Turkey's Automotive Industry

REPUBLIC OF TURKEY PRIME MINISTRY
INVESTMENT SUPPORT AND
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Contents

In Turkey there are 13 OEMs producing over 1 million units of vehicles yearly…

İzmit, Kocaeli
Hyundai
PC
Capacity: 125,000[1]
Production: 100,000 in 2012

Çayırova, Kocaeli
Honda
PC
Capacity: 50,000
Production: 15,000 in 2012

Kocaeli, Eskişehir
Ford
LCV, Truck
Capacity: 320,000
Production: 265,000 in 2012

Kocaeli
Isuzu
HCV (Truck)
Capacity: 7,200
Production: 2,800[3] in 2013

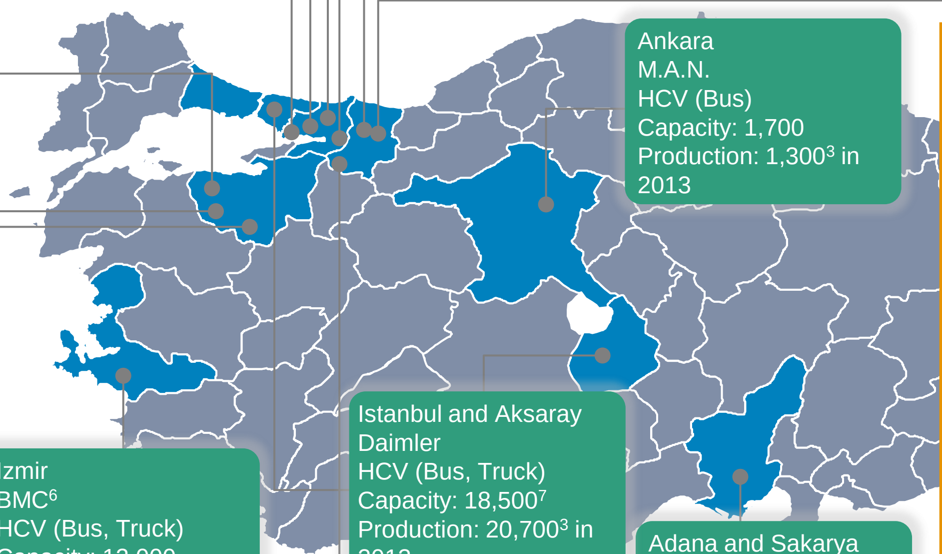
Arifiye, Sakarya
Toyota
PC
Capacity: 150,000[2]
Production: 70,000[3] in 2013

Arifiye, Sakarya
Otokar
HCV (Bus, Trailer)
Capacity: 11,005[5]
Production: 2,500[5] in 2012

North OIZ, Bursa
Renault
PC
Capacity: 360,000
Production: 310,000 in 2012

Bursa
Fiat
PC, LCV
Capacity: 400,000
Production: 255,000 in 2012

Bursa
Karsan
HCV (Bus, Truck)
Capacity: 4,480
Production: 1,700 in 2013[3]



Ankara
M.A.N.
HCV (Bus)
Capacity: 1,700
Production: 1,300[3] in 2013

Izmir
BMC[6]
HCV (Bus, Truck)
Capacity: 12,000
Production: 3,700[5] in 2011

Istanbul and Aksaray
Daimler
HCV (Bus, Truck)
Capacity: 18,500[7]
Production: 20,700[3] in 2013

Adana and Sakarya
Temsa
HCV (Bus, Turck)
Capacity: 6,500
Production: 2,600[3] in 2013

- As of 2012, Turkey has an **installed capacity of ~1.5 million** in PC & LCV segments
- Hyundai, Ford and Renault are **operating >80% capacity**
- Fiat plant in Bursa bears the **"Silver" production quality title** which is the **highest possible degree**
- Toyota and Hyundai already announced **capacity increases** in Turkey plants
- **In HCV**, Daimler, M.A.N., Karsan, Isuzu, Otokar, Temsa and BMC have production facilities in Turkey with **~100,000 capacity in total**
- With this production, Turkey has become **an important base** for
  - Ford with 46% of LCV production[4]
  - Fiat with 42% of LCV production
  - Renault 20% of PC production

1 Capacity increase to minimum 200,000 per year is announced
2 Plans to increase capacity to 300,000 is being discussed
3 Expected
4 Production out of the origin country
5 Capacity including trailers, armored vehicles, capacity and production based on 2012 annual report
6 The Turkish Saving Deposit Insurance Fund confiscated BMC in May 2013 and stopped production
7 Installed capacity, capacity can be increased by ~40% by extra shifts and hiring seasonal workers

SOURCE: OSD (Automotive Manufacturers' Association), web search, company websites

… making Turkey the 16th biggest global automotive producer in the world

Automobile production in 2012, top 17 producers

Million vehicles

Light and heavy trucks

Cars

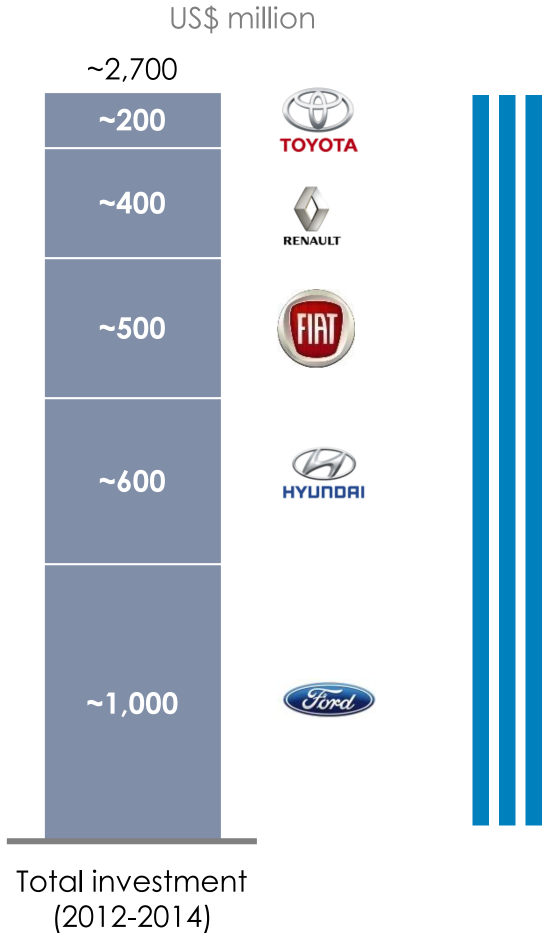
	Cars	Light and heavy trucks	Total	% of global production	% of automotive in total GVA
China	15.5	3.8	19.3	22.8	2.4
US	4.1	6.2	10.3	12.2	0.6
Japan	8.6	1.4	10.0	11.8	2.6
Germany	5.4	0.3	5.7	6.7	3.3
South Korea	4.2	0.4	4.6	5.4	3.2
India	3.3	0.9	4.2	4.9	1.0
Brazil	2.6	0.7	3.3	4.0	2.4
Mexico	1.8	1.2	3.0	3.6	2.8
Canada	1.0	1.4	2.4	2.9	0.6
Thailand	0.9	1.5	2.4	2.9	5.2
Russia	2.0	0.3	2.3	2.6	0.4
Spain	1.6	0.4	2.0	2.3	0.7
France	1.7	0.3	2.0	2.3	0.4
UK	1.5	0.1	1.6	1.9	0.4
Czech Rep.	1.2	0	1.2	1.4	3.4
Turkey	0.6	0.5	1.1	1.3	0.7
Indonesia	0.8	0.3	1.1	1.3	1.5
Rest	6.8	1.5	8.3	9.8	n/a

- China is the biggest provider with 23% of total production
- US and Japan, producing similar volumes, show different trends
  - US is growing in post-crisis era in both demand and production together with the rest of North America
  - Japan, in contrast, is shrinking with production mainly shifting to Asia
- Western European plants are suffering from low utilization rates as well as the barriers on restructuring
- Central and Eastern Europe is the center for new investments in Europe
- Turkey produced slightly above a million units in 2012 with 6 big OEMs operating plants
  - Renault, 310,000 units
  - Ford, 265,000 units
  - Fiat, 255,000 units
  - Hyundai, 100,000 units
  - Toyota, 70,000 units
  - Honda, 15,000 units

SOURCE: OICA (International Organization of Motor Vehicle Manufacturers); press search

Global OEMs who are present in Turkey plan to increase their investments

Expected OEM investments



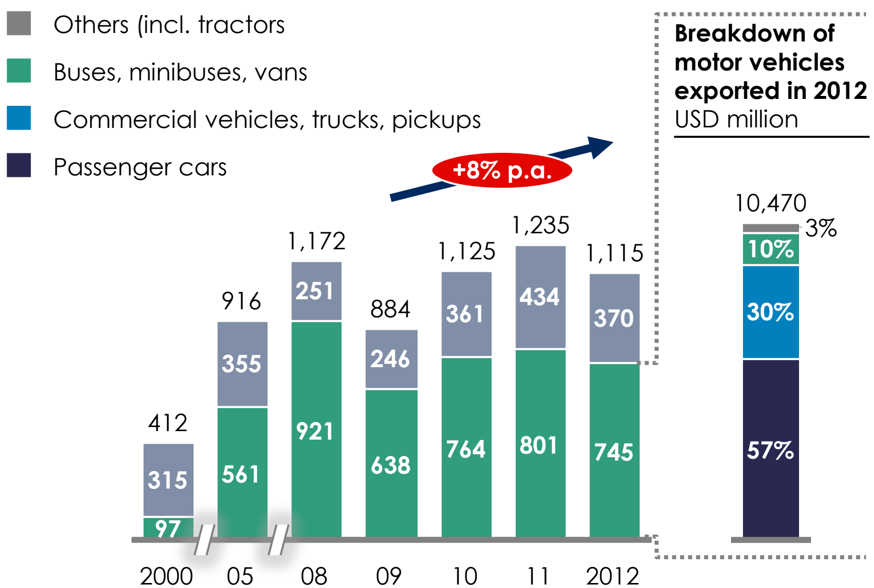
Company	Announced investments in Turkish press
Toyota	▪ Started production of new Corolla ▪ It is reported that Toyota is planning investment for a B-class SUV in 2014
Renault	▪ Renault is expected to announce investment for production of a new model at the end of 2013 – The expected model will replace Fluence – Pending approval from France
Fiat	▪ Already started production of Doblo and exports to North America ▪ Recently announced (Q4 2013) investment for production of 2 new models: One B-class and one C-class
Hyundai	▪ Increased capacity of production plant in İzmit to 200 thousand ▪ Started production of small A and B-class cares (i10 and i20)
Ford	▪ Invested into manufacturing of 4 new LCV models – Tourneo Custom and Tourneo Transit started late 2012-early 2013 – Started Transit production in August 2013 – Planned production start of Transit Courier late 2013

SOURCE: Press search

Automotive industry demand and production evolution in Turkey

~2 out of 3 vehicles produced in Turkey are exported

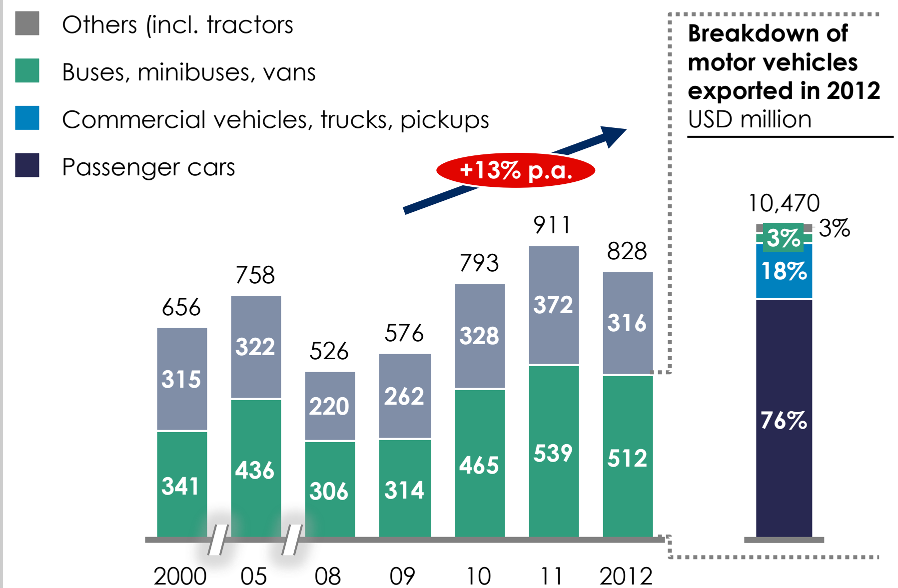
Total vehicle production in Turkey
Thousands of vehicles



	2000	05	08	09	10	11	2012
Export share in total auto-motive market	24%	63%	81%	71%	70%	65%	67%
Automo-tive sector's share[1] in total exports	N/A	16%	17%	14%	14%	15%	13%

More than 35% of demand in Turkey is supplied locally

Total Turkish vehicle market
Thousands of vehicles

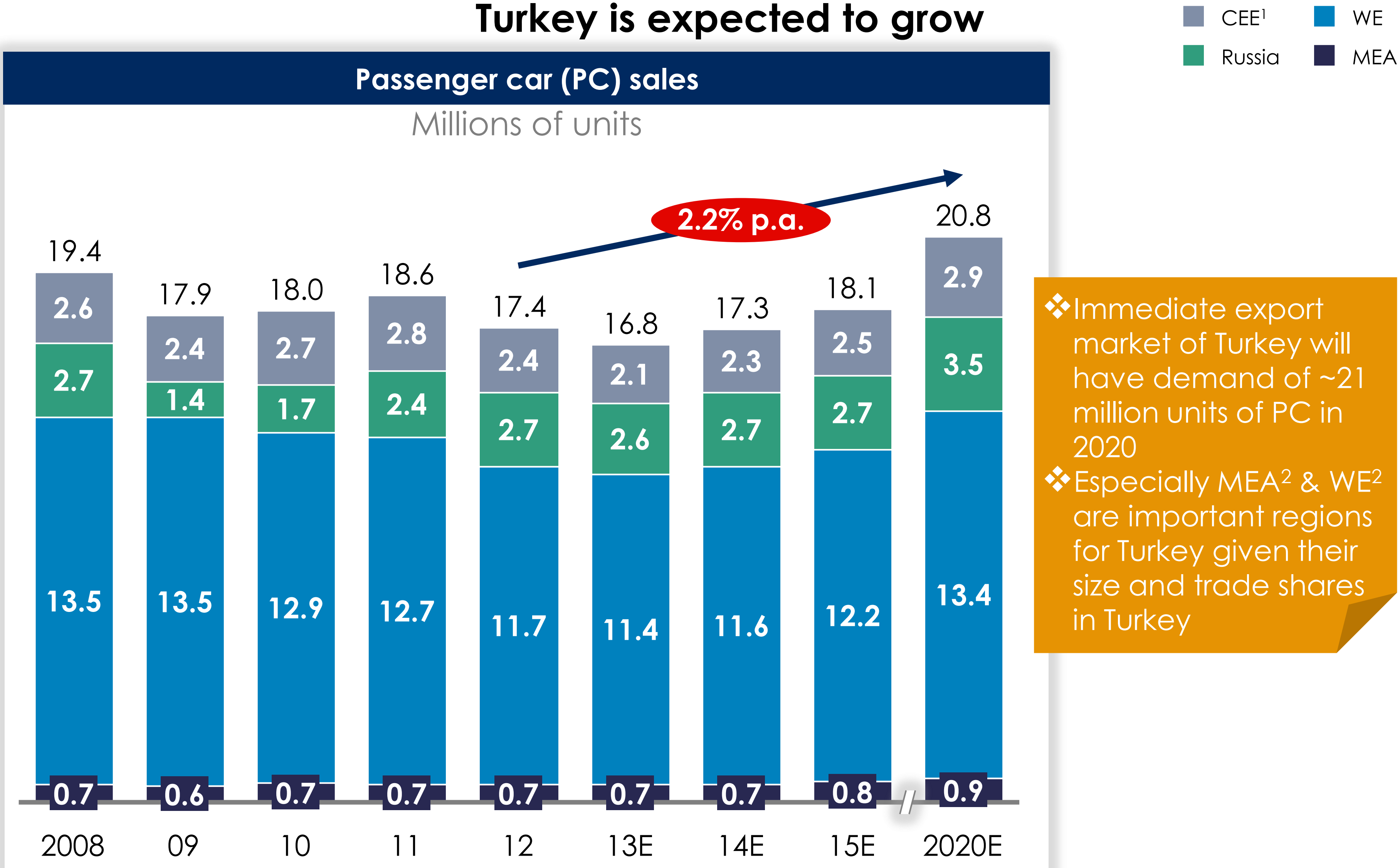


	2000	05	08	09	10	11	2012
Import share in total auto-motive market	52%	57%	58%	55%	59%	59%	63%
Automo-tive sector's share[1] in total exports	N/A	12%	9%	8%	10%	11%	11%

