

Automotive Industry Agenda

Special Edition 2018



PRESIDENCY OF THE REPUBLIC OF TURKEY
INVESTMENT OFFICE



Building a better
working world





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Arda Ermut

President

The Presidency of the
Republic of Turkey
Investment Office

Dear Readers,

Turkey is on the verge of a transformation. As a nation, we have ambitions of becoming one of the top 10 economies in the world and of developing domestic technologies. One of the most important pillars of this goal is undoubtedly the automotive industry. Today, our country is home to nine global and seven domestic automotive industry producers that have completed their investments, as well as being an important supply network that is continuously developing. In addition, the Istanbul Chamber of Industry lists five automotive companies among the top 10 "Top 500 Industrial Enterprises of Turkey in 2017." All of the companies are global leaders and centers of excellence in their respective fields.

In 2018, vehicle production in Turkey amounted to 1.55 million units. 85% of these vehicles were exported, and the rate of export from production increased by 7% when compared to 2017 rates, rising to about 1,318,000 units in total. On the basis of quantity, Turkish automotive industry manufacturers made a significant contribution to the balance of foreign trade by realizing exports totaling 32.2 billion USD last year. According to data provided by the Turkish Exporters Assembly, among the top five exporting companies last year were four automotive companies. Ranking first in the export by industry list of 2018, the automotive industry has been repeating this achievement for 13 years in a row. During the same period, we also saw significant increases in R&D employment and patent applications in the automotive industry; with 141 R&D and design centers, the automotive industry has become one of our largest industries hosting R&D and design centers.

The Turkish automotive industry holds an important share of the international investments completed thus far. The first investments in our country during the import substitution period gained momentum with the attractive investment opportunities offered by Turkey during the globalization period. We, as the Presidency of The Republic of Turkey Investment Office, are involved in these efforts as we strive to bring new added-value and technology-intensive investments into the ecosystem and enhance the reliability of existing investments.

With this "Turkish Automotive Industry Agenda," we, as **The Presidency of The Republic of Turkey Investment Office** and **EY in Turkey**, are making available detailed and comprehensive content for anyone interested in or involved with the automotive industry. We hope that this study will meet a significant need by bringing together developments in the sector's basic areas, such as Production, Market, Tax, Subvention, and Human Resources, and allow for analysis and the presentation of existing opportunities.

I would like to express my gratitude to all of the people who have contributed to the preparation of this issue, especially to EY in Turkey, and to all of the relevant private sector representatives who continue to support our activities to bring Turkey to the position it deserves in the international arena.

Arda Ermut

President

The Presidency of the Republic of Turkey Investment Office



Preamble



Serdar Altay

EY Turkey

Automotive Industry Leader

Esteemed Automotive Industry Stakeholders and Industry Associates,

At EY in Turkey, we have been publishing our “Automotive Agenda” journal without interruption for years. We include researches, opinions and articles about periodical data, developments and trends about the automotive industry in Turkey and in the world in our publications.

Unlike other issues, we have had the pleasure of preparing this issue with the **Presidency of the Republic of Turkey, Investment Office**, which assumed the task of introducing the investment opportunities offered by Turkey to the global business world and supporting investors in every stage of their investments in Turkey. The Investment Office, which operates directly under the Presidency, is in charge of promoting investments that are necessary for Turkey’s economic development. For this purpose, it continuously supports technology-intensive investments with high added value that create employment opportunities. At the same time, it oversees all processes associated with these investments with their respective investors and strives to quicken the pace of such processes.

Turkey’s automotive industry, of which foundation dates back to the early 1960s, has transformed itself from assembly-based production to an industry with R&D design capability and high added value, attaching more importance to local production input over the years, with the partnerships established by foreign companies with Turkish entrepreneurs. Turkey, which has now cemented its position as the largest light commercial vehicle manufacturer in Europe today, ranks 14th in the world in terms of automotive production output. We are extremely proud and pleased to contribute to the development of Turkey’s automotive industry, which undoubtedly deserves attention in this aspect, and to the promotion of our country with this publication prepared with the Investment Office.

This special issue addresses;

- ▶ Figures realized in Turkey and the world as of November 2018 and production, sales, export and growth estimations about the industry,
- ▶ Market analysis, export and production performance of the Turkish automotive industry,
- ▶ Information about the latest updates and current changes in the areas of taxation, incentives and foreign trade in Turkey, which may be of concern to current sector players and groups who set their eyes on gaining access to the sector,
- ▶ Latest situation of the domestic automobile business in Turkey,
- ▶ Success stories in the automotive industry in Turkey and
- ▶ Global trends that shape the future of the Automotive Industry.

As the automotive industry professionals at EY in Turkey and the Investment Office, we thank you for your interest in this issue, which we think will be beneficial for all our readers interested in the automotive industry.

Serdar Altay

EY Turkey Automotive Industry Leader

Actual figures and forecasts

Current situation and future expectations in the Turkish automotive industry

A. Data

Since 2018 Q2, sales of automobiles and light commercial vehicles in particular have significantly slipped in Turkey, which is largely blamed for economic developments.

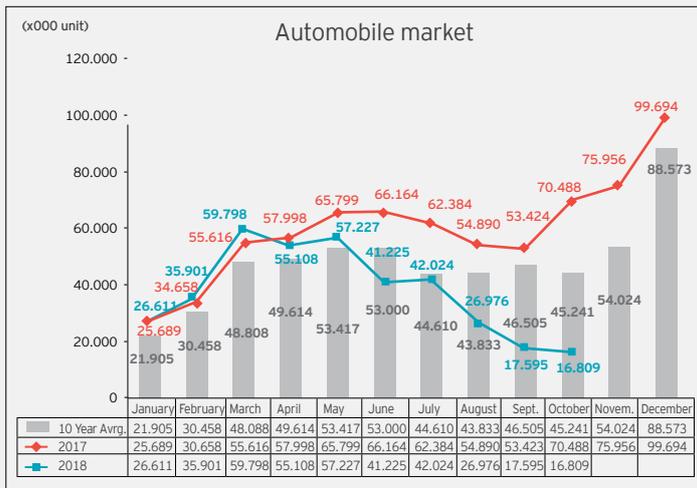
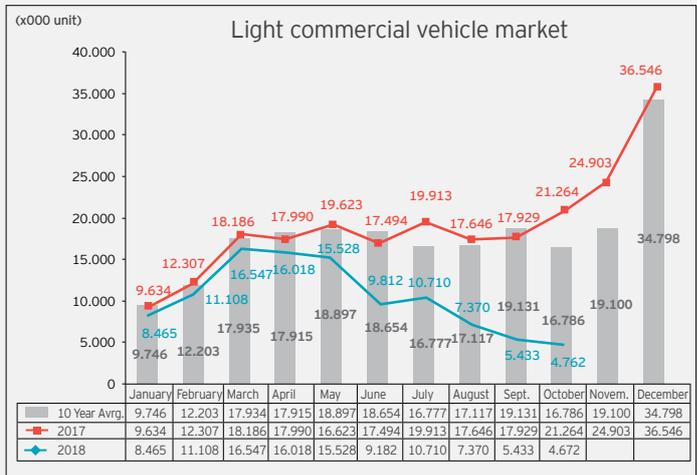
The following table shows the 10-year sales data of the monthly automobile sales made in Turkey in the last 10 years and the monthly sales data in 2017-2018.

According to the market assessment made by the Automotive Distributors Association, automobile sales on the Turkish automotive market declined saw a 30.68% decline down to 379,274 units at the end of October 2018, compared to the same period of the previous year, when 547,109 automobiles were sold.

Automobile sales, which recorded 70,488 unit sales in October 2017, declined to 16,809 units with a 76.15% fall in October 2018, compared to the same month of the previous year.

It is observed that the automobile market decreased by 62.85% according to 10-year average sales in October.

Light commercial vehicle sales fared similarly as well. As the following data reveals, the light commercial vehicle market decreased by 38.51% between January and October in 2018 compared to the same period of the previous year with sales falling down to 105,753 units. In contrast, 171,986 units were sold during the same period last year.



The big picture is different, however, when the production and export figures realized in the industry are examined.

2017-2018 data shows that production volumes in the automotive industry remained largely intact even as the economic situation fluctuated. Exports even seemed to be on the rise.

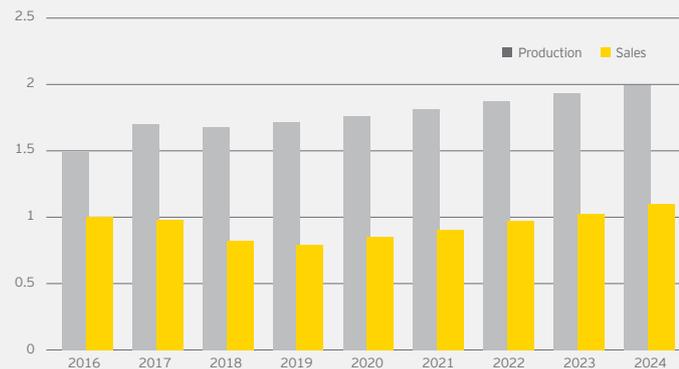


Source: OSD 2018 Monthly Assessment Report

As can be seen, Turkey's proximity to Europe, Asia, Middle East and North Africa provides a strong competitive advantage as a logistics and exportation center. Future outlook underlines this advantage that Turkey seems to have.

Upon closer inspection of the data in the following table, it transpires that the production output is expected to recover its transient plunge in 2018, turning the tide to an upward increase from 2019 to 2024, reaching approximately 2 million units by 2024. Considering the export-oriented structure of the industry and our estimations for Europe's new vehicles market to continue its growth, we expect that Turkey's automotive production is poised to grow until 2027.

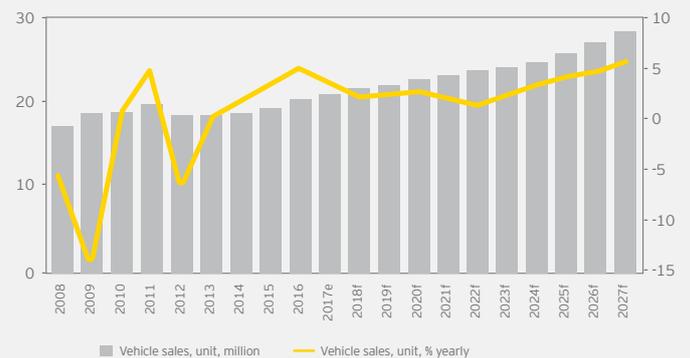
This expectation is largely based on the fact that Turkey has a globally strong exportation center in terms of Original Equipment Manufacturers (OEM) and continues to boost its performance. According to global automotive value chain trends, OEMs in Turkey are export-oriented, because they consider Turkey a leverage to reach out to these markets.



78.6% of all vehicles manufactured in Turkey in 2017 were manufactured for exportation. Majority of these exports are made to EU (80.9% of the export value of vehicles in USD), Asia-Pacific Economic Cooperation (12.7% of the export value of vehicles in USD) and Middle East and North Africa (6.4% of the export value of vehicles in USD).

As the European market continues to recover its former power after plunging to all-time low volumes in the wake of the 2008 and 2012 crises, we expect a relative growth in Turkey's automotive exports outlook until 2027. It is estimated that vehicle sales in the EU will reach 17.8 million units with a 5.4% average growth in 2018 and will reach an annual growth rate of 4.1% on average in the period between 2018 and 2027.

The following table shows the estimated vehicle sales expected in Europe until the end of 2027.



Source: International Solutions, Fitch Solutions.

Turkey's strengths and opportunities

According to expectations, production will be strengthened by the positive export performance in both European and Middle Eastern markets, in addition to more investments made by local manufacturers in the long term. Turkey's strengths and opportunities are summarized below.

1. Opportunities

- ▶ Turkey's proximity to Europe, Asia, Middle East and North Africa provides a strong competitive advantage as a logistics and exportation center.
- ▶ Turkey has a low-cost and relatively well-educated workforce.
- ▶ A combination of a rapidly-growing middle class and a large population base supports the country's positive sales outlook.
- ▶ In the medium term, there is increasing demand for luxurious brands and high demand for brands that appeal to large masses of people.
- ▶ The export-oriented nature of the Turkish automotive industry and the geographical position of the country provide suppliers with many opportunities.
- ▶ The recovery trend in the European market supports the increase in demand for Turkish exporters.
- ▶ Annual new vehicle sales are expected to score a 2.7% growth between 2018 and 2027. As a result, total new vehicle sales are estimated to exceed 1.25 million units by the end of 2027.
- ▶ In addition, an average annual growth of 2.3% is projected for passenger car sales. Average annual growth for commercial vehicle sales is estimated to be 4.3%.

2. Recent Tax Regulations

In a bid to safeguard passenger car sales against fluctuations that may be caused by high taxes such as Special Consumption Taxes (SCT) and particularly the annual Motor Vehicles Tax (MVT), the Ministry of Treasury and Finance introduced a VAT cut in October 2018 with regard to commercial vehicles. The latest tax cut is set to remain in place until December 31, 2018. Similarly, a special consumption tax cut which slashes the cost of vehicles with engine power of 1600cc and less will remain in effect as late as until December 31, 2018.

In the first five months of 2018, since more than 96% of the total vehicle market in Turkey is comprised of vehicles with 1600cc internal combustion engines, a 10% decline was observed in the taxes actually paid for the vehicles in this category.

3. Recent investments

Most recently, automobile manufacturers such as Hyundai Motor, Fiat Chrysler Automobiles (FCA) and Toyota Motor continue to invest in Turkey with increased production capacities according to the 5-year forecast period until 2027. These investments will make a 0.9% contribution to the average annual growth in the passenger car production in Turkey between 2018 and 2027.

Renault Motor is also planning to carry out more of the Clio subcompact vehicle manufacturing operations in Turkey. According to this new production plan, 94% of the global production of the Clio model of the French automaker will be carried out at the facilities in Turkey and Slovenia.

These announcements follow chunky, long-term investments announced earlier by OEMs and continue to be implemented. For example, Toyota Otomotiv, the Turkish affiliate of Toyota Motor, remarkably increased the production volume of its facilities in Turkey with the launch of the new Toyota C-HR hybrid SUV model in 2017. The company made an investment worth 350 million EUR (396 million USD) in its Sakarya manufacturing facility as part of a Turkish investment valued as much as 470 million USD. The said investment plan will boost Toyota's annual production capacity from 150,000 vehicles to 280,000 vehicles a year. The SUV model is the first hybrid car which will be mass-produced in Turkey and will continue to be manufactured together with the Corolla and Verso models manufactured again in Sakarya facilities.

Earlier, in November 2014, Turkish automotive manufacturer, TOFAŞ, owned by Koç Holding and FCA in Turkey; made an additional investment amounting to 480 million USD on top of an investment of 520 million USD as announced earlier, in the manufacturing of new passenger cars until 2023. The ultimate purpose of the investment is to boost Tofaş's production up to 700,000 units per year in the new hatchback and station wagon models.

Automotive industry trend analysis

The Automotive industry trend analysis is comprised of 4 sub headings.

1. Market trend

25% slump on average in year-on-year sales of passengers car and commercial vehicles in January-September 2018.

Volatility in terms of inflation and exchange rates during the mid-year led to a slowdown in the automotive market over the first 9 months of 2018, ending a rising sales trend north of 1 million units per year over the past 3 years. The drop in the auto market was 24% for passenger vehicles, but sales figures were 31% less for commercial vehicles. A downturn in the light commercial vehicles market, once regarded as one of the strongest areas in Turkey, has been influential in this overall decline.

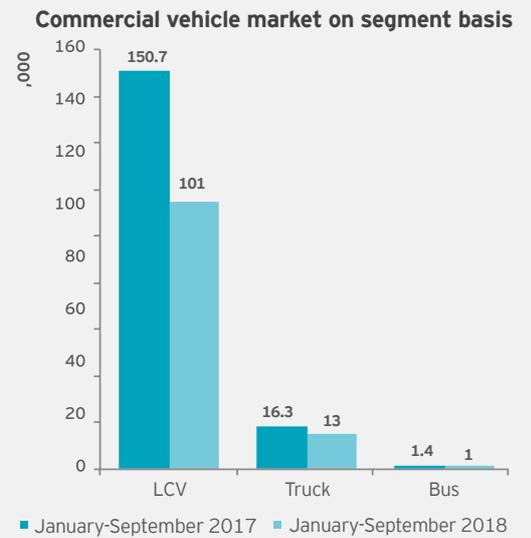
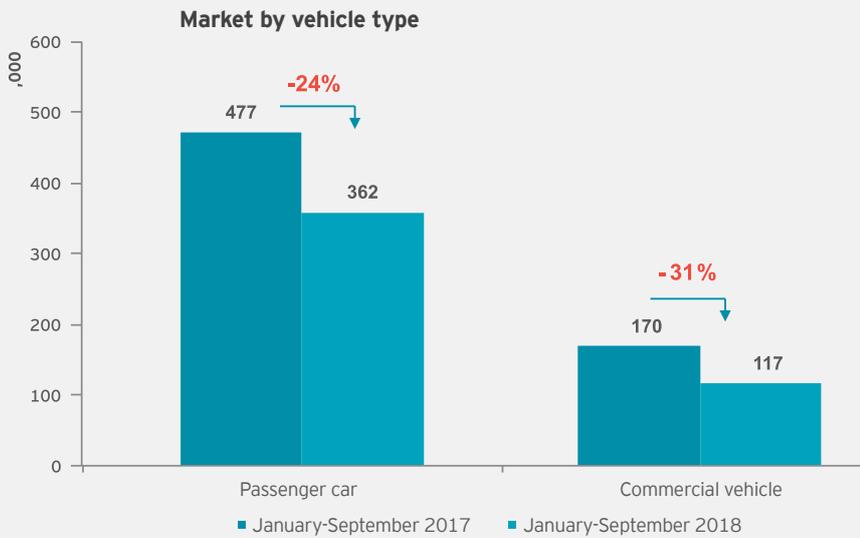
Automotive industry trend analysis

► Market trend

Production performance

Export performance

Comparative analysis of production



Source: Automotive Industry Association (OSD)

In contrast to the strengthened position of domestic models in the market, sales of imported passenger autos have been hit by a sharp decline.

