified staff in the sector
The need for pilots, engineers, technicians and controllers
Not having a certification system for individual equipment/technologies that leads to problems in external purchases
Lack of experience in the after sales support processes in the air platform and systems design and production industry and insufficient structuring in the international markets
Due to post-delivery payment conditions, the pre-financing needs of our air platform and systems design and production industry
Insufficient number of heliports

EXTERNAL OPPORTUNITIES FOR THE SECTOR
Young population, dynamic and productive demographics
Turkey being one of the rising economies
Opportunity to draw up the roadmap in line with today's realities, with the 11th Transportation, Maritime and Communications Council
Thanks to its geographical advantages, the opportunity to become a regional hub in passenger-cargo transportation and MRO and training services
Ever-increasing tourism potential
Development potential in cargo transport
Positive relations and collaborations with organizations in the international aviation sector
Recently established collaborative work on technical issues and R&D
The potential of mutually supportive transportation modes
The way being paved for international-scale entrepreneurship by the accumulation of knowledge and "know-how" in airport business management
The emphasis and incentives given to exports in Turkey
Large-scale aviation firms' increasing preference for collaborative development projects and increasing opportunities for international collaboration; developing subsidiary industries

CURRENT AND FUTURE THREATS TO THE SECTOR AND MEASURES THAT MAY TAKEN TO OVERCOME THESE THREATS AND/OR OPPORTUNITIES THAT MAY BE HELPFUL
The negative impact of the global crises
Potential impact of the foreign political developments
Appreciating dollar and euro
Fluctuations in oil prices
Lack of innovation
Need for a common vision-mission for the civil aviation and tourism sectors

The risk of transportation modes like fast train to negatively affect air transportation demand
Possible airport capacity problems that may arise in the near future
Lack of customs legislation needed to facilitate transfers among cargo transportation modes
Environmental protection restrictions
Extra costs brought on by the EU carbon trade system
R&D and training infrastructure being put on back burner with commercial and economic concerns
Since Turkey is far from the central coordination and consolidation structure (Chinese example) its huge purchase power cannot generate enough "win-win returns" from its individual purchases

4.1. Internal Strengths of the Sector

A rapidly-growing and unsaturated civil air transportation sector

In recent years, with the progress made in liberalization and improving the infrastructure of the aviation sector, Turkish air transportation sector has become a steadily-growing sector even during the crises. Compared the rest of the world, the growth rate in Turkey is quite high. Thus, the sector contributes at an increasing rate to the national economy as well.

Having a relatively young and big population, sustaining its economical development and being one of the rising economies, having relatively low passenger/population rate or travel expenditure per person/per capita income compared to European countries, indicate that the potential demand for airlines in Turkey is quite high. Besides, tracing the gap in saturation point or potential sectoral growth rates, can be the sole source to help determine objectives and/or making decisions on the entrepreneurial ratios for all shareholders.

It is also projected that air transportation demand in Turkey will tend to support the fast growth in the sector. However, this steady sectoral growth requires improving and keeping the sectoral infrastructure, qualified staff, legislation, and such issues dynamic.

The geographical location of Turkey and İstanbul's being a very important "hub"

The geographical location of Turkey is important in acting as a bridge between the East that is increasingly drawing the global growth axis and the West that has developed economies and a population that has a high purchase power. This quality affords Turkey a huge advantage in civil aviation. With this quality, İstanbul is the most prominent city. İstanbul has direct access to almost all parts of the world with long-range aircraft, and more than 100 countries with medium-range aircraft; it has become one of the most important transfer points, and the number of available flights is most likely to increase much higher. On the other hand, it is very important to realize the potential of other cities to become hubs both to ensure a more balanced sectoral growth and to reduce the burden on İstanbul.

A more competitive atmosphere in the aviation sector, the positive impact of public-private sector partnerships, and higher market entry-exit freedom and accumulation of "know-how"

The notion of "regional aviation" has played a key role in developing Turkish aviation sector. To boost the aviation sector business and increase competition, there have been steps taken toward liberalization and state incentives have been put in place. Entry and exits in the aviation have also become relatively more flexible. Another important point is the realization of big infrastructure projects through public-private collaborations and the accumulation of "know-how" in the private sector. This way, local companies have been able to extend their activities to the international level and have become internationally competitive.

The absolute advantage that air transportation brings over other means of transport by its high speed and superior safety

What is unmatched in air transportation is its time-saving quality. The aviation sector is advantageous in Turkey because the domestic distances can be quite long. Furthermore, compared to the road transportation, which is the most common means of transportation in Turkey, air transportation is much safer. To be able to create and improve social awareness on this issue, better promotion of the aviation sector is crucial sector.

Ongoing work to promote air transportation

In Turkey, there has been considerable progress in popularizing air transportation and increasing airport accessibility. The studies carried out by the Transportation, Maritime and Communications Ministry show that in recent years air transportation has been gaining popularity. With increasing competition, the prices for air transportation stayed low. The endeavors to expand airport infrastructure in every corner of Turkey and improving aviation activities contribute to rising accessibility. Also, encouraging concepts like "disabled-friendly airport" by public organizations contributes to higher accessibility.

The political support given to Aviation sector and drawing up the roadmap with the 10th Transportation Council

The aviation sector receives political support due to its economical and social contributions. The development of the aviation sector is seen as a part of global expansion. At the 10th Transportation Council, all transportation sub-sectors and components of each sub-sector were analyzed and based on the results, a roadmap was drawn up. Following and revising the Council objectives and decisions and raising awareness about reaching these objectives will contribute greatly to the sectoral development.

Rising tendency and sustainability of aviation revenues

Despite the negative impact of global recession on aviation in almost all continents, the Turkish air transportation sector has been able to increase its share of revenues from the global aviation business. The increase in the trade volume also increases the cargo transportation potential. Higher demand for air transportation and rising popularity of Turkey combined with the higher revenues in business and navigation lowers the sectoral fragility and allows remarkable earnings in foreign currency.

Furthermore, the services gained thanks to "recycling of costs system" in the air navigation services create approximately 300 million Euro worth of foreign revenue, and provides considerable resource transfer for the national economy.

The increase in the foreign investment thanks to aircraft maintenance-repair-overhaul (MRO) improvements and investments

Within the scope of 2023 objectives, it is projected to become the regional leader in aircraft MRO and training services. Thanks to the rapid advances in Turkish MRO organizations and comprehensive investments, Turkey has become the country of choice for both local and foreign aircraft maintenance (including components). Launching THY Aviation Maintenance Repair and Modification Center (HABOM), will further increase this momentum. The collaborations with original component producers also greatly contribute to the improvements in MRO.

Considering the fact that maintenance and repair processes involve staff and component costs, the higher young educated population of Turkey compared to Europe will be a major factor in maintenance and repair costs. Due to its geographical location, Istanbul is expected to be preferred especially for major maintenances.

The advanced production and modernization infrastructure in aviation platform and systems design and production; advanced global experience and quality export realizations consolidated by international projects

The Turkish air platform and systems design and production organizations, primarily TAI, are consolidating their internationally (civil and military) certified design, production and modernization infrastructures through A400M, HÜRKUŞ and such national and international projects and strongly contribute to Turkey's becoming one of the leader countries in the global aviation industry. Led by TAI, with active participation in projects like A400M, F-35, A350 not only remarkable experience has been gained in both US and European aviation industries, but also has become part of the important information and communication network with the most important global aviation players like Boeing, Airbus, Lockheed Martin. By efficiently blending the young, dynamic and open-minded high-quality workforce that is comprised of graduates from the best universities mostly with masters and doctoral

degrees with the experienced workforce having national-international project experience, an effective and sustainable workforce harmony has been created.

Particularly in the merciless competition atmosphere of international civil aviation; managing to create a loyal customer base with its high quality, timely delivery and customer satisfaction, the Turkish air platform and systems design and production industry is improving its performance day by day. Every year it increases its quality exports from the previous year and it is making a sustainable progress among the leading industrial organizations in the international rankings.

Rapid advances in the civil aviation training organizations and programs

The number of universities and colleges offering civil aviation training in Turkey has reached 26. Aviation programs offered by other organizations are also on the increase. In 2012, the admission quota for the aviation-related programs of university and vocational schools was determined as 3.456 student/year, and for National Ministry of Education secondary schools ~350 student/year. The quantity and quality of aviation education organizations (compared to most regional countries) are quite high. This development is important to provide the well-trained quality workforce that the sector needs. However, it is essential to adapt the student quotas/course contents to the sectoral needs and put a premium on foreign language (English) in the education programs that train human resources for the sector that targets regional leadership and is regulated by international laws. Similar requirements are also deemed essential at secondary education (high school) level.

The rapid development in the civil aviation sector has increased the chances for qualified staff trained in civil aviation to find a job in their professional field. The sectoral potential to provide more people employment is rapidly rising. However, with a fierce competition, this field requires a highly-qualified workforce and specialization at all levels.

Furthermore, in order to become the regional leader in training, especially pilot and technician training should be emphasized, instead of launching new programs, improving existing educational organizations/facilities should be targeted, and the opportunities for making use of advanced educational technologies should be optimized and toward this end, university-industry collaborations need to be developed to build computer-assisted systems and synthetic (simulated) training centers.

Turkey might be a potential choice for aviation trainings due to its affordability, the appropriate cultural structure for the staff training needs of nearby regions, as well as its popularity as a touristic destination.