1 Including autoparts

SOURCE: Automobile Manufacturers' Association (Automotive Industry Report, Dec 2012); Turkstat

Passenger car sales in the region surrounding Turkey is expected to grow



- Immediate export market of Turkey will have demand of ~21 million units of PC in 2020
- Especially MEA[2] & WE[2] are important regions for Turkey given their size and trade shares in Turkey

1 Turkey is not included

2 MEA: Middle East and Africa, WE: Western Europe

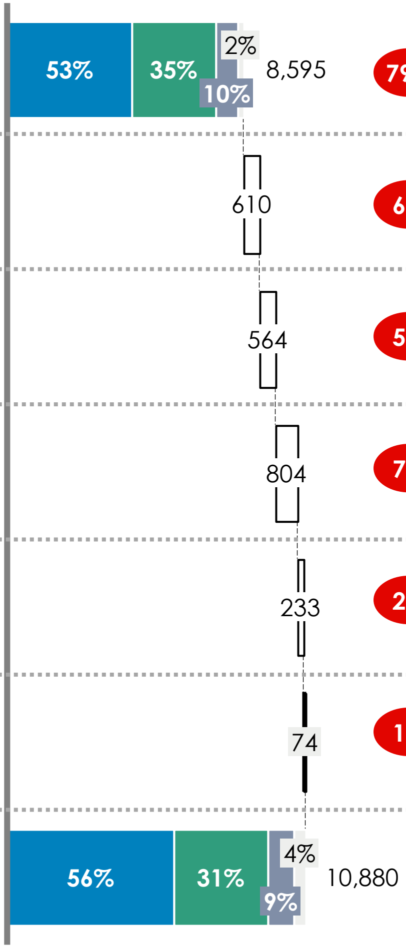
SOURCE: IHS

Europe is the main destination in Turkish automotive foreign trade

Passenger cars | Light vehicles | Busses | Tractors | Share in total

~80% of Turkey's exports are to Europe…

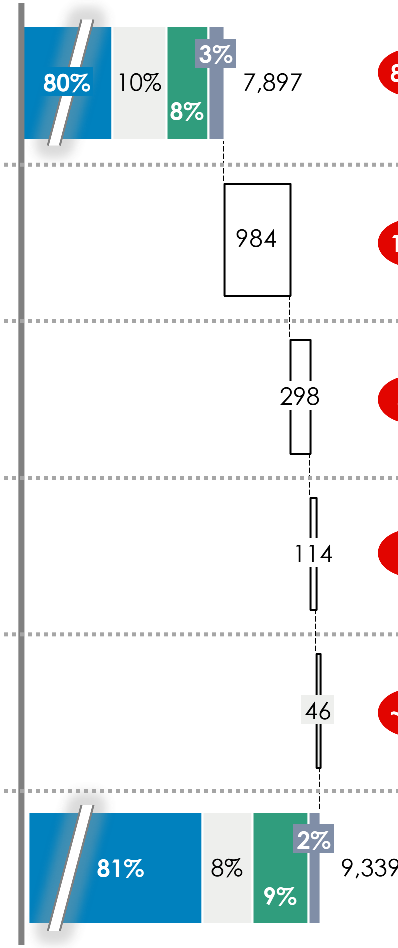
Total Turkey exports in 2012
USD million



	Total Turkey exports in 2012 (USD million)	Share in total	Leading countries in 2012 (USD million)
Europe	8,595	79%	France (1,709) Italy (1,253) Germany (981)
Africa	610	6%	Algeria (349) Morocco (102) Tunisia (86)
Asia	564	5%	Israel (270) Iraq (70) Azerbaijan (66)
North America	804	7%	USA (706) Canada (98)
South America	233	2%	Argentina (163) Chile (26) Brazil (23)
Australia + other	74	1%	Australia (47) New Zealand (11)
Total	10,880		

.. and ~85% of imports are from Europe

Total Turkey imports in 2012
USD million



	Total Turkey imports in 2012 (USD million)	Share in total	Leading countries in 2012 (USD million)
Europe	7,897	85%	Germany (3,434) Spain (978) France (728)
Asia	984	11%	S. Korea (483) Japan (226) Thailand (134)
South America	298	3%	Mexico (249) Argentina (48)
North America	114	1%	USA (111) Canada (3)
Africa	46	~0%	S. Africa (28) Moracco (17)
Total	9,339		

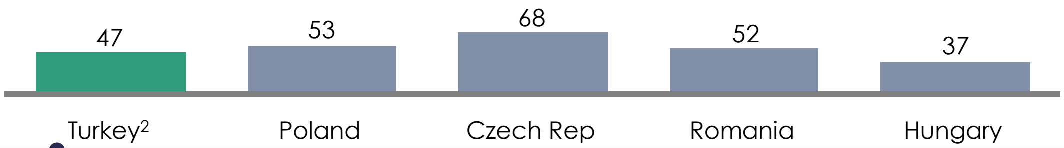
SOURCE: *Turkstat*

Contents

In Turkey, there are 47 registered automotive suppliers with revenues exceeding USD 40 million

↑ Expansion
→ Neutral
↓ Downsize

Number of registered automotive suppliers[1] 2012

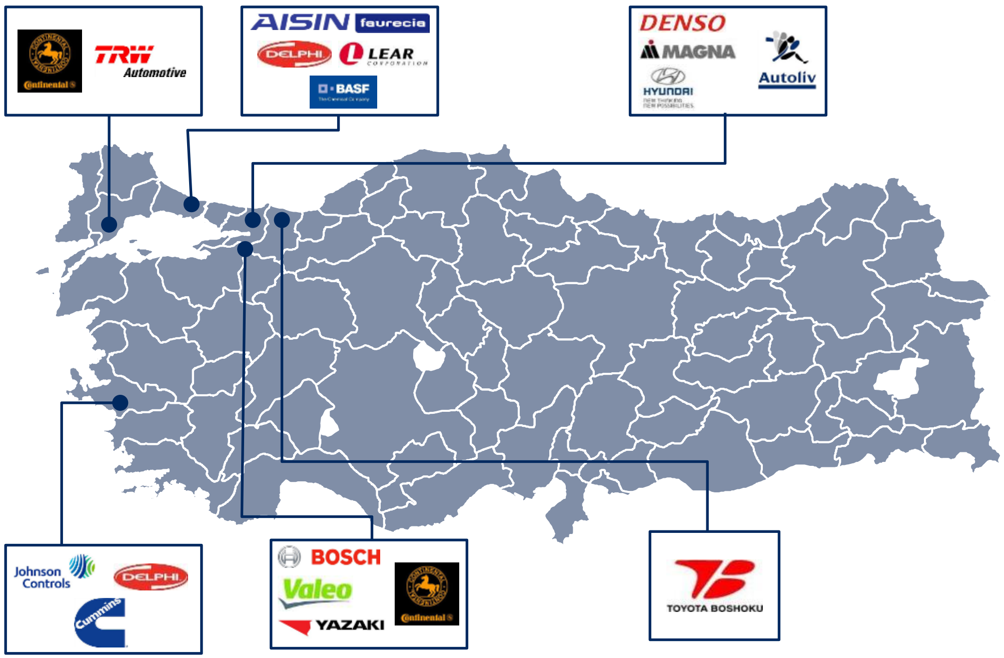


Ranking	Major suppliers	2012 Revenue USD million	Products	Long-term expansion	Long-term plan announcement
1	BOSCH	863	Brake systems, boosters, power limiters & regulators, repair kids, brake shoes, wheel brake cylinders, drum & disk brakes	↑	EUR 300 mln investment on Bursa plant until 2013
2	DELPHI	513	Cables, electrical/electronic architecture systems and components, fuel pumps, fuel injectors, nozzles, valves	→	(No announcement)
3	Autoliv	291	Steering wheels, seat belt, air bags	↑	Shifting production capacity in Tunusia to Turkey
4	CMS	265	Wheels	↑	EUR 135 mln investment on new plant construction in 2012
5	STANDARD PROFİL	265	Rubber bonded metal parts, seal & gasket sets, waist belts, hood/windshield/rocker panel seal, glass run channels	↑	Double the employment in Manisa plant by 2012
6	HEMA ENDÜSTRİ A.Ş.	265	Drivetrain components, engine components	↑	Targets to become one of the leading tech providers in 2023
7	FEDERAL MOGUL	253	Cylinder liners, piston rings & piston ring carriers, valve, lighting, fuel systems, brake parts, chassis, ignition parts	→	(No announcement)
11	YAZAKI	208	Electrical and electronics components	→	(No announcement)
25	CEVHER	83	Wheels	→	(No announcement)
34	KANCA	63	Camshafts, connecting rods, crankshafts, engine parts, gear box and transmission parts, forged suspension parts	↑	Increase production capacity three folds in 10 years
44	COŞKUNÖZ METAL FORM	47	Suspension & body parts, fuel tanks, chassis and rear axle, exterior	↑	Open production facilities in Europe by 2013

1 Only suppliers whose annual sales exceeded USD 30 million
2 Suppliers with annual sales exceeded USD 40 million, please see TAYSAD website for the full-list
SOURCE: National Statistical Offices; press search

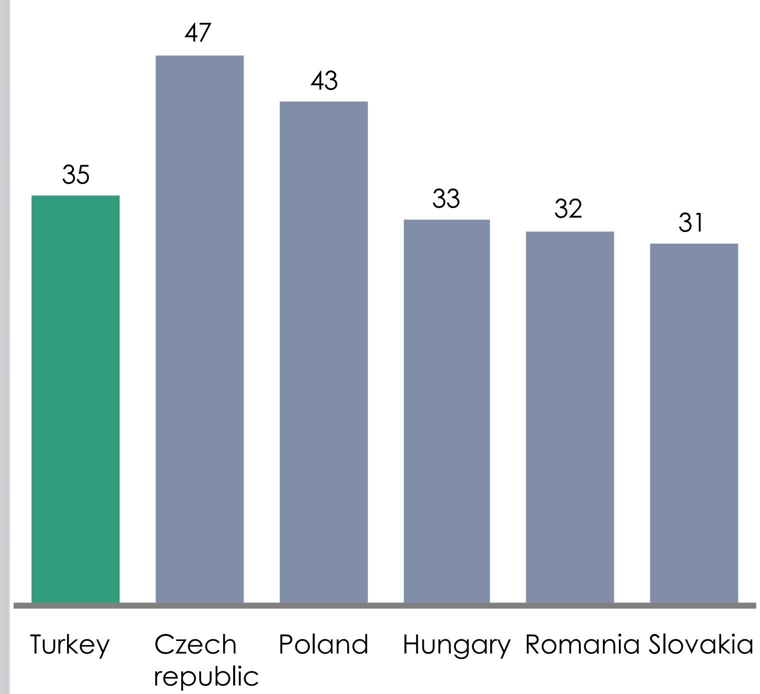
35 of the Top 100 global automotive suppliers are present in Turkey

These suppliers are concentrated in western Turkey



- In line with the OEM plants, OESs are mostly located in Bursa, Kocaeli and Istanbul
- Izmir is another important hub for OESs mainly because of the GM plant there which has no production now

Number of top 100 OES[1] present[2] in the country



17 of these are amongst the Top 20 which is the highest number within the group

1 Top 100 OESs listed in Automotive News Top 150 OEM Suppliers list
2 Defined as automotive components production
SOURCE: Automotive News Top 150 OEM Suppliers; TAYSAD; Company Websites