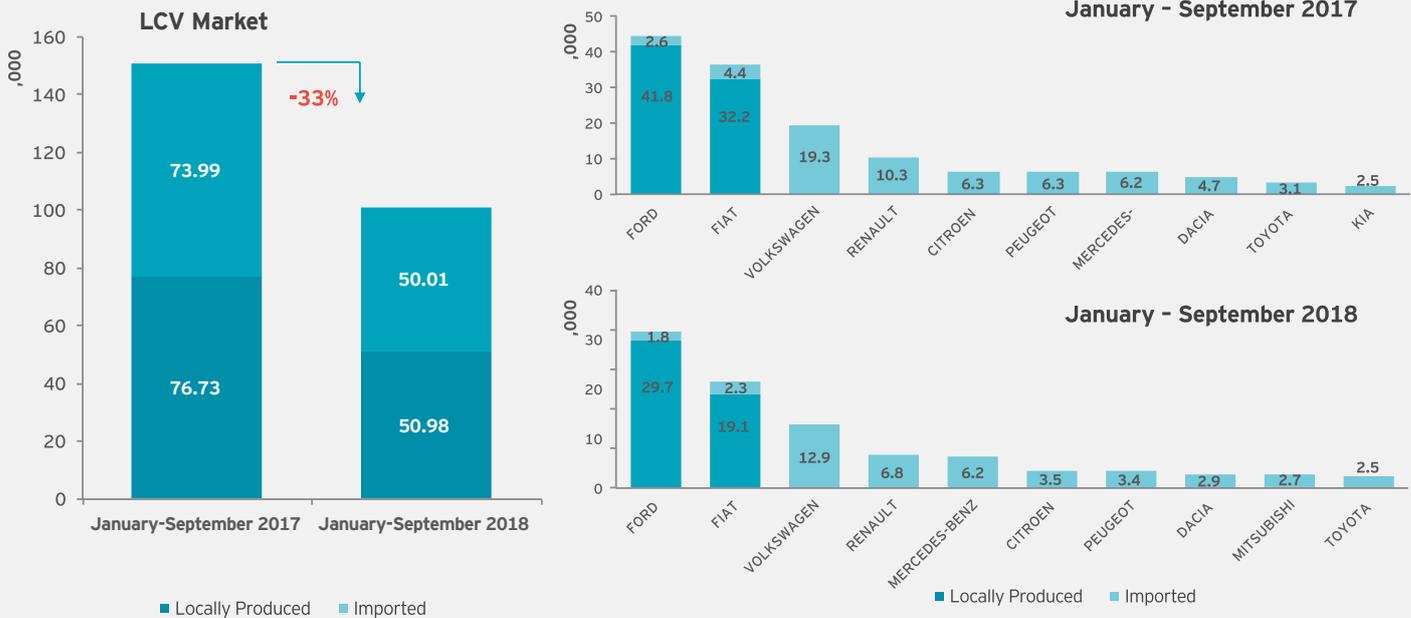
Renault has maintained its leadership in January-September 2018 despite a decline in sales compared to the same period last year. Turkish-built models accounted for 75% of Renault's sales, followed by Volkswagen, Fiat and Hyundai respectively. Toyota and Honda were seen rising in ranking as sales of other imported brands plummeted - a trend which further cements the view that a preference for locally-produced vehicles reigns supreme.



Source: Automotive Distributors Association (ODD)

As was the case in previous years, the domestic share of over 50% cars in the light commercial vehicle (LCV) market is still growing.

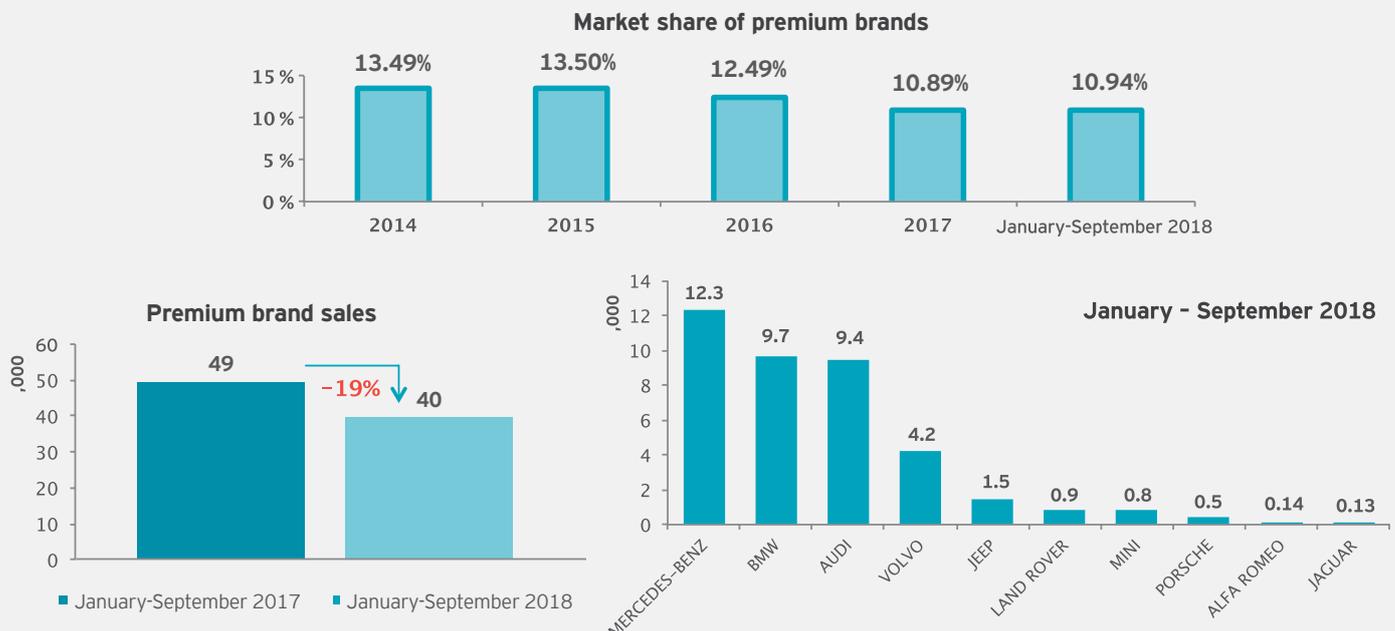
Despite a marked decrease in import and domestic model sales has been observed, the Special Consumption Tax discount and company campaigns are expected to bring along a rebound in the market during the last quarter of the year. Ford and Fiat maintained their hegemony over the market, thanks mainly to domestic LCV models. German and French automakers followed closely this year with their imported models.



Source: ODD

A notable change has not been noticed in the preference for premium vehicle models during the first 9 months of the year.

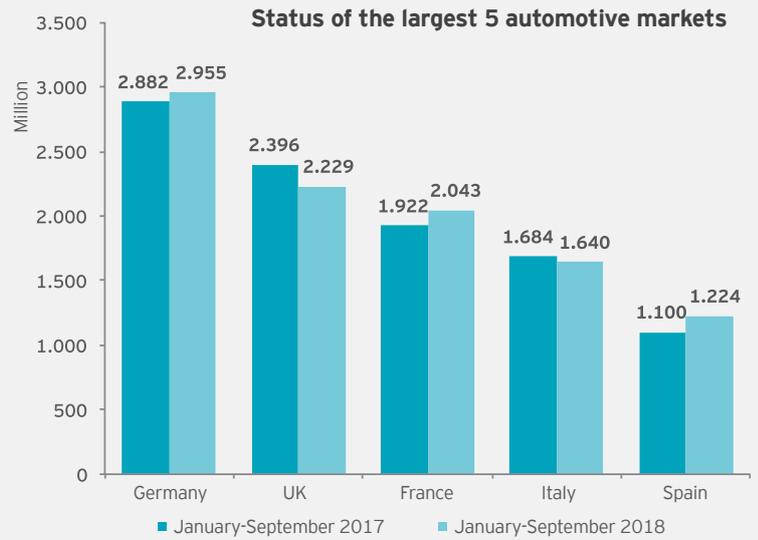
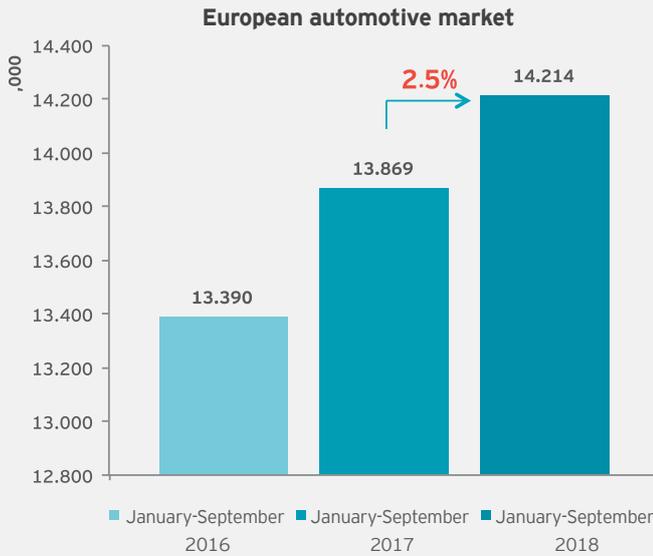
Upon examining the data of January-September 2018 period, it is possible to see that the market shares of premium vehicles is around 11%. Similar to that in the previous years, the German brands have maintained their places in this field. 19% shrinkage in sum also shows that the trend in the overall automobile market has also influenced the sales of these brands.



Source: ODD

The growth in the European vehicle market, the biggest market for Turkish automotive companies, was 2.5% during the first 9 months of this year. A slight slowdown may be felt in the UK and Italy due to political and economic developments.

Germany, France and Spain, the leading markets to which Turkey exports most vehicles, have flaunted some remarkable growth. The slump in the UK market is blamed on Brexit during the same period. Italian's sluggish market is due to political economic developments.



Source: ACEA and ODD

2. Production Performance

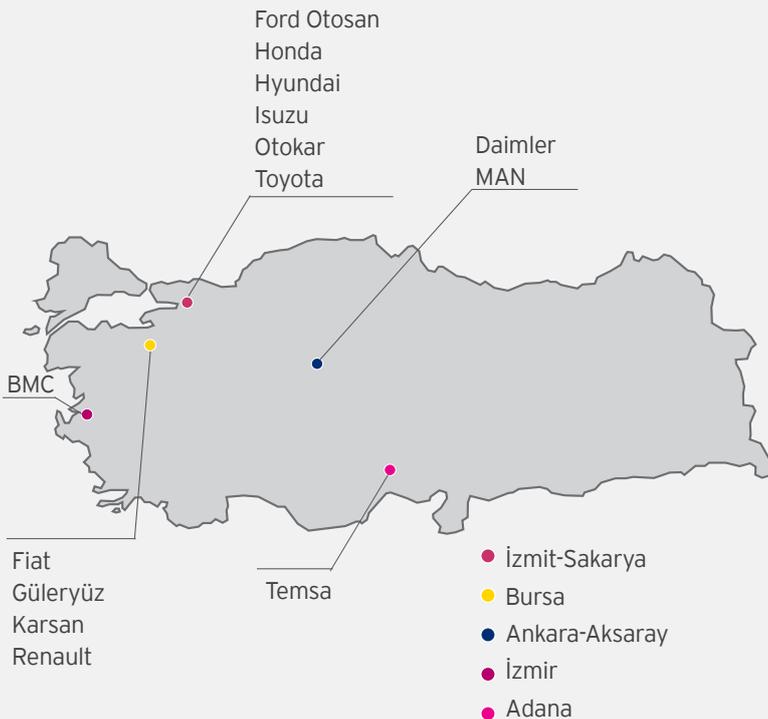
Automotive industry trend analysis

Market trend

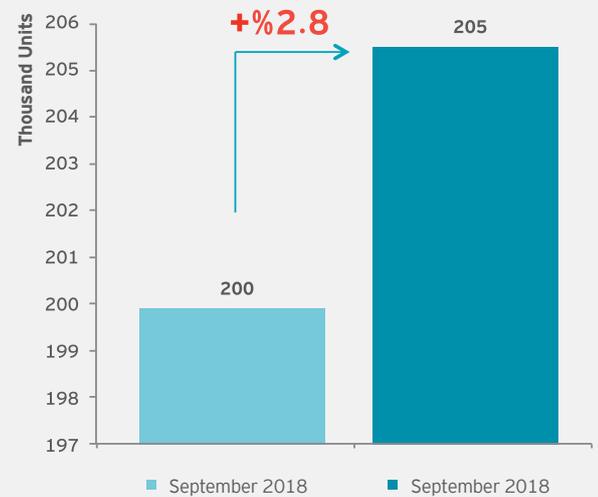
► **Production performance**

Export performance

Comparative analysis of production



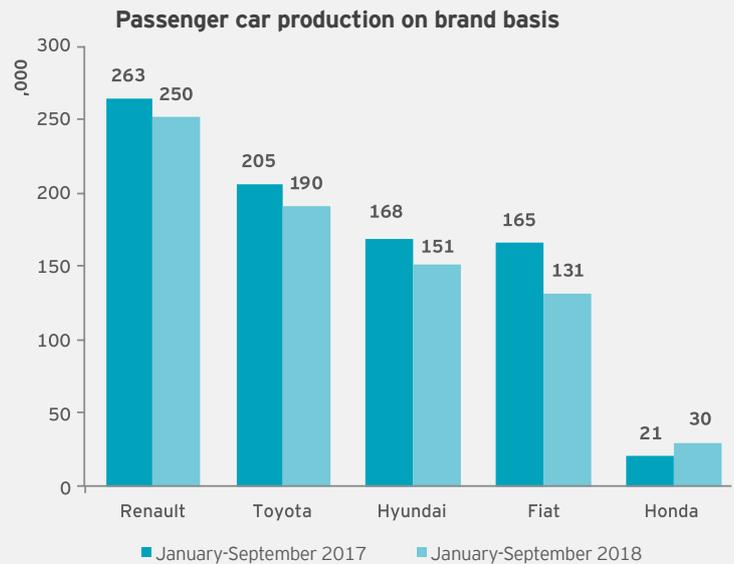
Automotive industry employment



Source: Republic of Turkey Social Security Institution (SGK)

Despite the growth in export markets, the effect of domestic market sales is also felt in production.

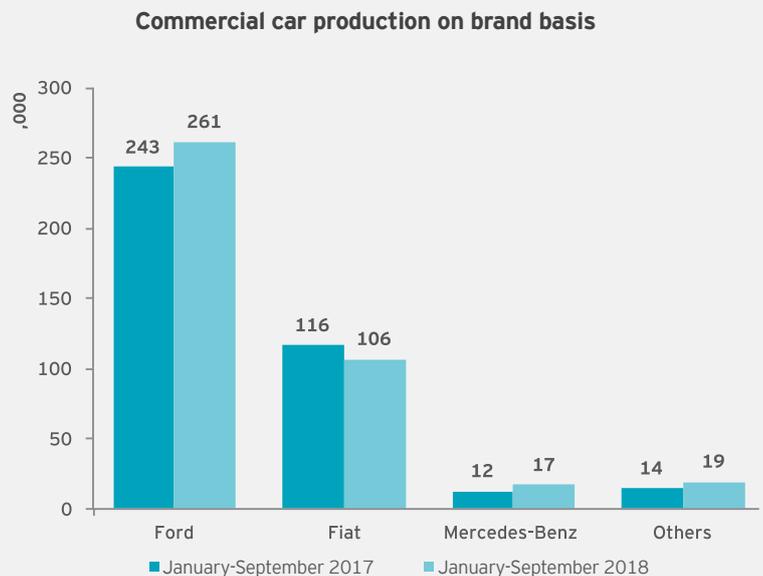
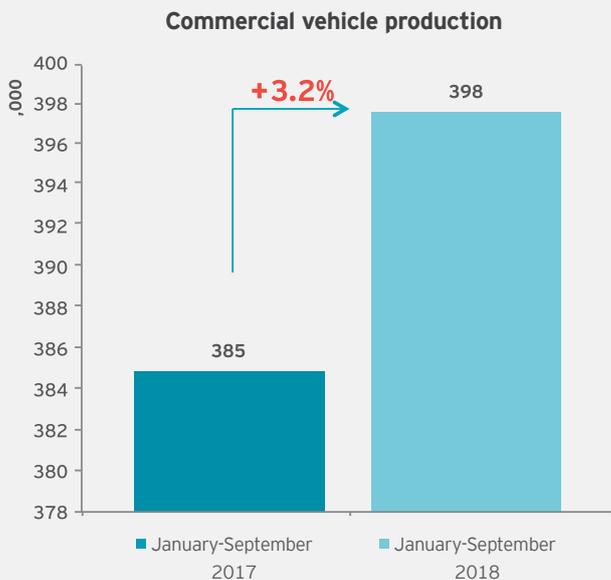
During the first 9 months of the year, partial shrinkages have been noted in the production levels of 5 brands that manufacture passenger cars in Turkey. However, Honda has achieved up to 50% growth, a bout attributed for the most part to the manufacturing of its diesel Civic model during the same period. Fiat's production dropped by 20% while the average slump of the overall industry was 8.3%.



Source: OSD

Growth in commercial vehicle production, as a segment where Turkey has gained a global strong stance, also continued during the first 9 months of this year.

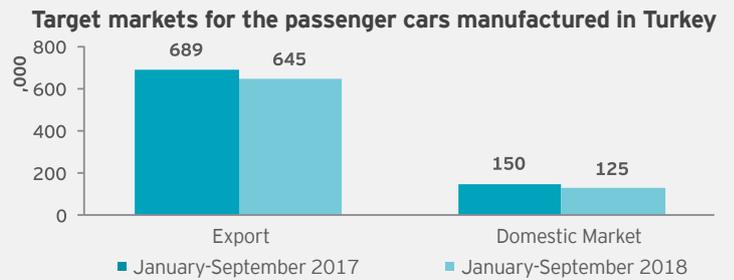
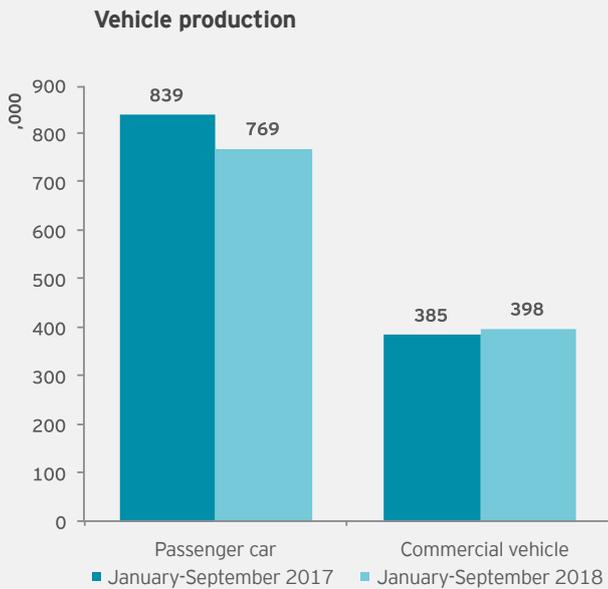
3.2% year-on-year increase has been scored in commercial vehicle production during the first 9 months of 2018. In addition to Ford Otosan, Mercedes-Benz had a great share in this increase as the company has dramatically increased its truck production capacity in Aksaray. An increase in total production numbers of other local-foreign players in the industry is also noted.