4.2. Internal weakness of the sector and projections to eliminating them

Lack of communication and collaboration among sectoral organizations

There are some communication problems in the sector that makes it difficult for the sectoral organizations to carry out effective collaborative planning. This hampers the coordination of large-scale and long-term strategic plans. Not having a master plan in the aviation sector leads to an inability to build infrastructure by estimating the future demand, inadequate harmonization with other modes of transportation, to conflicting organizational plans, uneconomical management of airports, limited airport accessibility and ineffective logistical processes. Today, the world is oriented towards the “airport city” concept. Moving on to the "airport city” concept involves sorting out the problems of authority conflicts among city transportation organizations and clarifying any vague points in the hierarchical structure. Coordination of legislation and reorganizing it through dialogue with all stakeholders to encourage collaboration may help overcome such problems.

Problems stemming from national legislation

The national legislation may at times not allow organizations to make accurate, fast and timely decisions by being “flexible” enough. When the State Economic Enterprises, which operate under market conditions, do not have the same degree of flexibility as the private organizations, especially in the service sector, they are prevented by the legislation from becoming more active market players. Also, since the activities in aviation sector are subject to a great number and variety of legislatures, it may cause inertia and contradictory practices.

There must be a straightforward, plain and clear regulation in the service sector, and binding cumbersome dependency on ancillary legislatures must be reduced. The continuing 11th Transportation, Communication and Maritime Council is an opportunity in that sense, and the organizations working under the “regulation” work group have the chance to evaluate these points and make suggestions on comprehensive, realistic legislative revisions.

On the other hand, in the regulations in the industrial legislation, the definition of “producer” needs to be updated and expanded to cover all components of the aircraft MRO sector as an exporting branch of service industry that uses high-quality workforce and advanced technology. A similar legislation change is necessary for the “export and export item” issues; and accepting service-intensive products of the aircraft MRO sector as export will render the current activities more effective.

Lack of a Sectoral Master Plan and Not Drawing up a Strategic Plan

Not having a national, up-to-date, organic “Master Plan” that is structured around a concept of ecosystems and based on a sectoral database that pulls from a multitude of databases of civil aviation

workforce, technology and organizations prevents future aviation projections and proper implementation of investment programs.

The inability to determine investment decisions on the basis of priorities prevents objective needs analyses and also creates problems in the objective assessment of different alternatives for the public good. At this point, strategic planning becomes crucial. Creating work flow charts for the process where aviation service purchase starts and ends, evaluating subcomponents of the sector, and planning economic and technical investment instead of individual investments are some necessary steps to be taken.

On the other hand, strategic planning should be conducted by a team of specialists in an interdisciplinary way. As mentioned before, to be able to ensure effective planning, it is vital to solve coordination problems among interested parties and organizations, to have effective dialogues, and to clarify authority and responsibility hierarchies by all-encompassing regulations.

High cost of air transportation operations, low profit margin and over competition

Considering the high costs, airlines have to meet the passenger expectations and this situation brings out over competition, especially in domestic and charter flights. One of the most important problems in low-profit passenger transportation is the difficulty of keeping costs under control. Since controllable costs give an edge in competitive pricing, addressing cost-conscious passengers will be a definite factor in expanding the market share, especially during periods of economic recession.

The problems experienced in sectoral data collection and evaluation

The data must be compliant with international standards, appropriate for multi-purpose use, and kept in a detailed, comparable and objective way. Furthermore, enabling easy access to data would be very beneficial for transparency. Sectoral organizations may resist data collection and creation of new data categories. That's why reporting discipline and report tracking must be carried out very seriously. In order to be able to conduct data collection and data evaluation more effectively, staff training and employment of highly-qualified and proper personnel are vital.

Importing the majority of the most-needed sectoral spare parts, equipment, toolkits from abroad

Almost all the components (tools, spare parts, software and materials) used in the air transportation sector are produced abroad. The import of these components leads to a great deal of foreign currency losses. Encouraging the production of these components in Turkey is important both for the development of domestic industry and for its positive impact on the balance of foreign revenue-expenditure. However, before establishing this domestic industry, comparative advantages must be analyzed well, and taking into account the high costs of R&D in producing aviation materials, any approach to waste valuable resources must be avoided.

Moreover, as the civil aviation industry has an exponential effect on the national economy, it would be appropriate to produce policies to encourage collaborations, groupings and strategic partnerships so as to move from being a technology-consumer to technology-producer.

Not having a pricing policy that takes into account the demand flexibilities and technical analyses

One of the most important elements determining airport preferability, pricing must be made realistically by considering various scenarios, rational prices based on benefit/cost analyses, flexible demands and future expectations. However, being a cost factor in the private sector, prices undergo a downward pressure. Compared to Europe, the prices in Turkey are fairly low and this can be taken as an incentive. But it is essential that the results of the instability arising from the improper amount and timing of the constant demand for incentives, its sustainability of revenue-generation, and whether it actually has a positive effect on the sector be found out and sensitivity analyses be carried out.

Service payments that are far from benefit/cost analysis must be analyzed properly. Accordingly, the necessity of maintaining the public revenues, that irrational price discounts/ low pay policies may restrict the long-term infrastructure and investments and thus negatively affect the allocations required for optimum development must be taken into account. Proper payment policies must be adopted to minimize risks by employing correct strategies based on the calculation of developments through loss/gain ratio.

The need for clarification in the Public-Private Sector Collaboration Projects after operate-lease period

Besides the ground breaking achievements that the airports have had in Public-Private Sector Collaboration projects, as the final stages of operation/lease period draw close, it is inevitable to face novel situations in the tasks and transactions to be handled. In the light of the previous Public-Private Sector Collaboration experiences, it can be said that the private sector is better at maximizing the profit potential of organizations, managing processes well both in terms of “know-how” and profitability by employing qualified staff and outsourcing policies, and taking measures to cut down expenses and to raise revenue. But at this point, due to the increasing exclusion of the public sector from service processes, definition of its role gains importance. The public must work more actively and consciously on what the public benefits will be, what the possible gains and losses are and whether conditions for competition are adequately satisfied; it must also closely follow modern and latest developments and develop new management models if necessary. Furthermore, in order to fulfill its responsibilities, it should take the necessary measures to lead the way in legal, technical and human resources. Additionally, it must also get plans ready for possible takeovers.

The problems faced in securing qualified staff for the sector

There are some difficulties in recruiting qualified personnel fort the aviation sector. For many that are employed in the aviation sector, it is not an informed or planned profession of choice, which brings

down the level of motivation. A technical analysis of sectoral needs for staff must be made by taking into account every point of aviation work flow.

To train intermediary staff, establishing aviation programs from secondary education on, and by guaranteeing employment ensuring popularity of these programs are necessary steps. This way the need for qualified staff can be met and thus aviation employees can be made sure to join the aviation workforce with a certain degree of knowledge and skills. There is also the need for facilitating the public and private aviation employment opportunities for the graduates of civil aviation education institutions.

Also, it is essential to train specialized professionals for every point of the work flow of aviation sector, by opening programs in other subdivisions of aviation in higher education. It is also crucial to encourage all kinds of institutional education efforts both to mainstream the young population into the national economy and to offer a more productive and quality service. If organizations support the training of their current staff, it would also lead to returns in increases in productivity.

The need for pilots, engineers, technicians and controllers

The need for pilots; the captain pilot need in the sector is met by employing foreign pilots and the need for copilots is addressed by hiring from domestic and foreign pilot training institutions. In order to reduce foreign captain and copilot employment, domestic pilot training institutions must be supported and capacity increases need to be encouraged.

Besides, to improve domestic pilot training institutions, as in Europe and the USA, suitable civil or military airports and training air fields should be allocated for such institutions.

The need for engineers; human resources especially needed in the field of aviation and space technologies and design need to be urgently provided. Being one of the pillars in achieving the national goal of becoming one of the biggest 10 economies of the world by 2013, production of active policies in becoming a technology-producing country, the aviation technologies sector needs qualified human resources particularly in design and modification.

The need for technicians; in recent years, with its aim to become a global base, the rapid succession of investments in the MRO sector has created a significant need for qualified staff for the sector. Therefore, first and foremost, capacity development is needed in the related education institutions.

The need for controllers; to meet the controller needs of the sector, due planning is necessary; current training activities should be improved on the basis of new technological applications.

A lack of certification system for individual equipment/technology and resultant external purchase obligations

Due to the inadequacy of the current national aviation basic (such as materials and production) infrastructure for certification of individual equipment and technologies, there has been an ongoing dependency especially on spare parts supply, and this is a contributing factor in the increasing foreign trade deficit.

Established under the Ministry of Transportation, Maritime and Communications, Aviation and Space Technologies General Administration infrastructure needs to be urgently built and put in operation as soon as possible.

Lack of experience in the after-sales support processes of national air platform and systems design and production industry and insufficient structuring in the international markets

Putting in service its original products at the platform level, the national air platform and systems design and production industry is only gaining experience in providing support to users. In terms of the sustainability of the increasing exports and successfully performing the proactive marketing activities that are necessitated by the competitive environment of the international markets, local offices and structuring issues need to be given a high priority.

The need for pre-financing national air platform and systems design and production resulting from post-delivery payment conditions

In the fierce competition atmosphere of the aviation industry, in terms of project financing of the main platform design and producers, the pre-financing need created by post-delivery payment conditions and work is a challenging factor for the national air platform and systems design and production industry.

Inadequacy of the number of heliports

While there has been an increase in the past few years, the number of heliports to be used in natural and man-made disasters is still limited. Metropolitan municipalities need to incorporate heliports into their city transportation plans. Building a heliport for every town is an indispensible need.

4.3. External opportunities for the sector

The young population, dynamic and productive demographic structure

Turkey has one of the youngest populations of Europe, and this affords it a dynamic and productive quality. This quality is a great advantage for the national aviation sector, both in terms of air transportation demand and bringing in dynamism by employing young staff.