Global engineering houses are establishing offices in Turkey

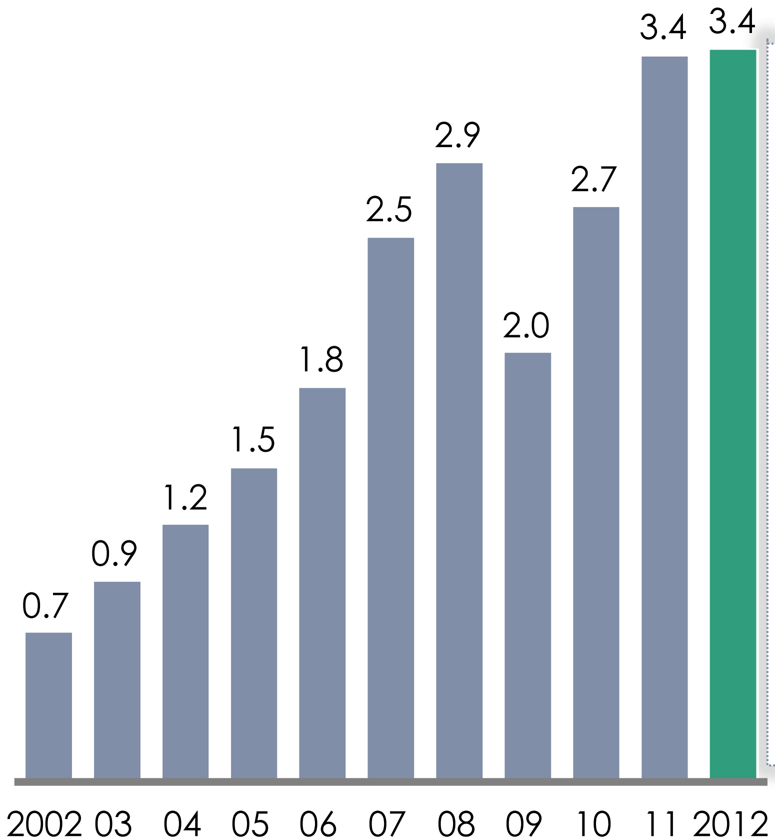
	Description	Turkey operations
IDIADA	❖ Established in 1973 with its headquarters in Santa Oliva, Spain ❖ Employs ~1,500 employees ❖ Present in 20 countries focusing on design, testing, engineering and homologation services in automotive	❖ Expanded into Turkey in 2000 ❖ There are 4 full-time engineers in Turkey office ❖ Focus is on testing of R&D consulting for automotive
FEV GmbH	❖ Established in 1978 in Aachen, Germany ❖ Employs ~2,600 employees ❖ Focusing on powertrain components engineering (mainly engine design, turbo-charger and transmission)	❖ Expanded into Turkey in 2011 with 10 engineers working in Turkey office ❖ The main focus is design and R&D consulting of powertrain and ICE for automotive sector ❖ Plans to become one of the key players in Turkish brand car production
Ricardo	❖ Established in 1927 with its headquar-ters in Shoreham-by-Sea, England ❖ Employs ~1,500 employees ❖ Operating in 10 countries with focus on engines, transmission and intelligent transportation systems	❖ Works together with Anova (a Turkish engineering house) for powertrain development and R&D consulting in Turkey

SOURCE: Press search; company websites

Turkish automotive part[1] exports have passed 3 USD billion

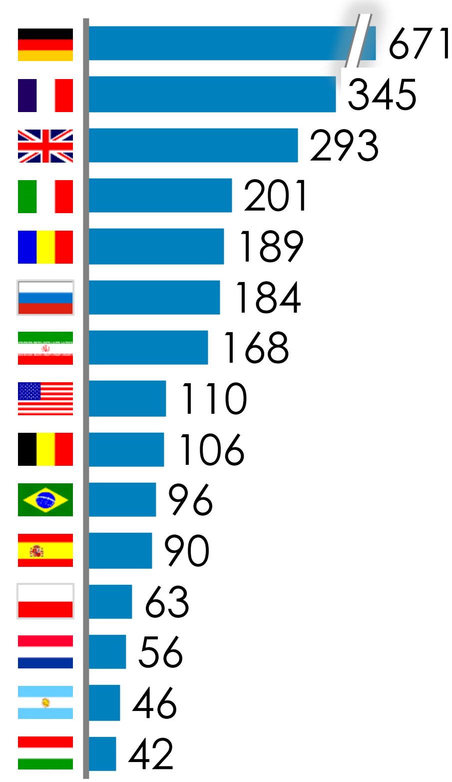
Turkey supplier exports

USD billion



Top 15 export countries

USD million



- Germany is the largest export partner accounting for ~20% of Turkish exports
- Beside Western European countries, Turkish suppliers also export to OEMs in Eastern Europe
- Turkish suppliers export to more than 150 countries, including USA and major Latin American countries

1 Based on HS code 8708: Parts and accessories of the motor vehicles of headings 8701 to 8705

Source: United Nations COMTRADE database, DESA/UNSD

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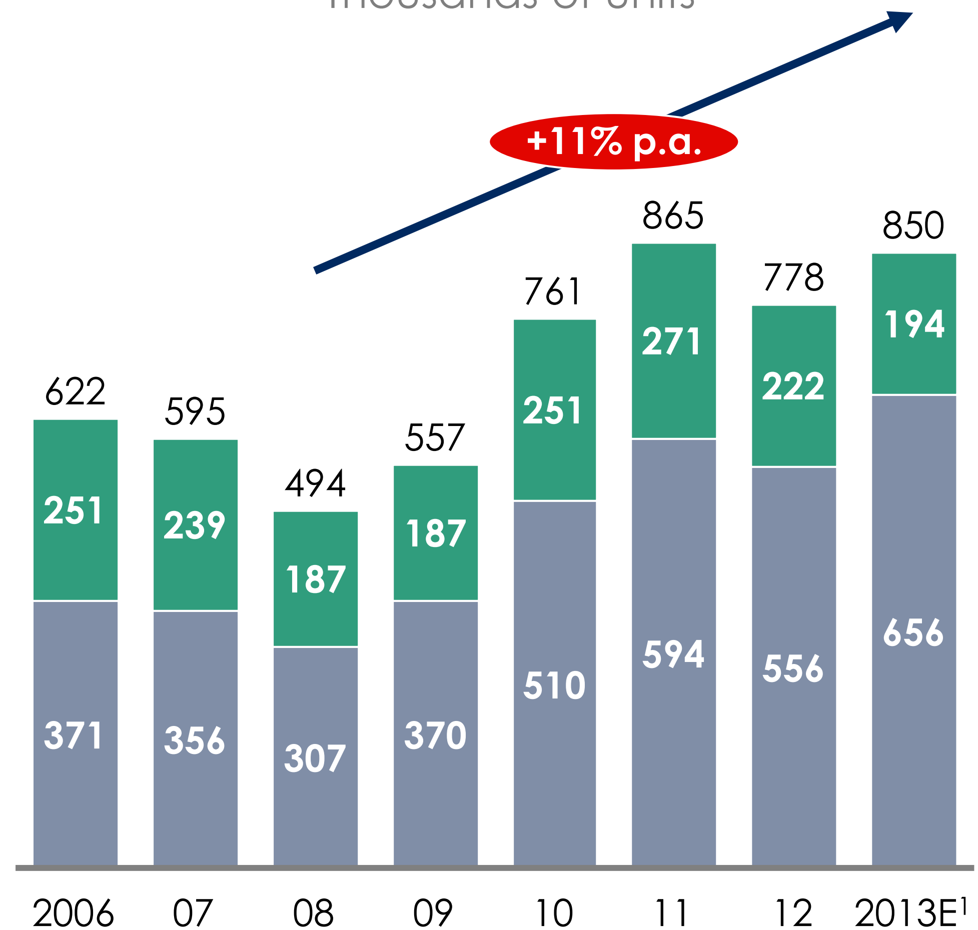
Turkey's passenger car and LCV[1] demand has enjoyed double-digit YoY growth between 2008 and 2013

LCV   Passenger Car

Total new car and LCV sales

Thousands of units

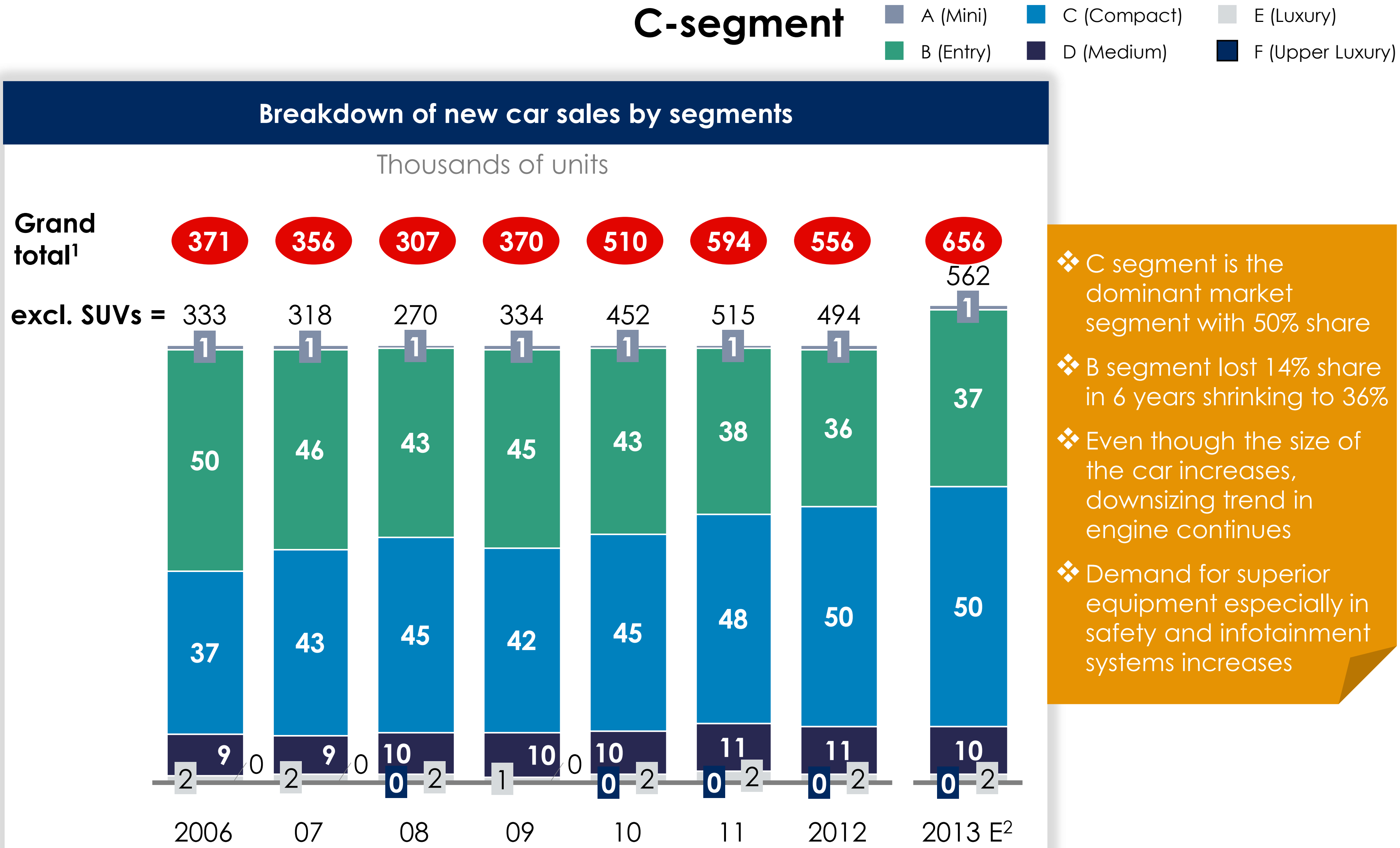


- Turkey's car and LCV demand recovered from the crisis and reached around 800K units
- Increase in passenger cars fueled the growth while LCV market decreased in recent years due to the increased taxes on LCVs from 10% to 15%
- Passenger car demand doubled in 5 years time reaching 600K units
- B&C segment cars are expected to constitute 90% of the demand
- Value cars will continue to dominate market with a share of ~80%
- Share of diesel engine in sales having been already exceeding gasoline, is likely to increase

1 Light Commercial Vehicle *2 Projection for 2013 is calculated based actual 2013 Jan-Sep sales, seasonality is estimated from sales of last 10 years*

SOURCE: ODD (Automotive Distributors' Association)

Consumer preference is changing towards bigger size cars, primarily C-segment



- C segment is the dominant market segment with 50% share
- B segment lost 14% share in 6 years shrinking to 36%
- Even though the size of the car increases, downsizing trend in engine continues
- Demand for superior equipment especially in safety and infotainment systems increases

1 Including SUVs
2 Estimated figure projected based on weighted average of share of first 9 months to year end for each segment
SOURCE: ODD (Automotive Distributors' Association)

Tax advantage drives small engines and diesel preference in Turkey

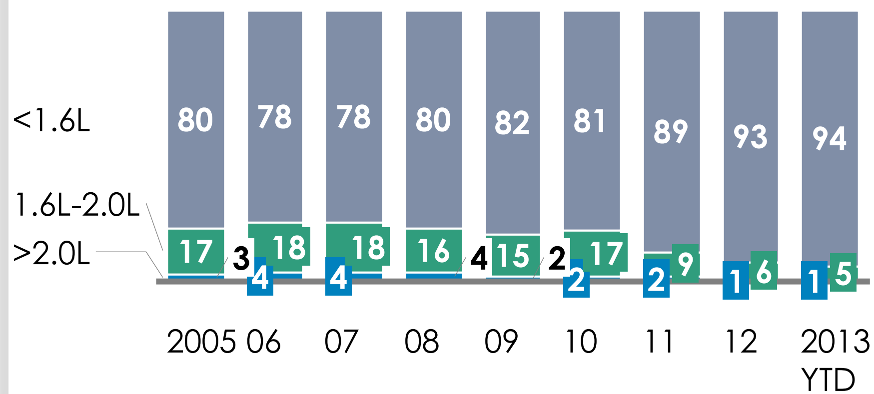
New car sales taxes are based on engine size and extremely high for >2L engines

Percentage

Engine Size	VAT	SCT	Effective Tax Rate
Smaller than 1.6L	18	45	71
Between 1.6L & 2.0L	18	90	124
Bigger than 2L	18	145	189

