INVEST IN TURKEY

TURKISH DEFENSE & AEROSPACE INDUSTRY

JAN 2018

Agenda

- **Snapshot**
- Turkish Defense Industry
- Turkish Civil Aviation

Snapshot

Turkish defense and aviation industry offers lucrative opportunities…

SPENDING
$15
BILLION
DEFENSE EXPENDITURES
(2016)

CLUSTERS
DEFENSE & AEROSPACE

TURNOVER
$20
BILLION
CIVIL AVIATION TURNOVER
(2016)

TURNOVER
$6
BILLION
DEFENSE & AEROSPACE
INDUSTRY TURNOVER
(2016)

STRONG SUPPORT FOR JOINT VENTURES WITH FOREIGN FIRMS

540
AIRCRAFT
AIRLINE FLEET
(2016)

EXPORTS
$2
BILLION
DEFENSE & AEROSPACE
INDUSTRY EXPORTS
(2016)

AVIATION HUB
INCREASING CONNECTIVITY WITH
286 INTERNATIONAL DESTINATIONS
(as of 2016)

PASSENGERS
193
MILLION
AIRLINE PASSENGERS
(2017)

Source: SIPRI, SASAD, DGCA, DHMİ, Ministry of Transport, Maritime Affairs and Communications

Agenda

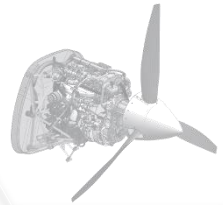
- Snapshot
- **Turkish Defense Industry**
- Turkish Civil Aviation

Turkish Defense Industry

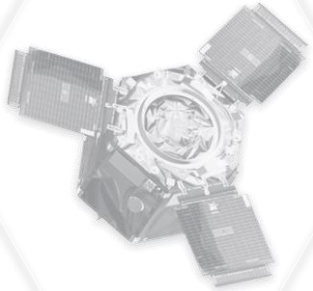
Turkish defense industry has important advantages with a globally-competitive edge..












Well-developed industrial and human resource ecosystem

Globally-competitive national defense companies

Strong government support to joint ventures, international partnerships and defense cooperation

Strong government support to the defense industry

Cost-competitive defense products *vis-a-vis* Western-manufactured equivalents, suiting budgets of the governments with financial constraints

High number of strategic agreements with international partners, facilitating defense industry collaboration and trade

Among the largest defense budgets globally

Transformation of the Defense Industry

Turkish defense industry has been undergoing a profound transformation from a sole procurement to design and manufacture..

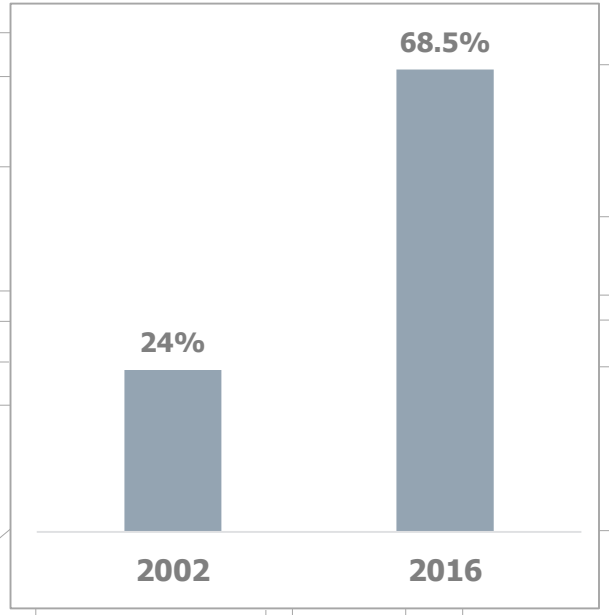
Pre-1990	1990-2000	2000-2010	2010-2020	2020-2030
Direct Procurement	Co-Production	Partial Design (Main Platforms)	Indigenous Design (Local Production)	Basic & Advanced Technologies
				
Cobra AH-1 W (Attack helicopter) AB-412 Helicopter MLRS (Rocket system)	Armoured Combat Vehicle Light Transport Aircraft Basic Trainer Aircraft Cougar Helicopter	Altay (Tank) Milgem (Warship) Anka (UAV-MALE Class) Hürkuş (Basic trainer aircraft)	Indigenous Helicopter Program Indigenous Fighter Jet Project Göktürk-3 Satellite	Complete Localization Life Cycle Management Performance-based Logistics

Source: SSM

Transformation of the Defense Industry

Turkey's decisive policies have yielded significant results in transforming the defense industry..

Local Content in Turkey's Defense Procurement



Source: SSM

Transformation of the Defense Industry

Turkey has introduced industrial participation (IP) / offset (O) policies in order to facilitate long-term cooperation with international partners in the field of defense, aerospace and homeland security..

BASELINE

Indicator	Requirement
Threshold to Require Offset	$5 Million
IP/O Commitment	At least 70% of the Contract Price
Subcontractor / SME Portion	30% of the Category-A IP&O 15% of SME share
Crediting Basis	Domestic Net Added Value (DNAV)
Type of Agreement	Separate IP&O Agreement with the Contractor
Bank Guarantee	6% of IP&O Commitment
Period of Performance	Program Duration + 2 Years
Penalty	6% of Unfulfilled Commitment
Temporary Crediting	Allowed (Conditional)
Banking of Credits	Allowed (Valid for 5 Years)
Transfer of Excess Credits	Allowed (Causality)

CATEGORIES

Category A

Direct Industrial Participation

Category B

Export of products/services in the areas of defense, aerospace and homeland security

Category C

- Acquire technology / capability
- New investment in the areas of defense, aerospace and homeland security

MULTIPLIERS

Transaction	Multiplier
Design & Engineering Works Performed by SMEs (Cat-A)	2
All other IP Works (Cat-A)	1
Export of Platforms	4 - 5
Export of Systems / Subsystems	3
Export of Structural Parts	2
SME Portion in Export	(+ 1)
Export to Prior Market	(+ 1)
Technological Collaboration (Cat-C)	3 - 5
Enabling technology/ability that is requested particularly by SSM (Cat-C)	6 - 8
Foreign Direct Investment (Cat-C)	4
Transfer of Hardware / Software to University / Research Institute (Cat-C)	3

Source: SSM

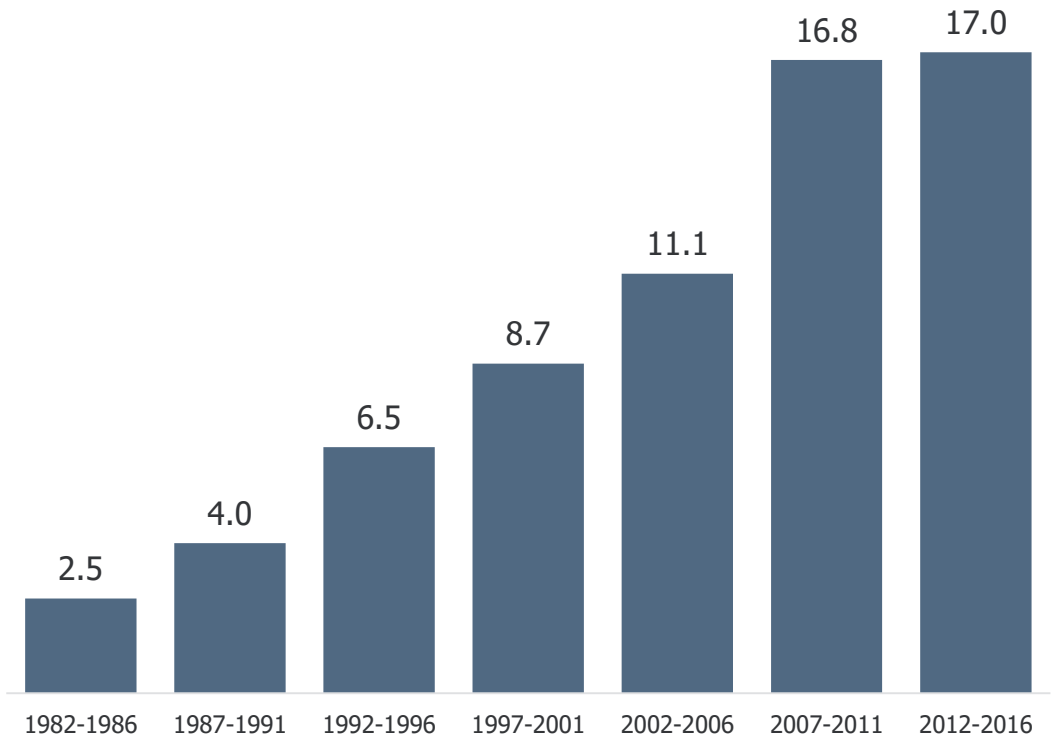
Defense Expenditures

Turkish defense expenditures have significantly expanded over the past two decades..

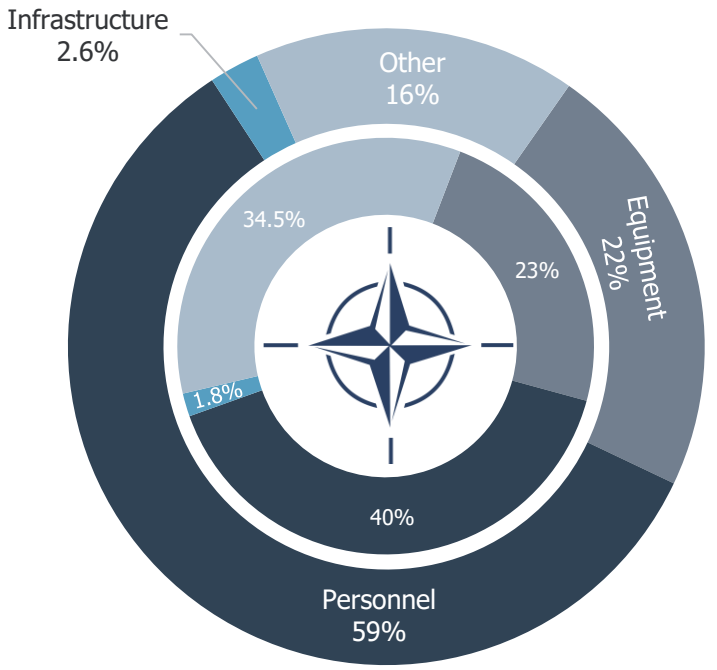
Top 20 Countries by Defense Expenditures in 2016 ($ Billion)

1	USA	611.2
2	China	215.2
3	Russia	69.2
4	Saudi Arabia	63.7
5	India	55.9
6	France	55.7
7	UK	48.3
8	Japan	46.1
9	Germany	41.1
10	South Korea	36.8
11	Italy	27.9
12	Australia	24.6
13	Brazil	23.7
14	Israel	18.0
15	Canada	15.2
16	Spain	14.9
17	Turkey	14.8
18	Iran	12.7
19	Algeria	10.2
20	Pakistan	10.1

Turkey's 5-year Average Annual Defense Spending ($ Billion, current prices)



Distribution of defense expenditure by main category (2016)



Outer Circle: Turkey
Inner Circle: NATO

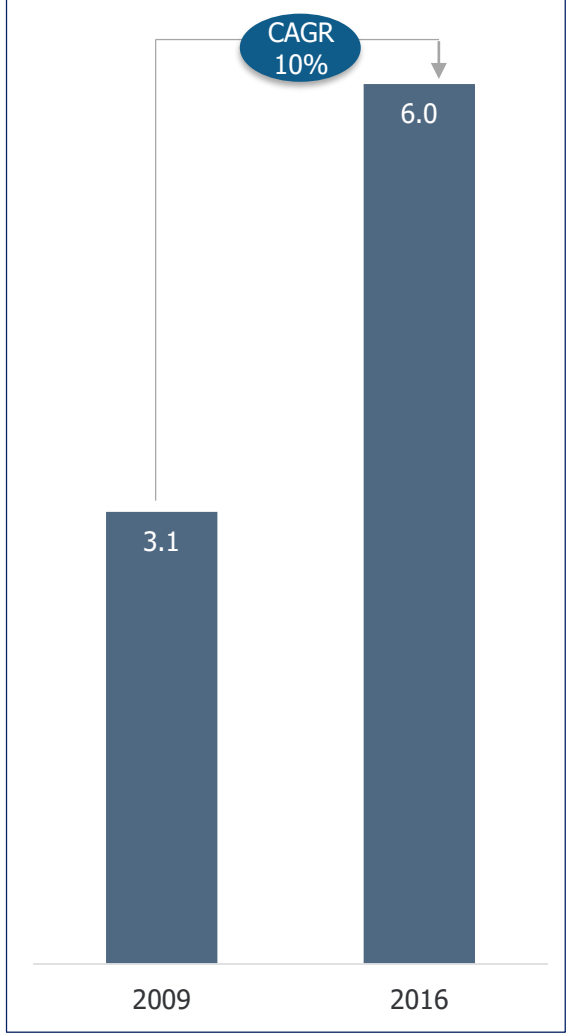
Equipment expenditure includes major equipment expenditure and R&D devoted to major equipment. **Personnel** expenditure includes military and civilian expenditure and pensions. **Infrastructure** expenditure includes NATO common infrastructure and national military construction. **Other** expenditure includes operations and maintenance expenditure, other R&D expenditure and expenditure not allocated among above-mentioned categories.