Turkey as one of the rising economies

Deeply felt throughout the world in recent years, the global recession has inflicted deep economic wounds in many countries in Europe. The global aviation sector has been negatively affected by this as well. Turkey has been affected much less by this crisis, and continues to be one of the most important among the rising economies. Thanks to this, the Turkish aviation sector has a chance to increase its share in the global and European market.

The opportunity created by the 11th Transportation, Maritime and Communications Council towards drawing up a road map in line with modern realities

The 11th Council work to be carried out in 2013 poses great opportunities for inter-organizational coordination, revision of targets and plans, adapting to the changing world conditions, and taking measures against possible threats in advance. The success of the Council depends on how effective and accurately the advantages and disadvantages are addressed from a wide perspective.

The opportunity to become a regional center and hub in passenger/cargo transport, MRO and training services presented by its advantageous geographical location

The geographical location of Turkey allows expansion into regional markets and also strengthens its position as an important passenger/cargo transfer center. Turkey also has a regional advantage by being at the crossroads of transport, and being strategically located on the east-west axis. That the Turkish airspace is a transfer corridor and the mid- long-terms growth projections for the countries that use the Turkish airspace for transfers (Europe, Middle East, Eastern and Southeastern Asia) present remarkable of Turkish aviation.

Bilateral agreements signed to transform Turkey into a regional aviation center create opportunities for the growth of national civil aviation. Turkey has become the country of choice as a transfer point and has a growing number of airlines and flights. Having reachability to 50 countries by a 3-hour flight also supports its transfer transport.

Due to its proximity to Europe and Middle East, Turkey has a great potential to provide training services for many countries and people. Most current civil aviation organizations have the capacity and equipment to teach in foreign language. Considering that Turkey began its aviation training long before the other Middle East countries and its extensive aviation experience can be used to attract resources that normally flow to the Western countries.

Making use of the positive sectoral developments and opportunities, Turkey can become a hub not only in the demand for air transport, but also in MRO services, design, production and training. By providing a quality service and reasonable prices in the MRO sector, becoming a potential center of attraction must be aimed for. There are opportunities to be grabbed in moving from the position of being a supplier to being a designer-producer in the chain of supply through collaborative projects or

buyouts/mergers with global producers. This can be done especially through collaboration with some East European countries and some African-Asian countries.

The ever-developing tourism potential

According to the data by the Ministry of Culture and Tourism, with 31,8 million tourists, Turkey was one of the most visited countries in the world in 2012. Turkey draws a great number of tourists from Germany (5 million), Russian Federation (3,5 million) and the UK (2,4 million). The most visited cities are Antalya (10,2 million), İstanbul (9,3 million) and Muğla (2,9 million). When the number of tourists visiting Turkey is analyzed on an annual basis, it can be seen that the increase is sustainable (Rates of increase; 2010/2009=5,74%; 2011/2010=9,86%; 2012/2011=10%).

The positive developments in tourism will lead to positive developments in the aviation sector as well, since the most widely used type of transport for tourism is by air. Also, annulling the visa requirements for Turkey, the international organizations held in the country, the integration of the education system with the world and sports activities, which all contribute positively to tourism will also be reflected positively in air transportation.

However, the national tourism activities are heavily concentrated on summer tourism. To prevent seasonal fluctuations and to increase and vary the annual touristic demand for air transportation, this potential needs to be better accommodated.

The development potential of cargo transportation

Turkish geography is much suitable for using airways in cargo transport. However, air cargo transportation system and components need to be guided by comprehensive expansion and management plans. One drawback that Turkey has at this point is that the majority of the Turkish exports isn't made up of products that are appropriate for air cargo transport (that is, they are not light-in weight but expensive in price). But expanding the free trade zones and putting the Turkish logistics master plan into effect may contribute to an increase in the air cargo potential.

The positive relations and collaborations with international aviation organizations

Turkey's harmony with organizations like ICAO, Eurocontrol, and European Union has the potential to be effective towards making use of the collaboration opportunities and adapting to the international integration. Such collaborations are critical to realize the national goal of reaching a globally-integrated transportation sector. Following a method that prioritizes national needs and conditions in the implementation of decisions and recommendations will certainly help the nation-specific progress of the transportation sector in general and of the aviation sector in particular.

The R&D work and nascent collaboration in other technical issues

Given the rising popularity of the aviation sector both in Turkey and in the world, it is crucial that, in order to ensure domestic production and development of sectoral equipment, materials and tools and to increase export, the national organizations collaborate on R&D and other technical issues and form an accumulation of "know-how." An important example is the TAI (Turkish Aerospace Industries Inc.)-led product development programs, based on R&D. Furthermore, initial steps have been taken by DHMİ and TÜBİTAK (The Scientific and Technological Research Council of Turkey) for technical collaboration on R&D. THY-TAI collaborative production projects are also being currently developed.

However, the collaborative projects with other specialized local organizations to enable the use of current technology and workforce capacity of the defense aviation for civil aviation must be encouraged and activated. This way local product use can be encouraged, local industry can improve and thus a significant amount of foreign currency loss can be prevented. The crucial point here is to decide on which special issues to encourage free competition, and in which framework to proceed the advancement of domestic industry.

The potential for transportation modes to support one another

The projects that consider transportation modes not as preventive of each other, but as intermodal and supportive to create an effective and competitive atmosphere will increase the social benefits of the transportation and have a positive impact on welfare. In the aviation sector, where current management models are gaining increasing flexibility and mobility, there is sufficient infrastructure to support intermodal transportation. However, as was mentioned before, proper setting up of work flow charts and resolving inter-organizational coordination deficiencies need to be ensured.

The accumulation of airport operation knowledge and "know-how" paving the way for international-scale entrepreneurship

The experiences gained by both the public and the private sectors in management after liberalization have made it possible to get involved in management activities abroad. This will help establish revenue-generating and lasting relations for Turkey.

The national emphasis and incentives given to support export

In line with the "Vision 2023" objectives, the export incentives granted by the government, backed by strong legislative and budgetary policies are significant indicators of the emphasis placed on the issue. Air platform and systems design and production industry is also one of the leading industries and capitalizes on this emphasis put on export to create opportunities.

The increasing preference for collaborative development projects by large-scale aviation firms and rising opportunities for international collaboration; development of subsidiary industries

The scale-down created by the economic fluctuations, and the consequent risk-share modeling of large-scale projects have led to the rise in the number of collaborative development projects that are compatible with this type of projects in the aviation industry. Within this structure that is open to international collaboration, especially the large-scale risk-share collaborative projects immensely contribute to the national air platform and systems design and production industry.

On the other hand, the way to establishing a globally strong aviation industry is paved by developing subsidiary industries that have talented specialists and certifications that can support the main platform design and producers. Turkish air platform and systems design and production industry is currently going through this process and just noticing the opportunities that this situation creates for all-out progress.

4.4. Current and future threats to the sector and measures that may taken to overcome these threats and/or opportunities that may be helpful

The negative effect of global economic crises

One of the most important risks for the aviation sector comes from economic crises. The aviation sector is a highly dynamic and sensitive one, as the problems in economic conditions (and even such expectations) negatively impact the demands for air transportation. Despite the minimal impact of the current European recession on Turkey, the deepening economic crisis in these European countries poses a great threat for Turkey as well. That's why it is essential that all the organizations in the sector be prepared for various scenarios.

The potential effects of foreign political developments

The global and regional political conjuncture may affect national economies, their social structures and resource distributions, and the instabilities and uncertainties may lead to a decline in the economic dynamism. Besides, since Turkey's geographical location is strategic for aviation, developments in the neighboring countries may potentially affect its situation as a transfer point and its overflight traffic.

The appreciation of Dollar and Euro

While the appreciation of dollar and Euro has a positive impact on aviation and tourism, considering the fact that the maintenance and fuel costs are based on dollar/Euro, it raises the costs. The extra costs added to ticket prices may cause slowdowns especially in the domestic traffic.

The fluctuations in oil prices

Prices of oil and oil derivatives play a decisive role on the final costs of airlines. The hike in oil prices leads to higher ticket prices and that results in lower demand for air transport and thus overall declines in demand for the entire sector. This uncontrollable cost factor is a threat for the future of the sector. The issue of energy prices calls for an analysis of energy efficiency and energy conservation. As one of the most important issues for the future, energy conservation and its efficient use inevitably require measures based on long-term strategies and projections.

Lack of innovation

The ongoing innovation in the aviation industry is not sufficient for today's conditions. Despite the efforts to achieve desired levels of modernization structure of the sector through projects such as "disabled-friendly" and "green" airports, more proactive approaches are necessary for the adaptation of new technologies, use of renewable energy resources and recycling of waste. Further, in order to improve the quality and preferability of the Turkish aviation sector (and its organizations), branding must be stressed. Now, Turkey needs to stand out from the crowd by underscoring its strengths and differences. Revenue-generating marketing activities are essential on issues requiring creativity and professionalism such as researching the demand and sharing know-how with other countries, being a training base, and technical service sales.

The need for a common vision-mission for the civil aviation and tourism sectors

Civil aviation transportation and tourism activities are a mutually supportive and integrated whole. The decision-maker and executive public institutions must determine a common/compatible vision-mission to ensure collaborative development and sustainability on these two issues.

The risk of transportation modes like fast train to negatively affect air transportation demands

While transportation by fast train has the potential to negatively affect the demand for air transport especially in the domestic lines, with an intermodal and harmonized transportation strategy, this effect can be counter-balanced. To prevent such alternative projects from causing insensible conflicts and problems in sectoral balances, a long-term planning that is based on social-benefit principle and technical analyses is necessary.