…<1.6L engines dominate the market with ~90% share in new car sales

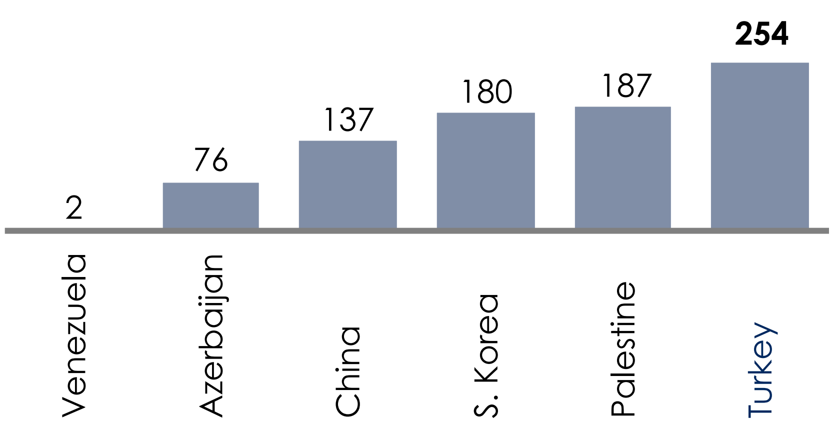
Percentage



Turkey has world's most expensive oil and gas

Nov. 2012 retail price of gasoline

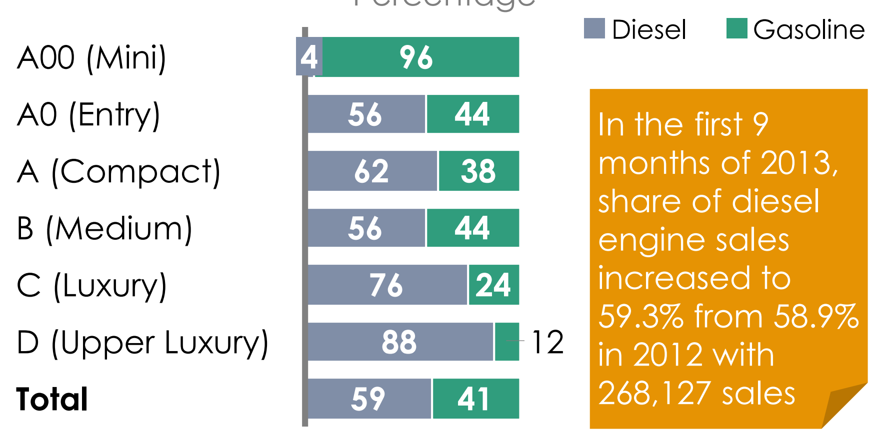
Cent/Liter



Breakdown of new car sales by engine fuel

2013 YTD

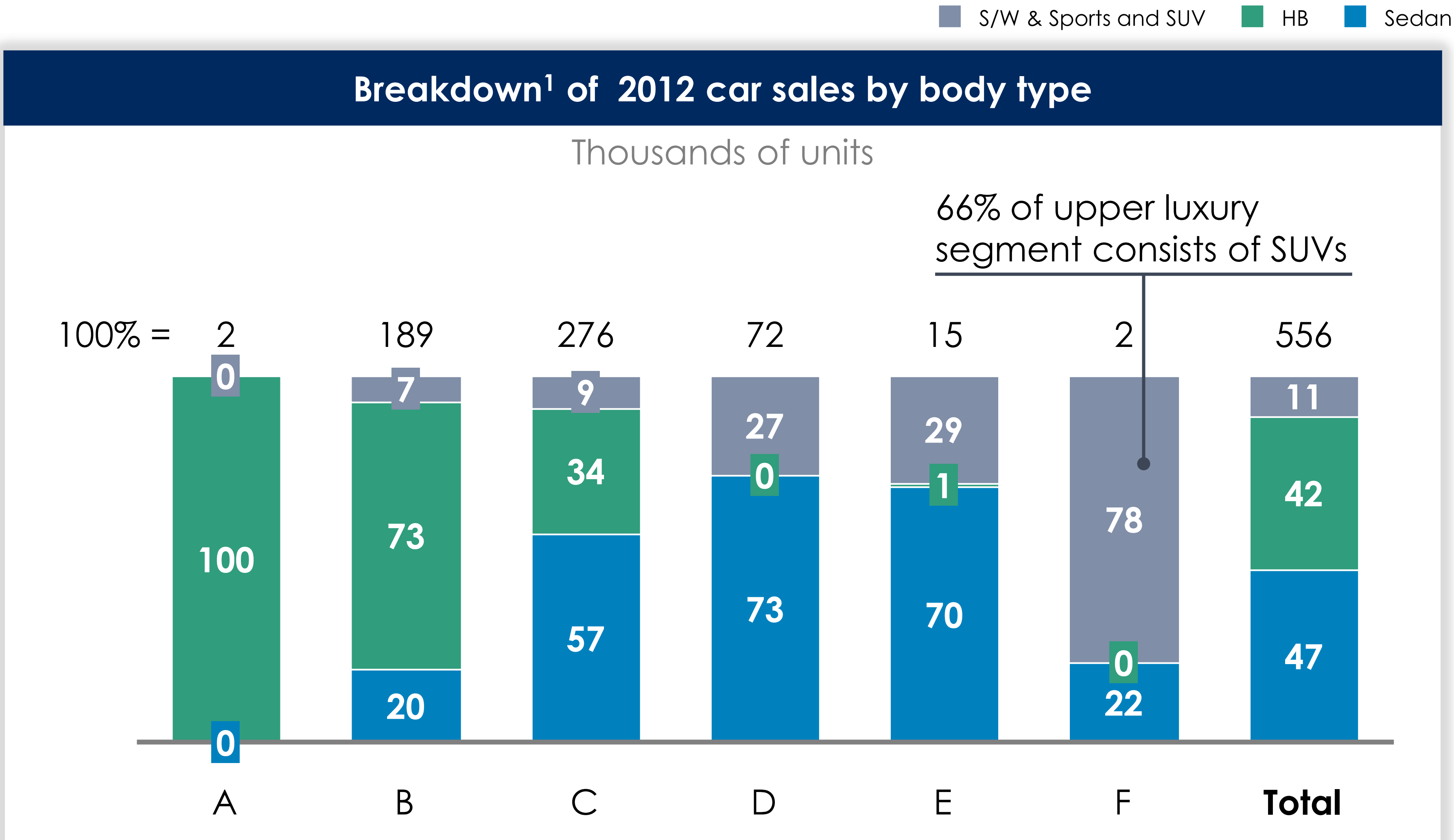
Percentage



In the first 9 months of 2013, share of diesel engine sales increased to 59.3% from 58.9% in 2012 with 268,127 sales

SOURCE: Automobile Manufacturers' Association; GIZ; ODD (Automotive Distributors' Association); press search

Sedan is the mainstream body type for cars in Turkey with 47% overall market share

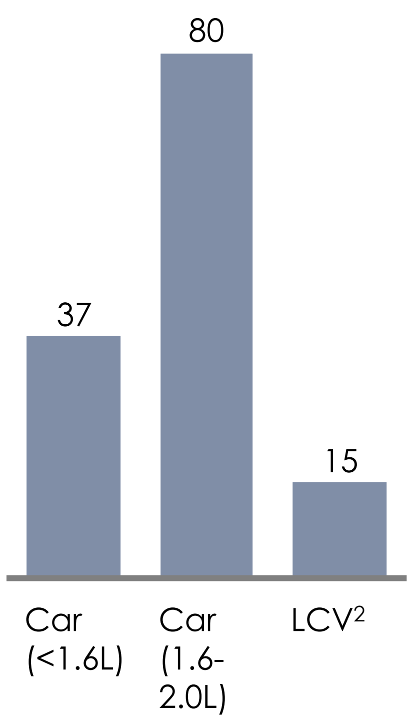


1 ODD (Automotive Distributors' Association) market share breakdown applied to IHS data

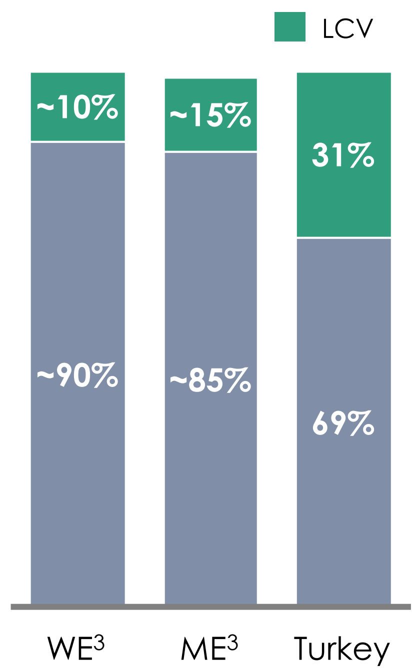
SOURCE: ODD (Automotive Distributors' Association); IHS

Compared to Europe and the Middle East, Turkey is an important LCV market with over 200k unit sales

Special consumption tax in percentage (SCT)[1]



Share of LCVs in overall sales



Brand	Model	2012 Sales (Thousands)
FIAT	Doblo	20
Ford	Transit	19
Ford	Transit	18
FIAT	Fiorino	15
RENAULT	Caddy	8
VW	Kangoo	6
VW	Transporter	6
PEUGEOT	Partner Tepee	5
PEUGEOT	Bipper	5
	Total LCV Sales	**221**

- LCVs are used as cars, especially by SMEs, to avoid high SCTon cars,
- However tax advantage slightly disappeared as SCT on LCV increased from 10% to 15%

1 Oct 2011 tax changes included, 18% VAT applies on top of SCT 2 Increased from 10% to 15% in 2012 effecting LCV demand negatively 3 WE: Western Europe, ME: Middle East

SOURCE: ODD (Automotive Distributors' Association); expert interviews

Local OEMs capture 40% of the Turkish car market with 8 models and in total achieve more than 35% market share in car and LCV

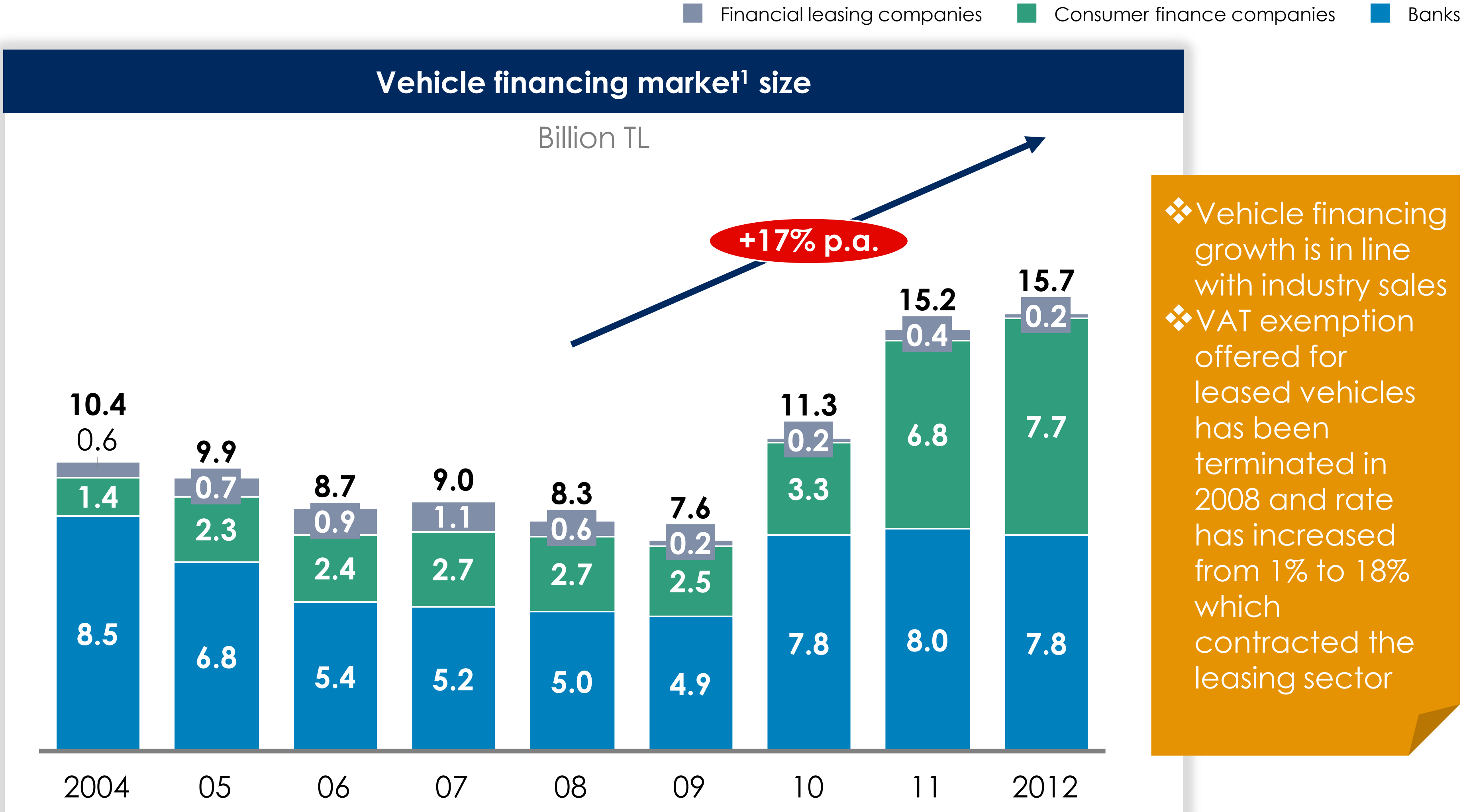
Vehicle sales rankings, 2012

#	OEM	Model	Qty(Thousand)	Body Type	Local
1	Fiat	Linea	33.4	Sedan	✓
2	Renault	Fluence	26.8	Sedan	✓
3	Ford	Fiesta	25.6	HB	
4	Opel	Astra	20.9	HB	
5	Opel	Corsa	17.8	HB	
6	VW	Polo	17.5	HB	
7	Renault	Symbol	16.5	Sedan	✓
8	VW	Jetta	15.7	Sedan	
9	Ford	Focus	15.5	Sedan/HB/SW	
10	Hyundai	i20 Troy	15.2	HB	✓
11	Honda	Civic	13.8	Sedan	✓
12	Toyota	Corolla	12.5	Sedan	✓
13	VW	Passat	11.9	Sedan	
14	VW	Golf	11.6	HB	
15	Toyota	Auris	11.5	HB	
16	Hyundai	Accent Blue	10.1	Sedan	✓

- Including LCVs 37% of the market is locally produced
- Toyota Corolla and Honda Civic production re-started in 2012
- Honda has plans of bringing the production of another model to Turkey

SOURCE: ODD (Automotive Distributors' Association)

Vehicle financing growth follows industry sales with more than 15% YoY growth



- ❖ Vehicle financing growth is in line with industry sales
- ❖ VAT exemption offered for leased vehicles has been terminated in 2008 and rate has increased from 1% to 18% which contracted the leasing sector

1 Banks = New generated consumer loans, Consumer finance companies = New generated loans in automotive sector
Financial leasing companies = Total investment value in land motor vehicles

SOURCE: TUFIDER; FIDER

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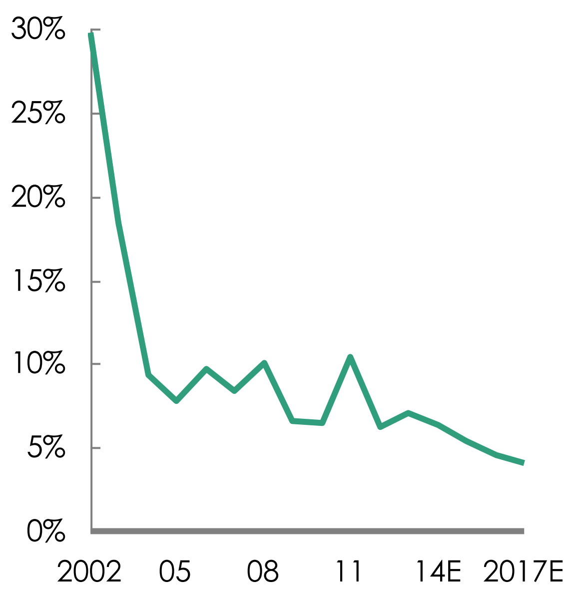
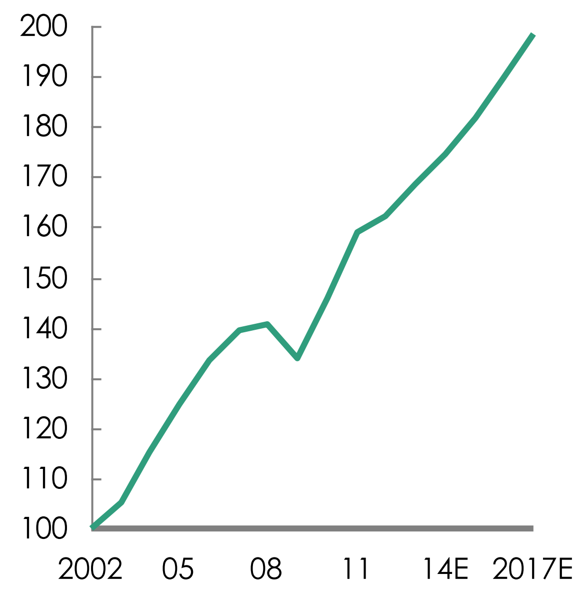
Basic economic indicators of Turkey (1/2)