Source: SIPRI, NATO

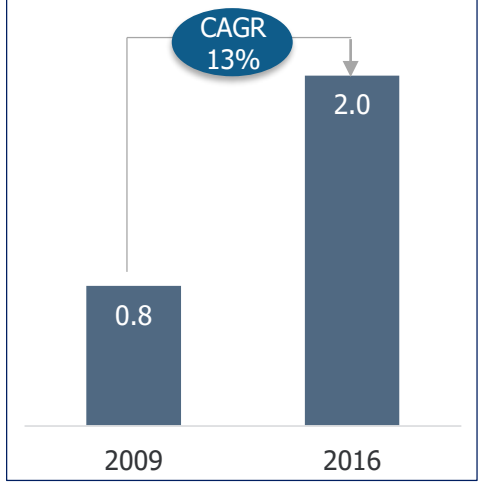
Turkish Defense Industry

Turkish defense industry turnover has doubled over the past seven years with an annual average growth rate of 10%.

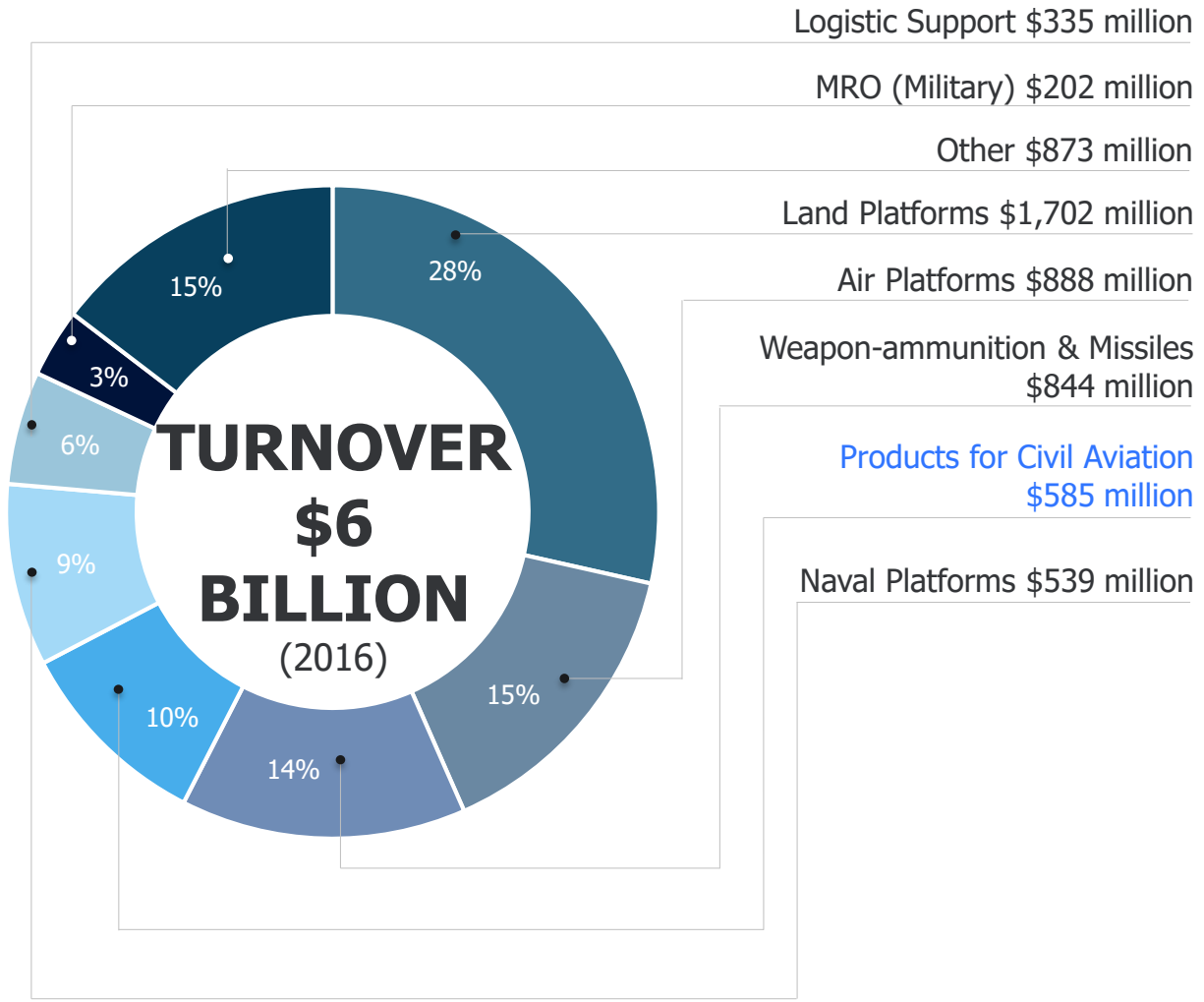
Defense Industry Turnover ($ Billion)



Exports ($ Billion)



Orders ($ Billion)

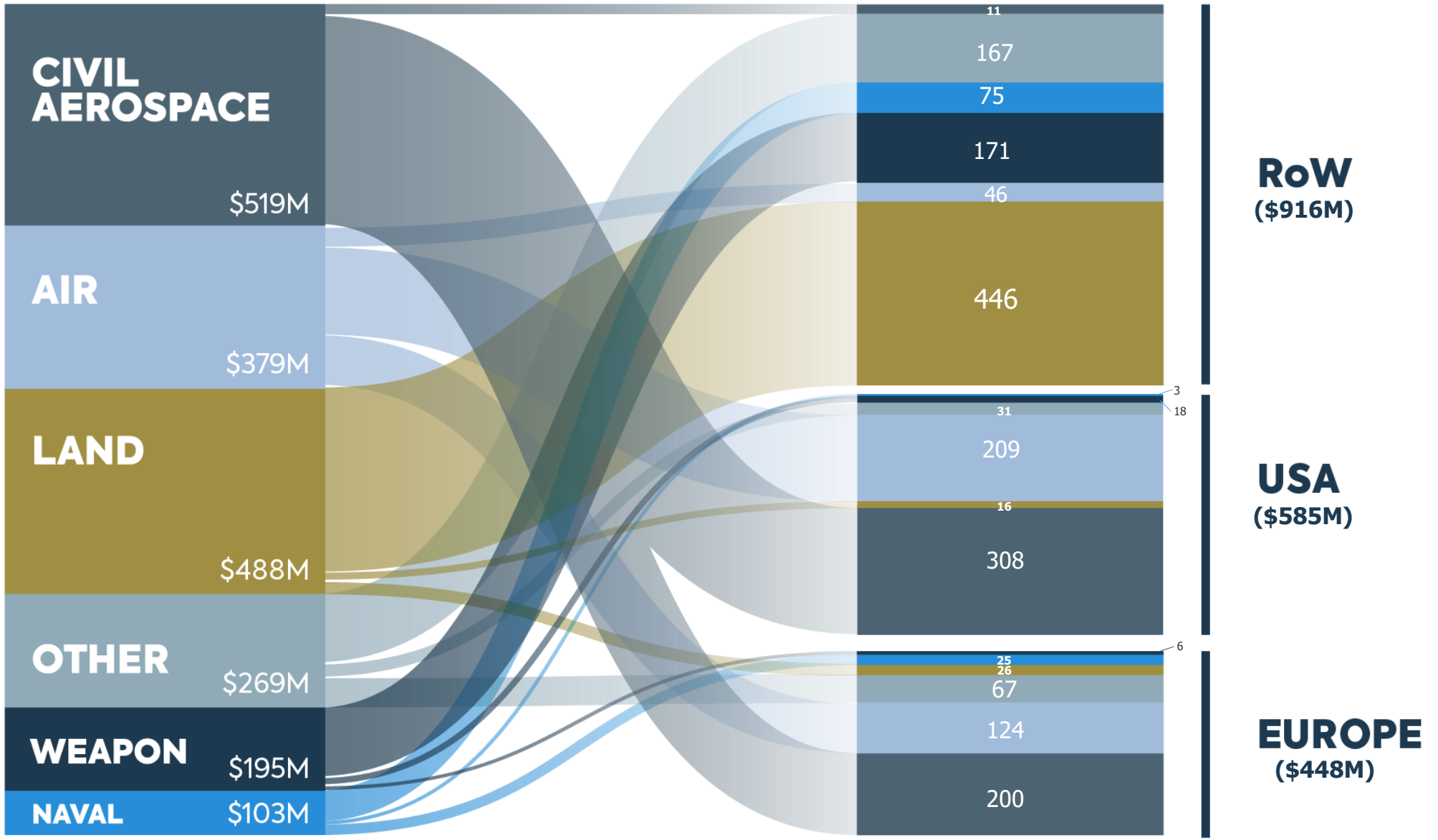


Source: Defense and Aerospace Industry Manufacturer Association of Turkey (SASAD)

Exports

Turkey's growing and diversifying exports have explored new opportunities in Middle East, Africa, Central Asia and South America

TOTAL EXPORTS **$2 BILLION** (2016)

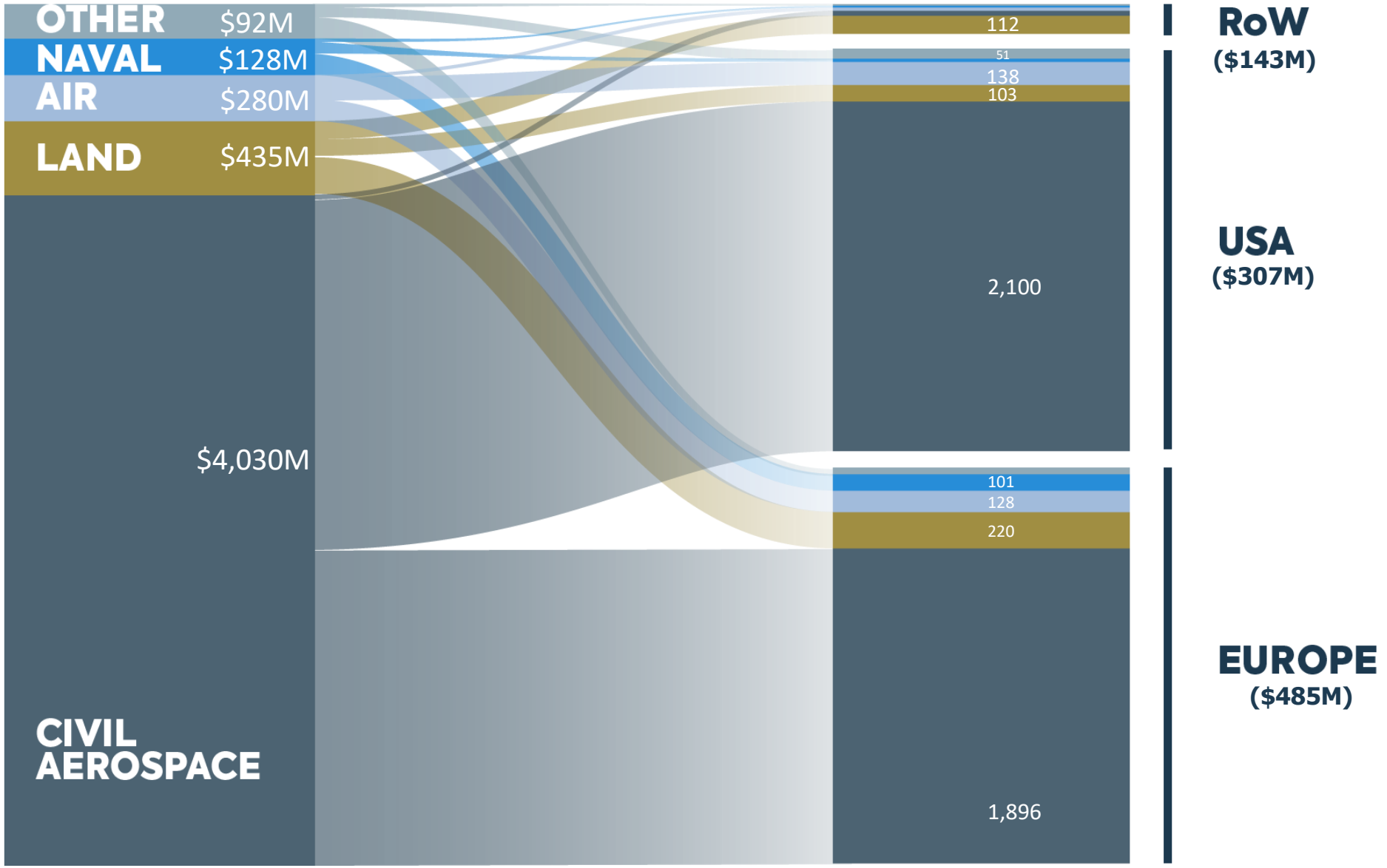


Source: SASAD

Imports

While Turkey has considerably increased its domestic capacity in the defense industry, it continues to import a significant amount of aerospace products..