Airport capacity problems that are likely to crop up in the upcoming years

Considering the increasing aircraft and passenger traffic, there have been investments aiming to overcome possible airport capacity problems all around the world. Likewise, Turkey may experience a similar problem with inadequate airport capacities. The investments to overcome this problem will bring out a considerable need for capital. However, Turkey has gained an important amount of experience in carrying out such investments through public-private sector collaborations. As long as it

is based on a long-term strategy, Turkey is expected to achieve such investments aiming to increase capacity.

Lack of customs legislation to facilitate transfer among transportation modes for cargo transport

Air cargo transportation can achieve the desired speed and success only if it is supported by other modes of transportation. A new legislation is needed to allow fast and healthy transfers among modes of transportation.

Environmental protection restrictions

As in every developing industry, in the aviation industry as well, as progress is made, potential threat factors that stump sectoral development arise from the restrictions and extra costs regarding environmental problems. These risks should be handled within social benefit framework, but in a way that does not to put the sector in trouble. Environmental protection measures should be taken by following a plan. At this point, the international agreements must be followed.

Extra costs introduced by EU carbon trading system

As per the European Parliament regulations, all the airlines flying to Europe have to comply with the *EU-ETS Emission Trading Scheme* and thus depending on the amounts of their carbon-release creates an extra layer of cost for the airlines. Turkish airline companies with flights to Europe will also be affected by these rises in costs.

Putting the R&D and education infrastructure on the back burner due to commercial or economic concerns

Putting the R&D and education infrastructure on the back burner due to commercial or economic concerns is the single biggest threat for the development of the aviation sector. Infrastructure and staff planning that aims to allow for advanced-technology R&D activities must be made. Paralleling the national rapid development in the air transportation, the capacities and capabilities of especially the institutions that train human resources for the technical services must be developed.

Turkey's great distance from the central coordination and consolidation structure (Chinese example) causing inability to generate enough "win-win returns" from its individual purchases

Thanks to the growing purchase power, cheap labor and increasing interest in the aviation industry in the developing markets like China and India, the competition is getting more intense for the exports by the Turkish air platform and systems design and production industry. Applied almost all over the world, in huge state purchases, the "off-set" and similar trade balancing mechanisms are practiced especially in the defense purchases in Turkey, but have not reached a healthy structure in other

types of big state purchases. That this situation remains in addressed prevents the rapid growth of export business.

It is a fact that in recent years Turkey has become one of the major buyers in the world economy with its healthy economic structure and sustainable growth. Similarly, being one of the strong and developing economies, China directs its huge purchase power to a centralized coordination and consolidation for the same type of purchases; for example, the Chinese state combines the aircraft purchasing plans of all its airline companies and, by placing such enormous amounts of orders, it gains the upper hand in bargaining power. As can be seen, this creates important opportunities for its business through win-win returns for the Chinese aviation industry.

5. A service concept for our environment and for our society at the aviation industry

5.1. Green airports (and organizations)

As indicated in 2011 sector report, Turkish DGCA started a new project on 25.06.2009 titled "organizations at airports is to promote environmental best practices to meet minimum or zero aviation's impact on the environment and human health". These issues are in the project as follows;

- to develop an environmental policy,
- to provide organizational aims and objectives to keep the environment,
- to determine environmental risk analysis,
- to make Solid Waste Plan, organization of waste materials, developing system for liquid waste,
- to provide clean air (measuring gas emissions and applying laws),
- water quality (including water purifying),
- prevent noise pollution (taking precautions to reduce noise),
- prevent environmental effects chemical substances used in cleaning, maintenance and repairing,
- to prefer eco-friendly vehicle and materials,
- to decrease greenhouse gas emission.

It is also indicated that business administrators who provide available conditions at their work places will have special reduction on the fees of some documents, certificates and licenses.

DGCA Project is an important initiative to implement environmentally-friendly applications. Some institutions and organizations carried out some studies and the list of 22 institutions and organizations that had "green certificate of incorporation" is below;

a) 2011 and before 2011

- Adnan Menderes Airport; Çelebi Ground Handling's and TAV İzmir Terminal Operations Co.
- Antalya Airport; Fraport IC ICTAS Antalya Airport Terminal Investment and Management Co. and SIK-AY Air Transport Co.
- Atatürk Airport; TAV İstanbul Terminal Operations Co. and THY Technic Co.
- Dalaman Airport; ATM Construction and Operation Co.
- Milas-Bodrum Airport; HAVAŞ Ground Handling Co.,
- Sabiha Gökçen Airport; Ayjet Anatolian Stars Air Transport and Flight Training Services Co., Hazerfan Aviation Trade Co., Ltd.,

b) 2012

- Adana Airport; TGS Ground Handling Co.,
- Antalya Airport; Adriyatic Transport Co. Ltd., Çelebi Ground Handling's Co., HAVAŞ Ground Handling Co., Sun Express, TGS Ground Handling Co.,
- Atatürk Airport; Sistem Logistic Service Co.,
- Dalaman Airport; DHMI, HAVAŞ , Ground Handling Co.,
- Sabiha Gökçen Airport; ISG Istanbul Sabiha Gökçen Airport Investment Construction and Operation Co,.

One of the important topics in the concept of Green airports is to decrease carbon gas emission and studies on this issue have been continued. Antalya Airport was awarded with "Airport Carbon Accreditation (ACA)" certification. Atatürk Airport is also initiative on this issue and took some rewards and certificates.

Studies of DHMI; "Green Organization" certificate was taken for Dalaman Airport, and studies are still carrying on for other airports. Studies are especially on water quality, de-icing and noise pollution.

5.2. Unimpaired (Barrier-free) Airports (organizations)

SHGMDGCA started up a new Project called "Unimpaired (Barrier-free) Airports" with the authority approval on 27.07.2009. "Organizations at airports (airport and terminal operations, airline companies, ground handling services) should have provisions for disabled people to make sure convenient and accessible facilities that are available to everyone in free of charge. New legislation regarding on disabled passengers come into force on December 26, 2011. Appropriate and suitable help by airports to help them through the airport process.

The list of 10 institutions and organizations that had "Barrier-free Airports" certificate is below

a) 2011

- Antalya Airport; Fraport IC ICTAS Antalya Airport Terminal Investment and Management Co. and Corendon Airlines,
- Sabiha Gökçen Airport; ISG Istanbul Sabiha Gökçen Airport Investment Construction and Operation Co,.

b) 2012

- Adnan Menderes Airport; TGS Ground Handling's Co.,
- Antalya Airport; SIK-AY Air Transport Co.,
- Ataturk Airport; TAV İstanbul Terminal Operations Co.,
- Erzincan Airport; DHMI,
- Kocaeli Cengiz Topel Airport; DHMI,
- Sabiha Gökçen Airport; TGS Ground Handling Co.,
- Zafer Airport; IC ICTAS Zafer Airport Terminal Investment and Management Co.

Studies of DHMI; DHMI has carried out implementations for all airports within state airports, the certificate of "Barrier-free Airports" was given to the two airports and some documents are still being examined by DGCA, involving check-in, re-build of passport counters, elevator and ramp arrangements.

6. Civil Aviation Education Programs in Turkey[1]

A proper number of qualified new personnel are needed to provide steady growth in the civil aviation industry in Turkey. There are almost 140 thousand people working in the aviation sector in Turkey[2]. 3.306 of them are pilots who work for airline companies, 372 of them are working for air taxi companies and the total number of pilots who work in the commercial aviation sector is 3.678[3].

According to the projection of civil aviation, it is expected that the number of the personnel for in this sector will be more than 300,000.

Human resource in the civil aviation sector is formed with the combination of graduates in the following institutions;

- Formal education and training programs,
  - Higher education institutions [universities (undergraduate and associate degree programs), vocational high schools]
  - secondary education institutions (technical and industrial vocational high schools anatolian vocational high schools),
- Non-formal education and training programs (license, certification, etc.),
  - courses conducted by the public,
  - coursed organized by the private sector,

Civil aviation education is grouped as a diploma and certificate training. In addition to this, there are basic, continuity and renewal trainings.

In the study titled Aviation Industry in Turkey 2023[4], the estimated number of personnel is about 4.000 pilots, 10.000 aircraft maintenance technicians, 1.100 air traffic controllers, 5.210 ground handling staff and 10.000 cabin crew.

Civil aviation education institutions and programs in Turkey are indicated in following items.

6.1. Higher education institutions and programmes

The list of Higher Education Institutions and Programmes in Turkey are shown in the tables below and separated as undergratude and associate degree programs[5,6].

[1] In the preparation of this Section, preparatory studies were also used in the 11th Transport, Communications and Maritime Council.

[2] TOBB Civil Aviation Assembly, Sector Report, April 2012 (http://www.tobb.org.tr/Documents/yayinlar/TOBB_havacilik_meclis_sektor_2012.pdf) and The ministry of Transport, Maritime Affairs and Communications, budget presentation (www.ubak.gov.tr)

[3] Source; DGCA.

[4] Karasar, Şahin Prof.Dr, "Aviation Industry in Turkey, Vision 2023", March 2012.

[5] Results of 2012-OSYS (Student Selection and Placement System) (http://osym.gov.tr/belge/1-13657/2012-osys-yerlestirme-sonuclarinin-aciklanmasi-17082012.html), 2012.

[6] Programs which are not opened for students yet are not included in the lists.

Table 6-1. Higher Education Institutions and Undergraduate Programs

Programs	Higher Education Institutions
Aeronautics and Astronautics Engineering	ITU, METU, THK
Flight Training	Anadolu, Özyeğin, THK
Air Traffic Control	Anadolu
Air Transportation Management	Anadolu, Atılım, Erciyes, Erzincan, Girne Amerikan, Kocaeli, Mustafa Kemal, Nişantaşı, Ondokuz Mayıs, Özyeğin, THK
Aircraft Electrical and Electronics	Anadolu, Atılım, Erciyes, Kocaeli
Airframe and Powerplant Maintenance	Anadolu, Atılım, Erciyes, Kocaeli

Table 6-2. Higher Education Institutions and Associate Degree Programs for 2 years.