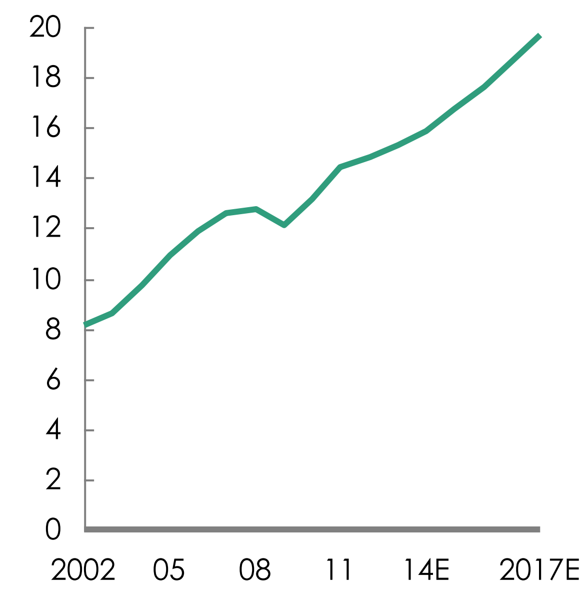
Annual Inflation (CPI)[1]



Real GDP (Index: 2002=100)[1]



GDP per capita in thousand USD (with PPP adjustment)[1]



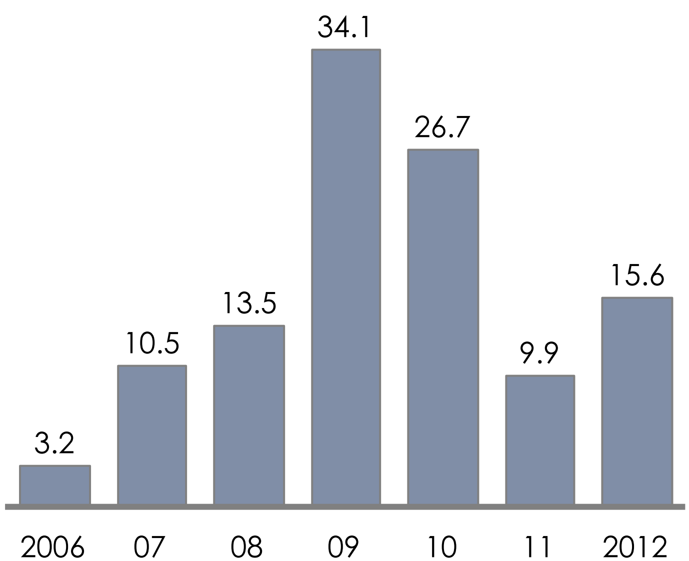
- Turkey shows continuous GDP growth in the last decade
- Stable USD and single digit inflation in last 10 years helped Turkey overcome the high inflation problem of the 1990s
- Turkey's economic growth in the last decade has reflections on per capita GDP as well
- Stable growth of real GDP with ~5% is expected to continue in future
- Single-digit inflation is expected to decrease

1 Indicators are based on the compilations of Turkstat data, 2013 data based on IMF staff estimate, IMF WEO Oct 2013
Source: Central Bank, Turkstat, IMF WEO October 2013

Basic economic indicators of Turkey (2/2)

Budget deficit

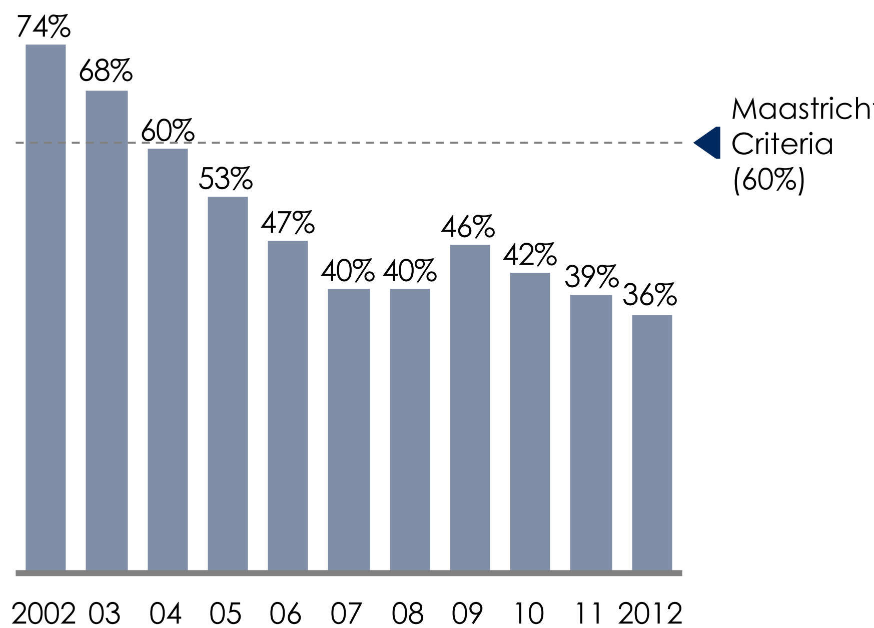
USD billion



	2006	07	08	09	10	11	2012
As percent-age of GDP	0.6	1.6	1.8	5.5	3.6	1.3	2
Primary Surplus[1] USD billions	28.9	26.9	25.7	0.3	5.5	15.4	11.4

- Turkey has its budget deficit less than 2% of its GDP except during times of crisis

Total public debt as precentage of GDP



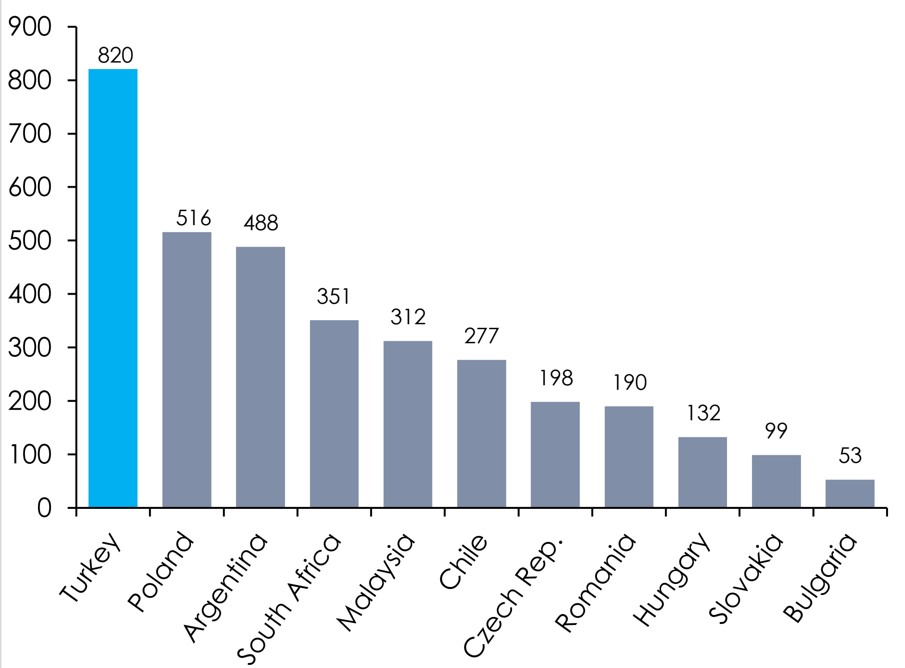
- Turkey shows a decreasing trend in public debt both in terms of proportion to GDP and total stock
- With 40% public debt, Turkey meets the Maastricht Criteria of a maximum of 60%

1 Budget surplus before interest expenses

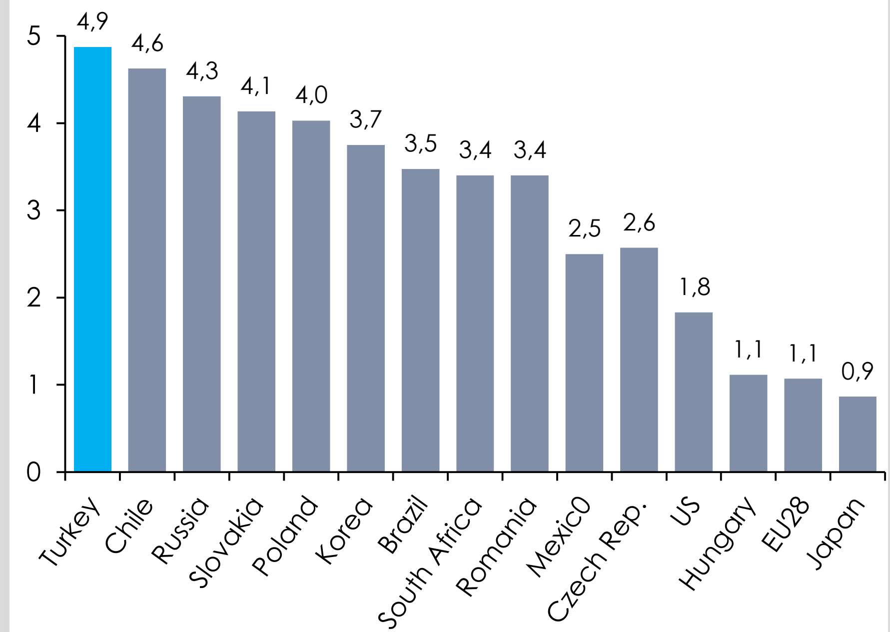
Source: Undersecretariat of Turkey; CBRT; BUMKO

Basic macro-economic indicators of selected countries

2013 GDP (Current Prices, $ Billion)



Annual Average Growth Rate (%) 2002 - 2013



- Turkey is the largest economy in the group
- Turkey's economy has shown 4,9 p.a. growth between 2002 to 2013 to become a size of ~USD 820 billion in current USD terms

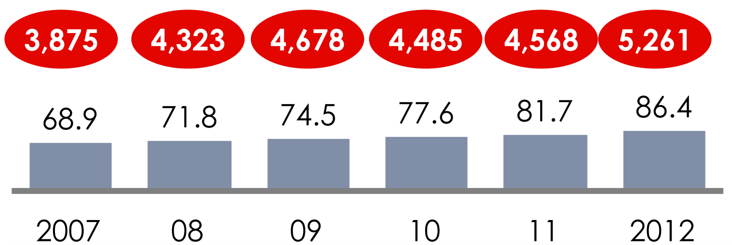
Source: IMF World Economic Outlook April 2014, Eurostat, OECD

Turkey's skilled labor supply

X Number of graduate students

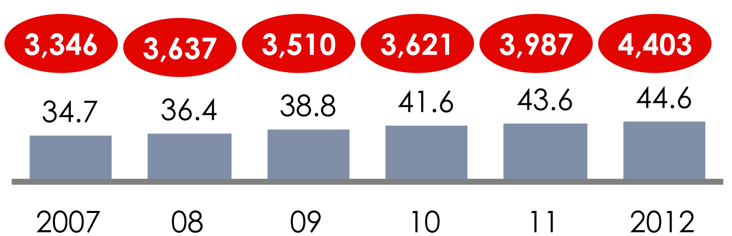
Mechanical engineers

Thousands



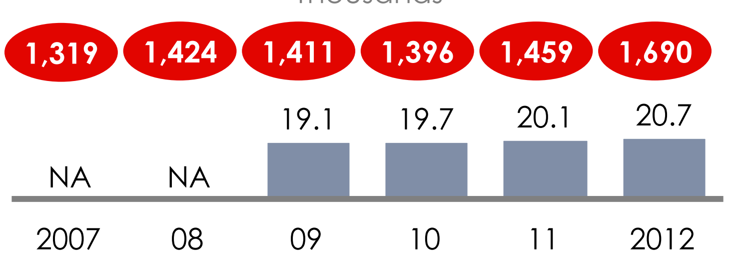
Electrical and electronics engineers

Thousands



Chemical engineers

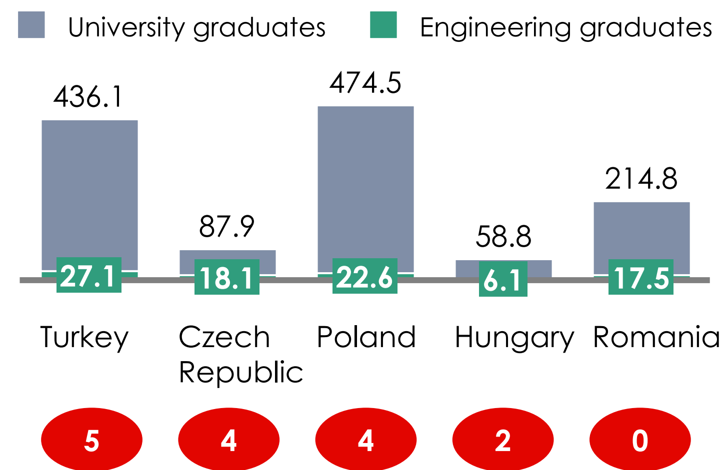
Thousands



This positions Turkey on par with EE countries

Number of university graduates per year, 2012

Thousands



The number of universities within the top 500 world-wide ranking[1] in 2008

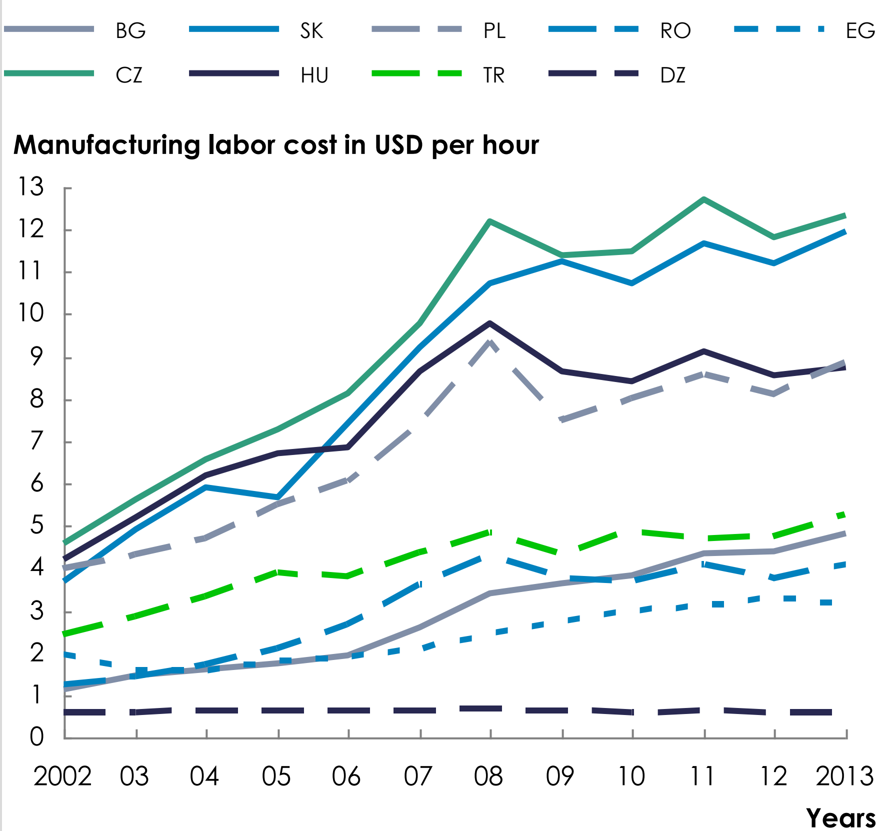
- Bilkent University (332th)
- Koç University (401-450th)
- Sabancı University (401-450th)
- İstanbul University (401-450th)
- İstanbul Technical University (451-500th)