Source: OSD

The share of sales of Turkish domestically manufactured vehicles has significantly increased in terms of exports.

Throughout the years, OEM's have positioned Turkey as an export center. This year, manufactured vehicles' share in export to the target markets has also increased and showed that the same trend has continued. At the same time, manufacturers' export capacity make it possible to mitigate the impact of negative developments in the domestic market. The export rate of the industry in January-September 2018 has been observed as 83%.



Source: OSD

3. Export Performance

Automotive industry trend analysis

Market trend

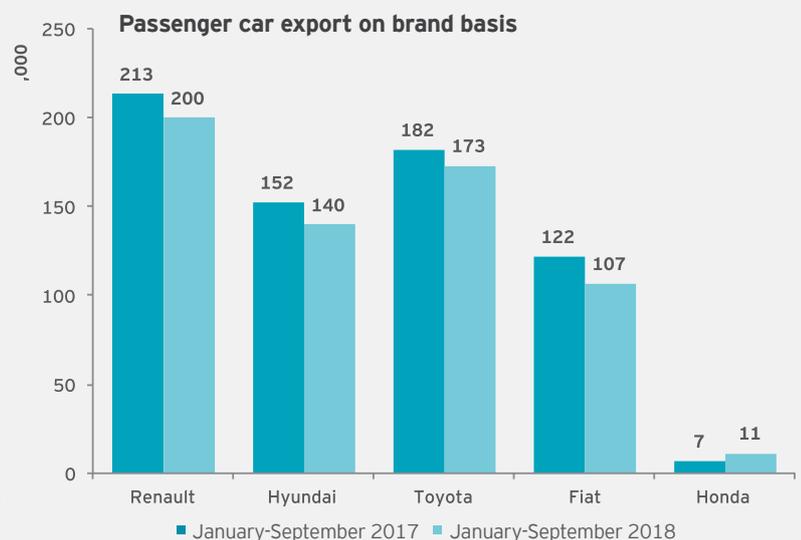
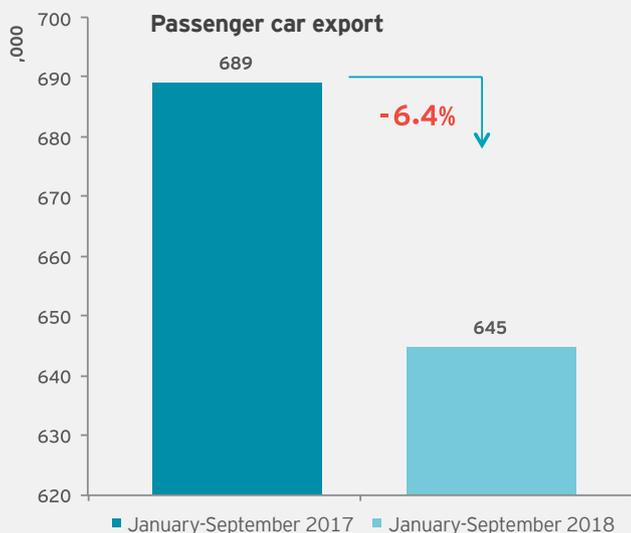
Production performance

► **Export performance**

Comparative analysis of production

A slump has been felt during the first 9 months of the year in the export figures of passenger car manufacturers other than Honda.

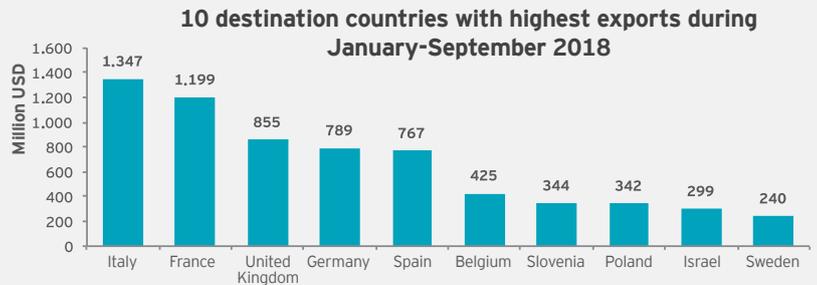
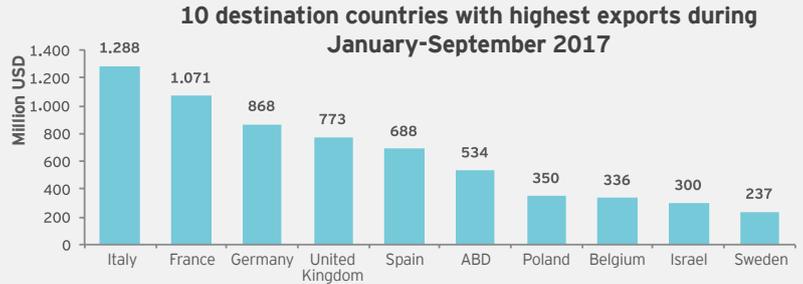
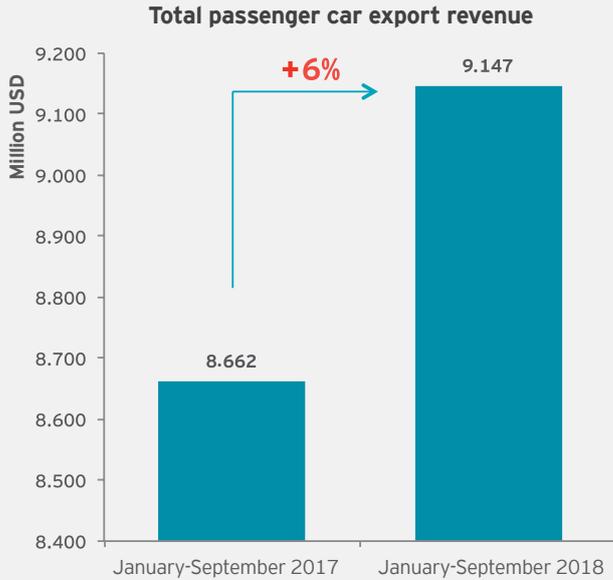
Registered at 689,000 units during the same period last year, passenger car exports slipped to 645,000 units in 2018; with a 6.4% decrease. Main manufacturers of the passenger car industry have been influenced by this decline in similar degrees. Honda, who has manufactured Civic model's diesel version, has recorded an export increase of 66% with the influence of this model and the production numbers.



Source: OSD

Due to the growth in the European automotive market and the differentiation in models, Turkish passenger cards have exported 6% more during the first 9 months of 2018.

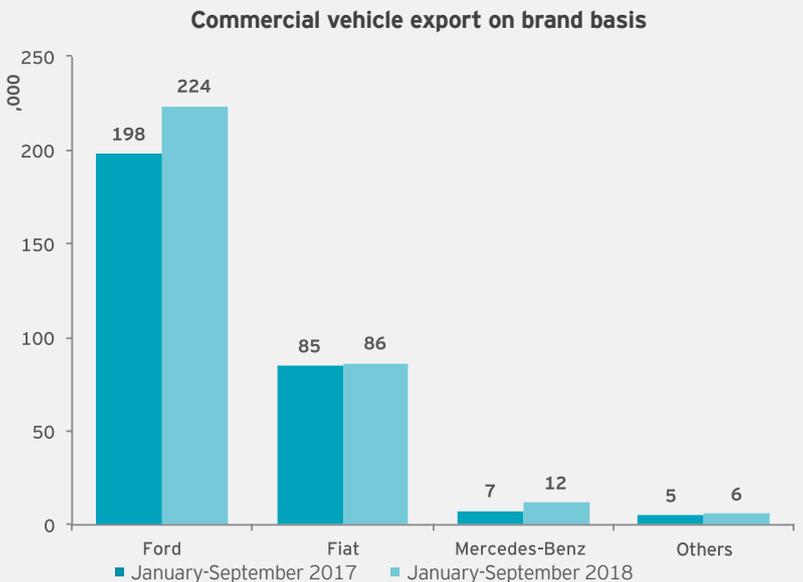
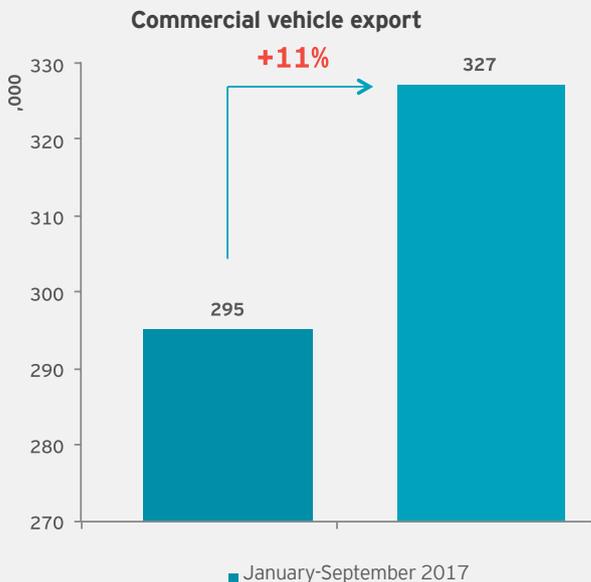
The industry has exported more than 9 billion dollars-worth passenger vehicles during the first 9 months of the year, and also registered significant developments in worth in its key markets except Germany. Turkey's passenger cars exports to Italy, where the domestic market has slowed down in terms of the number of units, have increased and so have the worth of Turkish vehicles in France and the United Kingdom has also increased.



Source: Turkish Statistical Institute (TurkStat)

A record increase has been witnessed in commercial vehicle exports together with the development achieved by Ford and Mercedes-Benz.

Upon inspection of the data of the first 9 months of 2018, commercial vehicle exports of 295,000 units of the previous year scored a record development of 11% and reached 327,000 units. Ford Otosan's impressive performance and Mercedes-Benz's completed capacity investments have been influential in this improvement. In parallel to the developments experienced in the domestic market, commercial vehicle manufacturers saw a rapid development in foreign markets.

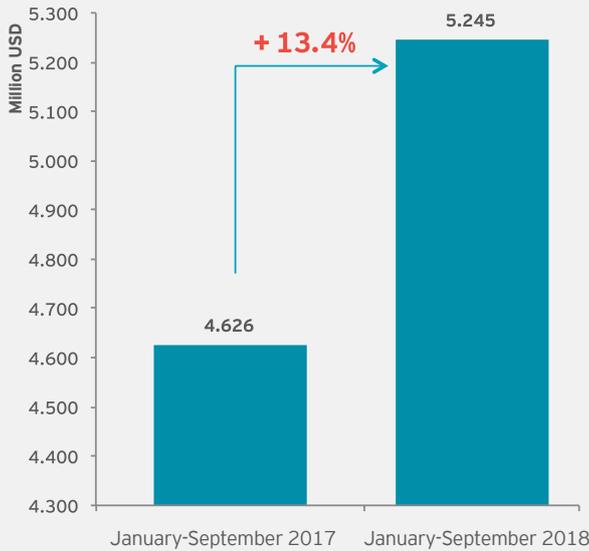


Source: OSD

Record levels have been realized in export revenues in parallel to the increase in numbers.

2018's first 9 month export revenues, which has been realized at the level of 5.3 billion dollars, increased by 13.4% compared to the same period of 2017. A change has not been observed in the ranking of the most exported 10 destination countries, while the income from the United Kingdom remained stable; however, income from the other 9 countries increased notably.

Total commercial vehicle export revenues



Source: Turkish Statistical Institute (TurkStat)

10 destination countries with highest exports during January-September 2017



10 destination countries with highest exports during January-September 2018



4. Comparative Analysis of Production

Automotiv industry trend analysis

Market trend

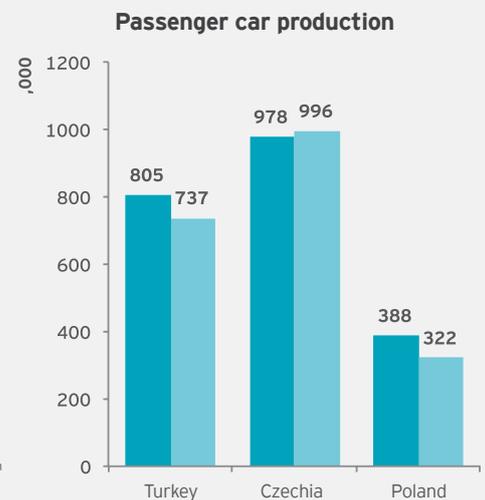
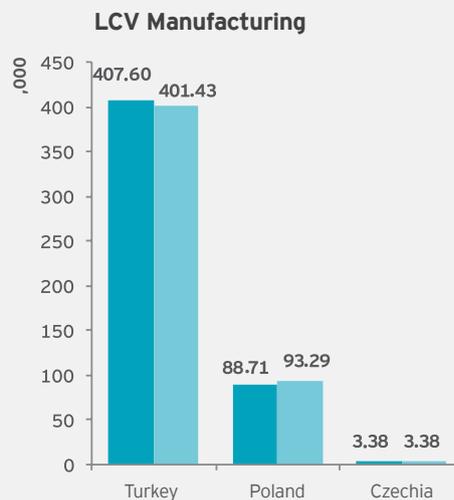
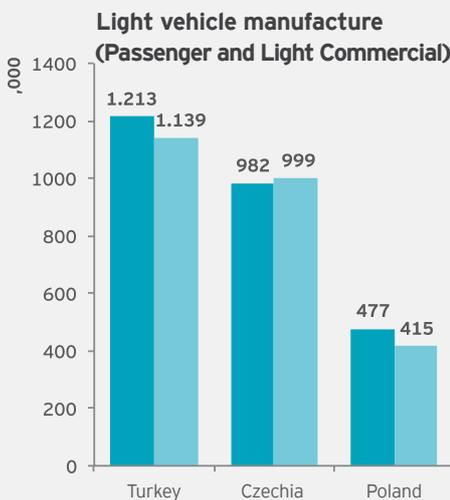
Production performance

Export performance

► Comparative analysis of production

As the biggest vehicle manufacturer of its region, Turkey has also maintained its leadership for light vehicles.

Having maintained the role of being the largest manufacturer in the region for many years, principally including Eastern Europe, Turkey has maintained its position of being the production base of the region despite the limited shrinkage during the first 9 months of 2018. As indicated by the Marklines data bank, approximately 1,140K LCVs were manufactured between January and September.



■ January-September 2017 ■ January-September 2018

Source: www.marklines.com

1. VAT - SCT Reduction

VAT Rate reduction for commercial vehicles and SCT rate reduction for some passenger cars

Pursuant to the Presidential Decree no. 287 promulgated in the State Gazette on 31 October 2018, which entered into force on the same date;

- I. VAT rate for deliveries of commercial vehicles is reduced to 1% until the end of the year
- II. Special Consumption Tax rates are reduced for some passenger cars until the end of the year.

VAT Rate reduction

Pursuant to the Presidential Decree no. 287, published in the State Gazette dated 31 October 2018, **VAT rate** on goods (commercial vehicles) whose GTIP numbers and definitions are set out in the following list **has been reduced to 1% until 31 December 2018 (including this date).**

However, the refund calculation of taxpayers' transactions subject to the reduced rate will not include the taxes they assume due to the following goods delivered by them.

HS Code	Name of goods
8701.20	Towtrucks for semi-trailers
87.02	Motor vehicles used for transporting 10 or more individuals (including the driver)
87.04	Motor vehicles used for transporting goods
87.05	Special purpose motor vehicles (except those specially designed for transporting people or goods) (for example, rescue vehicles, crane vehicles, fire trucks, concrete mixer vehicles, road sweeping cars, spraying cars, mobile workshops, mobile radiology units)

SCT Rate reduction

Pursuant to the Presidential Decree no. 287, **the Special Consumption Tax rates on some goods (passenger cars), whose GTIP numbers and definitions are set out in the following list, have been reduced by 5 to 15 points, until 31 December 2018 (including this date).**

The new Special Consumption Tax rates set forth with this regulation, which entered into force from 31 October 2018, are presented in the following table in comparison with the old rates:

HS Code	Name of goods	Old rate (30.10.2018 and before)	New rate (31.10.2018-31.12.2018)
87.03	Passenger cars and among other motor vehicles manufactured mainly for the purpose of transporting people (except for those defined in 87.02) (including station wagons and race cars) [only passenger cars, station wagons, race cars, land vehicles, etc. (including money transport vehicles), motor caravans, electricity, gas, solar, etc. powered motor vehicles.] [Except special purpose motor vehicles such as ambulances, police wagons, hearses, leading firefighting cars, especially those with compression-ignition internal combustion piston engines (diesel or semi-diesel) or spark-ignition internal combustion piston vehicles designed to move on snow, others (Golf carts, etc.)]		
	► Of the motor vehicles used in transporting cargo and whose maximum weight does not exceed 3,5 tons and whose passenger transportation capacity (passenger transportation capacity is calculated by multiplying the total number of passengers including the driver by 70 kilograms. In this calculation, the fittings used for seat assembly are also taken into account as seats, even if there are no seats) is lower than 50% of the load limit (the total load weight including the driver and passengers which can be safely transported by a vehicle) (except those all of whose wheels are or can be powered by the engine, passenger cars, station wagons, racing cars, off-road vehicles)		

HS Code	Name of goods	Old rate (30.10.2018 and before)	New rate (31.10.2018- 31.12.2018)
87.03	▸ Those with load weight not exceeding 850 kilograms and engine cylinder volumes below 2000 cm ³	15%	5%
	▸ Those with load weight exceeding 850 kilograms and engine cylinder volumes below 2800 cm ³	15%	5%
	▸ Vehicles with electric engines only	10%	5%
	▸ Those with seats for 9 people including the driver		
	▸ Whose engine cylinder volume does not exceed 3200 cm ³	15%	5%
	▸ Vehicles with electric engines only	10%	5%
	▸ Others		
	▸ Whose engine cylinder volume does not exceed 1600 cm ³		
	▸ Whose special consumption tax base does not exceed TRY 70,000	45%	30%
	▸ Whose special consumption tax base exceeds TRY 70,000, but not TRY 120,000	50%	35%
	▸ Others	60%	60%
	▸ Whose engine cylinder volume exceeds 1600 cm ³ but does not exceed 2000 cm ³		
	▸ Vehicles with electric engines whose electric engine power exceeds 50 kW but whose engine cylinder volume does not exceed 1800 cm ³		
	▸ Whose special consumption tax base does not exceed TRY 85,000	45%	30%
	▸ Whose special consumption tax base exceeds TRY 85,000, but not TRY 135,000	50%	35%
	▸ Others	60%	60%
	▸ Others		
	▸ Whose special consumption tax base does not exceed TRY 170,000	100%	100%
	▸ Others	110%	110%
	▸ Whose engine cylinder volume exceeds 2000 cm ³		
	▸ Vehicles with electric engines whose electric engine power exceeds 100 kW but whose engine cylinder volume does not exceed 2500 cm ³		
	▸ Whose special consumption tax base does not exceed TRY 170,000	100%	100%
	▸ Others	110%	110%
▸ Others	160%	160%	
▸ Vehicles with electric engines only			
▸ Whose engine power does not exceed 85 kW	3%	3%	
▸ Whose engine power exceeds 85 kW but not 120 kW	7%	7%	
▸ Whose engine power exceeds 120 kW	15%	15%	

Pursuant to the Presidential Decree No. 540 published in the 4th periodical Official Gazette dated 31 December 2018, the special consumption tax (SCT) on motorcycles and wheeled vehicles with an auxiliary engine has been temporarily set as 0% (zero), to be effective until 31 March 2019 (inclusive).