Programs	Higher Education Institutions
Air Transportation Management	Akdeniz, Arel, Atatürk, İstanbul Gelişim, Gümüşhane, Kapadokya (Nevşehir, İstanbul), Muğla, Nişantaşı, Okan, Beykoz lojistik
Civil Aviation Cabin Services	Anadolu, Kapadokya (Nevşehir), İstanbul, Kırklareli, Nişantaşı, Okan, THK (Ankara, İzmir), Beykoz lojistik
Aircraft Technology	Anadolu (Porsuk), Ege, Kapadokya (Nevşehir, İstanbul), İstanbul, Nişantaşı, THK (İzmir, Ankara)
Balloon Pilot Training	Kapadokya (Nevşehir)
Air Logistics	İstanbul Kültür, İstanbul Ticaret
Aviation Ground Services Management	İstanbul Kültür, İstanbul Ticaret, THK (Ankara)

There are 16 universities and 5 of them are foundation universities that are planning to place 1.556 students for 6 programs in the 2012-2013 academic year through the Student Selection and Placement Exam (OSYS) (Table-2). 9 foundation universities with associate degree programs for 2 years are planning to place 2.045 students (Table-3). In this way, the quota for 16 state universities and 14 foundation universities is 3.601[7] and in the first placements, 3.306 students are placed (92%)[8].

When the 2011-2012 academic year programs are compared to the 2012-2013 academic year, it is seen that the quota increased by 15% but there is no change in the number of programs. However, the reason for the increased quota does not depend on the need of the sector, it depends on the general quota increase in Higher Education Institutions in Turkey.

[7] The figures vary depending on the additional quota.

[8] Saldıraner, Yıldırım. Assoc. Prof. Dr. "The Civil Aviation Training Programs", Cumhuriyet Newspaper, Science Technical Supplement, October, 2012.

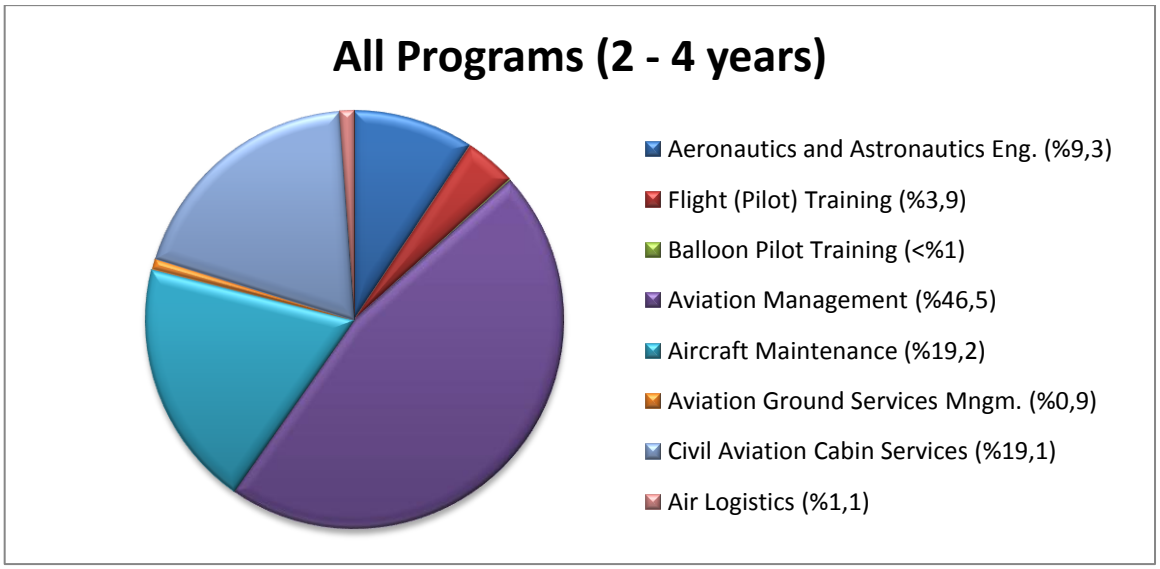
Table 6-3. University Undergraduate Programs (4 years), Students' Preferences and Quota

4 year Programs	Foundation		State		Total		pref.
	quota	preference	quota	preference	quota	pref.	%
Flight (Pilot) Training	120	119	16	16	136	135	99
Air Traffic Control	-	-	15	15	15	15	100
Aviation Management	235	184	408	408	643	592	92
Airframe and Powerplant Maintenance	35	25	196	196	231	221	96
Aircraft Avionics Maintenance	35	30	175	175	210	205	98
Subtotal	425	358	795	795	1.220	1.153	95
Aeronautics and Astronautics Engineering	120	120	201	201	321	321	100
Total	545	478	1.011	1.011	1.556	1.489	95

Table 6-4. University Associate Degree Programs (2 years), Students' Preferences and Quota

2 year Programs	Foundation		State		Total		pref.
	quota	pref.	quota	pref.	quota	pref.	%
Air Transportation Management	640	482	320	320	960	802	84
Civil Aviation Cabin Services	440	408	220	220	660	628	95
Aviation Ground (Handling) Services Management	70	52	0	0	70	52	74
Air Logistics	90	70	0	0	90	70	78
Aircraft Technology (Maintenance Technician)	145	145	115	115	260	260	100
Balloon Pilot Training	5	5	-	-	5	5	100
Total	1.390	1.162	655	655	2.045	1.817	89

As stated in the tables, according to 2012 OSYS data, programs which are related to civil aviation are organized as engineering (4 years), flight training (4 years), balloon pilot training (2 years), air traffic control (4 years) aircraft technology (2 or 4 years), ground handling service (2 years) cabin services (2 years) and air logistics (2 years). The rate preference of aviation programs is 95% in total for undergraduate programs, 89% for associate degree programs and 92,2% as compared to the quota of the universities. Some universities have programs for both 2 years and 4 years.



Graph 6-1. Programs (2 and 4 years) Student Quota Distribution

6.2. Secondary education institutions

The list of secondary schools such as Technical and Industrial Vocational High Schools (TEML) Anatolian Aviation Vocational High Schools (HAML) and Vocational and Technical Training in Turkey (METEM) which was approved by the Ministry of National Education (General Directorate of Technical Education for Boys) in 2012 are as follows. The high schools mentioned in the concept are 9 schools and their quotas are 354. These high schools are; Bağcılar TEML (İstanbul), Gazi TEML (Ankara), Hürriyet TEML (Bursa), Kayseri TEML, Özel Gökjet HAML[9] (istanbul) Sabiha Gökçen TEML (Eskişehir and İstanbul), Şehit Cengiz Topel TEML (Erzincan) ve Selçuk METEM (İzmir).

6.3. Non-formal education and training programs (license, certification, etc.)

Some certification programs at civil aviation sector require or do not require licenses for attendance; these training programs are organized on a weekly or monthly basis - in short-term courses. In the courses that the license is required, Authorization of the Directorate General of Civil Aviation - acceptance or authorization is required.

For the fields of activity requiring a license, besides training of relevant personnel, the national and international requirements must be met as well. Examples of requiring a license for vocational education are flight training, balloon pilot training, cabin crew, aircraft maintenance technician, air traffic control, air traffic safety, electronics services and flight movement expert (dispatcher).

There are also programs which are required for aviation personnel such as quality, safety management systems, dangerous goods rules, cargo and safety courses. There are also course programs on ground handling, safety management systems, heliport administration and management, etc. These programs are organized by higher education institutions or private organizations. Authorized flight training institutions by the Directorate General of Civil Aviation are shown in the tables below (Table- 6. 5 and 6).

[9] students haven't been enrolled.

Table 6-5. Authorized Flight Training Organizations (Source; DGCA)