- There are ~160 universities in Turkey with ~30k engineering graduates a year
- Besides university graduates, every year ~400-450k students graduate from technical and vocational high schools

1 THE-QS world university ranking

SOURCE: Eurostat; National Statistical Offices; Higher Education Board; THE-QS world university ranking

Comparison with selected CEE and MENA countries on labor dimensions



2012 scores

Country	Flexibility of wage determination	Hiring and firing practices	Pay and productivity	Reliance on professional management	Country capacity to retain talent
Turkey	5.5	4.1	4.1	4.3	3.3
Poland	5.4	3.4	4.2	4.1	2.7
Russia	5.3	3.9	4.2	3.8	2.8
Morocco	5.3	3.7	4.0	4.0	3.6
Czech Rep	5.2	3.3	4.6	4.4	2.8
Romania	5.1	3.9	3.7	3.3	2.1
Hungary	4.9	4.1	3.8	3.6	2.6
Algeria	4.4	2.7	2.8	2.3	2.1
Tunisia	4.0	3.5	3.5	3.9	3.4
	Ø 5.0	Ø 3.6	Ø 3.9	Ø 3.7	Ø 2.8

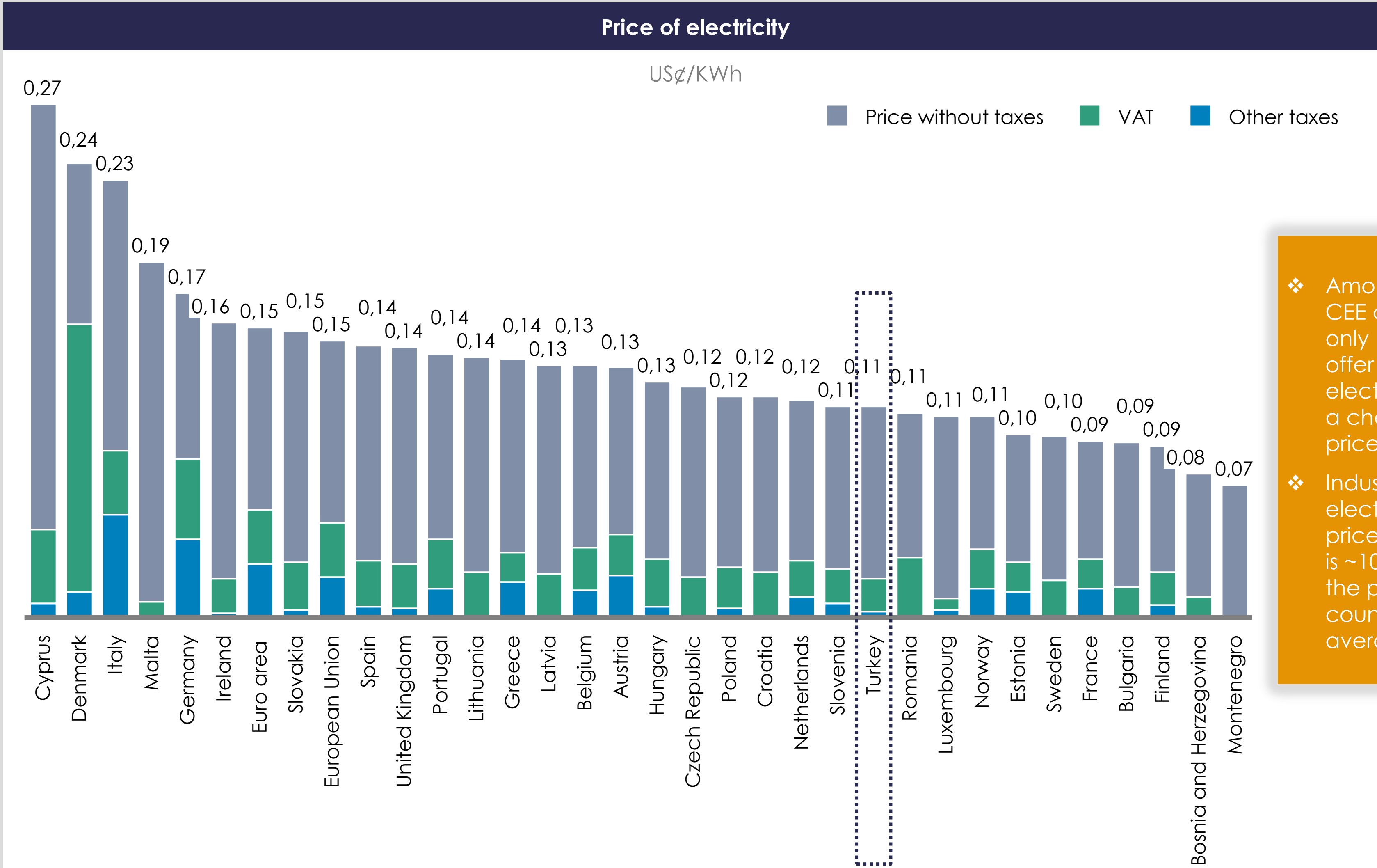
❖ Turkey has low average manufacturing labor cost and labor cost increase has been 7% p.a. between 2002-12

❖ Among the 5 important determinants of market efficiency, Turkey has good performance on 2
- Flexibility of wage determination
- Hiring & firing practices

❖ Turkey is above average in all 5 criteria

Source: EIU; World Economic Forum, GCI

Turkey offers electricity for 11.3 US¢/KWh for industry, below the average of selected[1] CEE countries



- Among the CEE countries only Romania offer electricity for a cheaper price of ~3%
- Industry electricity price in Turkey is ~10% below the peer country average

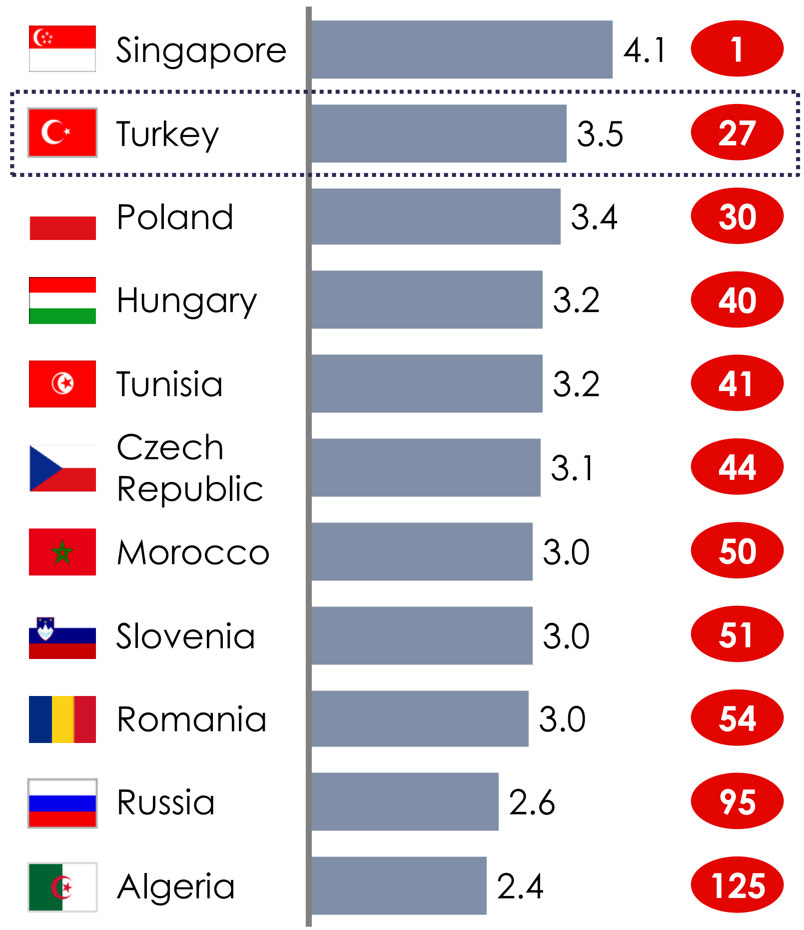
1 Peer countries include Romania, Slovenia, Hungary, Czech Republic, Poland, and Turkey

SOURCE: Eurostat

Logistics comparison of selected CEE and MENA countries

X Rank

2012 Logistics performance index (LPI)



- LPI index scores each country on 6 dimensions from 1 to 5 and aggregates them in a single ranking
- In 3 of the 6 LPI dimensions, Turkey performs well
  - 3.62 in infrastructure
  - 3.52 in logistics quality and competence
  - 3.54 in tracking and tracing
- In the remaining 3 LPI dimensions, Turkey ranks in top 3
  - 3.16 in customs
  - 3.38 in international shipments
  - 3.87 in timeliness
- Turkey ranks 4th in cost per container at USD 990 in 2012

SOURCE: The World Bank – LPI report

90% of the total transportation in Turkey is done through land transportation

Map of important roads in Turkey

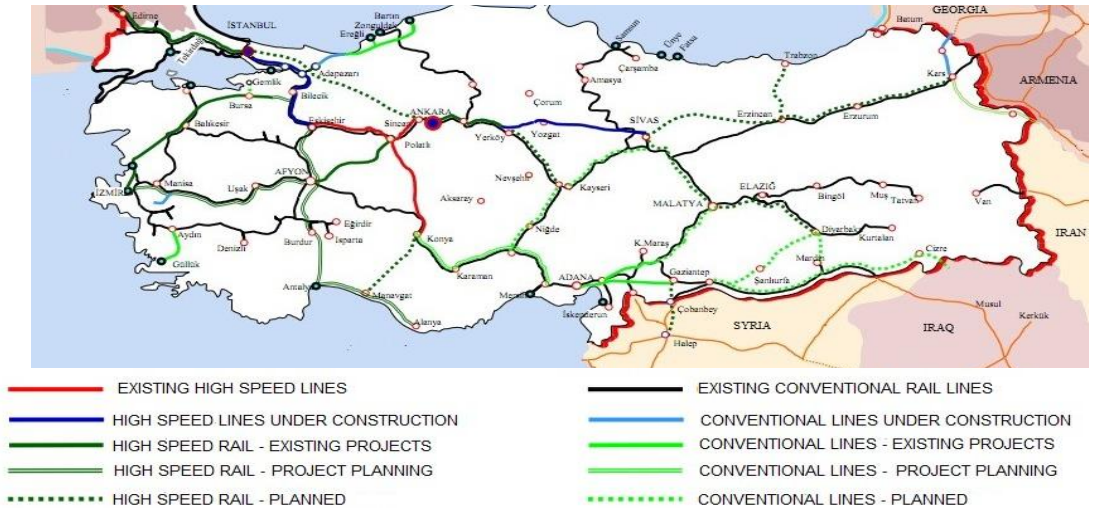
Source: General Directorate of Highways

- As of 2012, there are 2.2k km of highway, 31.4k km of intercity roads and 31.8k km of inner-city roads in Turkey
- Total worth of international trade through land transportation is USD 90 billion
- By 2023, total length of highways will increase to 5.6k km

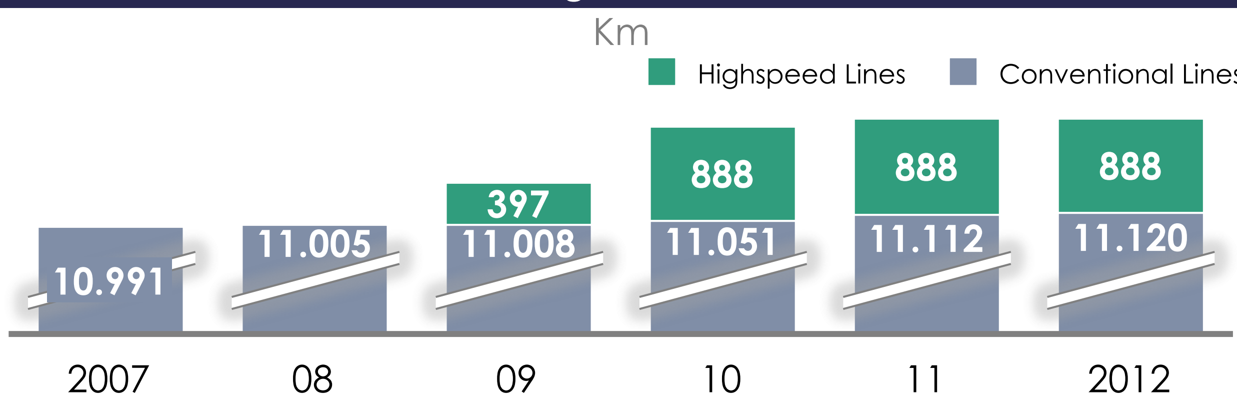
SOURCE: Ministry of Transport, Maritime Affairs and Communications

Turkey built ~1,000 km of new lines and renovated 7,300 km of existing lines (66% of total network)

Map of railroads in Turkey



Total length of railroads



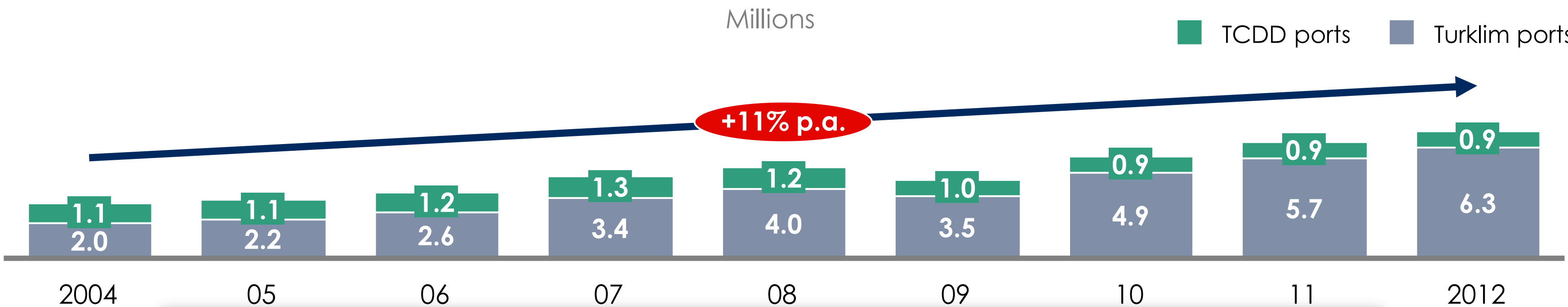
- Government invested USD 14 billion between 2003 and 2013 into railways
- There are 3,000 km of new lines currently being built
- 7,300 km of the existing network is renovated
- Government set a target to have ~26,000 km of total railway (10,000km being high speed line) in 2023