HS Code	Description of goods	Tax rate
87.11	Motorcycles (including mopeds) and vehicles fitted with an auxiliary motor (with or without side-cars); side-cars (side-cars are excluded) (Excluding vehicles with electric engines only) - Vehicles with up to 250cm ³ engine cylinder volume	0%
8711.60.10.00.00	Vehicles with two, three and four wheels, pedal assisted and with an auxiliary electric motor with a continuous nominal power not exceeding 250 watts	0%
8711.60.90.00.12	Vehicles with up to 20 kW engine power	0%

Before the discount, SCT rates of the foregoing goods were respectively 8%, 3% and 3%. The Decree has entered into force on 1 January 2019.

2. Advantageous foreign trade applications in the automotive industry

Advantageous foreign trade applications in the automotive industry

The automotive industry has an important position for our economy in terms of exportation and employment. Increase in production and decrease in production costs positively affect these two main economic indicators. We observe that these two indicators were also positively affected in the recent months. Our foreign trade structure in the automotive industry is dependent on imports in parallel with the general foreign trade structure. Therefore, taxes and customs clearance costs in import transactions are important for the industry. Additional taxes and costs imposed on imports directly affect our export competitiveness. Import processes should be completed with minimum cost, time and taxes to reach this competitiveness. The companies that are advantageous in these matters stand out in the industry.

The advantages of Authorized Economic Operator Status

The most privileged document in import transactions is "Authorized Economic Operator" (AEO). Only companies which are reliable and which meet the conditions set forth in the legislation may obtain this document. The document provides an application which minimizes the customs clearance procedures in import and export processes and allows companies to directly bring imported goods to factory or send exported goods from the factory to the customs border.

Benefits for AEO status holders		
	Requesting not required	Upon request
Simplified practices	<ul style="list-style-type: none"> ▶ Missing statement procedure ▶ Missing partial guarantee practice 	<ul style="list-style-type: none"> ▶ Lump-sum guarantee practice ▶ Approved exporter authority <ul style="list-style-type: none"> - ATR, EUR-MED and invoice statement regulation - On-site customization permit for export - On-site customization permit for import ▶ Permitted sender authority ▶ Permitted recipient authority
Practices on the control of statement	<ul style="list-style-type: none"> ▶ Green line practice ▶ Priority in control if subject to document checks ▶ Priority in inspection if subject to inspection 	
Applications on safety and security control	<ul style="list-style-type: none"> ▶ Ease of providing summary statement which consists of reduced compulsory information ▶ Reduction of customs controls related with summary statement and priority in the conduct of these controls ▶ Priority in right of way at border gates 	

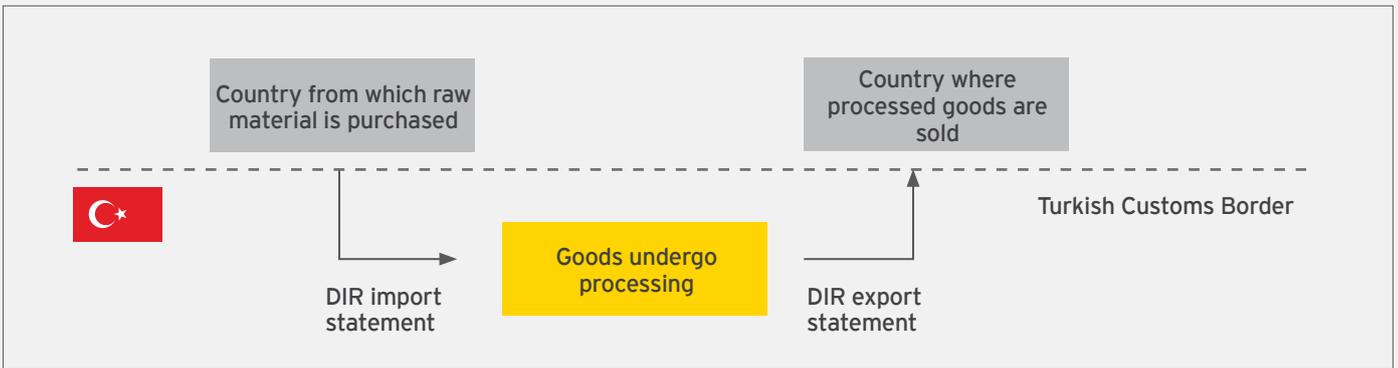
The advantages of this document for automotive companies are outlined above. However, the most important advantage is the "green line" application. Companies with this status can complete exports and imports with only electronic declarations, without submitting their goods to the customs administration in importation and exportation, without any customs clearance

processes. Thus, they can complete their customs procedures in a short time with the least cost amounts. According to October 2018 data, almost all import declarations processed through the green line were completed in the first 8 hours. This document provides a very important time advantage for the industry, which operates on just-in-time basis in production.

In addition, there are lower customs clearance costs (such as loading-unloading, handling, container opening-closing) since the goods processed in the green line are not presented to the customs administration. According to the 2017 Doing Business Report, the cost incurred in import processes was approximately USD 702. This document (AEO) decreases the cost arising in each import transaction below USD 100.

Advantages of the Inward Processing Regime

It is known that the automotive industry is heavily based in exportation. In customs applications, import taxes are not levied for the products, when an input or a raw material is imported for exportation. This application is called inward processing regime. In the Inward Processing Regime (IPR), the input used in obtaining the exported product is imported with customs exemption without being subject to trade policy measures. It is known that the purpose of IPR is to increase exports by supplying raw materials at global market prices to companies, to increase exported products' competitiveness in international markets and to develop export markets and diversify exported products.



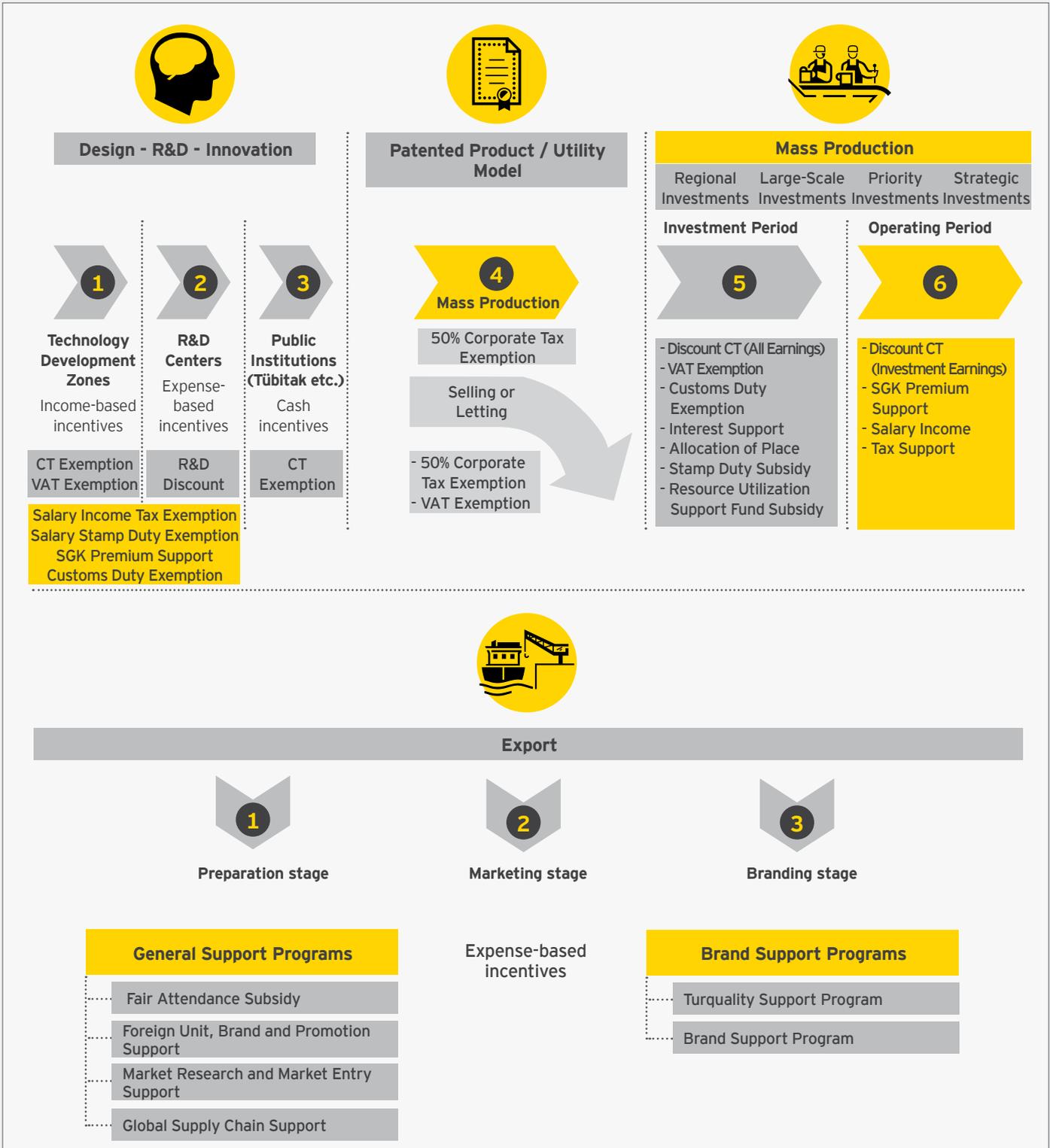
IPR provides a great benefit to companies in terms of tax. It is seen that firms operating with IPR take advantage over the other competitors in the market in terms of cost. With this application, the country's export figures are also increasing. According to the Automotive Industry Report published by the Economic Analysis and Evaluation Agency of the Directorate General of Risk Management and Control, the most used regime

in automotive exportation in 2016 was "Re-exportation of goods subject to inward processing regime conditional exemption system", with a 76.7% share. It is observed that the most frequently used regime in automotive exportation in January-June period of 2017 was the same regime with 79% share. This shows that majority of exportation in the automotive industry is made with IPR.

Incentives for the Automotive Industry

When the applicable incentives and support mechanisms tailored for the automotive industry in Turkey come to be examined, it is apparent that they are applied in all stages from idea to market; including early stages when the product is still a concept or still a project being initiated, through serial manufacturing until the final product is market-ready.

This section includes information about the significant incentives offered with regard to the industry and how they are implemented.



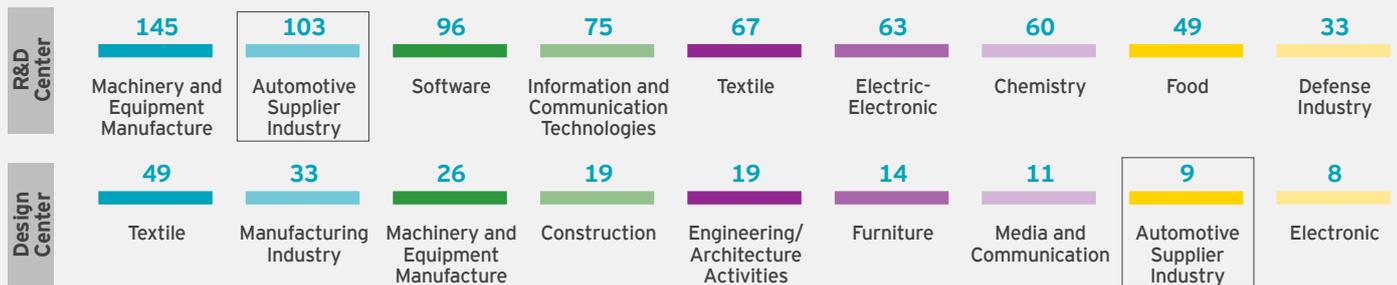
1. Incentives and support mechanisms Provided for Research and Development (R&D) Activities

The scope of support for R&D activities has been expanded greatly with the changes introduced as part of the R&D reform package rolled out in 2016 as well as subsequent regulations whereby R&D and innovation initiatives have been facilitated.

The new reforms helped the number of R&D centers to continue to grow exponentially. In 2008, 20 companies had R&D center

certificates. This number climbed to 323 in 2016 and 786 at the end of 2017. Today (November 2018), the number of active R&D centers has reached 1027 and the number of design centers has reached 273 and it is estimated that this increase will continue in the coming years.

Below is distribution of R&D and design centers by sector:



The number of R&D centers increased by approximately **2.5** times in the last year.

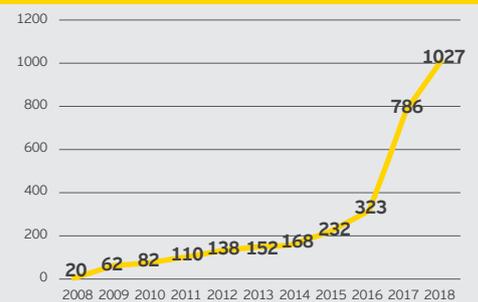
Number of Current R&D Centers

1027

Since the beginning of 2018, **241** R&D Centers began to operate.



Number of R&D Centers Active by Year



A. Comparison of Laws no. 5746 and 4691

Incentives and support mechanisms for R&D activities are primarily arranged under two different legislations in Turkey.

The first one is the Law no. 5746 on Supporting Research, Development and Design Activities. The principal purpose of the Law is to provide incentives and support mechanisms on expenditures related to R&D and design activities. In this context, as detailed below, incentives and exemptions such as additional 100% R&D and Design deduction on the expenditures related to R&D and design activities carried out under Law no. 5746, exemptions and deductions such as income tax, social security employer premiums and stamp tax calculated on the salaries of R&D and design personnel and customs duty exemption for imported goods used in R&D and design activities are provided.

On the other hand, the second legislation for R&D and design activities is Law no. 4691 on Technology Development Zones. In principle, this law regulates exemptions and incentives for the proceeds earned on R&D and design activities. Accordingly, incentives and exemptions such as corporate tax exemption, income tax, social security employer premium and stamp tax exemption for R&D and design personnel, VAT exemption for software sales and customs duty exemption for imported goods used in R&D and design activities are provided for the proceeds earned on R&D and design activities carried out in Technology Development Zones.

Incentives and support mechanisms provided under the two legislations are compared in the following table.

Law no. 5746 on the Support of R&D and Design Activities	Technology Development Zones Law no. 4691
 100% R&D and design deduction	 Corporate Tax Exemption
 Income tax withholding incentive (80-90-95%)	 Income tax exemption (100%)
Social security premiums employer's share support (50%)	
Customs duty exemption	
 Stamp tax exemption	 Stamp tax Exemption (only in payrolls)
	 VAT exemption

B. Support mechanisms and incentives provided to R&D and Design Centers

An amendment enacted by the Cabinet entered into force in August 2016, whereby the minimum number of equivalent full-time R&D personnel required to obtain R&D center certificate was reduced from 30 to 15. In comparison, the number of minimum design personnel required for design centers is 10 full-time equivalent personnel.

However, this number will be applied as 30 for the following industries;

- ▶ 29.10.01 - Road vehicle manufacturers such as tow-trucks, tankers, etc. for pickup trucks, trucks, semi-trailers,
- ▶ 29.10.02 - Manufacturers of automobiles and similar vehicles
- ▶ 29.10.03 - Manufactures of motor land vehicle engines (including rebuilding of engines in the factory)
- ▶ 29.10.04 - Manufacturers of passenger transportation vehicles such as minibus, midibus, bus, trolleybus, metrobus, etc.
- ▶ 29.10.07 - Manufacturers of special-purpose land vehicles (amphibious vehicles, garbage trucks, road cleaning vehicles, armored transport vehicles, mixer trucks, crane trucks, fire trucks, ambulances, motor caravans, etc.)

Under the 29.10 (Manufacturer of Motor Land Vehicles) class under the manufacturer heading according to the Statistical Classification of Economic Activities in the European Community (Nace Rev.2).

Another important reform introduced in the R&D legislation in order to support R&D activities is the inclusion of the time spent for R&D and design activities outside of the R&D center or technology development zone within the scope of the incentives and support mechanisms mentioned above. By means of this amendment, the time spent outside the premises designated for laboratory, analysis, test and trial studies within the scope of the project, studies carried out in other R&D or design centers, field researches, activities for prototype development and activities with scientific content with restriction to the personnel assigned to projects is included within the scope of the incentive. In addition, the time spent outside of the center by the personnel due to their graduate/doctorate studies may also be considered to be within the scope of income tax withholding incentive.

Another change implemented under the secondary regulations is the change in exemption (cancellation) rates taken into account for income tax incentive at R&D and design centers. Within this framework, improvements have also been made in the cancellation rates taken into account previously as 90% for personnel with doctorate degree and 80% for other personnel. With this change, R&D centers that employ R&D personnel who hold at least undergraduate degree in the fields of basic sciences (physics, chemistry, biology and mathematics) might receive support to cover part of the monthly remuneration paid to each personnel, equal to the monthly gross amount of the minimum wage applied for that year. Funding for such allowance shall be allocated to the budget of the Ministry of Science, Industry and Technology, for two years.