Catg.	Institution	Approved Courses
A	Erah Aviation	PPL(A),CPL(A) Modular, IR(A) Modular, ATP(A) Modular, ME(A) Multi-Engine Class Rating, FI(A), CRI(A), IRI(A), Non-JAA to JAA License Conversion for PPL(A) and CPL/IR(A), Bridge Training Course (PPL),(CPL),(ATPL)
A	Anadolu University	Ppl(A), IR(A) modular, ATP(A) İntegrated, ATP(A) Modular, ME(A),FI(A),CRI(A) IRI(A), TRI(A), TR(A), for BE-90 and BE-200, Non-JAA license Conversion for PPL(A), CPL/IR(A), and ATPL(A),MCC(A)
A	AFA-Atlantik Flight School	PPL(A), CPL(A) Modular, IR(A) Modular, ATPL(A) Modular, ME(A) Multi-Engine Class Rating, FI(A), CRI(A), IRI(A), MCC (A), Non-JAA to JAA License Conversion for PPL(A) and CPL/IR(A)
A	THK University	PPL(A) Theoretic, ATPL(A) Modular Theoretic
A	Özyeğin University	PPL(A) Theoretic, ATPL(A) Modular Theoretic
A	Turkish Aeronautical Association	PPL(A), CPL(A) Modular, IR(A) Modular, ATP(A) Integrated, ATP(A) Modular FI(A), CRI(A), IRI(A), ME(A), SE/ME(A) CR Single/Multi Engine Class Rating Aeroplane Training Course, TR(A) for PA-42 and Cl-215,Non-JAA to JAA License Conversion for PPL(A) and CPL/IR(A),MCC(A)
A	Turkish Aeronautical Association	PPL(A), CPL(A) Modular, IR(A) Modular, ATP(A) Integrated, ATP(A) Modular FI(A), CRI(A), IRI(A) Instructor Training Course, SE/ME(A) CR Single/Multi Engine Class Rating Aeroplane Training Course, MCC(A)
A	Turkish Aeronautical Association	PPL(A),CPL(A) Modular, IR(A) Modular, ATP(A) Integrated, ATP(A) Modular
A	Tarkim Aviation	PPL(A), CPL(A) Modular, IR(A) Modular, ATP(A) Modular, FI(A), CRI(A), IRI(A), Non-JAA to JAA License Conversion for PPL(A)
A	Turkish Land Forces	ATP(A/H) Modular for Military pilots
A	Turkish Air Force	ATP(A/H) Modular for Military pilots
A	Turkish Airlines	PPL(A), CPL(A) Modular, IR(A) Modular, ATP(A) Integrated, ATP(A) Modular, SE/ME(A) CR Single/Multi Engine Class Rating Aeorplane Training Course, FI(A), CRI(A), IRI(A), Non-JAA to JAA License Conversion for PPL(A) and CPL/IR(A), MCC(A)
A	Ayjet Anadolu Stars	PPL(A),CPL(A) Modular, IR(A) Modular, ATP(A) Modular, ME(A), FI(A), CRI(A), IRI(A)
A	SAA Air transport	ATP(A) Integrated, MCC(A)
A	Barış Aviation	PPL(A), CPL(A) Modular, IR(A) Modular, ATP(A) Modular, FI(A)
A	Bon Air	PPL(A), CPL(A) Modular, IR(A) Modular, Non-JAA to JAA License Conversion for PPL(A)
A	Tarkim Aviation	PPL(A),CPL(A) Modular, IR(A) Modular, FI(A),ME(A)
A	Yavrukuş Aviation	PPL(A), CPL(A) Modular
A	Top Service	PPL(A)

A	Burak Aviation Sp. Club	PPL(A)
A	İstanbul Aviation Club.	PPL(A)
A	Ege Aviation	PPL(A)
H	Sancak Air (Helicopter)	PPL(H), FI(H), TR(H), for Bell 206 and Bell 430
H	TAI (TUSAŞ)	PPL(H), TR(H) for Robinson
A	M.Hakan Osanmaz Co.,	SEP(A) Sea Class Rating

Table 6-6. Authorized Type Adaptation Training Organizations (Source; DGCA)

TRTO Name	**Legal authorities**
TURKISH AIRLINES CO.	Training for B737-300/900, A310/300-600, A320, A330, A340 aircraft types; training for TR, TRI/SFI, TRE/SFE, ZFTT, MCC, MCCI, Aircraft differences training for (B737 400→800 and training for B737 800→400), A320→A330→A340 CCQ
ATLASJET AVIATION CO.	For A320 and A330 aircraft types; training for TR, TRI/SFI, TRE/SFE, ZFTT, MCC, A320→A330 CCQ
HÜRKUŞ TRANSPORT AND TRADE CO.	Training for A320; training for TR, TRI/SFI, TRE/SFE, ZFTT, MCC
MNG AIR TRANSPORT CO..	Training for A300, A310/300-600 aircraft types; training for TR, TRI/SFI, TRE/SFE, ZFTT, MCC, FEO (A300)
PEGASUS AIR TRANSPORT CO.	For B737/300-900 aircraft type; TR, TRI/SFI, TRE/SFE, ZFTT, MCC, MCCI, Aircraft differences training for (B737 400→800 ve B737 800→400), Familiarization Training (B737-400→300-500, B737-800→600-700-900)
ONUR AIR TRANSPORT CO.	For A320, A330, A310-300/600 aircraft types; TR, TRI/SFI, TRE/SFE, ZFTT, MCC,A320→A330 CCQ e
SIK-AY AIR TRANSPORT CO	For B737/300-900, A320 aircraft types; TR, TRI/SFI, TRE/SFE, ZFTT, MCC, difference training (B737 400→800 and B737 800→400), Familiarization Training (B737-400→300-500, B737-800→600-700-900)
SUN EKSPRES AVIATION CO.	For B737/800 aircraft type; Training for TR, TRI/SFI, TRE/SFE, ZFTT, MCC
ULS AIR CARGO TRANSPORT CO.	For A300, A310/300-600 Aircraft types; Training for TR, TRI/SFI, TRE/SFE, ZFTT, MCC, FEO (A300)
ACT AVIATION CO.	For A300 aircraft type; Training for TR, TRI/SFI, TRE/SFE, ZFTT, MCC, FEO (A300)
TAILWIND AIRLINES.	For B737-400 aircraft type; Training for TR, TRI/SFI, TRE/SFE, ZFTT, MCC
SKY-LINE AIR TRANSPORT CO	For EC135, A109, BK117 helicopter types; training for TR, TRI

The list of airline companies which are authorized by the Turkish DGCA for the training of cabin crew are given in the table below (Table-6.7).

Table 6-7. Authorized Airline Companies for Cabin Crew Training (Source; DGCA)

Authorized airline companies for cabin crew training
Turkish Airlines, Sun Express, Pegasus, Onur Air, Freebird, SAGA,SIK-AY, Corendon, Atlasjet, Tailwind, Borajet, HEM (Freebird) Training Center

6.4. Result

In the council meeting of The Ministry of Transport, Maritime Affairs and Communication (2009 Report and preparatory works for 2013) the vision was determined as "Civil aviation sector will be a regional leader in formal and informal education, and will take its place among the leading countries in the world." Issues of competitive advantage towards the achievement of this vision are determined as follows.

- To increase recognition and successful activities internationally of civil aviation institutions and organizations ,
- To have qualified formal and non-formal educational civil aviation programs and advanced technological facilities.

As a result of rapid developments in the country's civil aviation activities (flight, passenger and cargo traffic growth; increases in manufacturing, and maintenance-repair-overhaul activities; new airports and business developments, etc.), the sector needs qualified personnel therefore, the number of institutions in higher education within the framework of civil aviation sector has increased quotas. The number of non-formal education/training programs has also increased.

When the designated vision and the current situation have been evaluated, there is a need to solve the following problems first.

Problems[10];

- Educational institutions and organizations, programs and quotas should be prepared in accordance with the Master Plan and a detailed study should be done in the short term. Differences in the curriculum between institutions of higher education programs should be removed and standardization should be provided.
- Medium and long-term civil air transport operations and the needs of civil aviation personnel should be estimated and these should be renewed every 2 years.
- Aviation personnel requirements must be determined as in the world, sample models should be created.
- Knowledge and skills needed in the field of civil aviation sector should be re-evaluated by the relevant authorities and educational institutions, certification and training should be organized according to this criteria in departments and sections.
- Standards should be developed and implemented for trainers who will give education in the aviation sector.

[10] Without order of priority..

- Arrangements should be made that sector experts can also make a contribution to training programs as well as academic staff.
- The use of computer-based training systems should be developed and implemented.
- Coordination with partners should be provided to become regional training center and studying English should be expanded and the number of foreign students studying in our country should be increased.
- Levels of education for "Knowledge", "Skills" and "Competence" should be determined in details according to the European Qualifications Framework (EQF) Reference Levels and definitions of professions should be according to these references[11].
- In the short term, measures should be taken to meet shortcomings for pilots and technicians. Suitable airports should be determined for pilot training
- The certification of aircraft maintenance technician training in EASA rules, and studies carried out in EU countries for recognition should be concluded quickly.
- R&D activities in the field of civil aviation should be developed and government support should be increased.
- Arrangements should be made to increase internship opportunities for students in higher education institutions.
- Technology-based military aviation (especially maintenance personnel) and training activities should be aligned with civil aviation activities.

[11] Erel, Can. "Evaluation of Formal Education Programmes for Aviation Industry in Turkey", MSI Defense and Aviation Journal (# 2012-075), January 2012.

7. Overall Evaluation and Recommendations

Turkey's policy of international expansion, developing export, tourism, and the importance of its geographic location are enabled by airline transportation and this is one of the most important elements of international relations. The civil aviation sector in the period of economic crisis has also a good opportunity with the operation of airports-terminal facilities, ground handling services, and catering services. The sector showed a significant level of development in the maintenance and repair, renovation services, design/manufacturing and in the education field, and this caused successful, quick and steady growth in our region.

The annual average growth of air traffic was 10% and passenger traffic were 14.3% in the last decade. In 2012, air traffic increased 4.9% (6.1% in commercial aircraft), and passenger traffic increased 10.8% when compared to 2011. Both the international and national projections show that this development is much higher than the world average and it will continue for the coming years to a certain extent. It is expected that Istanbul will be one of the important centers in the world. Civil aviation and tourism sectors are developing with the great support to each others.

Sales revenue in the sector exceeded 15 billion USD in total; the number of employees is almost 150000. This growth will provide an important contribution to the country's economy.

Turkey is rapidly going to become the center for civil aviation in its region. Transport activities will go further and Turkey will be a leader in the future with the technical infrastructure and staff especially on aircraft maintenance-repair-overhaul services and aviation training.

However, the sustainability of this development should be continued, investments of substructure should not be delayed; the number of trained personnel should be increased without compromising the quality of education.