SOURCE: TCDD, ISPAT, web search

Turkey has 8,400 km coastal borders suitable for sea transportation

There are a total of 182 ports and wharves in Turkey serving international transportation from 25 major locations

Number of containers shipped



Due to the geographical location of Turkey as a peninsula with a 8,400 km-long coast line, Turkey provides port facilities for sea transportation and its shipping volume is increasing

SOURCE: Port Operators Association of Turkey

Turkish government explicitly declares intentions to develop automotive industry to become one of the leading car manufacturers in the world

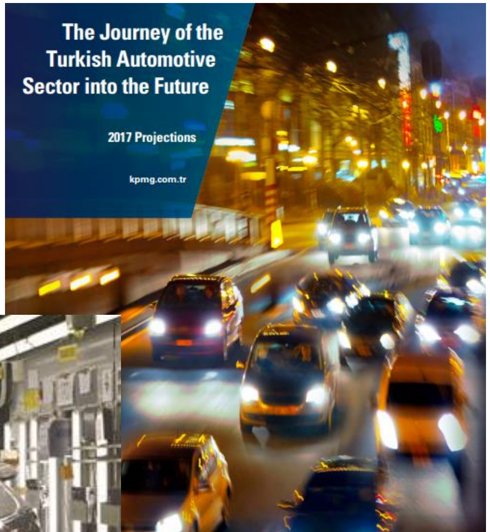
….. The majority of the Turkish automotive sector foresees a maximum growth of 50% in the following 5 years…. - Journey of The Turkish Automotive Sector into the Future

"Turkey's automotive industry is showing no signs of slowdown amid the stagnation that is taking hold of the European car industry. New investments, facility upgrades, and model additions are taking place in global car makers' Turkish facilities, while 58 of Europe's top 100 car plants are facing serious losses in one of the worst years for the industry in decades" - Hurriyet, 2013

"Turkey's main export sector to the US is the automotive sector according to the figures of the first 9 months of 2013" - TIM, 2013

"Turkey's 2023 target is to take place among the world's 10 largest economies in the 100th year of the Republic. Such a country in the economic top ten list can produce its own automobile brand, it is a reachable target" - Toyota Turkey CEO Orhan ozer

TIM TURKISH EXPORTERS ASSEMBLY



TURKEY'S TOP EXPORTERS

	2009	2010	2011
Oyak Renault	222,278	233,057	225,285
Ford Otosan	128,388	175,754	211,380
Tofas	168,353	193,737	180,690
Toyota	69,097	73,163	81,233
Hyundai Assan	17,136	42,249	64,000
Karsan	7,287	19,441	15,119

Source: OSD

SOURCE: Press search, TIM, OSD (Automotive Manufacturers' Association)

With the recent change in 2013, automotive industry investments[1] are listed among priority investments

Automotive industry 2023 targets of the government

- 4 million units of production
- 3 million units of export with an income of USD 75 billion

Support items

- VAT exemption
- Custom duty exemption
- SSPP support (employer's share)
- Tax reduction
- Interest support
- Investment land allocation

Regardless of the location of the investment, all automotive industry investments[1] are supported by the measures of region V

Incentive item		Region V
VAT exemption		✓
Custom duty exemption		✓
Tax reduction as of investment contribution rate	Out of OIZ	40%
	Within OIZ	50%
SSPP support (employer's share)	Out of OIZ	7 years
	Within OIZ	10 years
Land allocation		✓
Interest support[2]		✓
Income withholding tax		✗
SSPP support (employee's share)		✗

1 Engine, Engine Parts, Drivetrain components and electronics

2 With a cap of 700k TL

SOURCE: Ministry of Economy, KPMG

In addition to the support for big scale investments, Turkey provides incentives for innovation driven R&D and manufacturing endeavors

Incentives

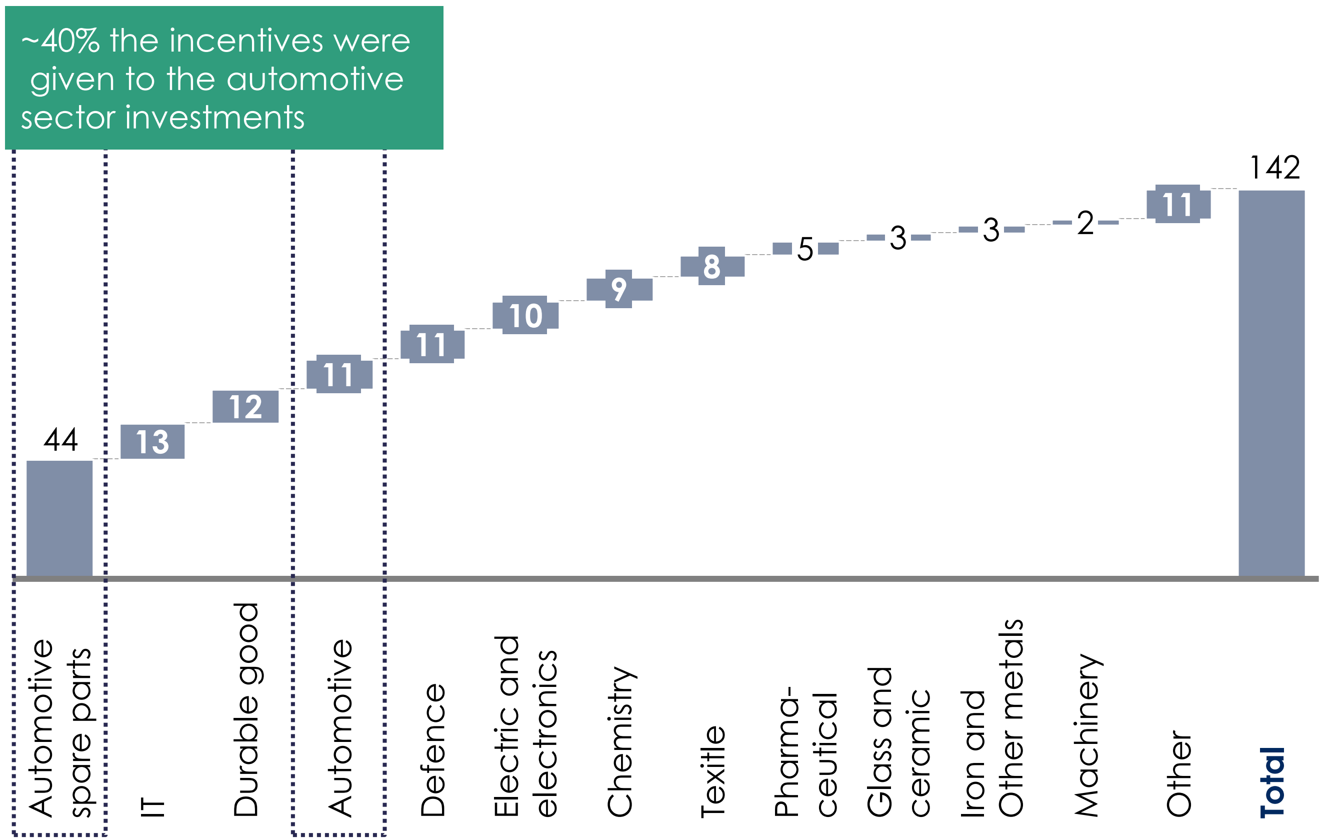
- **a** Support for industry R&D centers since 2008
- **b** "San-Tez" program to foster collaboration between academia and the industry
- **c** "Technoparks" to create an R&D ecosystem on a large scale
- **d** 13 R&D centers in 7 universities in core fields relevant for automotive
- **e** Incentive programs administered by KOSGEB, Ministry of Science, Industry, and Technology, and TTGV
- **f** 9 grant programs managed by TÜBİTAK to support the innovation ecosystem of Turkey

SOURCE: Ministry of Economy

Turkish government has taken concrete steps to promote R&D activities in the country

- # 5746 law: In effect since 2008 to provide support to R&D organization having at least 50 full-time employees
- As part of European Union candidacy, Turkey committed to increase R&D spending to 3% of GDP by 2023; 66% of this commitment is expected to come from the private sector

Turkish R&D centers with 50 personnel or more as of September 2013



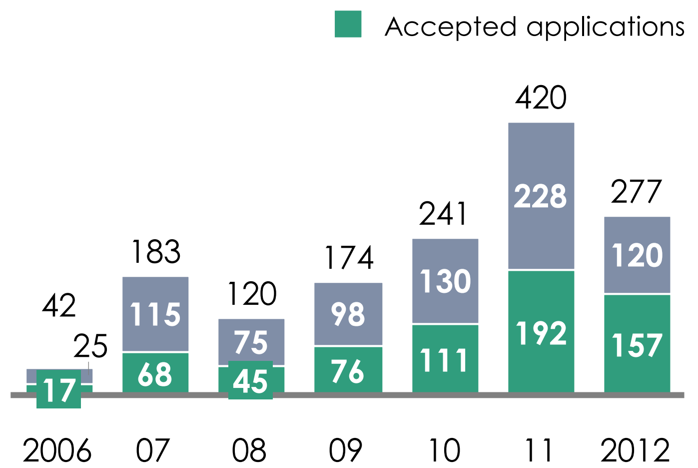
Between July 2008 and September 2013, 178 applications submitted to become an R&D center and 142 were accepted; employing 50 or more personnel is required to take advantage of the government support per # 5746 law

SOURCE: Ministry of Science, Industry, and Technology

"San-Tez" program supported more than 650 projects since 2006 allocating close to TL 200 million

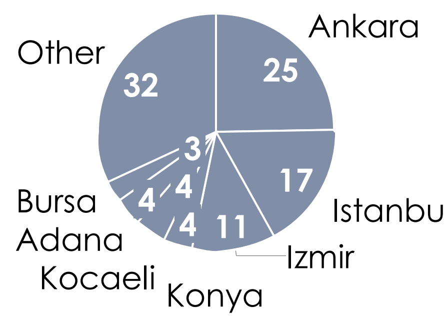
- As part of law #5593, "San-Tez" program is initiated in 2006 to foster collaboration between academia and industry by providing grants for selected projects
  - 75% of the cost of selected R&D projects are covered by the Ministry of Science, Industry and Technology up to 36 months
  - Grants are paid to a special account established by the participa-ting university

Evolution of "San-Tez" projects (number of applications)



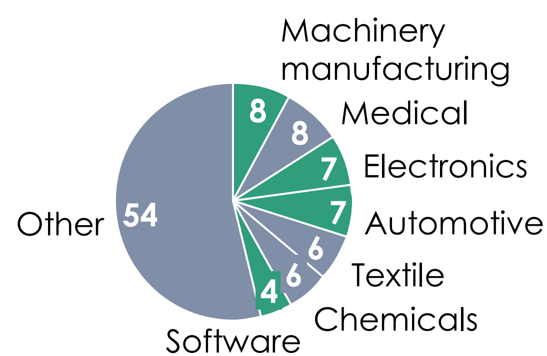
Distribution of projects by city, 2007-2011

Percent



Distribution of projects by sector, 2007-2011

Percent



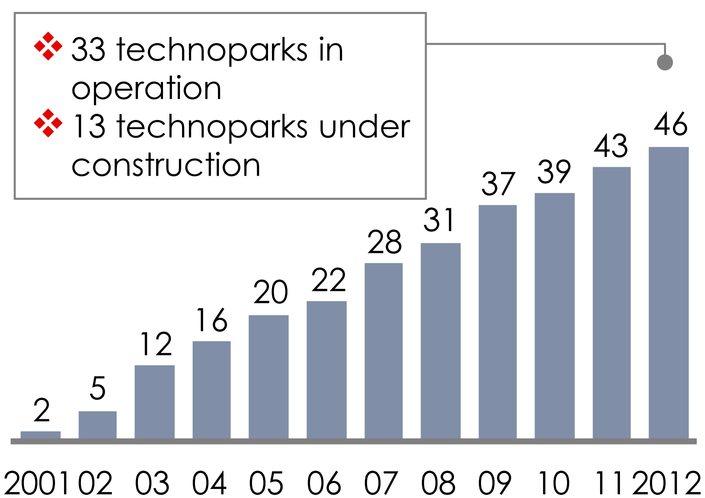
The majority of projects are in automotive related fields

SOURCE: *Ministry of Science, Industry, and Technology*

Since 2001, 46 technoparks have been established across Turkey with the participation of industry players, entrepreneurs and academia

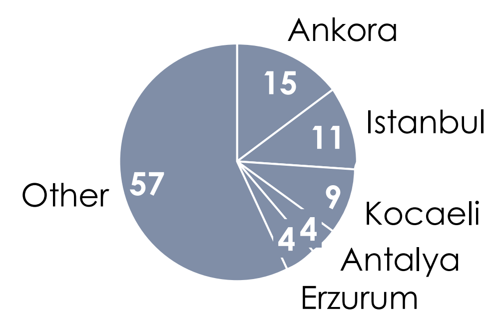
- # 4691 law for "technology deve-lopment areas" commenced in 2001 providing tax incentives and other subsidies for organizations' R&D operations in "technoparks"
- Currently there are
  - 1,800 compa-nies (66 foreign)
  - Employing 15,822 personnel
  - Working on 4,979 R&D projects
  - Having establi-shed 301 patents
  - And exported USD 544 million worth of goods and services

Evolution of technoparks in Turkey (number of technoparks)



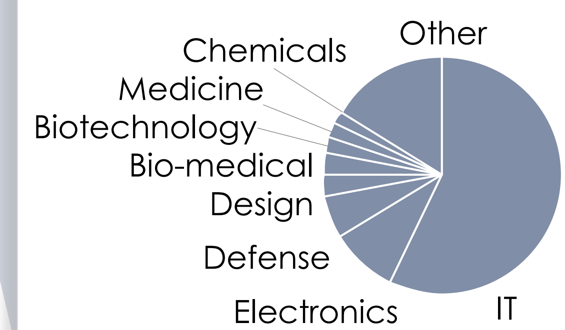
Distribution of technoparks by city, 2007-2011