R&D and design deduction

The whole amount (100%) of R&D and innovation expenditures made in R&D and design centers is deductible on the tax return when corporate profit is calculated. The amount not deductible due to insufficient tax base is transferred to later periods. Transferred amounts are increased at the revaluation rate in the following years.

If companies achieve at least twenty percent increase compared to the previous year in any of the criteria below at their R&D and Design centers, R&D and innovation or design expenses made in that year can be additionally deducted while determining the commercial profit, by an amount equal to 50% of the increase amount achieved compared to the previous year.

- a) Share of R&D or design expenditures within the total turnover,
- b) Number of international or national patents registered,
- c) Number of internationally supported projects,
- d) Ratio of the number of researchers with graduate degree to the number of total R&D personnel,
- e) Ratio of the number of total researchers to the number of total R&D personnel,
- f) Ratio of the turnover on new products obtained from R&D activities to the total turnover.

Income tax withholding incentive

Salaries received by R&D/design and support personnel working at R&D or design centers, except public personnel, are exempt from income tax. The exemption rates are 95% for personnel with a doctorate degree and personnel with at least graduate degree in one of the basic sciences (physics, chemistry, biology or mathematics), 90% for personnel with graduate degree and with undergraduate degree in one of basic sciences and 80% for others.

Social security premiums employer's share support

50% of the social security premium employer's share calculated on the salaries received by R&D, design and support personnel for their R&D and innovation or design studies is paid from the allowance to be allocated by the Treasury in the Ministry of Finance budget.

Customs duty exemption

Goods imported for use in researches related with R&D, innovation or design projects are exempt from customs duty and all kinds of funds; papers prepared and transactions performed within this scope are exempt from stamp tax and fee.

Stamp tax exemption

Papers prepared for all kinds of R&D and innovation activities within the scope of the Law no. 5746 are exempt from stamp tax.

VAT exemption

VAT exemption can be applied without time restriction to new machine and equipment deliveries made to be exclusively used in these activities at R&D and design centers.

Accelerated Depreciation

Depreciation rates and periods which will be applied for new machines and equipment purchased until the end of 2019 calendar year can be calculated by taking into account half of the useful life durations set forth and declared by the Ministry of Finance under the article 315 of the Tax Procedures Law.

Considering the support mechanisms and incentives above and the R&D project public support of approximately 40%, the monthly cost advantage of an employer for an R&D personnel with minimum wage would be as follows.

Monthly Minimum Wage Cost	TRY	Euro	%
Total Employer cost (IT, SGK premium and ST included)	2,501.54	416.92	100%
Total Payroll Support (IT, SGK premium and ST)	429.38	71.56	17%
Cash Support	828.86	138.14	33%
CT Advantage	729.40	121.57	29%
Net Cost	513.89	85.65	21%

As can be seen, approximately 79 units out of 100 units of cost are met with various incentives and support mechanisms by the state and only 21 units of cost are born by the employer.

C. R&D and Design Activity Expenditure Items Subject to Incentive

Expenditure that can be subject to incentives and support mechanisms provided to R&D and design activities and expenditure related with these items are summarized below.

a. Personnel Expenses

These expenses are the salaries accrued in relation with R&D or design personnel who are employed to carry out R&D, innovation or design activities and that are within the scope of income tax withholding incentive.

Support personnel's costs are also within the scope, provided they do not exceed 10% of the number of full-time equivalent R&D or design personnel.

b. General Expenses

These expenses are rent, water, energy, repair/maintenance, communication and transportation expenses of R&D or design centers and expenses incurred to ensure the continuity of activities carried out at these centers such as repair and maintenance expenses of machines and equipment used at these centers. Insurance expenses related with R&D, innovation or design activities, and expenses of books, journals and similar scientific publications are within this scope as well. In addition, the expression "However, expenses of consumables such as office and stationery are not considered to be within this scope" was abolished, which made it possible to apply R&D and design deduction for these expenditures as well. Shares that will be calculated on common general operating expenses according to various criteria, except rent or depreciation, water and energy expenses calculated for R&D or design centers will not be considered within this scope.

c. Raw Material and Supplies Expenses

These expenses include all kinds of direct raw materials, auxiliary materials, operating materials, intermediate products, spare parts, prototypes and similar expenses and expenses related with the purchase of non-depreciable tangible assets.

d. Outsourced Benefits and Services

Payments made for professional or technical support, testing, laboratory and analysis services, legal or scientific advisory services and other such services received from external local or foreign companies and institutions in relation with R&D and innovation or design activities, except normal repair and maintenance expenses.

These expenditures may not exceed 50% of the total project expenditures incurred within the scope of R&D and innovation expenditures.

e. Depreciation and Depletion Shares

Depreciation expenses of economic assets which are used in operating activities, other than economic assets that are used directly and continuously in R&D activities, are taken into account by making a daily calculation.

f. Taxes, Duties and Charges

Taxes, duties and charges which are directly related with R&D activities and which are taken into account as expense while determining the corporate tax base are within the scope.

D. Incentives Provided to Technology Development Zones

Technology development zones (Technotowns) began to be implemented with the "Technology Development Zones Law" no. 4691 which was enforced after being published in the Official Gazette on 06.07.2001. The law has undergone many changes until today. The "Technology Development Zones Application Regulation", which was published in the Official Gazette dated 10 August 2016 regarding the application of the law and which was enforced on the date of its publication with effect from 1 March 2016, provides explanations about the activities to be carried out in technology development zones and incentives provided for these activities.

a. Corporate tax exemption

Proceeds from R&D, software and design activities are exempt from income and corporate tax.

Proceeds from activities performed outside of the zone cannot benefit from the exemption, even if they were obtained from software and R&D activities.

b. Income Tax Withholding Incentive

Remuneration for researchers, software developers, R&D and support personnel working in the zone in compensation for their duties are exempt from all kinds of taxes.

c. Social Security Premiums Employer's Share Support

Half of the social security employer's share support calculated over the salaries received in return for these works by the personnel whose salaries are income tax exempt under the Law no. 4691 is covered by the Treasury.

d. Customs Duty exemption

Goods imported for use in researches related with R&D, innovation and design projects are exempt from customs duty and all kinds of funds; papers prepared and transactions performed within this scope are exempt from stamp tax and fee.

e. Stamp Tax exemption

Payrolls prepared for salaries that correspond to R&D, software and design activities carried out in technology development zones are exempt from stamp tax.

f. VAT exemption

Deliveries and services of entrepreneurs operating in technology development regions, produced by them exclusively in these regions and in the form of system management, data management, business applications, sectoral, internet, gaming, mobile and military command control application software are exempt from value added tax.

On the other hand, within the scope of Law no 7104, VAT exemption can be applied without time limitation for new machinery and equipment deliveries made exclusively for usage in R&D, innovation and software activities.

g. Accelerated Depreciation

Depreciation rates and periods which will be applied for new machines and equipment purchased until the end of 2019 calendar year can be calculated by taking into account half of the useful life durations set forth and declared by the Ministry of Finance under the article 315 of the Tax Procedures Law.

On the other hand, according to the Decree ("Cabinet Decree no. 2017/10821") promulgated on 19 October 2017, if income and corporate taxpayers who earn profits in the Technology Development Zone earn their proceeds out of the sale, transfer and leasing of intangible rights, their proceeds are eligible for exemption from corporate tax depending on two important conditions, as detailed below.

- ▶ The condition that the intangible right should be patented/ functionally patented:

In order to benefit from this exemption, an application should be made to the institution authorized to make registration or entry within the framework of the related legislation according to the nature of these rights; and patent or documents functionally equivalent to patent should be obtained.

- ▶ The exemption should be determined according to the ratio of the qualified expenditure to the total expenditure:

If proceeds made in the technology development zone are earned by income and corporate taxpayers out of the sale, transfer and leasing of intangible rights, they are eligible for exemption from corporate tax on another condition, which is the restriction of the proceeds by the share of qualified expenditures to the total expenditures.

E. Incentives provided by TUBITAK

Development of industrial research and technology, supporting, encouraging and monitoring innovations and development of university-industry relations are among the basic functions of TUBITAK. Programs created and activities planned to realize these functions are carried out by TUBITAK's Technology and Innovation Support Program Directorate (TEYDEB).

National support programs

- ▶ 1512 - Gradual Support Program for Individual Entrepreneurship
- ▶ 1301 - Scientific and Technology Cooperation Networks and Platform Establishment Initiative Proj. (İŞBAP)
- ▶ 1501 - TÜBİTAK Industry R&D Projects Support Program
- ▶ 1503 - Project Market Support Program
- ▶ 1507 - TÜBİTAK SME R&D Start Support Program
- ▶ 1511 - TÜBİTAK Priority Areas Research Technology Development and Innovation P.S.P.
- ▶ 1505 - University-Industry Cooperation Support Program
- ▶ 1007 - Public Institutions Research and Development Projects S.P.

- ▶ 1513 - Technology Transfer Offices Support Program
- ▶ 1601 - S.P. For Capacity Increase in Innovation Entrepreneurship Areas
- ▶ 1602 - TÜBİTAK Patent Support Program
- ▶ 1514 - Venture Capital Support Program (GİSDEP)
- ▶ 1515 - Initial R&D Laboratories Support Program

Support programs with international partners

- ▶ AB 7. Framework Program
- ▶ 1509 - International Industry R&D Projects Support Program

F. Exemption Applied to Industrial Ownership Rights (CTL article 5/B)

50% of the profits earned from:

- ▶ Leasing,
- ▶ Transfer or sale,
- ▶ Mass production and marketing in Turkey and
- ▶ Use in production processes carried out in Turkey - and the sale of products manufactured through those processes (the part corresponding to the right)

of the inventions obtained at the end of R&D, innovation and software activities carried out in Turkey is exempt from corporate tax as of 1/1/2015.

Moreover, leasing, transfer or sale of the intangible rights related with the invention with patent or with utility model certificate, which results from R&D, innovation and software activities within the scope of the article 5/B of the Corporate Tax Law, are exempt from VAT.

The fact that expenditures related to inventions are eligible for R&D deductions under Art. 3 of Law no. 5746 does not constitute a barrier to availing of the exemption provided for in Art. 5/B of the Law on the profits earned from inventions that result from such activities.

Exemption requirements are as follows:

- 1 The patent or utility model protection period should not have expired,
- 2 Individuals should be the owner of the patent or utility model or have a special monopoly license on them
- 3 A "utility model certificate" should be obtained as a result of the "patent" or "positive research report" with the investigation system registered by TPE,
- 4 R&D, innovation and software activities should be carried out in Turkey,

2. Supports for investments in the automotive industry

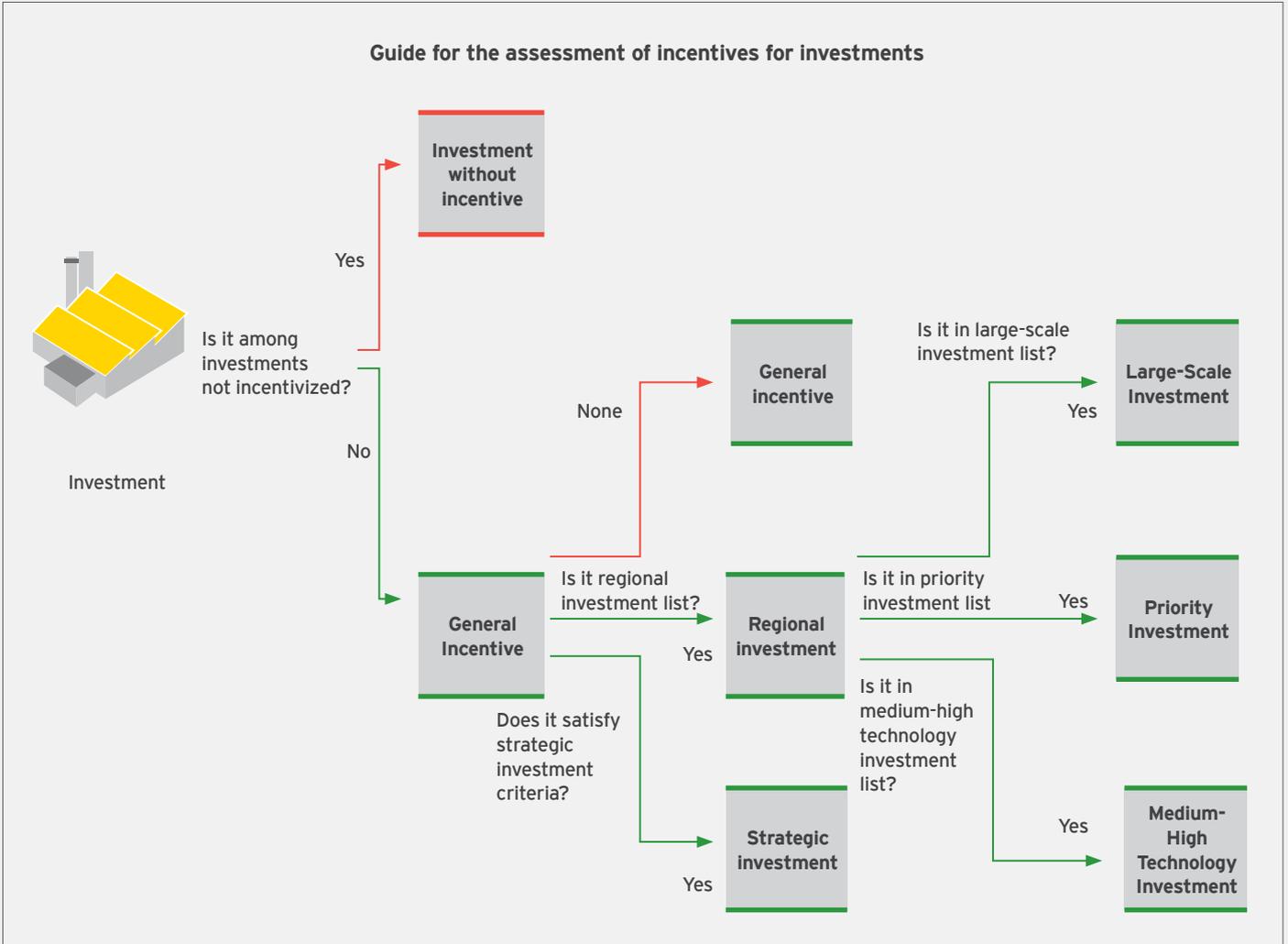
The current investment incentive system in Turkey is arranged within the scope of the "Council of Ministers Decree no. 2012/3305 (Decree)" and the "Law no. 6745 on Support of Project Based Investments and Amendment of Some Laws and Decree Laws" and the relevant secondary legislation since 2012. The system is based on separating Turkey's provinces into 6 different regions according to their level of development and applying various supports and incentives at rates and amounts that increase from more developed regions to less developed ones.

On the other hand, it is decided that the state will support investments relating to sectors that are considered strategic at high rates regardless of region; and the investments in the automotive industry have a special position in our current investment incentive system. The support items provided to investors are as follows.

Tax reduction	State contribution is provided to the investor by applying Income or Corporate Tax at a reduced rate, until the contribution amount determined for the investment is reached.
VAT exemption	The machines and equipment that are investment goods to be procured domestically and from abroad within the scope of incentive certificates are exempt from value added tax.
Customs Duty exemption	Customs duty is not paid for the machines and equipment that are investment goods to be procured from abroad within the scope of incentive certificates.
Social Security Premiums Employer's Share Support	The part - corresponding to minimum wage - of the social security premium employer's share that must be paid for the additional employment created with the investment within the scope of the incentive certificate is covered by the Ministry.
Income Tax Withholding Support	The income tax withholding determined for additional employment created with the investment in the investment certificate is canceled.
Social Security Premiums (Employee's Share) Support:	The part - corresponding to minimum wage - of the social security premium employee's share that must be paid for the additional employment created with the investment within the scope of the incentive certificate is covered by the Ministry.
Interest Support	Interest Support is a financing support provided for investment loans with a maturity of at least one year used in the scope of the incentive certificate. The Ministry covers a certain part of the interest or dividend relating to the loan used for the investment.
Investment Area Allocation	For investments subject to an Incentive Certificate, investment area is allocated for up to 49 years, within the framework of the principles and procedures determined by the Ministry of Finance.

The investment incentive legislation, which provides the basis for support of automotive industry investments, is very comprehensive and should be analyzed well and evaluated within the framework of a certain procedure so that investments benefit from the existing supports in the most effective way.

The following table shows the flow regarding the evaluation of the investment incentive system and the determined investment types within a certain systematic framework.



Support elements and rates can be summarized as follows, according to the type of investments to be made for the automotive industry.

Automotive industry in terms of regional and large scale investment incentive applications

Main industry investments and supplier industry investments relating to the automotive industry are among the investment subjects supported within the scope of regional incentive applications, with minimum investment requirement of 50 million TRY for main industry investments and 1-4 million TRY depending on the region for supplier industry investments. If the size of the related investment is minimum 200 million TRY for the main industry and minimum 50 million TRY for the supplier industry, the investment in question could be considered as large-scale investment. The support elements of Regional and Large Scale investments can be comparatively summarized as follows.

	Regional Investments	Large Scale Investments
Support Elements	1. - 6 th Region	1. - 6 th Region
Customs D. Exemption	✓	✓
VAT Exemption	✓	✓
Investment Contribution Rate	15% - 50%	25% - 60%
Tax Reduction Rate	50% - 90%	50% - 90%
SGK Employer's Support	2 years - 10 years	2 years - 10 years
SGK Employer's Sup. Lim. (Investment Amount X %)*	10 - 35*	3 - 11*
Interest Support Points (TRY / Foreign Exchange)	3-1 / 7-2	-
Interest Support Upper Limit (TRY)**	1,000,000 - 1,800,000**	-
VAT Return	✓	✓
Investment Area Allocation	✓	✓

(*) There are not any limits for the investments made in the 6th region.

(**) Interest support application is not applicable in the 1st and 2nd regions.

Medium - High Technology industry class product investments

In the investment incentive application, investments for the manufacturing of products in medium-high technology industry class according to OECD's technology intensity definition may benefit from the incentives provided for the 4th region, if they are carried out in the 1st, 2nd and 3rd regions except the Istanbul province. Investments for the automotive industry, whose US97 code is specified as 34 (Manufacture of Motor Land Vehicles) are also included among these products and the incentives in question can be used by making an investment amounting to minimum 1 million TRY.

Incentive elements and support elements are as follows, compared with the 1st region supports in terms of regional incentive applications.