As described in the SWOT analysis, the sector has significant opportunities; of course, the problems on the evaluation of these opportunities are also evident. In order to ensure the development and sustainability of civil aviation activities in a successful way, it is necessary to consider the following proposals;

- To follow up and review decisions and objectives indicated in the 10th Transportation Council and raise awareness on the achievement of objectives,

- To prepare a Master Plan in order to ensure the continuity of the appropriate planning for the development of civil aviation activities,

- To develop a common vision-mission for civil aviation and tourism sectors to support each other,

- To plan new investments for the prevention of airport capacity bottlenecks which is probable in the next years,

- To support developments in the field of aircraft, maintenance-repair-overhaul, and increase international market share,

- To keep data in accordance with international standards in the sector, and to record detailed data in an easily accessible way,

- To adjust the needs of civil aviation training institutions and programs for sector managers, engineers, pilots, technicians, controllers and other staff with the Master Plan,

- To develop the aircraft design and manufacturing industry, raise awareness on aviation sub-industry and promote new candidates,

- To develop the certification system on detail oriented technologies.

In conclusion, Turkish civil aviation, both passenger and freight transport, as well as training, maintenance-repair-overhaul and manufacturing industry will take an important place in the region and around the world, and it will develop further to strengthen the current position.

8. The Report of Turkish Civil Aviation Sector, Working Group

TOBB and the Turkish Civil Aviation Assembly decided to create a working group to prepare the Civil Aviation Sector Report (2012). Dr. Yıldırım SALDIRANER , the Advisor of the Assembly, is the coordinator and editor of the group. The group consists of the following people. The report has been prepared in this way.

Name of the Member	
Assoc. Prof. Dr. Yıldırım SALDIRANER	TOBB, Report Coordinator, Editor
Eda Bulut	TOBB
Cansel BİÇEN	
Prof. Mustafa Cavcar	
Can EREL	
Duygu İnceöz	
Faruk Subaşı	

English translation of this Report has made by the Anatolian University.

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11. DHMİ Statistical data base
12. SHGM Statistical data base

Appendix-1: BILATERAL AIR TRANSPORT AGREEMENTS					
1	USA	49	ICELAND	97	SERBIA
2	AFGHANISTAN	50	JAMAICA	98	SINGAPORE
3	GERMANY	51	JAPAN	99	SLOVAKIA
4	ARGENTINA	52	CAMEROON	100	SLOVENIA
5	ALBANIA	53	CANADA	101	SOMALIA
6	AUSTRALIA	54	MONTENEGRO	102	SRI LANKA
7	AUSTRIA	55	QATAR	103	SUDAN
8	AZERBAIJAN	56	KAZAKHISTAN	104	SYRIA
9	UNITED ARAB EMIRATES	57	KENYA	105	SAUDI ARABIA
10	BAHRAIN	58	KYRGYZSTAN	106	TADZHISTAN
11	BANGLADESH	59	TURKISH REPUBLIC OF NORTHERN CYPRUS	107	TANZANIA
12	BELARUS	60	COLOMBIA	108	THAILAND
13	BELGIUM	61	UNION OF THE COMOROS	109	TUNIS
14	BOSNIA AND HERZEGOVINA	62	KOREA	110	TURKMENISTAN
15	BRAZIL	63	KOSOVO	111	UGANDA
16	BULGARIA	64	KUWAIT	112	UKRAINE
17	BURUNDI	65	CUBA	113	OMAN
18	ALGERIA	66	LAO	114	JORDAN
19	CHAD	67	LATVIA	115	VENEZUELA
20	THE CZECH REPUBLIC	68	LIBYA	116	VIETNAM
21	PEOPLE'S REPUBLIC OF CHINA	69	LITHUANIA	117	YEMEN
22	DENMARK	70	LEBANON	118	NEW ZEALAND
23	THE DOMINICAN REPUBLIC	71	LUXEMBURG	119	GREECE
24	INDONESIA	72	HUNGARY	120	ZAMBIA
25	ESTONIA	73	MADAGASCAR	121	ZİMBABWE
26	ETHIOPIA	74	MACEDONIA	**2012**	
27	MOROCCO	75	MALDIVES	122	BENIN
28	THE FIJI ISLANDS	76	MALAYSIA	123	BOTSVANA
29	THE PHILIPPINES	77	MALI	124	BRUNEI
30	FINLAND	78	MALTA	125	BURKINA FASO
31	FRANCE	79	MEXICO	126	DJIBOUTI
32	GAMBIA	80	EGYPT	127	THE DEMOCRATIC REPUBLIC OF KONGO
33	GHANA	81	MONGOLIA	128	ECUADOR
34	SOUTH AFRICA	82	MOLDOVA	129	THE IVORY COAST
35	GEORGIA	83	NEPAL	130	GABON
36	CROATIA	84	NIGERIA	131	SOUTH SUDAN
37	INDIA	85	NORWAY	132	KONGO
38	HOLLAND	86	UZBEKISTAN	133	LESOTHO
39	HONG KONG	87	PAKISTAN	134	MAURITANIA
40	IRAK	88	PARAGUAY	135	MOZAMBIQUE
41	ENGLAND	89	PERU	136	NIGER
42	IRAN	90	POLAND	137	THE CENTRAL AFRICAN REPUBLIC
43	IRLAND	91	PORTUGAL	138	SAO TOME AND PRINCIPE
44	SPAIN	92	ROMANIA	139	SWAZILAND
45	ISRAEL	93	RWANDA	143	THE SEYCHELLES
46	SWEDEN	94	RUSSIAN FEDERATION	141	TOGO
47	SWISS	95	SENEGAL	142	URUGUAY
48	ITALY	96	SİERRA LEONE	143	REPUBLIC OF CAPE VERDE

Appendix-2: AIR TAXI COMPANIES		CITY	NUMBER OF AIRCRAFT
1	BARIŞ EDUCATION AVIATION MAINTENANCE LTD. CO.	ADANA	3
2	TARKİM AIRCRAFT MAINTENANCE AND AVIATION TRADING LTD.CO	ADANA	16
3	ATP AVIATION CO.	ANKARA	2
4	BOYDAK AVIATION TRANSPORT & TRADING CO.	ANKARA	1
5	EM AIR AVIATION & TRADING CO.	ANKARA	4
6	GÜNEYDOĞU AVIATION MANAGEMENT CO.	ANKARA	4
7	LİMAK AVIATION TRAINING COMMUNICATION TRADING CO.	ANKARA	1
8	MENEKŞE CIVIL AVIATION AND IMPORT LTD. CO.	ANKARA	0
9	MNG JET AVIATION CO.	ANKARA	6
10	NUROL AVIATION CO.	ANKARA	2
11	PAN AVIATION AND TRADE INC.	ANKARA	1
12	REC AIR TRANSPORT, TOURISM AND TRADE INC.	ANKARA	1
13	SANTAY AVIATION AND TRADING CO.	ANKARA	3
14	SKY LINE TRANSPORT CO.	ANKARA	27
15	TAHE AVIATION INVESTMENT CONSULTING LTD. CO	ANKARA	1
16	ADO AVIATION CO.	ANTALYA	1
17	RİKSOS TOURISM YACHTING AVIATION AND TRANSPORTATION TRADE AND INDUSTRY CO.	ANTALYA	1
18	NERGİS AVIATION CO.	BURSA	0
19	ÖZEK AVIATION LTD. CO.	BURSA	1
20	SARP AVIATION LOGISTICS INDUSTRY AND TRADE, INC.	ESKİŞEHİR	2
21	AIRENKA AIR TRANSPORT Co.	İSTANBUL	2
22	AK AVIATION AND TRANSPORTATION SERVICES, INC.	İSTANBUL	1
23	ATLANTİK FLIGHT SCHOOL	İSTANBUL	7
24	AYJETANADOLU STARS AIR TRANSPORT AND FLIGHT TRAINING; INC	İSTANBUL	14
25	BONAIR AVIATION TRADE AND INDUSTRY, INC.	İSTANBUL	7
26	BURHANETTİN KAYA AVIATION TRADE AND INDUSTRY, INC.	İSTANBUL	1
27	CENGİZ AVIATION CO.	İSTANBUL	1
28	CİNER AIR TRANSPORT CO.	İSTANBUL	1
29	ÇAĞDAŞ TOURISM , INC.	İSTANBUL	1
30	ÇUKUROVA AVIATION CO.	İSTANBUL	2
31	DENİZKUŞU AIR TRANSPORT AND TRADING CO.	İSTANBUL	2
32	DOĞAN AVIATION INDUSTRY AND TRADE INC.	İSTANBUL	1
33	DÖYSA VIP AVIATION CO..	İSTANBUL	1
34	FİBA AIR TRANSPORT AND SERVICES, INC.	İSTANBUL	2
35	FOTO AVIATION CO.	İSTANBUL	1
36	GENEL AVIATION CO.	İSTANBUL	4
37	KAAN AVIATION INDUSTRY AND TRADE INC.	İSTANBUL	3
38	KÖRFEZ AVIATION TOURISM AND TRADE INC.	İSTANBUL	3

39	KUĞU AVIATION AND TOURISM, INC.	İSTANBUL	5
40	MARMARA INDUSTRIAL AND COMMERCIAL INVESTMENTS INC.	İSTANBUL	1
41	OMSAN AVIATION CO.	İSTANBUL	2
42	PALMALİ AIR TRANSPORTATION INC.	İSTANBUL	5
43	PORT CIVIL AVIATION CO.	İSTANBUL	1
44	RED STAR AVIATION INC.	İSTANBUL	1
45	SANCAK AIR INC.	İSTANBUL	4
46	SETAIR AIR TRANSPORTATION AND SERVICES, INC.	İSTANBUL	7
47	SPORTİF AVIATION AND TOURISM, INC.	İSTANBUL	3
48	SÜPER AIR AIR TRANSPORT CO.	İSTANBUL	2
49	TAV AVIATION CO.	İSTANBUL	2
50	THK GÖKÇEN AVIATION COMPANY	İSTANBUL	25
51	TÜRKMEN AVIATION TRANSPORT & TRADING CO.	İSTANBUL	1
52	VEYEN AIR TRANSPORT AND INDUSTRY, INC.	İSTANBUL	0
53	ZORLU AIR AVIATION CO.	İSTANBUL	3
54	BETAZ AVIATION TRADE AND INDUSTRY, LTD. INC.	İZMİR	2
55	ARKASAIR AVIATION TRADE AND INDUSTRY, INC.	İZMİR	3
		Toplam	**198**