TOTAL IMPORTS **~$5 BILLION** (2016)

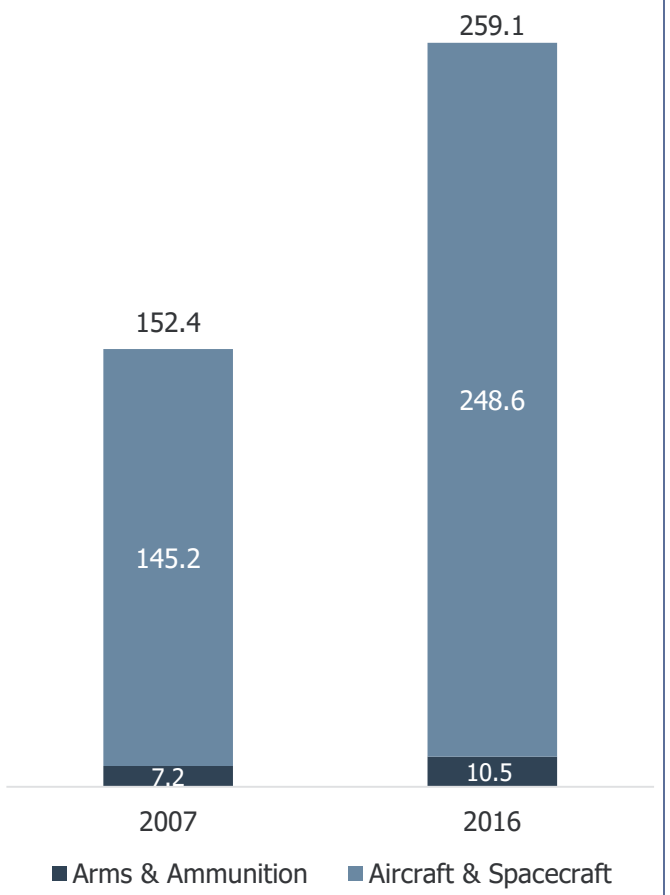


Source: SASAD, Turkish Statistical Institute

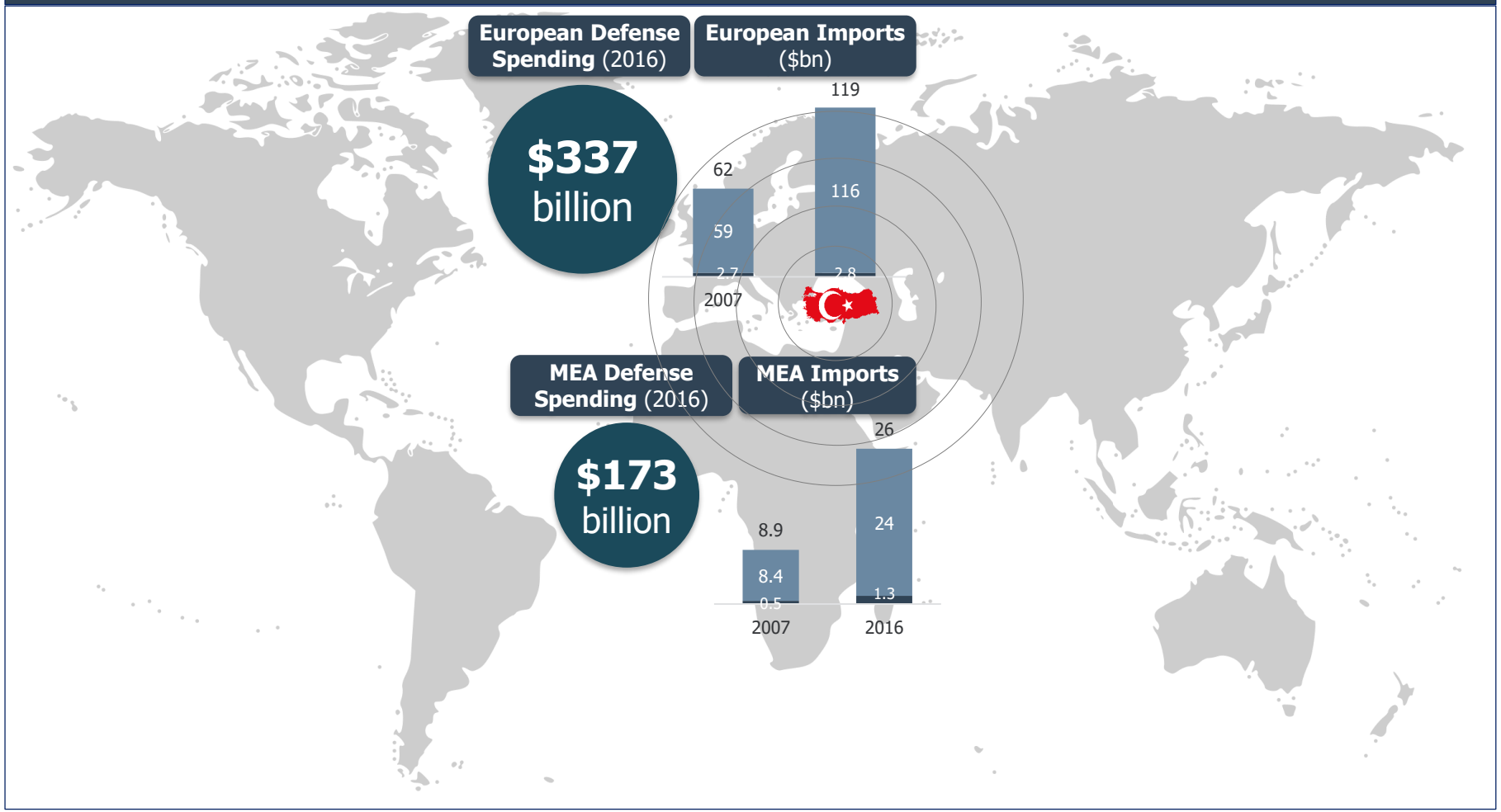
Trade

Turkey is located in proximity of lucrative markets with a significant trade volume of defense and aerospace products..

Global Imports ($Billion)



Regional Imports ($Billion, 2016)



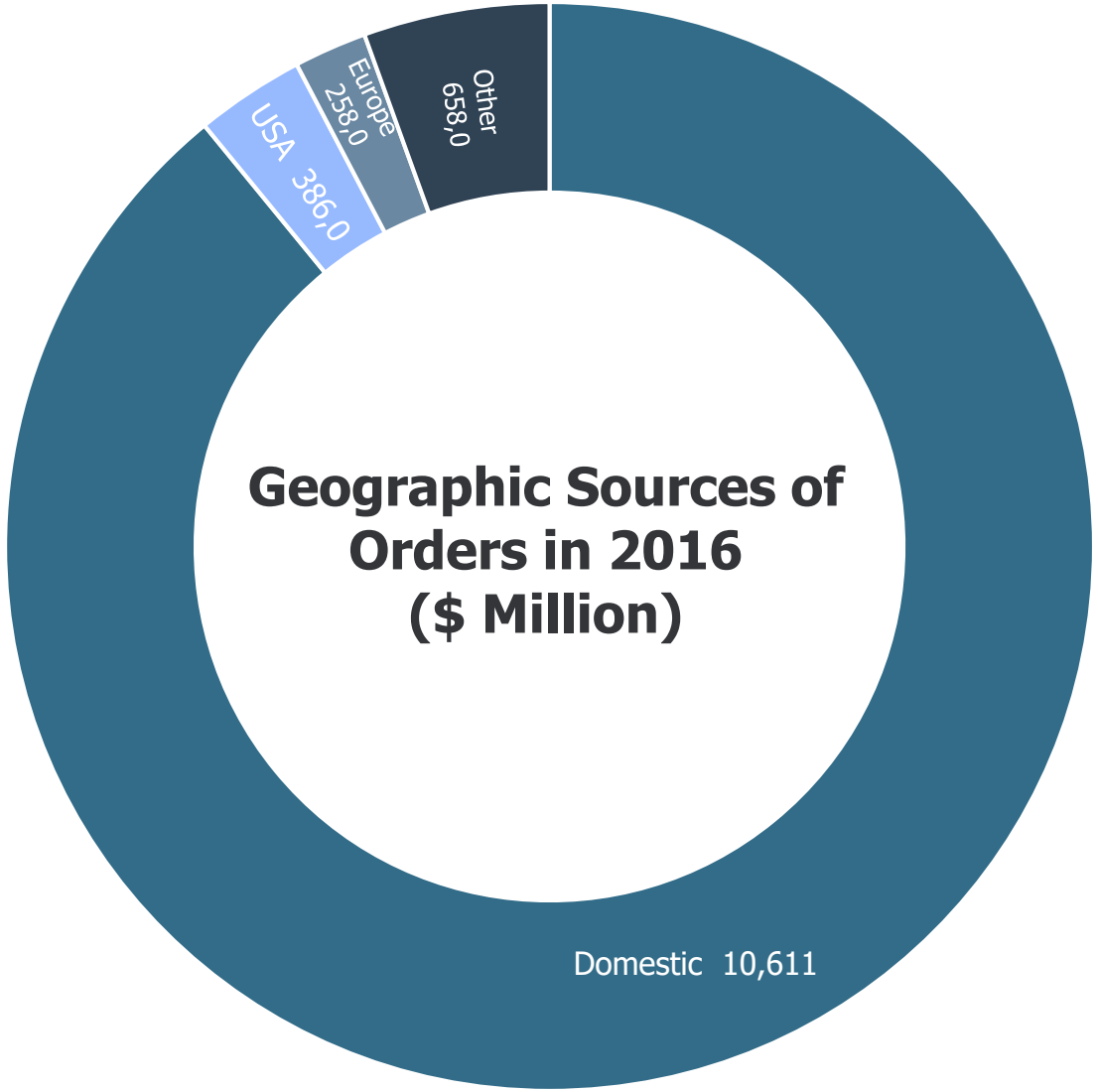
Source: SIPRI, ITC

Orders

Orders in the defense industry have significantly increased, amounting to ~$12 billion in 2016, with 90% coming from domestic clients.

- ✓ Land platforms/systems = $5,920 m.
- ✓ Air platforms = $3,391 m.
- ✓ Weapons & Missiles = $1,080 m.
- ✓ Naval = $640 m.
- ✓ Civil aviation = $293 m.
- ✓ Security systems = $254 m.
- ✓ MRO (Military) = $210 m.
- ✓ Other = $125 m.
- ✓ TOTAL = $11,913 m.

2016



Geographic Sources of Orders in 2016 ($ Million)

Source: SASAD, 2016

Major Players

Leading players represent a significant portion of the Turkish defense & aerospace industry..

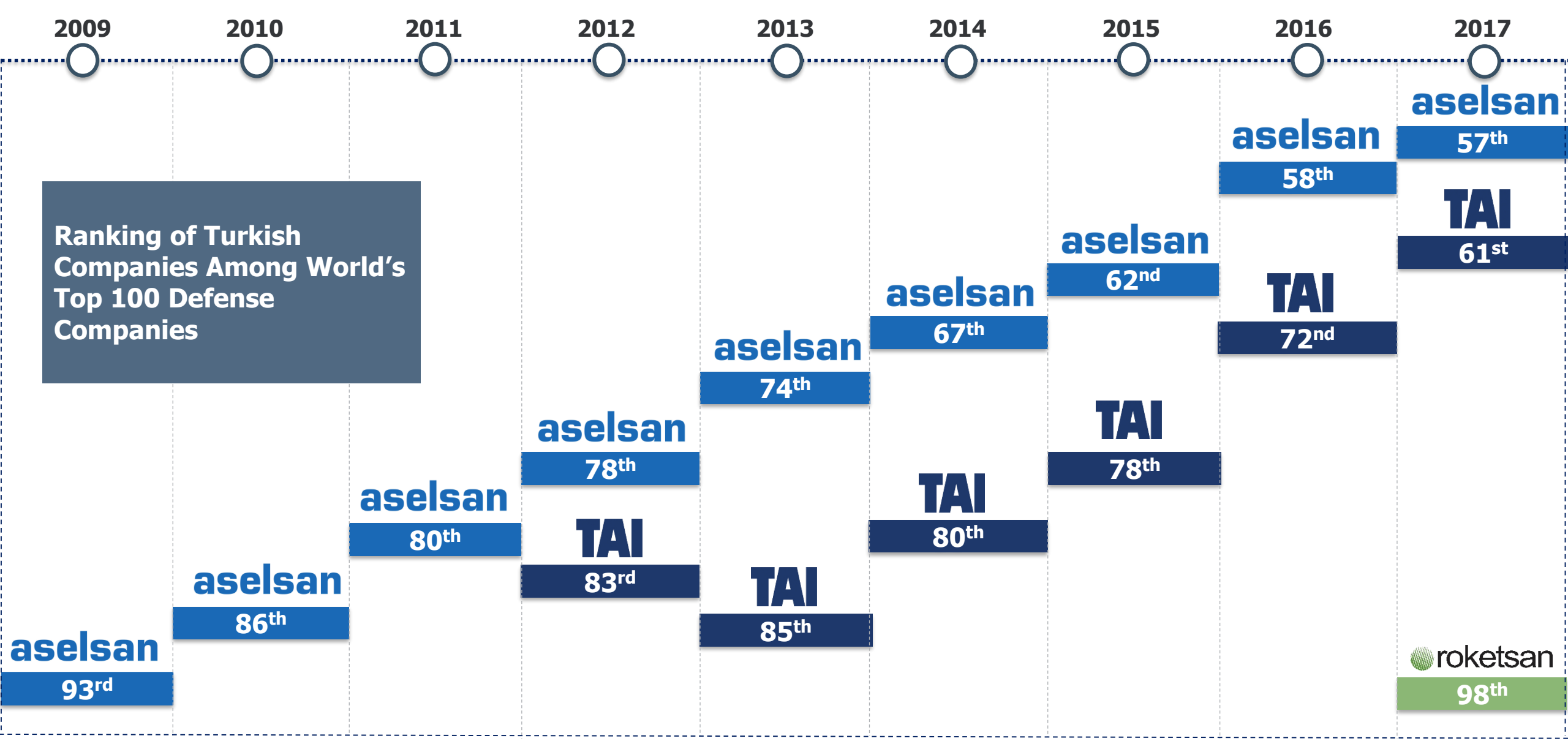
Rank (2015)	Company	Turnover ($Million)
1	ASELSAN	985
2	TURKISH TECHNICS	928
3	TAI	786
4	TEI	309
5	ROKETSAN	277
6	FNSS	188
7	MKEK	178
8	STM	170
9	OTOKAR	158
10	HAVELSAN	133
11	BMC	77
12	ALP AVIATION	62
13	SEDEF SHIPBUILDING	42

Rank (2015)	Company	Turnover ($Million)
14	NUROL MAKİNA	40
15	PROBIL	34
16	DEARSAN	33
17	HST AUTOMOTIVE	28
18	ÖZTEK TEXTILE	23
19	AYDIN SOFTWARE	22
20	ISTANBUL SHIPYARD	21
21	YAKUPOĞLU TEXTILE	20
22	SAMSUN YURT SAVUNMA	16
23	ÇAN JOINT VENTURE	15
24	SAVRONİK	15
25	YONCA-ONUK	15

Source: Undersecretariat for Defense Industries, turnovers as of end-2015 and cover defense and aerospace production revenues only

Major Players

Turkish defense companies, Aselsan, TAI and Roketsan are among world's top defense players.