	1 st Region	4 th Region (*)
Customs D. Exemption	✓	✓
VAT Exemption	✓	✓
Investment Contribution Rate	15%	30%
Tax Reduction Rate	50%	70%
SGK Employer's Support	2 years	6 years
SGK Employer's Sup. Lim. (Investment Amount x %)	10	25
Interest Support Points (TRY / Foreign Exchange)	-	4 / 1
Interest Support Upper Limit (TRY)	-	1,200,000
VAT Return	✓	✓
Investment Area Allocation	✓	✓

(*) Medium - High Technology Class Investment

	1 st Region	4 th Region (*)	5 th Region (**)
Customs D. Exemption	v	✓	✓
VAT Exemption	✓	✓	✓
Investment Contribution Rate	15%	30%	40%
Tax Reduction Rate	50%	70%	80%
SGK Employer's Support	2 years	6 years	7 years
SGK Employer's Sup. Lim. (Investment Amount X %)	10	25	35
Interest Support Points (TRY / Foreign Exchange)	-	4 / 1	5 / 2
Interest Support Upper Limit (TRY)	-	1,200,000	1,400,000
VAT Return	✓	✓	✓
Investment Area Allocation	✓	✓	✓

(*) Medium - High Technology Class Investment
(**) Priority Investment

Priority investments

Some investment subjects are specified as "Priority Investment" in the investment incentive legislation and it is stated that these investments can benefit from the regional supports applied in the 5th region. Motor parts, powertrains/parts and automotive electronics investments with a minimum amount of 20 million TRY, and motor investments with a minimum amount of 75 million TRY and investments with a minimum amount of 300 million TRY, which will be made in motor land vehicles main industry, can benefit from this application.

Support elements and rates of the investments mentioned above are shown below comparatively with 1st Region and Medium-High Technology Investments.

Strategic investments

Investments related to the manufacture of products with high import dependency according to the investment incentive system and which meet the requirements in the relevant legislation are considered a "Strategic Investment" and are supported in the following ratios and amounts.

	1 st Region	4 th Region (*)	5 th Region (**)	Strategic Investment
Customs D. Exemption	✓	✓	✓	✓
VAT Exemption	✓	✓	✓	✓
Investment Contribution Rate	15%	30%	40%	50%
Tax Reduction Rate	50%	70%	80%	90%
SGK Employer's Support	2 years	6 years	7 years	7 years
SGK Employer's Sup. Lim. (Investment Amount X %)	10	25	35	15
Interest Support Points (TRY / Foreign Exchange)	-	4 / 1	5 / 2	5 / 2
Interest Support Upper Limit (TRY)	-	1,200,000	1,400,000	TRY 50 M without exceeding 5% of the fixed investment amount.
VAT Return	✓	✓	✓	✓
Investment Area Allocation	✓	✓	✓	✓

(*) Medium - High Technology Class Investment
(**) Priority Investment

Analysis of the investment projects which obtained incentive during January-September 2018

During the first 9 months of 2018, **190 investment projects** in the automotive industry obtained an “incentive certificate”.

- ▶ There are **12 projects** with a worth of over **TRY 90 million**.
- ▶ The provinces for the highest investment are **Bursa (55 units), Kocaeli (25 units), Konya (23 units), İzmir (18 units)** and **Istanbul (14 units)**.
- ▶ There are **136 project development** investments, **38 completely new investments** and **16 modernization** investments.
- ▶ All projects' **total investment amount is approximately TRY 8.2 billion** and approximately **TRY 5.5 billion of that amount will be invested by foreign companies and TRY 2.7 billion by domestic companies**.
- ▶ Of the totally TRY 8.2 billion investment, approximately **TRY 6.3 billion is for expansion, TRY 1.5 billion is for modernization** and approximately **TRY 460 million is for completely new investment**.
- ▶ The **employment commitment in the end of all projects is 5,069 people. 3,705 people portion of this employment shall be realized by domestic companies and 1,364 people portion by foreign companies**.

Source: Ministry of Industry and Technology

Analysis of the investment projects which obtained incentive during January-September 2018

According to the capital type:

Type of capital	Number of investments
Local	154
Foreign	36
Total	190

According to the capital type of the investment amount:

Type of capital	Total investment (TRY)
Foreign investment	5,509,222,890
Local investment	2,685,729,730
Total	8,194,952,620

According to the capital type of employment:

Type of capital	Employment (people)
Foreign investment	1,364
Local investment	3,705
Total	5,069

According to the investment type:

Type of investment	Type of investment
Expansion	136
Completely new	38
Modernization	16
Total	190

According to the investment type of the investment amount:

Type of investment	Total investment (TRY)
Expansion	6,244,983,452
Modernization	1,492,005,000
Completely new	457,964,168
Total	8,194,952,620

According to the provinces where investment is made:

City	Number of investments
Bursa	55
Kocaeli	25
Konya	23
İzmir	18
İstanbul	14
Ankara	11
Manisa	6
Tekirdağ	6
Düzce	4
Sakarya	4
Samsun	3
Bilecik	2
Elazığ	2
Eskişehir	2
Hatay	2
Zonguldak	2
Aksaray	1
Balıkesir	1
Bolu	1
Diyarbakır	1
Kütahya	1
Mersin	1
Osmaniye	1
Siirt	1
Sivas	1
Şanlıurfa	1
Şırnak	1
Total	190

Source: Ministry of Industry and Technology

The largest 10 foreign capital investment projects that received investment incentive certificate (January - September 2018)

	Company	City	Investment Type	Fixed Investment Amount (TRY)	Employment
1	Hyundai-Assan Otomotiv Sanayi ve Ticaret A.Ş.	Kocaeli	Expansion	1,959,440,000	105
2	Tofaş Türk Otomobil Fabrikası A.Ş.	Bursa	Modernization	1,120,000,000	0
3	Ortadoğu Rulman San.ve Tic. A. Ş.	Ankara	Expansion	938,590,000	300
4	Prometeon Turkey Endüstriyel ve Ticari Lastikler A.Ş.	Kocaeli	Expansion	502,652,000	50
5	Valeo Otomotiv Sanayi ve Ticaret A.Ş.	Bursa	Expansion	409,000,000	140
6	Maxion Jantaş Jant Sanayi ve Ticaret A.Ş.	Manisa	Expansion	122,460,000	50
7	Cengiz Makina Sanayi ve Ticaret A.Ş.	Kocaeli	Completely new investment	96,760,000	200
8	Autoliv Cankor Otomotiv Emniyet Sistemleri Sanayi ve Ticaret A. Ş.	Kocaeli	Expansion	49,443,390	30
9	Mahle Filtre Sistemleri A. Ş.	Kocaeli	Expansion	33,630,000	30
10	Valeo Otomotiv Sanayi ve Ticaret A.Ş.	Bursa	Expansion	31,060,000	60

Source: Ministry of Industry and Technology

Additionally, 15-point additional contribution and 100% tax reduction can be applied exclusively to investment expenditures of the years 2017, 2018 and 2019 in the manufacture industry

investment areas which also include automotive industry investments mentioned above.

Project Based Investments

Pursuant to Law no. 6745 on the Support of Project-Based Investments and Amendment of Some Laws and Decree Laws, published in the Official Gazette on 7 July 2016, project-based investments were included in the incentive system legislation. These project based investments are specifically supported for the following purposes:

- ▶ To be able to meet critical needs at present or those that may arise in the future,
- ▶ To be able to ensure the security of supply for products with insufficient production capacity,
- ▶ To improve the technology capacity in areas with technology deficits,
- ▶ To reduce import dependency in areas where there is foreign trade deficit,
- ▶ To achieve high added value,
- ▶ To ensure manufacturing by using new generation technologies not used in manufacturing yet,
- ▶ To lend competitiveness to our country in different sectors,
- ▶ To accelerate technological transformation in the sectors interacted with and provide positive externality to these sectors,
- ▶ To promote innovative and R&D-based investments,
- ▶ investments should be aimed to manufacture processed products with high added value which will be made in sectors

that negatively affect the current account balance and that experience shortage of raw materials

- ▶ Investments should address integrated production that enables the utilization of our country's raw material potential, etc.

Incentive elements offered within this framework include the following, in addition to the incentive elements in the decree no. 2012/3305;

- ▶ Income tax withholding regardless of investment region,
- ▶ Qualified personnel support,
- ▶ Grant support,
- ▶ Energy support,
- ▶ Capital contribution,
- ▶ Infrastructure support and
- ▶ Public purchase guarantee.

The project-based incentive system also includes the incentives in the decree no. 2012/3305 by applying increased rates (investment contribution rate up to 200% of the investment, SGK Employer's Share support up to 10 years, etc.) and in order for an investment to benefit from project based investment incentives, it should meet the minimum 100 million USD investment requirement and should be accepted by the related Ministry as a "Project Based Investment".

Automotive projects which have been entitled to benefit from project-based supports: Oyak Renault

Production of engines, batteries and aluminum engine blocks for hybrid vehicles	
Renault	Location: Bursa
	Beginning date: 16/3/2018
	Investment duration: 4 years
	Investment type: Product diversification
	Fixed investment amount: ~133,000,000 USD
	Employment: 110
	Number of qualified employees: 63

Support items provided:

- ▶ VAT Exemption
- ▶ Customs Duty Exemption
- ▶ VAT Rebate
- ▶ Corporate Tax Rebate
(Tax rebate rate: 100%, rate of contribution to investment: 80%, rate of support that can be used during the investment period: 100% of the contribution amount)
- ▶ Social securities premium, employer share support (10 years)
- ▶ Income Tax Withholding Support (10 years)
- ▶ Qualified Personnel Support (maximum TRY 42,000,000)
- ▶ Energy Support
(50% of the consumption for 10 years (maximum TRY 40,000,000 after the plant is activated))

Automotive projects which have been entitled to benefit from project-based supports: Bosch

BOSCH	New generation high pressure gasoline injector production	
	Location:	Bursa
	Beginning date:	28/5/2018
	Investment duration:	5 years
	Investment type:	Product diversification
	Fixed investment amount:	~270,000,000 USD
	Employment:	314
	Number of qualified employees:	14
Support items provided:		
<ul style="list-style-type: none"> ▶ VAT Exemption ▶ Customs Duty Exemption ▶ Corporate Tax Rebate (Tax rebate rate: 100%, rate of contribution to investment: 95%, rate of support that can be used during the investment period: 100% of the contribution amount) ▶ Social securities premium, employer share support (10 years) ▶ Income Tax Withholding Support (10 years) ▶ Qualified Personnel Support (maximum TRY 20,000,000) ▶ Energy Support (50% of the consumption for 10 years (maximum TRY 100,000,000 after the plant is activated)) 		

Automotive projects which have been entitled to benefit from project-based supports: BMC

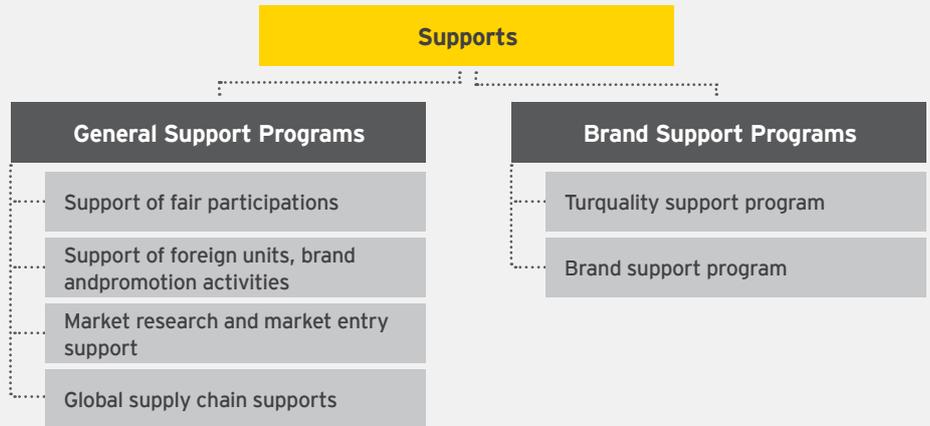
BMC	Manufacture of diesel engines, transmission and subsystems	
	Location:	Sakarya
	Beginning date:	1/6/2018
	Investment duration:	8 years
	Investment type:	Greenfield
	Fixed investment amount:	~166.000.000 USD
	Employment:	600
	Number of qualified employees:	24
Support items provided:		
<ul style="list-style-type: none"> ▶ VAT Exemption ▶ Customs Duty Exemption ▶ VAT Rebate ▶ Corporate Tax Rebate (Tax rebate rate: 100%, rate of contribution to investment: 72%, rate of support that can be used during the investment period: 100% of the contribution amount) ▶ Social securities premium, employer share support (10 years) ▶ Income Tax Withholding Support (10 years) ▶ Qualified Personnel Support (maximum TRY 69,000,000) ▶ The Interest Support (for 10 years beginning from the date of using financing, and maximum TRY 141,000,000) ▶ Energy Support (50% of the consumption for 10 years (maximum TRY 12,000,000 after the plant is activated)) 		

3. Automotive industry export incentives

State support mechanisms for exportation that are implemented by the Ministry of Trade aim to support companies expanding abroad in each stage of this process. Thus, progress in R&D, innovation, design, branding and target market entry is achieved by developing policies for all links in the investment-production-employment-exportation value chain.

These supports are implemented under the titles "General Support Programs" and "Brand Support Programs".

It is aimed to provide the support needed by companies in the 'preparation', 'marketing' and 'branding' processes with the incentives.



General Support Programs

Support of Fair Participations

Expenditures incurred in international fair organizations by companies resident in Turkey for the purpose of promoting their own products are supported through grants.

The basis amount of the support is determined separately for each fair in foreign trade fairs and the total grant amount is calculated according to the rented fair area.

	General fair	Sectoral fair	Prestige fair
Upper limit of the support	TRY 56,000	TRY 85,000	TRY 284,000
Expenditure Support Rate	50%		
Expenditure Support Rate (Target Countries)	70%		

Support of Foreign Units, Brands and Promotion Activities

The following expenditures of companies resident in Turkey and the abroad-resident companies more than 51% of which is owned by those companies are supported through grants:

- ▶ Rent expenses of units set up abroad (office, store, showroom, warehouse, office, etc.),
- ▶ Various promotion expenditures for foreign markets (TV-radio advertisements, promotions on the internet, printed promotions, promotions in indoor and outdoor areas, other promotion expenditures)
- ▶ Expenses for foreign registration of brands registered in Turkey and protection of international brand registrations.

The grant rates and upper limits for these expenditures are as follows.

Support element	Expenditure Support Rate	Upper limit of the support
Unit Rent Costs	40-70%	If the unit opened is a store; 100,000 - 120,000 USD/year
		If it is a warehouse, office, showroom, product exhibition warehouse/field or a section or land rented to construct a building thereon; 75,000-100,000 USD/year
		Rent expense of warehouses rented abroad by the industrial and trade companies that manufacture and/or supply original parts for the main industry abroad or the company with whom there is a an organic link
Promotion and marketing expenses	60%	USD 150,000/year
Support of Foreign Brand Registration Activities	50%	USD 50,000/year

Market research and market entry support

Expenses of market researches carried out for the overseas market by companies resident in Turkey and consultancy expenses for the acquisition of companies abroad are supported through grants. The expenditures to be supported in this context are as follows:

- ▶ Transportation and accommodation expenses related to market research trips that companies resident in Turkey go on abroad,
- ▶ Expenses of reports focused on sectors, countries, companies resident abroad or brands, which are purchased in order to establish companies' and partnership organizations' action plans and market entry strategies for foreign countries,
- ▶ Expenses related to financial and legal consultancy services for acquisitions of companies resident abroad,
- ▶ Interest expenses of loans used for the acquisition of the companies resident abroad which have advanced technology and will enable technology transfer,
- ▶ Subscription expenses of partnership organizations' e-commerce sites.

The grant rate and upper limits for the support are as follows:

Support element	Expenditure support rate	Upper limit of the support
Foreign Market Research Support	70%	Maximum USD 5,000 per foreign market research trip
Report and Foreign Company Acquisition Support	60%	USD 200,000/year
Support for acquisition of foreign companies with advanced technology	75%	Expenses of financial and legal consultancy services USD 500,000/Year
	TRY Loans 5 points / Foreign currency loans 2 points 50%	Interest expenses of loans obtained in the acquisition of the company USD 3,000,000/Total
	TRY Loans 5 points / Foreign currency loans 2 points 50%	Interest expenses of loans obtained in the acquisition of the brand of the company resident abroad USD 2,000,000/Total
E-Trade subscription support (partnership organizations)	80%	USD 2,000 /Year for each company and each site

Support of Market Entry Documents

Expenses of companies resident in Turkey relating to various quality and standard certificates set by the Ministry of Commerce are supported through grant at the rate of 50% and up to maximum USD 250,000 annually per certificate.

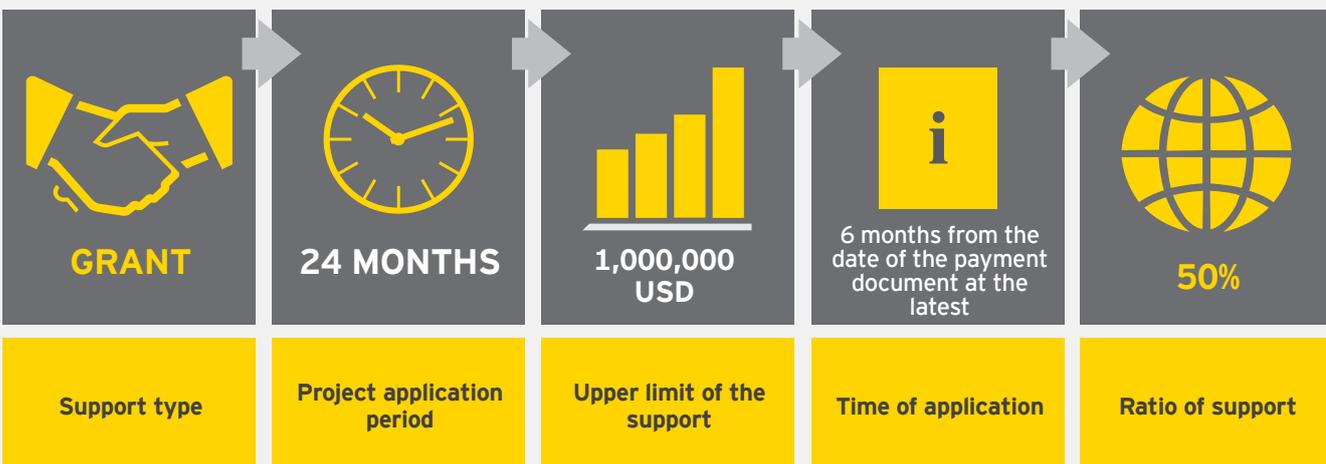
The expenditures of companies under this Decision are considered within the scope of support, if they are realized through companies of which 51% at least belongs to them and with which they have organic links.