Percent



Distribution of technoparks by sector, 2007-2011

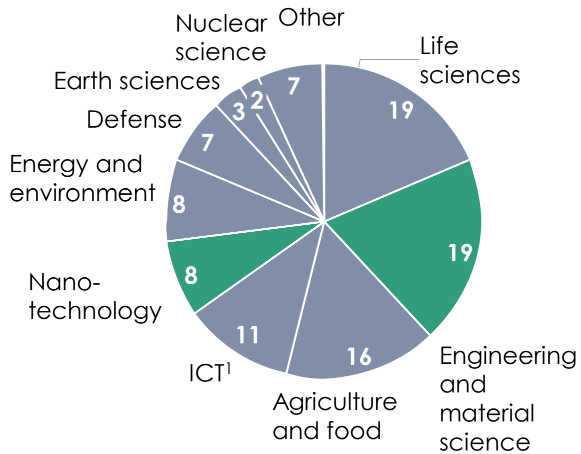
Percent



SOURCE: Association of Turkish technology parks

114 thematic research centers in 39 universities significantly contribute to development of new projects across many fields

Distribution of thematic research centers by field in 2011 (percent)



List of research centers related to automotive in universities

University	Research center	Funding TL millions	Number of researchers
Boğaziçi	Advanced Technologies Central R&D Lab	5.5	N/A
Dumlupınar	Research and Design Center	8	32
Fatih	Industrial Automation Technologies R&D and Application Center	2.1	9
Gebze YTE	Nanomagnetism and Spintronic Research Center	7	43
ITU	Center of Advanced Materials Production Technologies	17	62
ITU	Mechatronics Training & Research Center	10	14
ITU	Nanotechnology Research Center	25	150
ITU	Automotive Technologies R&D Company	16	N/A
ITU	National Center for High Peformance Computing	41	23
METU	Micro-Electromechanic Systems Research and Application Center	80	56
METU	BILTIR - Vehicle Safety Unit	9.5	N/A
METU	BILTIR – Automotive Industrial Design Unit	17	N/A
Sabancı	Nanotechnology Research and Application Center	50	N/A
		288	**389**

13 centers across 7 universities employ more than 390 researchers to work on automotive related topics with a total budget of ~TL 288 million

1 Information and communication technologies
SOURCE: Ministry of Development (DPT)

Various governmental and industrial institutions provide additional incentives

Institution	SME or general	Incentive details
KOSGEB[1]	SME	❖ Gives R&D, innovation and industrial application incentives
TÜBİTAK[2]	General	❖ Uses industry incentives by Ministry of Economy; R&D investments receive R&D tax discount of %100 as of 2008; the companies that use law no:5746 discount cannot use law no:5520 discount at the same time
Ministry of Science, Industry, and Technology	General	❖ Supports attempts of cumulative industrialization with legislation called "Cumulative Support Program Legislation“; support amount provided by ministry without payback, for business plan cannot be more than 50% of budget, while for each supported area cannot be more than 75% of the budget
TTGV[3]	General	❖ Supports two types of R&D projects • **Technology development projects support (suspended in current in 2013):** "Technological product" and "Technological Process Innovation" , classified as R&D projects are supported; maximum support is 1 million USD, maximum support duration is 2 years and supports need to be paid-back • **Advanced technology projects support:** Companies applying for this support have R&D projects in food processing, biomedical, or climate control technologies); manufacturing and software companies are targeted and can receive a maximum support of 3 million USD to be paid back in three years

1 Republic of Turkey Small and Medium Enterprises Development Organization
2 The Scientific and Technological Research Council of Turkey
3 Technology Development Foundation of Turkey

SOURCE: Institution web pages

TÜBİTAK has 9 programs to incentivize R&D for a wide range of innovation ecosystem players, including start-ups, universities, industry enterprises, and venture capitalists

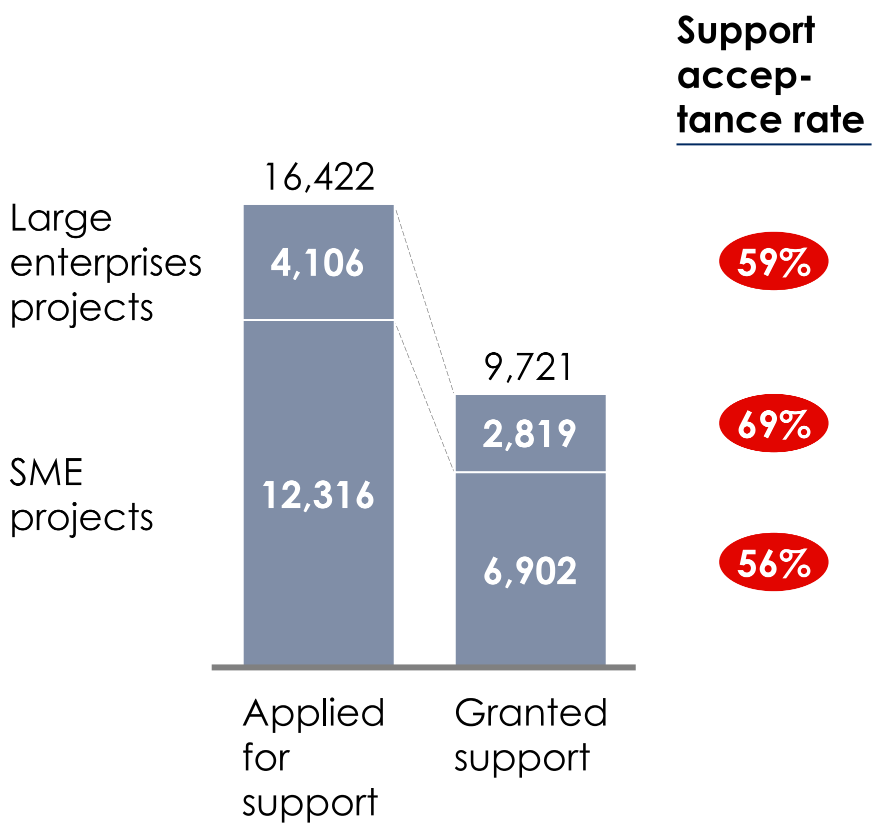
TÜBİTAK private-sector R&D and innovation support programs managed by TEYDEB

Name	Purpose	Grant limit	Grant duration	Award to innovation	Grant amount
1501	Industry R&D support	None	36 months	7,500 TL	❖ 40-60% of project budget
1503	Local and international "project market" participation support	25,000 TL (local) 30,000 TL (international)	-	-	❖ -
1505	University-Industry collaboration support	1 million TL	24 months	-	❖ 75% of SME project budget ❖ 60% of large enterprise project budget ❖ 10,000 TL for project manager
1507	SME R&D commencement support	500,000 TL	18 months	7,500 TL	❖ 75% of project budget
1509	International industry R&D support	None	None	-	❖ 75% of SME project budget ❖ 60% of large enterprise project budget
1511	Prioritized (high value-add) sector R&D support	None	None	-	❖ 75% of SME project budget ❖ 60% of large enterprise project budget ❖ 10% of general expenses ❖ >20% of international service expense
1512	Startup R&D support				
	❖ Phase 1: Business plan creation				
	❖ Phase 2: Incorporation and technology verification	100,000 TL	12 months		❖ 20% of project budget
	❖ Phase 3: Advanced R&D	1507 rules apply	18 months	1507 rules apply	❖ 1507 rules apply
	❖ Phase 4: Product commercialization		12 months		
1503	Technology transfer office support	1 million TL	10 years	-	❖ 80% first 5 years ❖ 60% second 5 years
1514	Venture Capital support; program is under development	-	-	-	❖ -

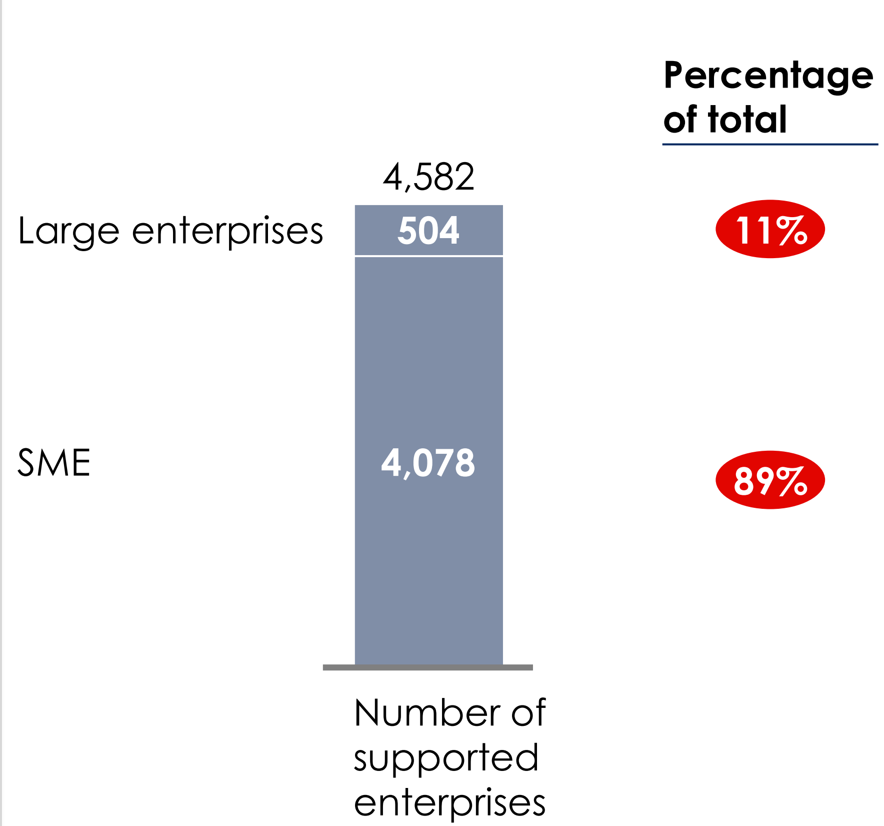
SOURCE: TÜBİTAK TEYDEB

TEYDEB has supported both large and SMEs by approving ~60% of their grant applications; ~90% of the beneficiaries are SMEs, which tend to be more agile and innovative

Number of R&D projects processed by TEYDEB (1995-2012)



Number of enterprises granted support by TEYDEB (1995-2012)

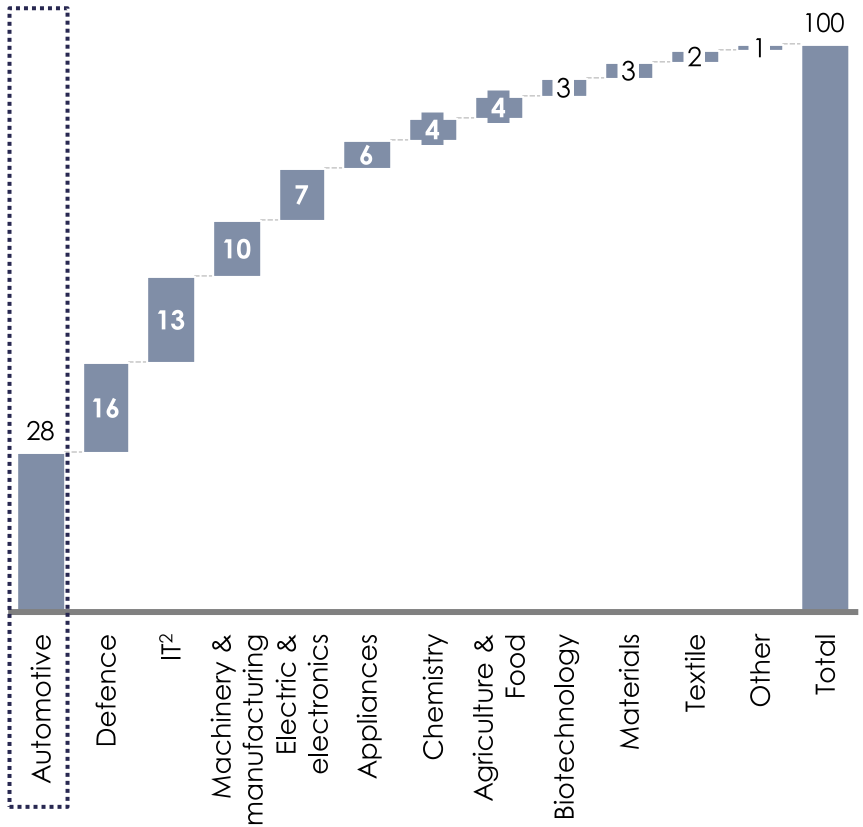


SOURCE: TÜBİTAK TEYDEB

Automotive investments received the most support between 1995 to 2012

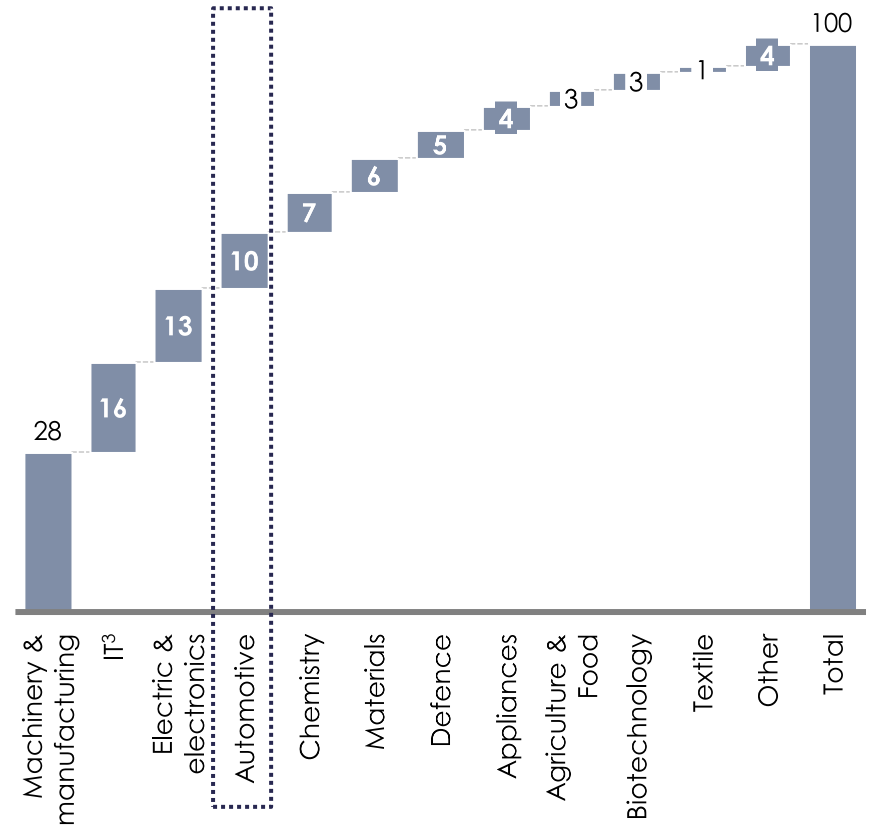
Automotive industry investments were granted with TRY 0,8 billion accounting for 28% of the total grants

Grant distribution based on industry sectors
Percent; 100% = 2.9 billion TL[1]; 1995-2012



Out of ~10k projects supported, ~1k were in automotive sector

Supported projects based on industry sectors
Percent; 100% = 9,721 project; 1995-2012



1 2012 price-base used to account for inflation
2 Information and data technology
3 Information and data technology
SOURCE: TÜBİTAK TEYDEB

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