Source: DefenseNews, Annual rankings based on preceding years' financials.

Partnerships

Turkish defense industry has developed a strong culture of partnerships which have successfully implemented important projects..

FNSS

nurol

BAE SYSTEMS

1988

FNSS, a joint venture owned 51% by Nurol Holding and 49% by BAE Systems, is a leading manufacturer and supplier of tracked and wheeled armored vehicles and weapon systems for the Turkish and Allied Armed Forces.

Kale Pratt & Whitney

Kale

Pratt & Whitney
A United Technologies Company

2010

Kale Pratt & Whitney, a joint venture owned 51% by Kale Group and 49% by Pratt & Whitney, use state-of-the-art technologies critical to the production of the F135 engine powering the F-35 Lightning II fighter aircraft.

TEI
TUSAŞ MOTOR SANAYİİ A.Ş.
TUSAŞ ENGINE INDUSTRIES, INC.

TAI
TUSAŞ-TÜRK HAVACILIK VE UZAY SANAYİİ A.Ş.
TURKISH AEROSPACE INDUSTRIES, INC.

T.H.K. 1925

1985

TEI, a joint venture of TAI, GE, Turkish Armed Forces Foundation (TAFF) and Turkish Aeronautical Association (TAA), has been a key player in manufacturing, assembly and testing technology of aircraft engine parts and modules.

BMC

BMC

2014

Qatar Armed Forces

BMC, which is a Turkish-Qatari partnership, manufactures tactical armored vehicles for the defense industry, in addition to buses for public transportation, light and heavy weight trucks for transportation and logistics industry.

TAI
TUSAŞ-TÜRK HAVACILIK VE UZAY SANAYİİ A.Ş.
TURKISH AEROSPACE INDUSTRIES, INC.

BAE SYSTEMS

2017

BAE Systems and TAI signed an agreement, worth £100m, to collaborate on the first development phase of an indigenous fifth-generation fighter jet for the Turkish Air Force – TF-X.

ROLLS ROYCE

Kale

2017

Rolls-Royce and Kale Group, established a joint venture company owned 51% by Kale and 49% by Rolls-Royce 49%, to develop aircraft engines for Turkey, initially targeting the TF-X National Fighter Jet Project.

Global Supply Chain

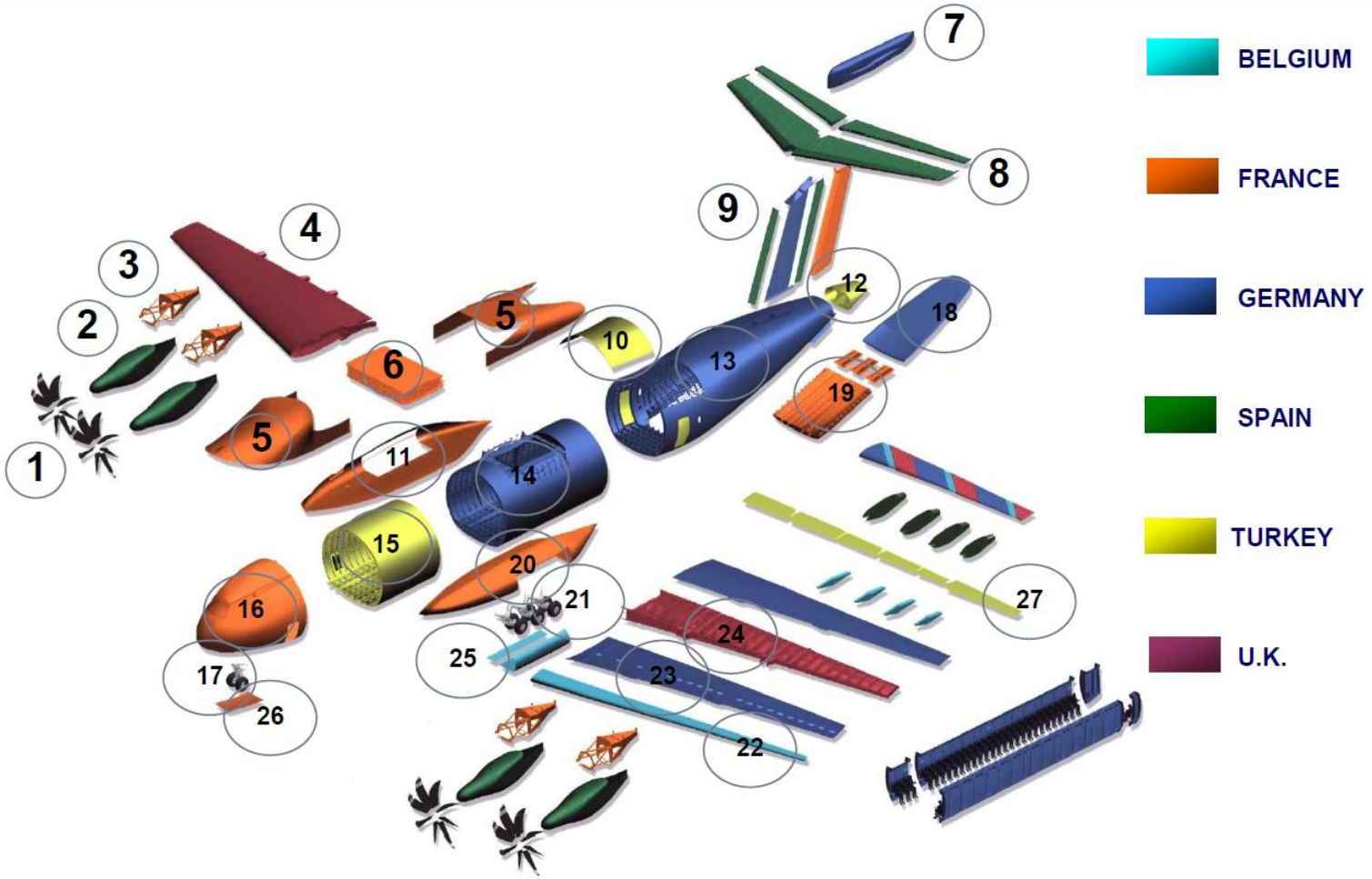
Developing a domestic competitive supply chain base has also integrated Turkish companies into the global value chain..

TUSAŞ-TÜRK HAVACILIK VE UZAY SANAYİİ A.Ş.
TURKISH AEROSPACE INDUSTRIES, INC.

Airbus A400M Program

A400M is the first program that enabled TAI to gain capability and responsibility of a whole life cycled aerospace product starting from concept design studies to after sale logistics support activities. TAI's workshare in A400M Program includes design and manufacture of structural components as Forward Center Fuselage with Emergency Exit Door, Section 17 Upper Shell with Rear Hatch Door, Paratroper Doors, Tailcone, Ailerons and Spoilers. TAI has also manufacturing responsibility of all fuselage harnesses. TAI has first level design and procurement responsibility on lighting system (except cockpit) and water and waste system.

Global Supply Chain of A400M



1-Ratier-Figeac, 2-AM Seville, 3-AF Saint Eloi, 4-AUK Filton, 5-DENEL, 6-AF Nantes, 7-AD Stade, 8-AM Seville, 9-AD Stade, 10-TAI, 11-SOCATA, 12-TAI, 13-AD Bremen, 14-AD Bremen, 15-TAI, 16-AF Saint Nazaire, 17-Messier-Dowty, 18-PAG,19-SOGERMA, 20-SOCATA, 21-Messier-Dowty, 22-SONACA, 23-AD Stade, 24-AUK Filton, 25-SONACA, 26-Aerolia, 27-TAI

Source: Airbus Military

Global Supply Chain

F-35 Production Industrial Participation opportunities for Turkish companies are expected to reach more than $12 billion..

ALP AVIATION

Manufacturing F-35 production airframe structure and assemblies, production landing gear components and over 100 F135 production engine parts to include titanium integrated blade rotors.

aselsan

Developing manufacturing approaches for advanced optical components, which are part of the F-35 Electro Optical Targeting System. They are also working with Northrup Grumman on the F-35 CNI Avionic Interface Controller and will initiate full scale production activities in the near term.

ayesaş

Currently is the sole source supplier for two major F-35 components – missile remote interface unit and the panoramic cockpit display.

FOKKER ELMO TURKEY

Manufacturing 40% of the F-35 Electrical Wiring & Interconnection System (EWIS) and will also deliver and support TAI with all center section wiring systems. Fokker Elmo is also developing the EWIS for the F135 engine, for which a major share is produced in Fokker Elmo Turkey in Izmir.

HAVELSAN

Havelsan has been instrumental as the Turkish lead for developing the construct of the future Turkish F-35 Integrated Pilot and Maintenance Training Center (ITC) and associated training systems in Turkey.

TAI
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TURKISH AEROSPACE INDUSTRIES, INC.

TAI has been strategically supporting the F-35 Program since 2008. The company currently supplies production hardware that goes into every F-35 production aircraft. In conjunction with Northrup Grumman, TAI manufactures and assembles the center fuselages, produces composite skins and weapon bay doors, and manufactures fiber placement composite air inlet ducts. Additionally, TAI is strategically manufacturing 45 percent of the F-35's including Air-to-Ground Pylons and adapters which is Alternate Mission Equipment (AME).

Kale Aero

In conjunction with Turkish Aerospace Industries, they manufacture and produce F-35 airframe structures and assemblies. Kale Aero also supports Heroux Devtek as the sole source supplier for all three variants landing gear up lock assemblies. Additionally, Kale Aerospace has also established a joint venture in Izmir with Pratt & Whitney and is manufacturing production hardware for the F135 engine.

roketsan **TÜBİTAK SAGE**

ROKETSAN and Tubitak-SAGE are the Turkish joint leadership team who strategically manage the development, integration, and production of the advanced precision-guided Stand-off Missile (SOM-J) which will be carried internally on the 5th Generation F-35 aircraft. Additionally, Lockheed Martin Missiles and Fire Control has partnered with Roketsan, through a teaming agreement, to jointly develop, produce, market and sell the advanced, precision guided Stand Off Missile – Joint Strike Fighter (SOM-J).

Source: www.F35.com

Domestic Capabilities

In addition to international partnerships, Turkish companies have developed strong domestic capabilities with cutting-edge technologies.. UAVs are a key area where Turkish companies excel..

ANKA

ANKA, advanced Medium Altitude Long Endurance class Unmanned Aerial System, performs day and night, all-weather reconnaissance, target detection / identification and intelligence missions with its EO/IR and SAR payloads, featuring autonomous flight capability including Automatic Take-off and Landing. ANKA incorporates a heavy-fuel engine and electro-expulsive Ice Protection System with an Advanced Ground Control Station and dual datalink allowing operational security and ease. The system is expandable with a Transportable Image Exploitation Station, Radio Relay, Remote Video Terminal and SATCOM.

Technical Specifications

- Wing Span: 17.3 m
- Length: 8 m
- Powerplant: 150 HP
- Payload Capacity: 200 kg
- Endurance: 24 hours
- Service ceiling: 30,000 ft
- Data range: 200 km
- Cruise Speed: 110 knots

TAI
TUSAŞ-TÜRK HAVACILIK VE UZAY SANAYİİ A.Ş.
TURKISH AEROSPACE INDUSTRIES, INC.

BAYRAKTAR TACTICAL UAS

Bayraktar Tactical UAS is a Medium Altitude Long Endurance class system developed for tactical reconnaissance and surveillance missions. Prototype Development Phase started within 2007 based on competition model. Bayraktar Tactical UAS with its critical all subsystems - including Flight Control, INS-GPS, Automatic Take Off-Landing systems developed in house demonstrated fully automatic taxi, take off, cruise, landing, parking phases - was selected as the winner of the program in 2009.

Technical Specifications

- Wing Span: 12 m
- Length: 6.5 m
- Powerplant: 100 HP
- Payload Capacity: >55 kg
- Endurance: >24 hours
- Service ceiling: 24,000 ft
- Data range: 150 km
- Cruise Speed: 70 knots

BAYKAR

KARAYEL TACTICAL UAV

KARAYEL Tactical UAV System is the first and only Tactical Unmanned Aerial Vehicle designed and produced according to NATO's STANAG-4671 for reconnaissance and surveillance purposes. With its capable Payloads on board, KARAYEL can not only detect a target but also mark it with its laser designator. KARAYEL can take off, land and fly a designated mission fully autonomously without assistance from a pilot. Payload capacity and variations are available for both civil and military applications.

Technical Specifications

- Wing Span: 10.5 m
- Length: 6.5 m
- Powerplant: 97 HP
- Payload Capacity: 70 kg
- Endurance: 10 hours
- Service ceiling: 22,500 ft
- Data range: 150 km
- Cruise Speed: 60-80 knots

VESTEL
Defence Industry

Indigenous Design

In order to meet Turkish Air Force (TurAF) requirements beyond 2030s, Turkey has introduced an indigenous design and development program (TF-X) to replace the aging F-16 fleet of TurAF..

TF-X Program

Within the scope of TF-X Program, Turkey will become one of the few countries to possess the necessary technologies, engineering infrastructure and production capabilities, once the engineering activities on all the critical technologies are accomplished (e.g. increased situational awareness, sensor fusion, low observability, weapon bay, …etc), which are needed by a 5th generation (or beyond) jet fighter aircraft.

TF-X aircraft is planned to be kept operational in the TurAF inventory until 2070s and will be interoperable with other critical assets of TurAF such as F-35As.