Global Supply Chain Supports

Global Supply Chain Competency Project is a support program that aims to increase the intermediate product production and export capabilities of companies that produce goods in Turkey and that are or can be suppliers of any global brand.

Support at the rate of 50% and up to USD 1,000,000 is provided for expenditures to be incurred for the acquisition of machinery, equipment, hardware, laboratory and test devices, foreign customer visits, software purchase, education and advisory expenditures, certification, test analysis and product verification costs.

A maximum of 1 project per company is supported under this Decision.



Support Expenditure Items

- Machinery Equipment and Hardware Purchase
- Software Purchase
- Education, Consultancy and Customer Visits (Up to 100,000 USD)
- Certification, Test-Analysis, Product Verification Expenses

Brand Support Programs

Brand support programs have been created in order to enable the creation of know-how, institutionalization and development of Turkish companies, which have the potential of branding in the international markets, thus enable them to become global players with their own brands in the international markets and to create and establish a positive image for Turkish goods through these brands.

The strategy in question is executed through two programs: "Brand Support Program" and "Turquality". Although the support elements provided in the programs are the same, there are differences in terms of grant upper limits and period of the support. Supports within the scope of the brand support program are implemented for a period of four years and within the context of the Turquality program, this period is five + five years.

Companies included within the scope of the support with these programs carried out by the Ministry of Trade are supported for their:

- Expenditures on patent, utility model, industrial design and trademark registration,
- Expenses related to certification,
- Expenses related to the employment of Fashion/Industrial product designers/Chefs/Cooks,
- Promotion, advertising and marketing activities,
- Expenses related to units abroad,
- Consulting (Management, design, law, informatics) expenses

through grants.

Supports are applied at a rate of 50% and the upper limits for grant payments are as follows;

Support Item	Support Upper Limit Brand Support Program (4 Years)	Support Upper Limit Turquality® Support Program (5+5 Years)
Product/Service/Brand Registration-Protection Support	TRY 200,000/year	Unlimited
Advertisement, Promotion and Marketing Support	TRY 1,600,000/year	Unlimited
Certification Support	TRY 1,000,000/year	TRY 2,000,000/year
Rent Support for Units Abroad	TRY 2,400,000/year	50 pcs
Decoration and Installation Support for Units Abroad	TRY 1,200,000/year	TRY 800,000/unit
Rent and Installation Support for Sales Areas Abroad	TRY 800,000/year	Unlimited (rent) TRY 800,000/unit (installation)
Franchising Support (Decoration and Installation)	TRY 200,000/store	TRY 400,000/store
Franchising Support	TRY 200,000/store	TRY 800,000/year (100 stores)
Consultancy Support	1,200,000/year	Unlimited
Employment Support (Chef/cook, software developer, engineer, translator)	TRY 800,000/year	Unlimited
Market Research and Reporting	TRY 400,000/year	Unlimited

4. Automotive Industry Employment Incentives

One of the most important elements of labor costs in Turkey are the social security premiums paid over employees' monthly gross salaries. Employee's cost is generally calculated by adding the social security premium amounts that correspond to the employer's share, to the gross salaries. In addition, these premiums are considered as an expense element in determining the earnings of employers.

The cost of an employee working with gross minimum wage for employers, including social security premium employer's share are as follows as of 2018.

	Gross minimum wage (A)	Social security contribution (C)	Employee's cost* (A) + (C)
TL	2,030	456	2,486
€	338	76	414

The employment provided by investors is supported with various legal regulations. The aim of these regulations is to reduce employment costs and increase employment across the country.

Employers who will start their activities for the first time with any investment can benefit from employment incentives for the individuals to be employed under certain criteria.

The two important additional employment supports currently available include different amounts of support and different conditions for those to be hired.

New generation employment incentive (Law no. 7103)

The new generation employment incentive can be used between 1 January 2018 and 31 December 2020 for those to be employed in the manufacturing industry in any region of Turkey. The incentive ensures that both the employer and the employee's social security premiums are covered by the Unemployment Insurance Fund.



According to the regulation, in order to benefit from the support, individuals who will be provided employment must be chosen among people who were unemployed for the three months before the date they will start to work. The duration of the support varies between 12 and 18 months depending on the age and gender of the employee.

Employee	Support period
Men between the ages of 18 and 25	18 months
Women over the age of 18	18 months
Disabled individuals	18 months
Other	12 months

Additional employment incentive (Law no. 6111)

The Additional Employment Incentive is applicable until 31 December 2020 for employees who will be employed in any industry in any region of Turkey. The Incentive enables the social security premium employer's share amounts to be covered from the Unemployment Insurance Fund.



According to the practice, employees who are hired must be chosen among individuals who were unemployed for the last six months prior to the date of starting to work. The duration of the support varies between 24 and 48 months depending on the age and gender of the employee.

Support element	Support period
Men between the ages of 18 and 29	Up to 48 months
Women over the age of 18	
Men over the age of 29	Up to 24 months

5 points reduction from the social security employer's contribution share (Law no. 5510)

According to the related incentive regulation, the amount corresponding to five points of the social security premium employer's share will be covered by the Treasury. There is no period and quota restriction to benefit from the five point reduction advantage. The main condition to benefit from the incentive is the fulfillment of the insurance declarations within the legal period and not having any contribution, administrative fine and related delay penalties or delay charge debts to the Social Security Institution.



6 points additional reduction from the social security premium employer's share (Law no. 5510)

Employers who benefit from the above 5-point reduction support mentioned above can benefit from additional 6-point reduction for each employee, if they continue their activities in one of the cities shown in the following table.



**Additional 6-points reduction from
social security employer's contribution share**

Cities & Incentive period

4 years	5 years	6 years
Afyonkarahisar	Adıyaman	Ağrı
Amasya	Aksaray	Ardahan
Artvin	Bayburt	Batman
Bartın	Çankırı	Bingöl
Çorum	Erzurum	Bitlis
Düzce	Giresun	Diyarbakır
Elazığ	Gümüşhane	Hakkari
Erzincan	Kahramanmaraş	Iğdır
Hatay	Kilis	Kars
Karaman	Niğde	Mardin
Kastamonu	Ordu	Muş
Kırıkkale	Osmaniye	Siirt
Kırşehir	Sinop	Şanlıurfa
Kütahya	Tokat	Şırnak
Malatya	Tunceli	Van
Nevşehir	Yozgat	Bozcaada
Rize		Gökçeada
Sivas		
Trabzon		
Uşak		

Incentive for the Employment of the On-the-job Training Program participants

Employers who are registered at Employment Agency of Turkey and who currently employ more than 10 employees may request organization of on-the-job training program for participants up to 30% of the current number of employees, by providing a commitment regarding the employment of the participants.

Accordingly, it will be possible to employ participants in the program for up to 6 months without costs such as salary and social security premium.

In addition, employers may benefit from employer's premium support for up to 42 months for the employment of graduates from the On-the-job Training Program. The Incentive enables the social security premium employer's share amounts to be covered from the Unemployment Insurance Fund.

Human resources profile/potential

One of the biggest advantages for investors in potential investments in Turkey is competitive and qualified labor force. In Turkey, it is easy to access a young, dynamic, educated and multicultural workforce. Half of Turkey's population, which is 81 million according to 2017 data, is under the age of 31.7 and Turkey has the largest young population compared to the European Union.

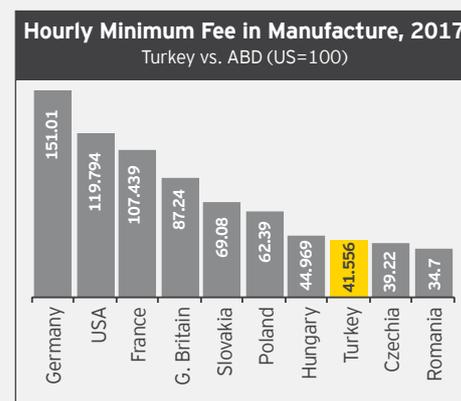
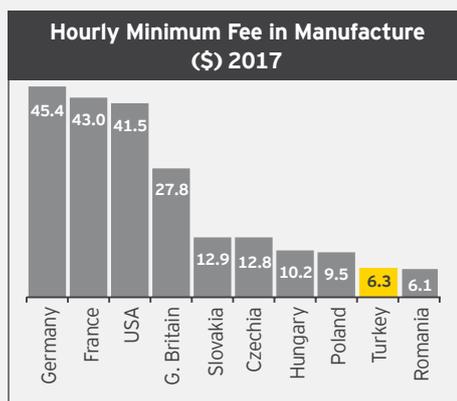
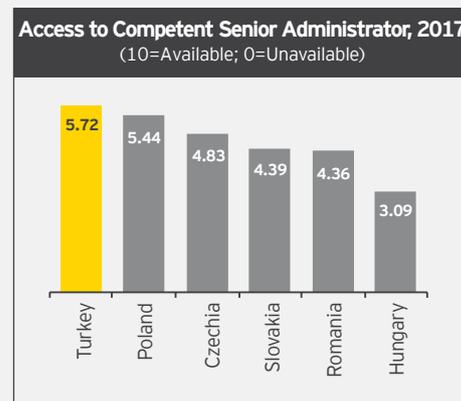
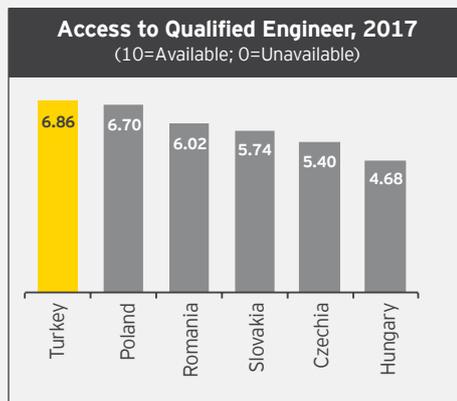
According to data of 2017, in Turkey, more than 800,000 young people graduate from 183 universities over the country within one year and there are over 985,000 high school graduates half of whom are vocational and technical high school graduates.

Statistics on Education and Access to Workforce and Graduates in Automotive and Related Areas Access to Workforce and Cost Comparison

	Associate degree	Bachelor's degree	Master's degree	Doctor's degree	Total
Management with database and network design	452	17	169	3	641
Software and application development and analysis	12,219	793	190	10	13,212
Electric and energy	8,576	1,424	272	58	10,330
Electronics and automation	8,170	17,467	1,905	293	27,835
Mechanical science and metalwork	6,741	11,147	871	174	18,933
Motor vehicles, ships and aircraft	4,847	2,427	203	31	7,508
Total	41,005	33,275	3,610	569	78,459

Source: YÖK (The Council of Higher Education)

Access to qualified and competitive labor force



Source: IMD World Competitiveness Yearbook Executive Opinion Survey(O-10); Eurostat, OECD, BLS, TurkStat

Turkish automotive industry success stories

Ford Otosan

Established R&D Culture

Ford Otosan developed its first major project, Transit Connect model following the establishment of equal partnership with Ford in 1997, and in 2003, the company developed Ecotorq, the new Cargo truck and brand new heavy vehicle engine. Ford Otosan has the entire required capacity and infrastructure to design, develop and test a complete vehicle including its engine, from the stage of white paper to the launch of a commercial product. Our company is working on advanced technologies to offer products which can compete not only in Turkey but also in all potential export markets including Europe and North America.

Largest R&D Organization of the Turkish Automotive Industry

Having realized engineering exports with more than 1,200 R&D engineers, Ford Otosan has the largest R&D organization of the Turkish automotive industry. On behalf of Ford Motor Company and Ford Otosan, many different ongoing projects are being conducted for the development of engines, engine systems, body and inner space. Particularly the focus is on fuel economy and emission optimization, driver support systems, development of test processes and analytic methods.

MLeader in Engineering Exports

Ford Otosan, as the exports champion of Turkey, received the first prize in the category of "Architecture, Engineering, Scientific and Other Technical Services" in 2015 and 2016 in the survey "Turkey's 500 Largest Service Exporters" organized by the Turkish Exporters' Assembly (TIM). Our total engineering exports have reached 578 million US Dollars since 2010. With the efforts carried out within the scope of engineering exports, the company won Ford Motor Company's the most prestigious award "Henry Ford Technology Award" in 2017.

Ford Otosan's signature in Engineering and Design

- ▶ Transit Courier
- ▶ Ecotorq Engine Family
- ▶ Local Transmission and Engine development
- ▶ EcoBlue Engine
- ▶ New Ford Trucks F-MAX

Autonomous Drive

Ford Otosan conducts 4 different projects with support from the European Union. Various autonomous vehicle systems up to Level 4 are being developed within the scope of these projects. In these efforts, Ford Otosan is responsible for all steps and development of the necessary software from the selection of autonomous vehicle sensors to signification of the data received from the sensors and then autonomous control of the vehicle.

Electrification

Ford-Otosan conducts electrification efforts from hundred percent electric cars to hybrid solutions in all vehicle segments it has manufactured. These efforts include electric vehicles' software and control, design and simulation at component and system level, and development of product and infrastructure strategies. Similarly, the components' design and production strategies are developed and implemented by taking into account the value chain of electric vehicles.

A First-Time Application by Ford Otosan: Technology and Engineering Export to China

Ford Otosan has pioneered a new endeavor with the technology licensing agreement it has signed with the Chinese Jiangling Motor Corporation (JMC) in 2013. With this agreement, Ford Otosan has granted a license for the manufacture of its 100% intellectual property rights-owned Ecotorq engines in China -the largest truck market of the world- for JMC brand vehicles. In 2014, another license agreement was signed with the same company for the transmission, cabin and parts technology of our existing trucks. With this agreement, in addition to license income, the opportunity of exporting engineering to China has also been obtained. Ford Otosan engineers are working together with JMC engineers on the localization of existing parts, adapting them into the Chinese market and commissioning. "JMC Weilong" trucks were designed with support from Ford Otosan engineers within the scope of the technology licensing agreement with JMC for the manufacture of the trucks developed completely (including the engine) by Turkish engineers of Ford Otosan. The truck was launched in China, the world's largest truck market, in 2017. The vehicle was recognized as the "Truck of the Year" in China.

New Ford Trucks F-MAX

1,200 Ford Otosan engineers worked during the design, development and production process, which lasted for 5 years at Ford Otosan R&D Center and Inonu factory for the new F-MAX with 100% Intellectual Property Rights owned by Ford Otosan. The new F-MAX became the first connected vehicle of Ford Otosan which can update its software through the cloud of both Ford and Ford Otosan. Ford Trucks attended Hannover Fair -one of the world's most important commercial vehicle fairs- with its own name for the first time in its history, and won the "2019 International Truck of the Year" (IToy) Award with F-Max.

Farplas

'Our company Farplas won the first prize among 971 companies during the Inovalig Innovation Leaders contest in the end of 2017.

F+ Ventures is the Fark Holding's new corporate capital-based company established for investing in intelligent transportation technologies in order to adapt to evolving technologies and integrate innovations into conventional business models.

We have invested 4.5 million dollars for start-ups so far. Our first investment, Comodif is an internal venture of Fark Holding, and it has achieved a groundbreaking project on digital transformation of connected vehicles in Turkey...

Our objective is to explore the technology and companies that will radically change the transportation industry and improve the quality of transportation and life for people. Companies will begin downsizing and even disappearing unless they turn towards technological and high value added products and markets.

We are aiming to turn F Plus into a platform in which the entire transportation ecosystem can jointly investment, beyond being a typical venture capital. Our objective is to make F Plus one of the first names remembered for intelligent transportation in the world.'

Ahu Büyükkuşoğlu Serter
Fark Holding A.Ş. Chairperson of the Board of Directors

Technology:

- ▶ We are using and developing production technologies for value added products in automotive. We are commissioning painted, coated pieces and new materials.
- ▶ TWe are the company which has used COD, wrapping, Mucell technologies for the first time in Turkey.
- ▶ We are conducting system integration with composite materials with the objective of reducing weight.
- ▶ We have identified our priority issues by creating a technology radar with the Fraunhofer Institute.

Digital transformation:

- ▶ We started projects to realize digital transformation from product design to the last point of production in order to realize productivity and high quality expectations.
- ▶ We are working with main industries for vertical integration efforts.
- ▶ We are increasing our savings by conducting sample application projects of Industry 4.0 technologies. We have begun obtaining results in the fields such as data analytics, visualization with camera, and integration of processes.
- ▶ We are actively participating in Boğaziçi University Industry 4.0 Platform.

~2000 employees

- ▶ Automotive inner and outer trim parts
- ▶ Connected vehicle platform

▶ € ~180 Million Turnover

▶ İSO 500 : 250

▶ Industry 4.0 Automation/Digitalization

▶ F+ Ventures

▶ İnovalig - 2017 Strategy Category Winner

Innovation:

- ▶ Our focus is to use open innovation and synergy intelligence. Our innovation strategy is to realize improvements to ensure process efficiency, become a strategic business partner of our existing customers with innovative and value added products, and learn and develop new technologies in transportation.
- ▶ We have configured our innovation efforts under a directorate: Strategy, R&D and Innovation. We are coordinating our Digital Transformation efforts under this structure. We are supporting transformation with innovation through cultural transformation.
- ▶ We are including our employees in these efforts in the most effective way through our internal entrepreneurship contests.
- ▶ Comodif, as one of our internal ventures, has delivered the solutions it has developed for connected vehicles to users through Fiat Tofaş and Turkcell so far.
- ▶ F+ Ventures constitutes our investment branch in new fields. The investments we have made so far are: Charge Point, Valens, Comodif, Garaj Sepeti, Maşinga, T-Dispatch.

Trends & Farplas innovation portfolio

Trend	Strategy	Action
Product Customization of Electric Car Regulations	Light Materials Design and Production Value-added Products	Metal substitute products Composite and New Materials New Process Technologies
Process Industrial IoT	EIndustry 4.0	Digital Transformationin Production
Business Model IoT	Connected Vehicles Intelligent Mobility	Comodif, F+ Ventures

Okan University/UTAS

Transportation Technologies and Intelligent Automotive Systems Application and Research Center (UTAS)

- ▶ Founded in 2009.
- ▶ The university which started the **first studies** on intelligent and communicating vehicles in Turkey.
- ▶ In collaboration with OTEP, **the first Intelligent Transportation and Intelligent Vehicles Strategy Plan** of our country was issued.
- ▶ The **only member** of ERTICO in Turkey.
- ▶ Turkey's **first domestic autonomous car** was developed at Okan University.
- ▶ It was part of Turkey's first communicating vehicle research project.
- ▶ **The only Turkish university with membership** at UTAS EGVA (European Green Vehicles Initiative Association).
- ▶ Prof. Orhan Alankuş is included in the Board of Directors of the Intelligent Transportation Systems Association as (**AUSDER**) **founder member** (representing universities).