Appendix -3: GENERAL AVIATION COMPANIES		CITY	NUMBER OF AIRCRAFT
1	ADANA AVIATION SPORTS AND ASSOCIATION	ADANA	2
2	ALBATROS GROUP MAINTENANCE ,TRAINING AND CONS. LTD. CO.	ANKARA	4
3	BEST UNITED INDUSTRIAL SYS. INC.	ANKARA	1
4	BİLFER MINING INC.	ANKARA	1
5	BURAK AVIAITON SPORTS CLUB	ANKARA	6
6	GEN. DIR. OF THE MINISTRY OF ENVIRONMENT AND FORESTRY	ANKARA	6
7	GENERAL DIRECTORATE OF STATE AIRPORTS AUTHORITY (DHMI)	ANKARA	6
8	İZAİR CUSTOM, TOURISM AND TRAVEL LTD. CO.	ANKARA	1
9	PLOUTOS AIRLINES AND AVIATION TRANING LTD. CO..	ANKARA	1
10	GENERAL DIRECTORATE OF LAND REGISTRY AND CADASTRE	ANKARA	2
11	TUSAŞ TURKISH AEROSPACE INDUSTRIES, INC.	ANKARA	3
12	TURKISH AERONAUTICAL ASSOCIATION (THK)	ANKARA	51
13	YÜZÜAK AVIATION, TROUSIM AND CONSULTANCY LTD. CO.	ANKARA	4
14	SİDE AVIATION SPORTS ASSOCIATON	ANTALYA	1
15	BURSA HOTEL MANAGEMENT INC.	BURSA	1
16	GEMLİK FERTILIZER INDUSTRY CO.,	BURSA	1
17	SÖNMEZ AIR A.Ş.	BURSA	1
18	ANADOLU UNIVERSITY CIVIL AVIATION SCHOOL	ESKİŞEHİR	29
19	AĞAOĞLU TOURISM AND CONSTRUCTION INC.	İSTANBUL	1
20	AHU AVIATION INDUSTRY AND TRADE LTD. CO.	İSTANBUL	2
21	CÖMERTOĞLU HOTEL AND TRADE INC.	İSTANBUL	1
22	DELTA AVIATION AND TROUSIM LTD. CO.	İSTANBUL	3
23	HAYAT AVIATION AND CAR HIRE LTD. CO.	İSTANBUL	1
24	ISTANBUL TRANSPORTATION INDUSTRY AND TRADE INC.	İSTANBUL	1
25	KONURALP CONSTRUCTION CONSULTING INC.	İSTANBUL	1
26	MAK TOURISM AND AVIATION LTD. CO.	İSTANBUL	3
27	MESTAŞ ELECTRONICS AND TOURISM CO.	İSTANBUL	1
28	SERVİS AIR AVIATION TRADE CO.	İSTANBUL	1
29	THK İSTANBUL AVIAITON CLUB	İSTANBUL	19
30	TOP SERVICE AVIATION INDUSTRY AND TRADE INC.	İSTANBUL	20
31	TURKISH AIRLINES (THY)	İSTANBUL	24
32	İŞBANK	İSTANBUL	1
33	URAY AIR TRANSPORT INC.	İSTANBUL	1
34	ÜNVER AIRLINES CO.	İSTANBUL	1
35	YAVRUKUŞ AVIATION AND TRAINING LTD. CO.	İSTANBUL	2
36	İZMİR DELTA AVIATION ASSOCIATION	İZMİR	11
37	EGE AVIATION LTD. CO.	İZMİR	11
38	ERCİYES UNIVERSITY	KAYSERİ	1
39	M. HAKAN OSANMAZ BUSINESS	KOCAELİ	8
40	SAA AIR TRANSPORT, MAINTENANCE AND FLIGHT TRAINING INC.	MUĞLA	1
41	YAZICI INVESTMENTS AND TOURISM ENTERPRISES INC.	MUĞLA	1
42	SAMSUN AVIAITON SPORTS CLUB AND ASSOCIATION	SAMSUN	4
43	TURHAL AVIAITON SPORTS CLUB	TOKAT	1
		TOTAL	**242**

Appendix-4: AERIAL AGRICULTURAL COMPANIES		CITY	NUMBER OF AIRCRAFT and HELICOPTERS
1	Ak Agricultural Chemical Products Marketing. Import and Export Industry and Trade Co., Ltd.	ADANA	2
2	Anıl Aviation-Ahmet Bahalı	ADANA	2
3	Barış Agricultural Pesticide, Forest Fire Fighting Plane Aircraft Maintenance Aviation, Tourism and Fuel Marketing Ltd. Co.	ADANA	2
4	Çavaş Aviation and Aerial Agriculture, Industry and Trade. Ltd.	ADANA	1
5	Erbay Aerial Agriculture Industry and Trade. Ltd. Co.	ADANA	1
6	Halil Atar Aerial Agriculture Co.	ADANA	1
7	Martı Aerial Agriculture Cooperation Co.	ADANA	1
8	Ölçer Aerial Agriculture Aircraft, Industry and Trade. Ltd. Co.	ADANA	1
9	Özer Tarhan Aerial Agriculture Cooperation Co.	ADANA	1
10	Recai Türkmen Aerial Agriculture Cooperation Co.	ADANA	1
11	Tar-uç Aerial Agriculture Cooperation Co.-Şaban Baş	ADANA	1
12	Toros Aviation and Trade Ltd. Co.	ADANA	2
13	Ahmet Sami Özyurt Aerial Agriculture Cooperation Co.	ANKARA	1
14	Pan Aviation and Trade Co.	ANKARA	1
15	THK Gökçen Aviation and Business Administration	ANKARA	25
16	Antalya Antbirlik, Cotton and Citrus Agricultural Sales Cooperation	ANTALYA	3
17	Rıfat Kamil Koçman	BALIKESİR	1
18	Koza Çırçır Aviation and Trade Ltd. Co.	HATAY	1
19	Reyhanlı Agricultural Aviation	HATAY	3
20	Er-Ah Aviation Trade Ltd. Co.	ISPARTA	3
21	BETAZ Aviation Trade Ltd.	İZMİR	1
22	Red Star Co.	İZMİR	1
23	Mustafa Ulusoy Ulusoy Aerial Agriculturing	K.MARAŞ	1
24	Keykubat Aviation and Agricultural Spraying Services and Counseling Ltd. Co..	KAYSERİ	1
25	Türker Aviation and Agricultural Spraying İbrahim Türker	MERSİN	2
Not; The 14 Companies without aircraft have not been included in the list		**Total**	**60**

Appendix-5: BALLOON COMPANIES		CITY	NUMBER OF BALLOONS
1	THK GÖKÇEN AVIATION BUSINESS ADMINISTRATION	ANKARA	14
2	TÜRKİYE İŞBANK CO.	İSTANBUL	1
3	ARIKAN AVIATION LTD. CO.	NEVŞEHİR	5
4	ATMOSFER BALLOON, TOURISM and TRADE LTD. CO.	NEVŞEHİR	11
5	BAŞKENT BALLOON TRAINING TOURISM and ADVERTISING LTD.CO.	NEVŞEHİR	6
6	CİHANGİROĞLU BALLOON, ADVERTISING, TOURISM LTD. CO.	NEVŞEHİR	6
7	DISCOVERY AVIATION, TOURISM and TRADE LTD. CO.	NEVŞEHİR	5
8	EZEL AVIATION ADVERTISING AVIATION IMPORT EXPORT AND TRADE LTD. CO.	NEVŞEHİR	6
9	GÖKTÜRK BALLOON, AVIATION, TOURISM and ADVERTISING LTD.CO.	NEVŞEHİR	8
10	GÖKYÜZÜ BALLOON SERVICES, TOURISM and TRADE LTD. CO.	NEVŞEHİR	6
11	GÖREME BALLOON, AVIATION, ADVERTISING, TOURISM and TRADE LTD. CO.	NEVŞEHİR	15
12	HAN BALLOON, AVIATION, TOURISM and TRADE LTD. CO.	NEVŞEHİR	6
13	KAPADOKYA BALLOON, TOURISM and TRADE LTD. CO.	NEVŞEHİR	17
14	KAPADOKYA KAYA BALLOONING, AVIATION, TOURISM and TRADE LTD. CO.	NEVŞEHİR	11
15	MAVİ AY AVIATION, TOURISM, IMPORT EXPORT AND TRADE LTD. CO.	NEVŞEHİR	5
16	PELİKAN AVIATION, TOURISM; ADVERTISING,TRANSPORT and TOURISM TRADE LTD. CO.	NEVŞEHİR	7
17	ROYAL BALLOON AND AVIATION, TOURISM TRADE LTD. CO.	NEVŞEHİR	6
18	SULTAN BALLOON, AVIATION, ADVERTISING, TOURISM and TRADE LTD. CO.	NEVŞEHİR	7
19	SULTAN KELEBEK TOURISM and TRADE LTD. CO.	NEVŞEHİR	7
20	ULUER AVIATION, TOURISM and TRADE LTD. CO.	NEVŞEHİR	12
21	ÜRGÜP BALLOON, AVIATION, ADVERTISING, TOURISM LTD. CO.	NEVŞEHİR	6
		Total	167