The TF-X indigenous design and development program prime contract between Undersecretariat for Defense Industries (SSM) and Turkish Aerospace Industries Inc. (TAI) has been signed on 5th of August 2016.

The timing of this signature alone, is a key demonstrator of Turkey's determination of running mega-projects uninterruptedly, even under extraordinary conditions.

Currently, the prime contract covers the initial four (4) years (starting after signature of major subcontracts) which will end up with completion of preliminary design phase. Within this period beyond the design and development of TF-X Aircraft, engineering capabilities, technology development activities (for key sensors like radar, electronic warfare..etc.), test infrastructures establishment and certification processes will be performed and extensive capabilities for a new generation jet fighter design, development and production will be gained by Turkish industry. TF-X aircraft will be a multi-role aircraft, it will be designed mainly for air-to-air role with a consideration to air-to-surface roles as well. Upon engineering analysis, TF-X aircraft will be a multi-role aircraft, it will be designed mainly for air-to-air role with a consideration to air-to-surface roles as well. Upon engineering analysis, preliminary calculations, based on received information of suppliers of candidate engines, TF-X aircraft is decided to be a twin engine configuration.

In this regard a Heads of Agreement (HoA) was signed between TAI and BAE Systems on 28th of January 2017, in the presence of the Prime Ministers of Turkey and the United Kingdom. In addition, the Letter of Agreement (LOA) was signed during the IDEF 2017. The TAI-BAE Systems Collaboration Agreement was signed and entered in to effect on 25th of August 2017.

BAE SYSTEMS

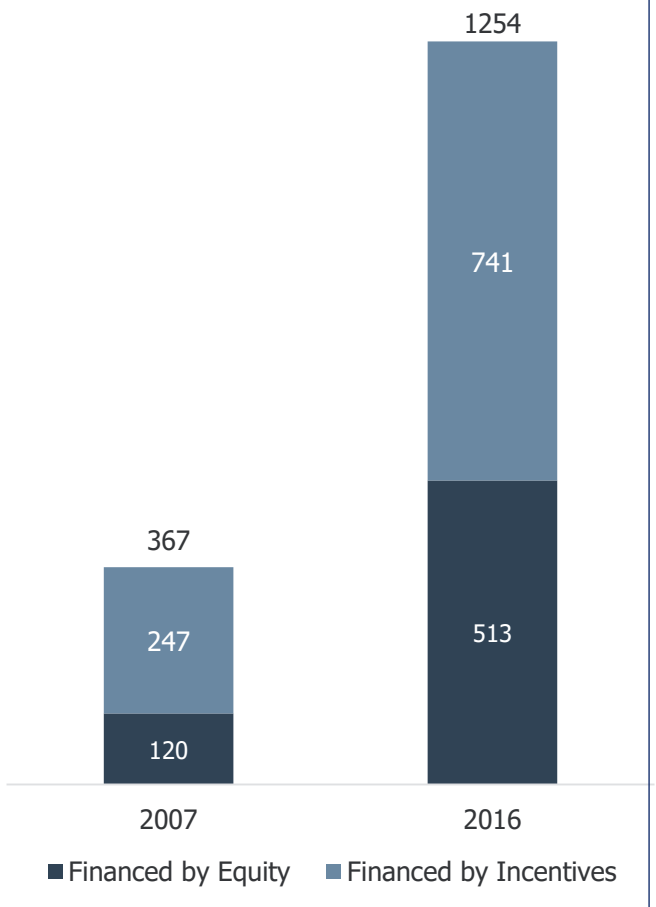
TAI
TUSAŞ-TÜRK HAVACILIK VE UZAY SANAYİİ A.Ş.
TURKISH AEROSPACE INDUSTRIES, INC.

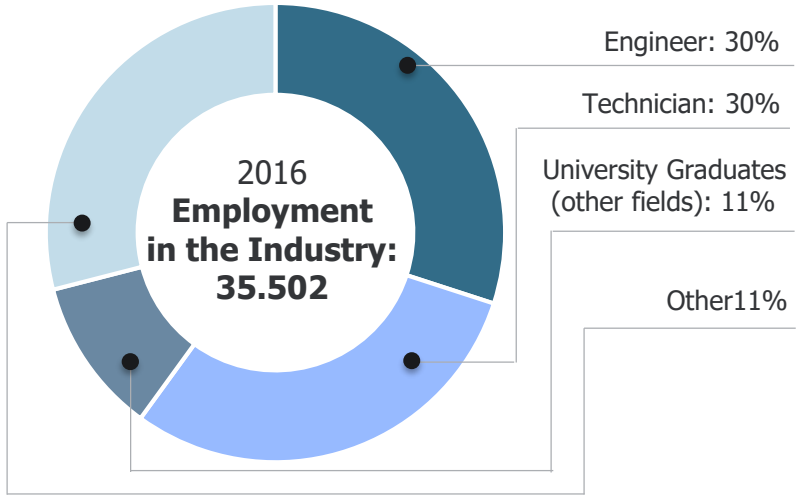
One of the key ambition and consideration of SSM and TurAF, which is shared by the Turkish industry as well, is the exportability of TF-X aircraft to key allies and friendly countries. In this regard, Turkey also welcomes any opportunities for participation of interested countries in a win-win model.

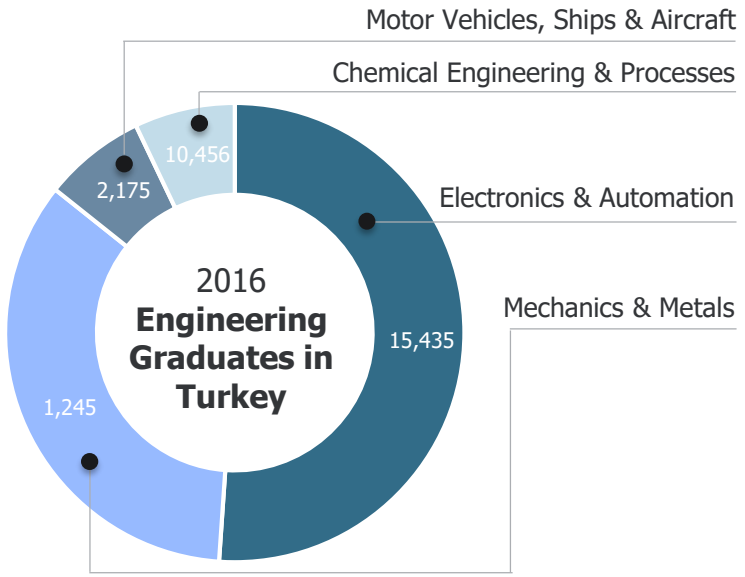
Ecosystem

Turkish defense industry has an attractive ecosystem supported by a qualified workforce, incentives and know-how...

Product & Technology Development Expenditures ($million)







Main Incentive Tools	Incentive Schemes						
	General Incentives	Regional Incentives	Incentives for Priority Investments	Incentives for Large Scale Investments	Incentives for Strategic Investments	Project-Based Incentives	R&D Incentives
Corporate Tax Reduction		✓	✓	✓	✓	✓	✓
VAT/Custom Duty Exemption	✓	✓	✓	✓	✓	✓	✓
Social Security Premium Support		✓	✓	✓	✓	✓	✓
Income Tax Withholding Support	✓	✓	✓	✓	✓	✓	✓
Interest Support		✓	✓		✓	✓	
Land Allocation		✓	✓	✓	✓	✓	
Partnership (Equity Investment by Govt.)						✓	
Guarantee of Purchase by Govt.						✓	
Energy Cost Support						✓	
Financial Grant							✓

Source: SASAD, Higher Education Council, Ministry of Economy, Ministry of Science, Industry and Technology

Incentives

Turkish defense and aerospace investments are eligible for a wide range of incentives offered by the government, lucrative incentives schemes boost project economics substantially…

Manufacturing investments in defense and aerospace receive incremental benefits

- ✓ Corporate Tax deductions (up to 100%)
- ✓ Tax credits (up to %90)
- ✓ Land Allocation
- ✓ Project Financing Support
- ✓ Social Security Premium Exemptions
- ✓ VAT and Customs Duty Exemptions
- ✓ Training support

Lowering upfront costs, improving cash flow, and accelerating returns on investment

Research, Development, and Design activities are backed by generous support programs

- ✓ 100% deductible R&D expenditures
- ✓ Corporate Tax exemptions
- ✓ Income Tax exemption for R&D personnel
- ✓ VAT exemptions on final products
- ✓ Dedicated Technology Development Zones
- ✓ Early stage financing for start-ups
- ✓ Export support

Grants, incentives, and supports are available at all stages of new product development life cycle

Investments in Defense and Aerospace are Priority Areas with Strategic Focus

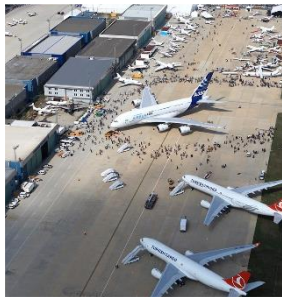
- ✓ Industry Participation / Offset
- ✓ Product based supports/loans
- ✓ Industry development programs
- ✓ Exemptions for duties

Clusters

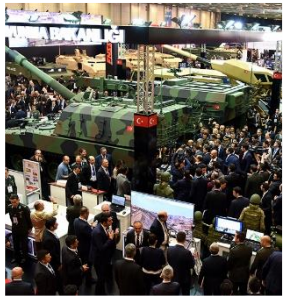
As the industry developed, important aerospace clusters have emerged across Turkey..

Industry Events

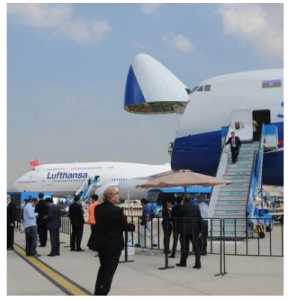
Turkey hosts important events with significant international participation…





Airport Equipment

Weapons Systems Manufacturers

Air Forces

Airline Companies

Satellite & Space Systems Manufacturers

Research & Development

Aviation Faculties

Software Companies

MRO

Cabin Equipment

Radar System Manufactures

Cargo Delivery Service Providers

EURASIA AIRSHOW

April 25-29, 2018
Antalya

www.eurasiaairshow.com

ISTANBUL AIRSHOW

September 27-30 2018 Ataturk Airport

12th International Civil Aviation & Airports Exhibition & Aviation Industry Supply Chain Platform

www.istanbulairshow.com

Türkiye

IDEF'19

14th International Defense Industry Fair

April 30 – May 3, 2019
Istanbul

idef.com.tr

Industry Organizations

The business environment for the industry is well-organized with a strong cooperation between the public and private sector..

www.ssm.gov.tr

UNDERSECRETARIAT FOR DEFENSE INDUSTRIES (SSM)

SSM was established in 1985 with a mandate to develop policies establishing a modern defense industry infrastructure in Turkey and has the authority and responsibility to implement these policies. As per its mandate, SSM carries out major systems procurement, industry policymaking, localization strategy, R&D and international industry relations. SSM is responsible for reorganizing and integrating the existing national industry in line with defense industry requirements; supporting new enterprises; exploring the opportunities with foreign investment and technology contributions; supporting enterprises to partner with foreign investors.

DIRECTORATE GENERAL OF CIVIL AVIATON TURKEY

www.shgm.gov.tr

DIRECTORATE GENERAL OF CIVIL AVIATON (DGCA)

DGCA is in charge of regulating the civil aviation industry in accordance with the national and international regulations and standards in order to ensure flight safety and security of the civil aviation. Its main duties, among others, are: to issue relevant documentation and to register aircraft; to audit licenses of flight crew; to determine the licensing terms of personnel working in the civil aviation; to regulate the terms and conditions for the permissions to be granted to real or legal persons to perform air transportation activities in or out of Turkey; to regulate and audit air navigation of commercial aircraft, as well as traffic communication services in Turkish airspace.

Defence and Aerospace Industry Manufacturers Association

www.sasad.org.tr

DEFENSE & AEROSPACE INDUSTRY MANUFACTURERS ASSOCIATION (SaSaD)

SaSaD was established in 1990 with a mission to contribute to the development, strengthening, and competitiveness of the Turkish defense and aerospace industry. As the representative of the Turkish defense and aerospace industry, both in Turkey and international platforms, SaSad aims to facilitate the business environment for the industry players in coordination with the procurement authorities and contractors. Having started the business with 12 founding members at the beginning, SaSaD currently has 113 full members and 75 special members in the communication network as of 2017.

www.dhmi.gov.tr

GENERAL DIRECTORATE OF STATE AIRPORTS AUTHORITY (DHMİ)

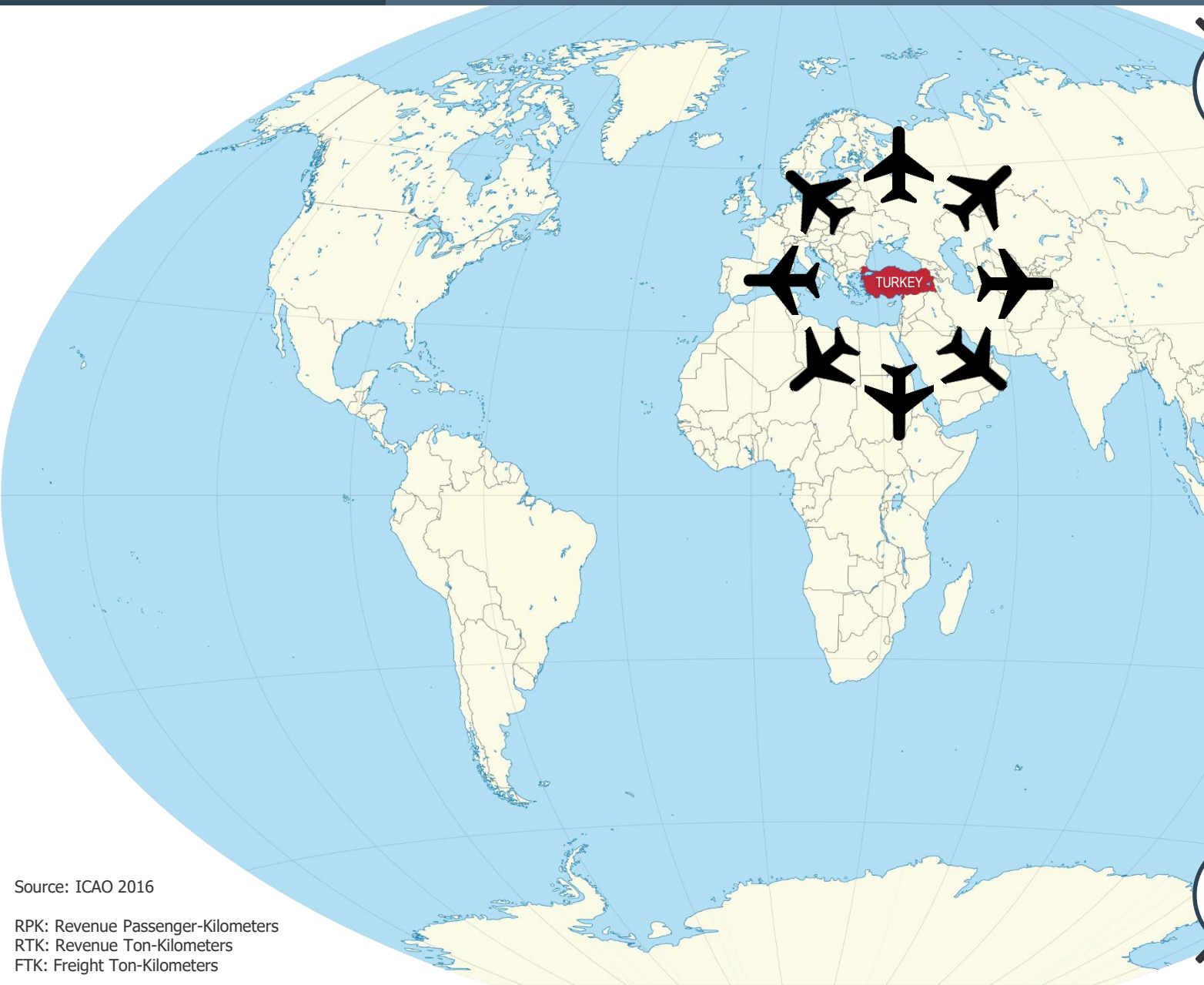
DHMİ is a state-owned enterprise in charge of the management of Turkish airports and controlling Turkish airspace. It main activities are; management of airports, ground services at airports and air traffic control services, establishment and operation of air navigation systems and facilities and other related facilities and systems, and to maintain them at the level of modern aeronautics.

Agenda

- Snapshot
- Turkish Defense Industry
- **Turkish Civil Aviation**

Civil Aviation

Turkey is a key player in global air transportation..



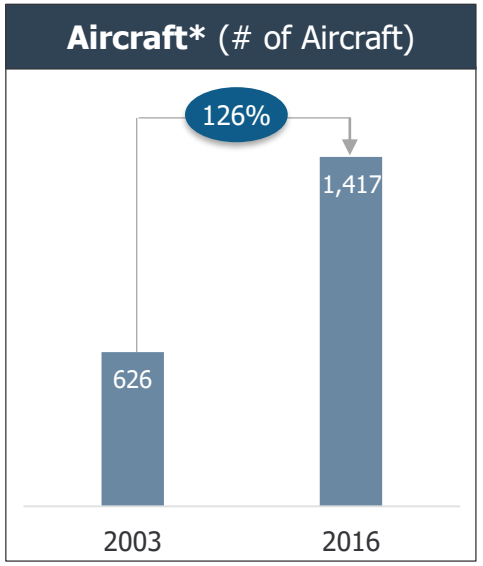
- 3rd European Passenger Ranking
- 11th Worldwide Passenger Ranking
- 10th Worldwide RPK Ranking
- 10th Worldwide RTK Ranking
- 14th Worldwide FTK Ranking
- 12th Worldwide Air Traffic Ranking
- 5th European Air Traffic Ranking

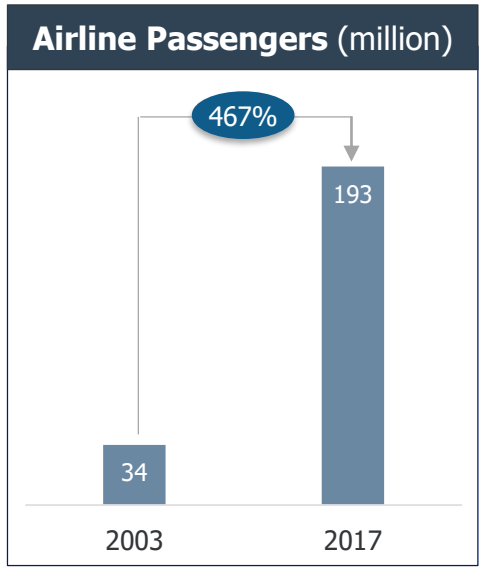
Source: ICAO 2016

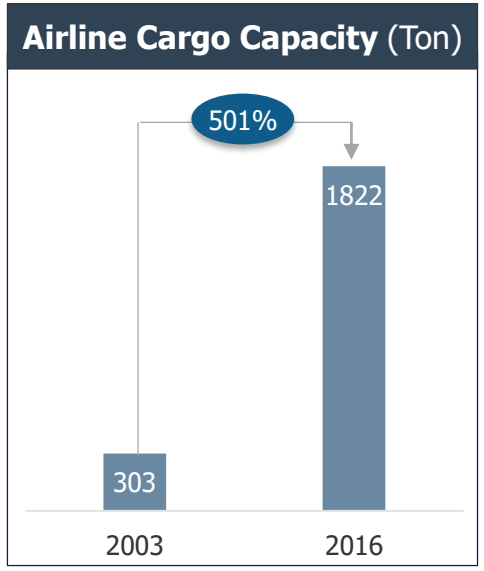
RPK: Revenue Passenger-Kilometers
RTK: Revenue Ton-Kilometers
FTK: Freight Ton-Kilometers

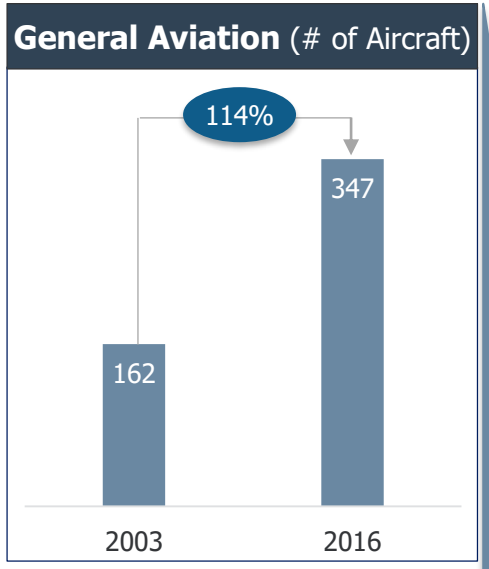
Civil Aviation

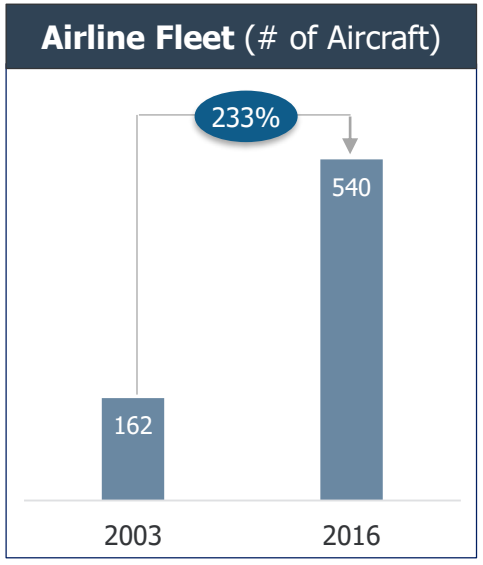
Turkey's civil aviation has been rapidly growing…

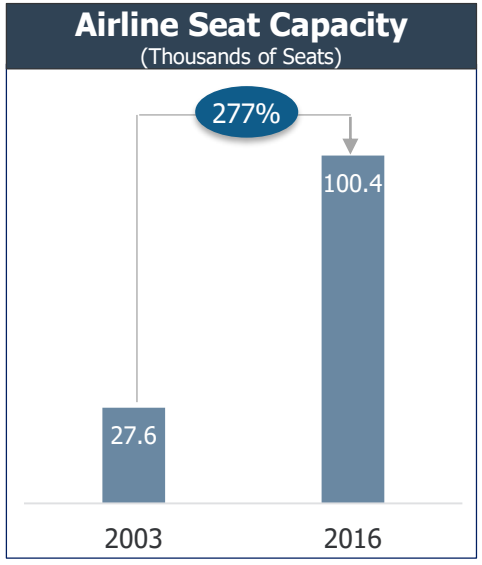


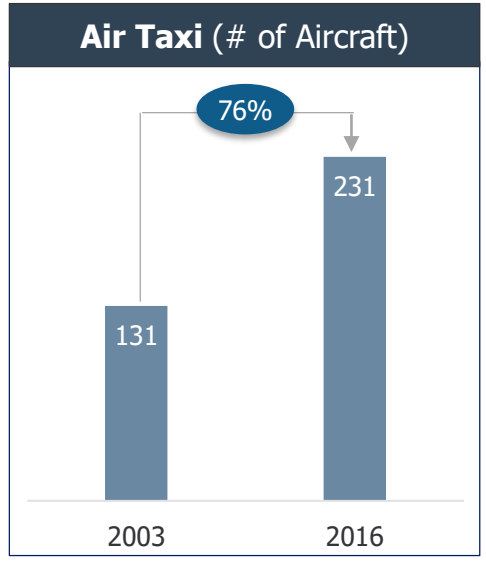


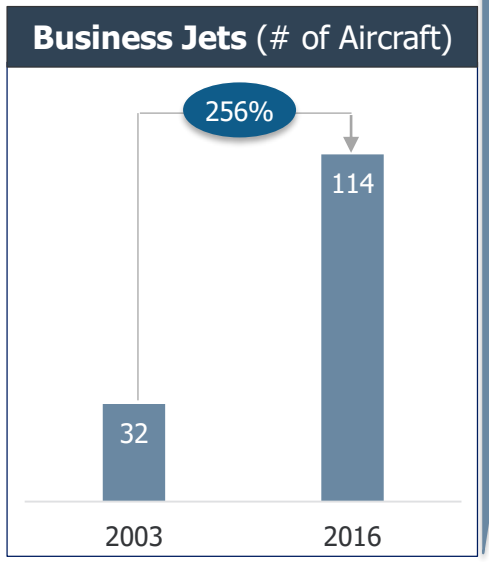


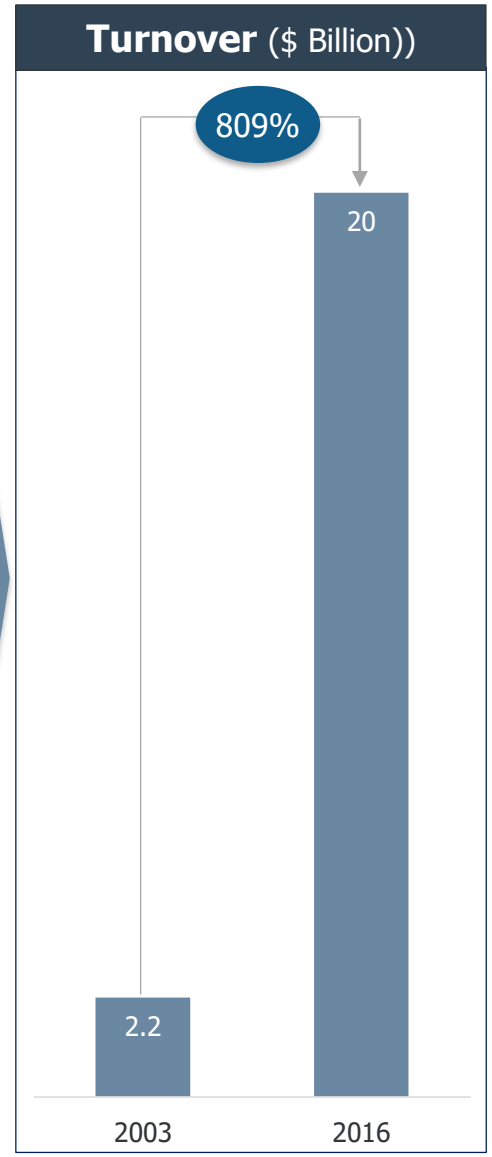












Source: Director General of Civil Aviation (DGCA), *Airline, air taxi, general aviation, business jets, aerial agriculture, balloon.

Airlines

13 airline companies are operating in Turkey as of end-2016..

Airline Companies	Passenger Aircraft	Seat Capacity	Cargo Aircraft	Freight Capacity	Total Aircraft
TURKISH AIRLINES	300	59,679	8	552,000 KG	308
SunExpress	49	9,261			49
PEGASUS AIRLINES	70	12,930			70
Onurair	25	6,349			25
MNG AIRLINES			7	353,000 KG	7
atlasglobal	25	4,944			25
FREEBIRD	8	1,440			8
ULS			3	121,575 KG	3
corendon AIRLINES	11	2,079			11
AIR ACT			7	795,025 KG	7
iZair	8	1,488			8
tailwind AIRLINES	5	840			5
BORAJET AIRLINES	14	1,335			14
TOTAL	**515**	**100,365**	**25**	**1,821,600 KG**	**540**

Source: DGCA

International Connectivity

Turkey's convenient location makes it a natural hub for aviation, as such, Turkish government has significantly invested in airport infrastructure to develop Turkey into an international hub..

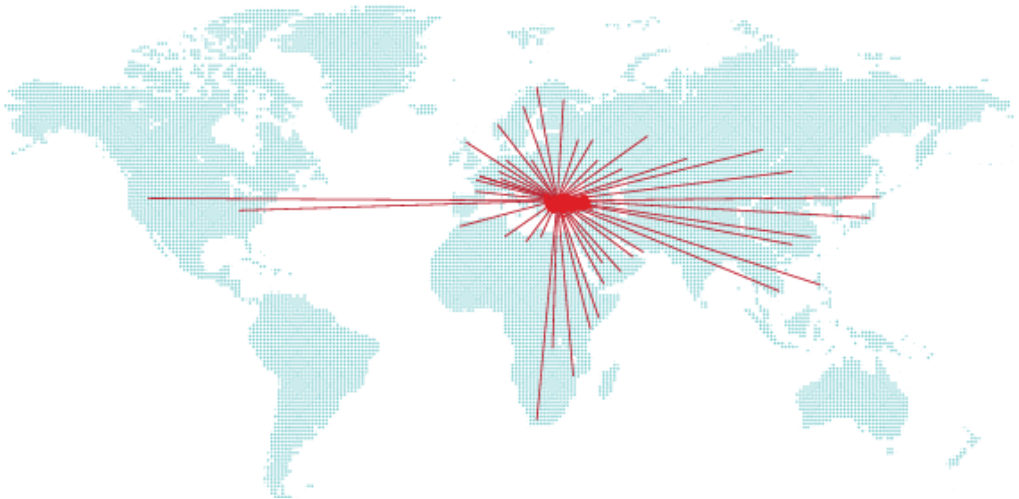
2003

50 countries

60 international destinations

2 domestic hubs

26 domestic destinations



2016

118 countries

286 international destinations

7 domestic hubs

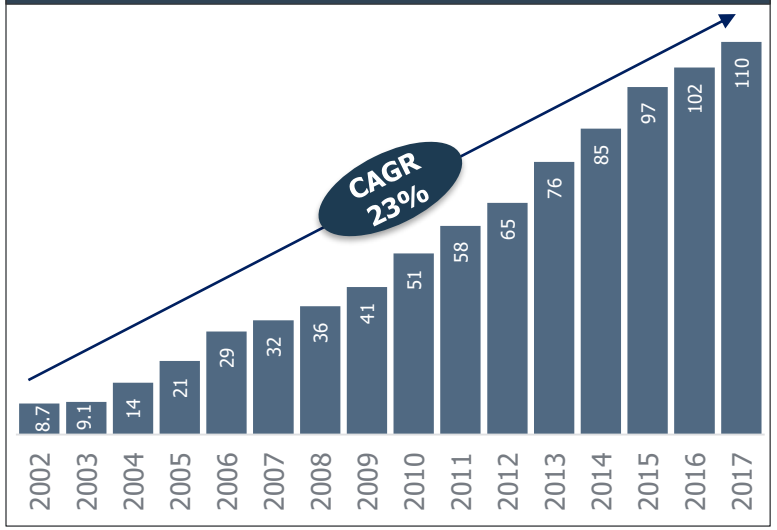
55 domestic destinations

Source: DGCA

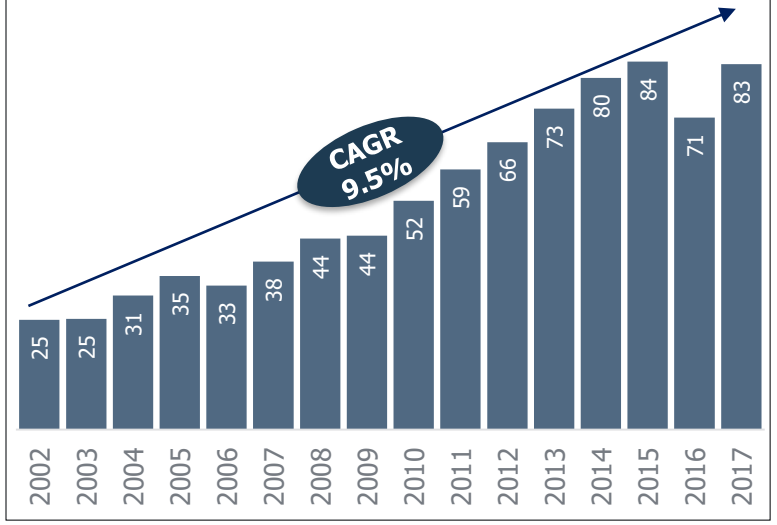
Civil Aviation

Improvement in the airport infrastructure has been a major boon to the Turkish civil aviation..

Domestic Passengers (million)



International Passengers (million)



THE BUSIEST AIRPORTS IN TURKEY

(MILLIONS OF PASSENGERS AS OF 2017)

	AIRPORT	CODE	DOMESTIC	INTERNATIONAL	TOTAL
01	ISTANBUL	IST	19.5	44.3	63.7
02	ISTANBUL	SAW	21.1	10.3	31.4
03	ANTALYA	AYT	7.5	18.5	25.9
04	ANKARA	ESB	13.9	2.0	15.8
05	İZMİR	ADB	10.5	2.4	12.8
06	ADANA	ADA	5.0	0.6	5.6
07	TRABZON	TZX	4.0	0.2	4.2
08	MUĞLA	DLM	1.4	2.3	3.7
09	MUĞLA	BJV	2.6	0.9	3.5
10	GAZİANTEP	GZT	2.6	0.3	2.9

THE BUSIEST AIRPORTS IN EMEA REGION

(MILLIONS OF PASSENGERS AS OF 2016)

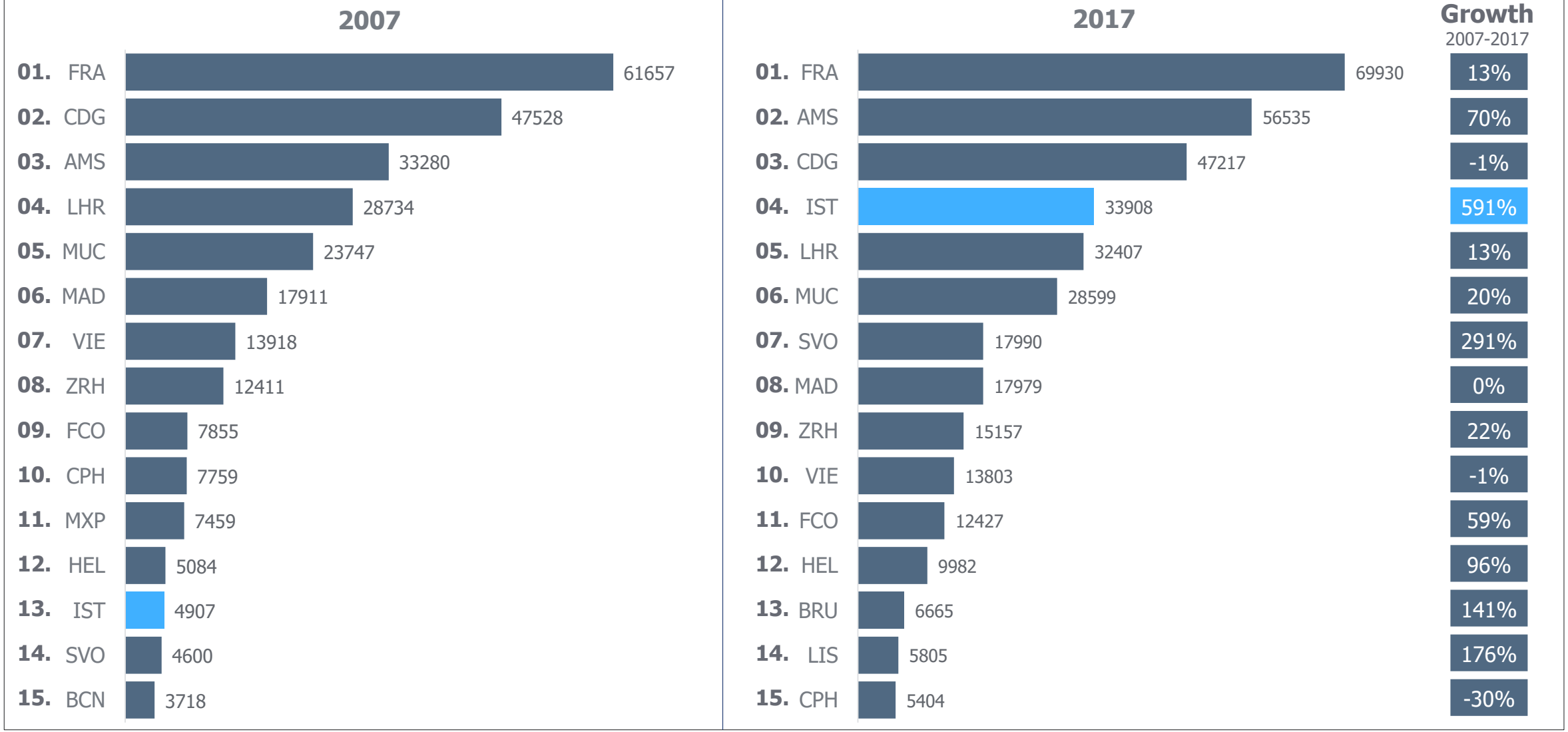
	AIRPORT	CODE	DOMESTIC	INTERNATIONAL	TOTAL
01	DUBAI	DXB	0.5	83.1	83.7
02	LONDON	LHR	4.7	77.0	75.7
03	PARIS	CDG	5.5	60.4	65.9
04	AMSTERDAM	AMS	0.1	63.5	63.6
05	FRANKFURT	FRA	7.1	53.7	60.8
06	ISTANBUL	IST	19.0	41.3	60.2
07	MADRID	MAD	14.3	36.1	50.4
08	BARCELONA	BCN	11.8	32.3	44.1
09	LONDON	LGW	3.9	29.3	43.1
10	MUNICH	MUC	9.7	22.6	42.3

Source: DHMİ, Airports Council International (ACI)

Hub Connectivity

Over the past decade, Istanbul Atatürk Airport has rapidly developed into an international hub..

HUB CONNECTIVTY: 15 FASTEST GROWING AIRPORTS IN EUROPE



Source: ACI Europe Airport Industry Connectivity Report 2017 *Connectivity is a composite measure of the number of destinations, the frequency of services and the quality of the connections (in the case of hubbing or indirect services).

Airport

Turkey is building world's largest airport in Istanbul...

Global Aviation

With more than 4 billion new passengers, global aviation market will grow to 7.8 billion passengers by 2036, around one-third of the growth will come from countries around Turkey..

Turkey is set to be 9th largest aviation market in the world over the next 20 years..

The Largest 10 Passenger Markets

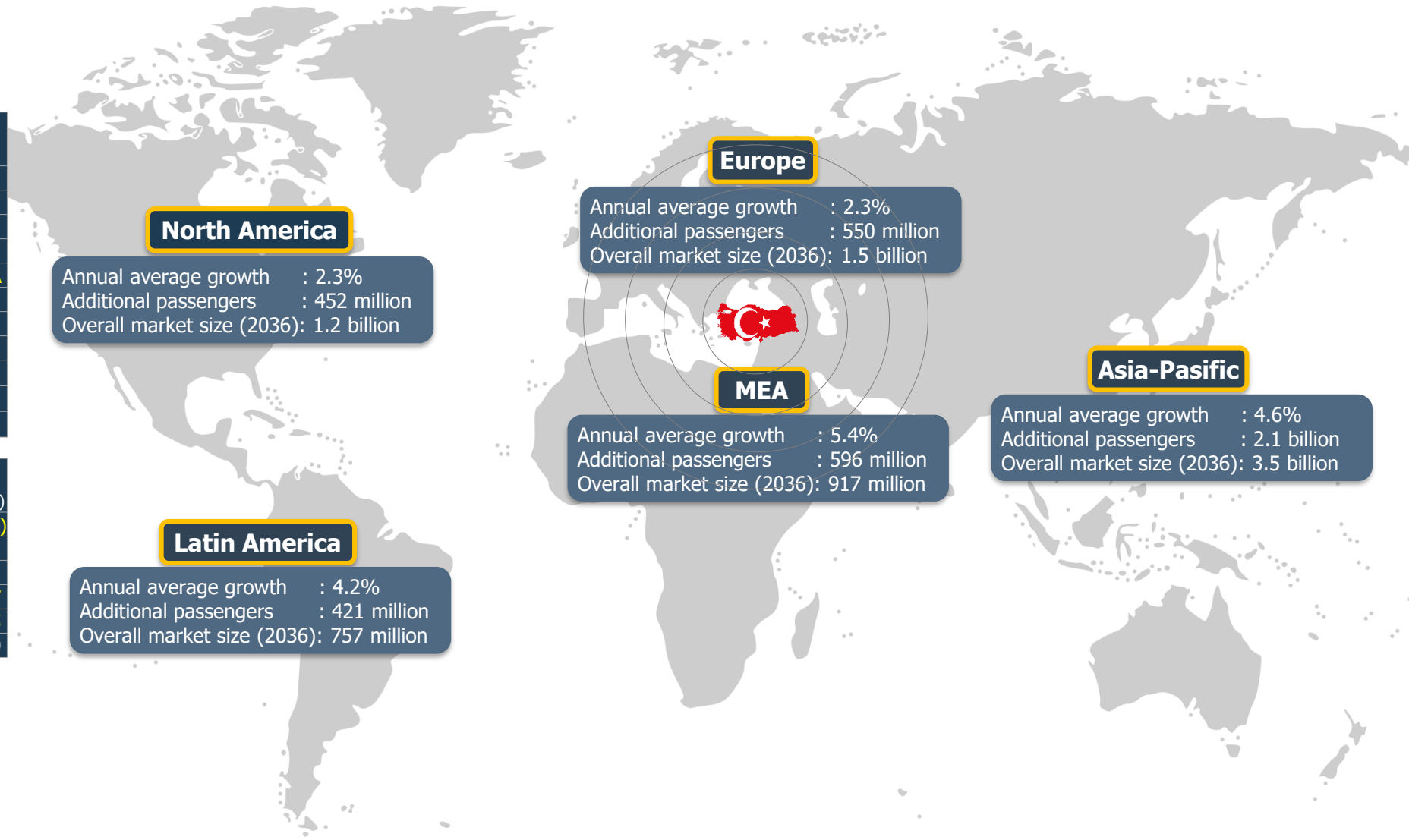
(Ranked by passenger numbers to, from and within each country)

	2016	2036
01	USA	CHINA
02	CHINA	USA
03	UK	INDIA
04	JAPAN	INDONESIA
05	SPAIN	UK
06	GERMANY	JAPAN
07	INDIA	SPAIN
08	ITALY	GERMANY
09	FRANCE	TURKEY
10	INDONESIA	THAILAND

5 Fastest Growing Markets

(In terms of annual additional passengers in 2036 compared to 2016)

		Additional Passengers (million)
1	CHINA	921
2	USA	401
3	INDIA	337
4	INDONESIA	235
5	TURKEY	119



North America

Annual average growth : 2.3%
Additional passengers : 452 million
Overall market size (2036): 1.2 billion

Europe

Annual average growth : 2.3%
Additional passengers : 550 million
Overall market size (2036): 1.5 billion

MEA

Annual average growth : 5.4%
Additional passengers : 596 million
Overall market size (2036): 917 million

Asia-Pasific

Annual average growth : 4.6%
Additional passengers : 2.1 billion
Overall market size (2036): 3.5 billion

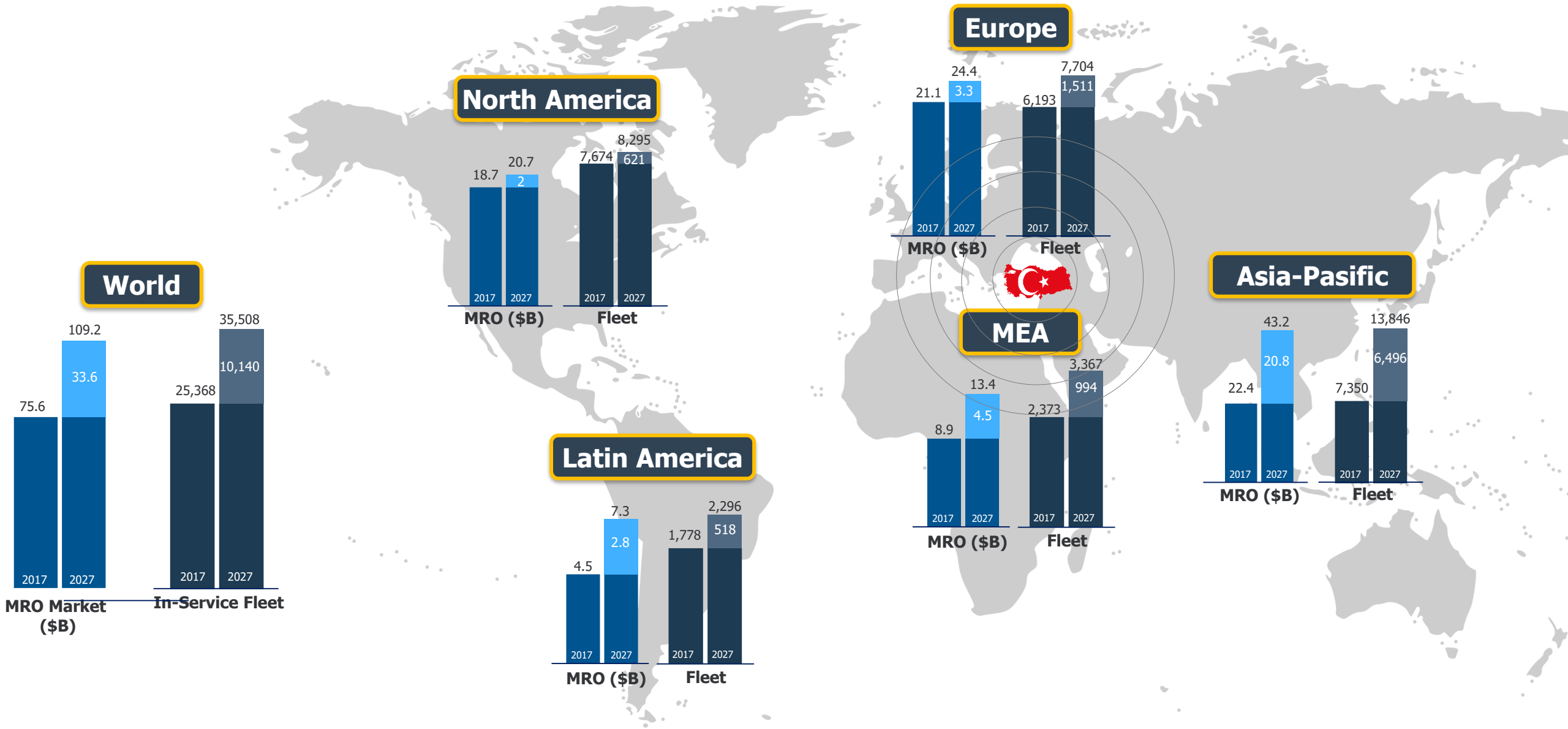
Latin America

Annual average growth : 4.2%
Additional passengers : 421 million
Overall market size (2036): 757 million

Source: IATA

MRO

Turkey is also well-positioned to benefit from Maintenance, Repair, and Overhaul (MRO) business in the region that hosts 34% of World in-service fleet and accounts for 40% of global MRO market..



Source: Oliver Whyman

Partnerships

Competition and cooperation go hand in hand in the Turkish aerospace industry..

TEC Turkish Engine Center

2009

TURKISH TECHNIC

Pratt & Whitney
A United Technologies Company

The Turkish Engine Center is a joint venture with Turkish Technic specializing in CFM56 and V2500 engine overhaul and repair. The Turkish Engine Center unites the long histories of engineering and maintenance excellence of its parent companies. Established in 2009, the facility is located at Istanbul's Sabiha Gokcen Airport and has performed more than 400 engine overhauls.

SunExpress

TURKISH AIRLINES Lufthansa

1989

SunExpress was founded as a subsidiary of Turkish Airlines and Lufthansa. Today, SunExpress has a fleet of 70 aircrafts with 13,950 seats capacity, flying to more than 100 destinations. It carried around eight million passengers in 2016. With its 26 years of experience and thus the long-term commitment in the traffic between the home markets of Turkey and Germany, the airline has acquired the reputation of the holiday specialist even beyond Turkey.

tci CABIN INTERIOR®

TURKISH TECHNIC

2011

TAI
TUSAŞ-TÜRK HAVACILIK VE UZAY SANAYİİ A.Ş.
TURKISH AEROSPACE INDUSTRIES, INC.

A joint venture owned 51% by Turkish Technic and 49% by TAI, the company manufactures galleys and their inserts (like trolleys, std. containers etc.), crew rests, cabin dividers, wind screens, miscellaneous stowage, coatrooms, video control compartments, aircraft textile, leather and most of other cabin interior parts except for the aircraft seats.

my TECHNIC
AIRCRAFT MRO SERVICES

HNA

Bravia Capital Group

Established in 2008, acquired by HNA in 2010 myTECHNIC is World's first lean greenfield MRO with a total closed area of 48,400 m² and one of its kind in the region with a 15,788 m² hangar area, 12,115 m² office area and 20,500 m² warehouse and shop area under one roof. Located in Sabiha Gökçen Airport, myTECHNIC has established business with 130+ customers in 10 regions.

GOODRICH TURKISH TECHNIC
SERVICE CENTER

TURKISH TECHNIC GOODRICH

2010

A joint venture owned 60% by Goodrich Aerostructures and 40% by Turkish Technic, Goodrich Turkish Technic provides services for nacelles, thrust reversers, related parts and rotable support.

TSI AVIATION SEATS

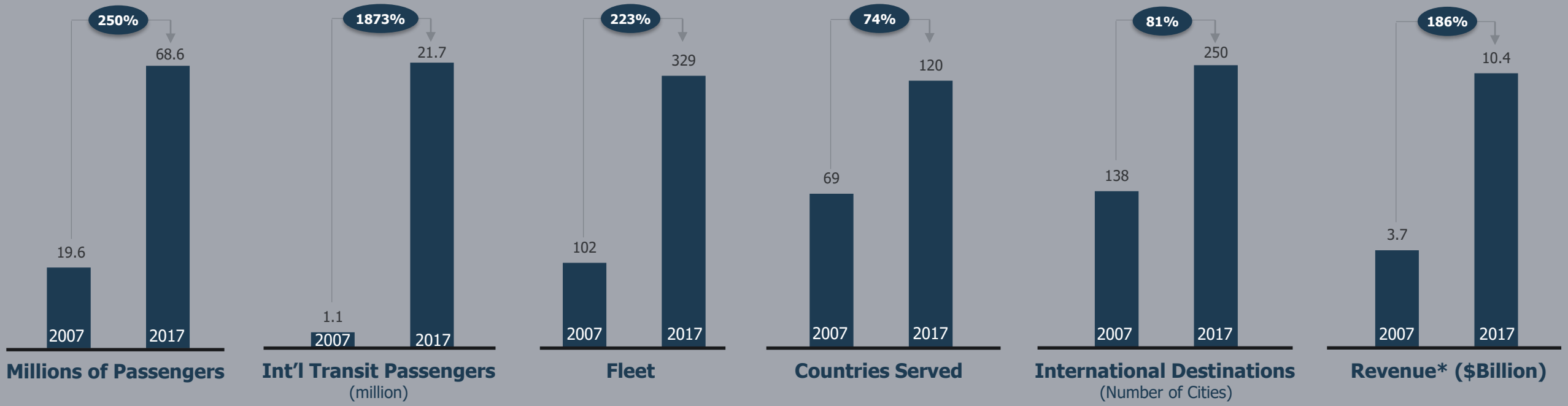
TURKISH TECHNIC Assanhanil

2011

TSI Aviation Seats was established as a joint venture owned 50% by Turkish Airlines and 50% by Assan Hanil, with the target of designing, producing, repairing and marketing all types of aircraft seats and supplying their spare parts.

Showcase

Turkish Airlines has shown incredible growth over the past decade, taking competition to a higher level..



Source: Turkish Airlines *2017 annualized as of September 2017

Showcase

The visionary leadership of Turkish Airlines is committed to expanding..

"We will increase our fleet to 500 aircrafts and revenues to 30 billion dollars by 2023"

Mr. İlker AYCI
Chairman
Turkish Airlines

Growth Drivers of Civil Aviation

Turkey's macro fundamentals have been a key driver of civil aviation…

5.6 %

AVERAGE ANNUAL REAL **GDP GROWTH** OVER THE PAST 14 YEARS

$ 10,833

INCOME **PER CAPITA** AS OF 2016, UP FROM $3,581 IN 2002

$ 391 billion

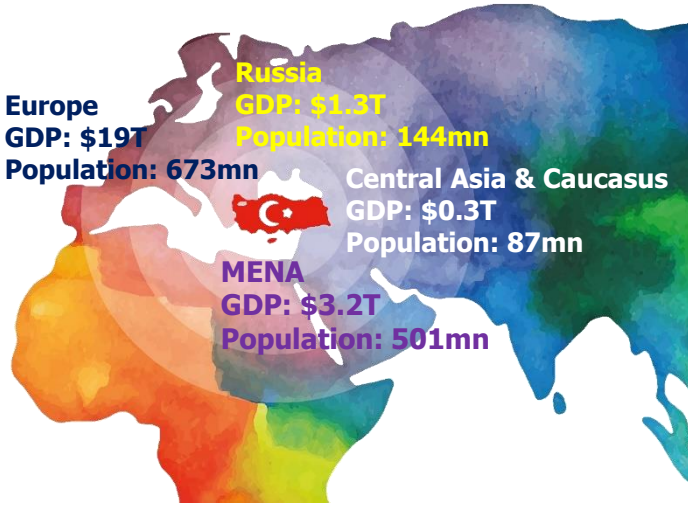
FOREIGN TRADE VOLUME AS OF 2017, UP FROM $88 BILLION IN 2002

30+ million

AVERAGE ANNUAL NUMBER OF **TOURISTS** VISITING TURKEY OVER THE PAST 10 YEARS

PROXIMITY TO MAJOR MARKETS

1.5 BILLION PEOPLE, $24T GDP AND 45% GLOBAL TRADE AT A 4-HOUR FLIGHT DISTANCE



Source: Turkstat, IMF and World Bank

What can ISPAT do for you?

ISPAT will assist you before, during and after your entry to Turkey

A governmental body attached to the Prime Ministry

Private sector approach with public sector capabilities

Acting as your solution partner

General & customized business information & sectoral analysis & reports

Site selection support to find appropriate location/land for your investment

Arrangements of meetings with governmental bodies and other stakeholders

AFTERSALES

Facilitating your investment at all stages

Matchmaking with local partners & establishing business linkages

Project launch & Press release Services

Facilitating your visit to Turkey

INVEST IN TURKEY

INVESTMENT SUPPORT & PROMOTION AGENCY OF TURKEY

THANK YOU

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Contact: nkaymaz@invest.gov.tr

www.invest.gov.tr