OKAN UNIVERSITY "TRANSPORTATION TECHNOLOGIES AND INTELLIGENT AUTOMOTIVE SYSTEMS APPLICATION AND RESEARCH CENTER" (UTAS)



- ▶ UTAS intends to be a «World-renowned information and research center, and a Center of Excellence in the field of Intelligent Transportation Systems by 2020»
- ✓ ERTICO's only member from universities and the private industry
- ✓ EGVA's only member from universities
- ✓ Member of the Board of Directors of AUSDER

Main Research Areas

- ▶ Intelligent vehicles
- ▶ Autonomous vehicle technologies
- ▶ Communicating vehicles
- ▶ Intelligent energy management systems
- ▶ Battery packaging and management systems
- ▶ Electric machine and inverter development
- ▶ Traffic management
- ▶ Big data and cloud technologies
- ▶ Simulation systems

Center of Excellence Systematics Case Study: Intelligent and Eco-friendly Vehicles

Interdisciplinary Study

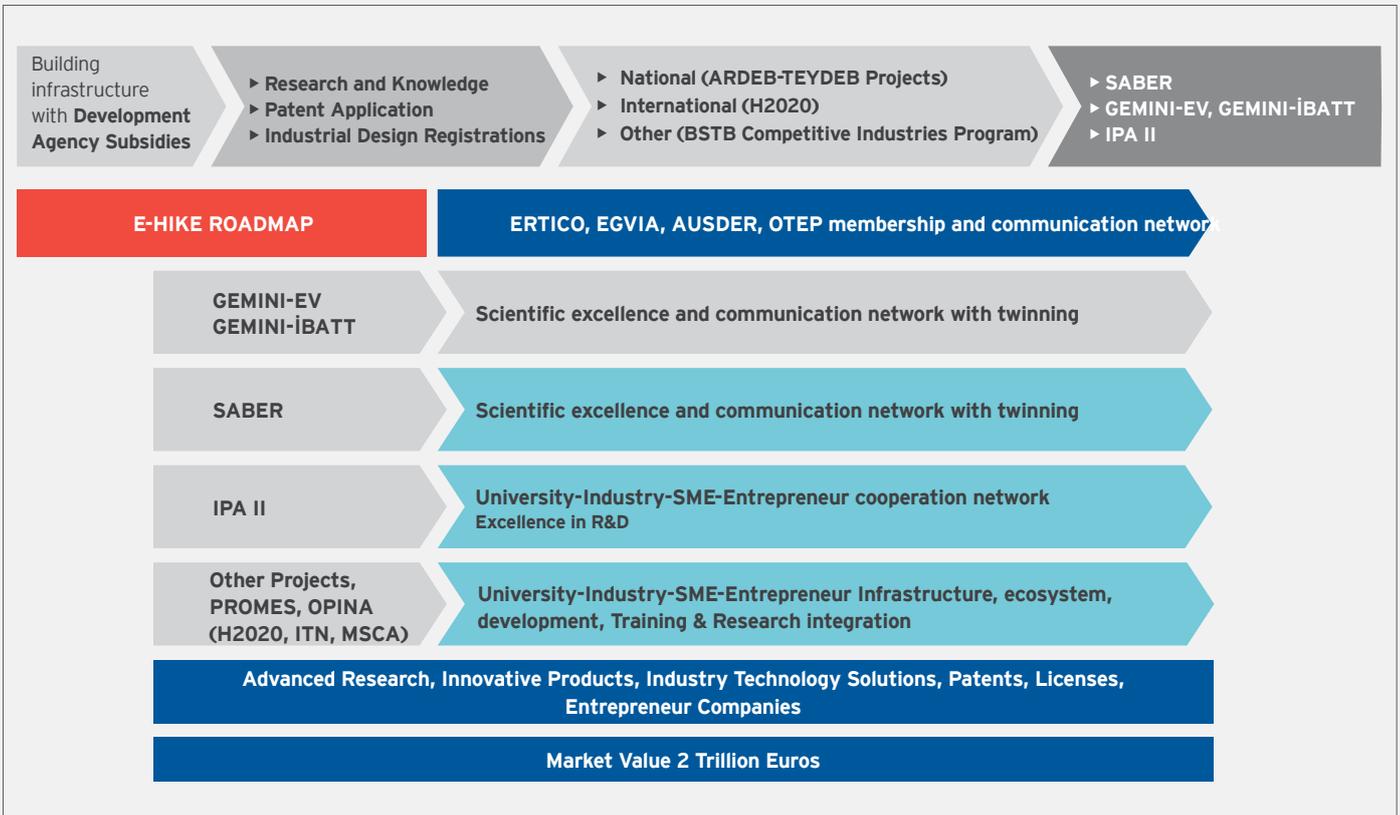
Engineering Departments - Electrical & Electronic Eng., Mechanical Eng., Civil Eng., Automotive, Mechatronic Eng., Computer Eng., Industrial Eng., Mathematical Eng., Software Engineering
Medicine - Ergonomics, Internal Medicine, Physiology.
Faculty of Business Administration

The most important Research Networks of Europe in this field are ERTICO, EGVA - The Only Turkish Univ. Member

- ▶ **8 Horizon 2020** application (1 Won, Three Coordinator Applications)
- ▶ Work with the automotive clusters in Europe
- ▶ **7 ARDEB, 5 TEYDEB** applications (3 ARDEB were won)
- ▶ Three **1505 Projects** were won
- ▶ Two **IPA II Competitive Industries Programs** were accepted

Horizon 2020 (Examples)

- ▶ Collaborative Tools for Sustainable City Mobility(X-City)
- ✓ **Optimal fuel consumption with Predictive Power Train control and calibration for intelligent Truck (OptiTruck)**
- ▶ Sustainable Advanced Battery Value Chain Revolution for Electro mobility (SABRE)
- ▶ Innovative and Sustainable Battery Pack Development for Increased Efficiency and Energy Density (INNOBATT)
- ▶ Growing Excellence of Research and Development for Intelligent Electric Vehicle Technologies (GEMINI_EV)



Studies Related with Intelligent Vehicles and Energy Systems

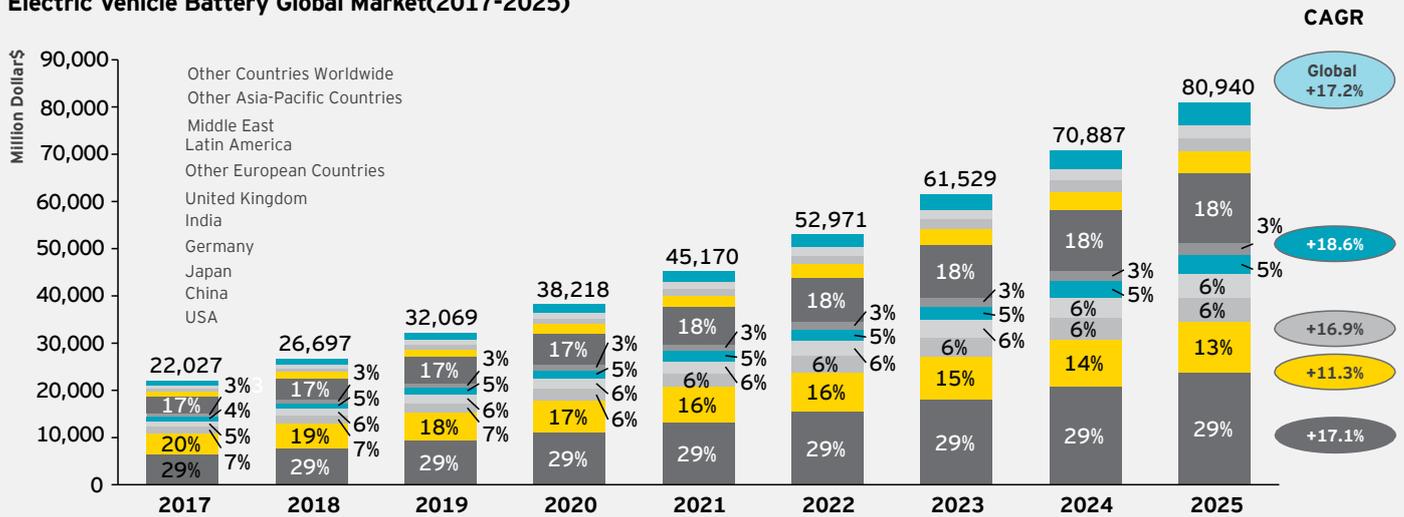
- ▶ OKANOM-Okan Autonomous Vehicle Project
- ▶ SAE Level 3 Autonomous Vehicle Development Project
Intelligent and Communicating Energy Management System
- ▶ Productivity Increase Feasibility Study with Intelligent Transportation Systems Application on Metrobuses
- ▶ OPTITRUCK, HORIZON 2020 Project
- ▶ Hydraulic steering wheel system with intelligent power support
- ▶ Intelligent vehicle computers
- ▶ Active driver fatigue sensor system
- ▶ Unmanned Land Vehicle Platform Design and Realization for Industrial and Militaristic Use with High Maneuvering Capability
- ▶ Automotive Value Chain Collaborative Upgrading (IPA II)
- ▶ Open Innovation Autonomous Vehicle Development and Testing Platform (IPA II)
- ▶ Dynamic and Modular Intelligent Battery Management System
- ▶ Intelligent Renewable Energy Management System
- ▶ Development of a Battery management System According to the Automotive Standards for Hybrid and Electric Vehicles
- ▶ Development of an Electrical Vehicle Battery with Significantly Increased Energy Density and Efficiency
- ▶ Development of an Intelligent Battery Management System which Provides High Efficiency and Performance for Electric Vehicles
- ▶ Design and Realization of SEPIC LED Driver with High Efficiency and Variable Output Voltage at Two Different Power

Which electric vehicle battery market should be focused on for growth?

Growth in the Electric Vehicle Battery Market

USA and China are the largest electric vehicle battery markets among other countries

Electric Vehicle Battery Global Market(2017-2025)



Source: Allied Market Research, EY analysis
* Commercial, passenger and two-wheeled electric vehicle battery markets' total

The battery recycling market may swell to USD \$11.83 billion in global value in 2022

Outlook on the opportunity

As the battery stocks continue to improve as a result of advancements in electric vehicles, solar roofs and other storage applications, recycling will be a rapidly-growing and attractive investment area. The growth of the global battery recycling market is further supported by the strict governmental regulations to control environmental hazards during battery production and destruction.

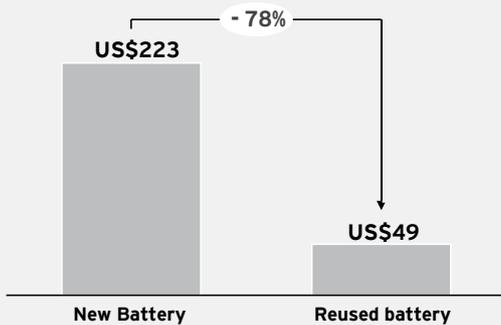
<p>Battery recycling: An innovative opportunity</p> <p>11 million tons Li-ion batteries expired as at 2030</p> <p><5% Recycled Li-ion batteries in the current situation</p> <p>20% Cobalt demand that can be met with recycling as of 2025</p>	<p>Advantageous Key Factors</p> <ul style="list-style-type: none"> ▶ Correct recycling choice depending on the battery chemicals used and recycled materials ▶ Promoting battery recycling as a culture - being able to establish good relations with the government and industry circles 	<p>External Factors</p> <ul style="list-style-type: none"> ▶ Potential demand for increased use of electric vehicles in Asia, especially China and India ▶ Opportunities to cooperate with global electric vehicle producers ▶ Tesla is working with Kinsbursky Brothers in North America and Umicore in Europe for the closed loop battery recycling program. 						
	<p>Income Flows</p> <ul style="list-style-type: none"> ▶ Waste generator recycling fees ▶ Sale of the recycled materials to battery producers and other industries ▶ Storage, packaging and transportation of used batteries for other recycling companies 	<p>Key Risks</p> <table border="1"> <thead> <tr> <th>Key Risk</th> <th>Risk Mitigation</th> </tr> </thead> <tbody> <tr> <td>▶ Unexpected regulations about recycling</td> <td>▶ Consult government and industry institutions before establishing the recycling process</td> </tr> <tr> <td>▶ Slowly progressing adoption of electric vehicles</td> <td>▶ Diversify battery supply sources (especially consumer goods)</td> </tr> </tbody> </table>	Key Risk	Risk Mitigation	▶ Unexpected regulations about recycling	▶ Consult government and industry institutions before establishing the recycling process	▶ Slowly progressing adoption of electric vehicles	▶ Diversify battery supply sources (especially consumer goods)
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Note: ¹ Market size is calculated for batteries weighing less than 5 kg. Battery packs mainly used in electric vehicles and industrial applications have longer life and will not offer a significant recycling opportunity in the medium term.

Will electric vehicle batteries make cities more sustainable?

The high cost of recycling and economic benefits associated with the reuse of batteries have encouraged producers to use batteries in different applications.

Comparison of Expenses (US\$ / kWh)

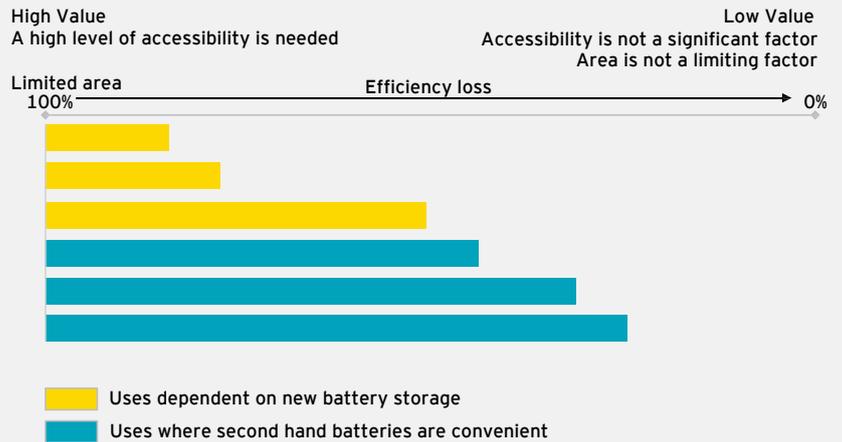


Key advantages

- ▶ Low cost of reuse compared to new batteries
- ▶ Additional flows of income from secondary usage applications
- ▶ Cost savings for optimized energy use

Source: EY Analysis

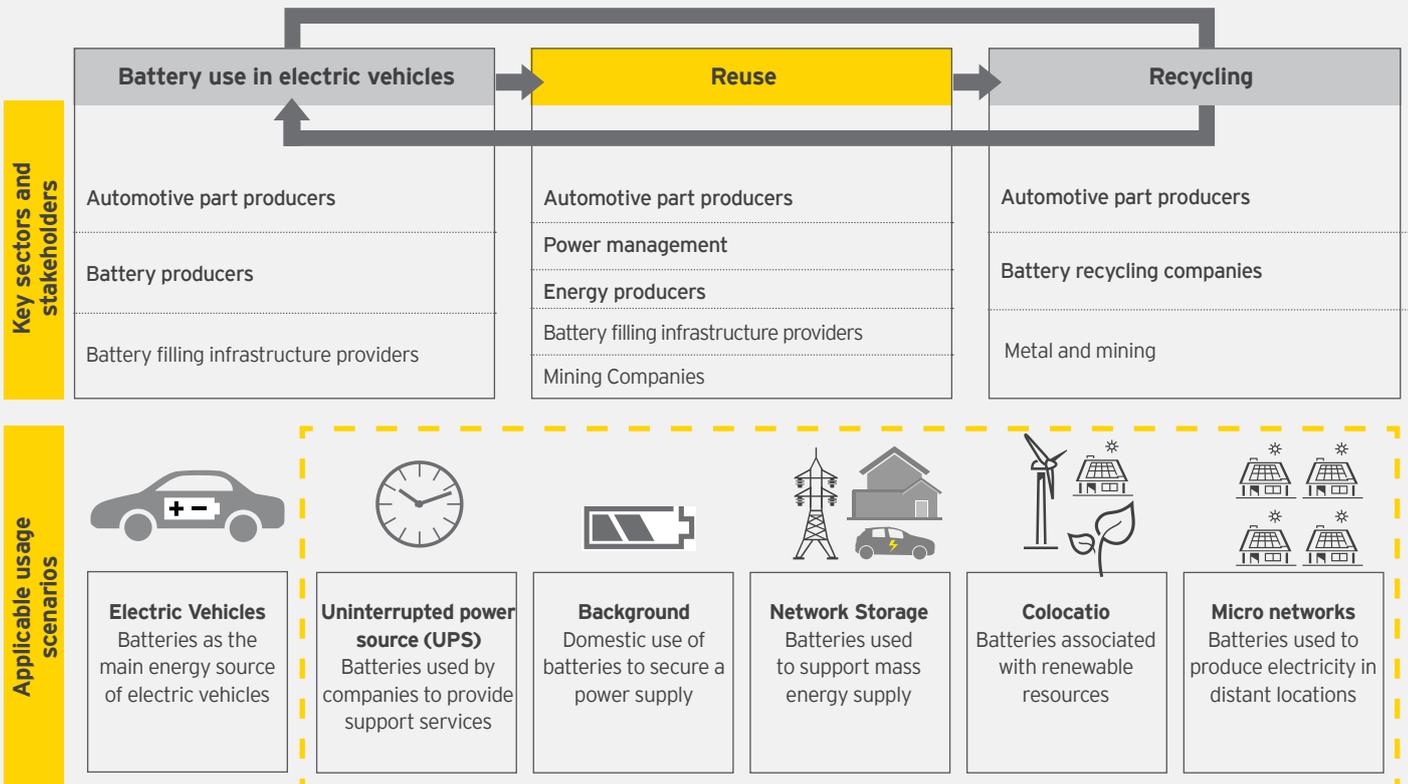
Comparison of Requirements



* Degradation of the managed battery service may vary according to the service level.

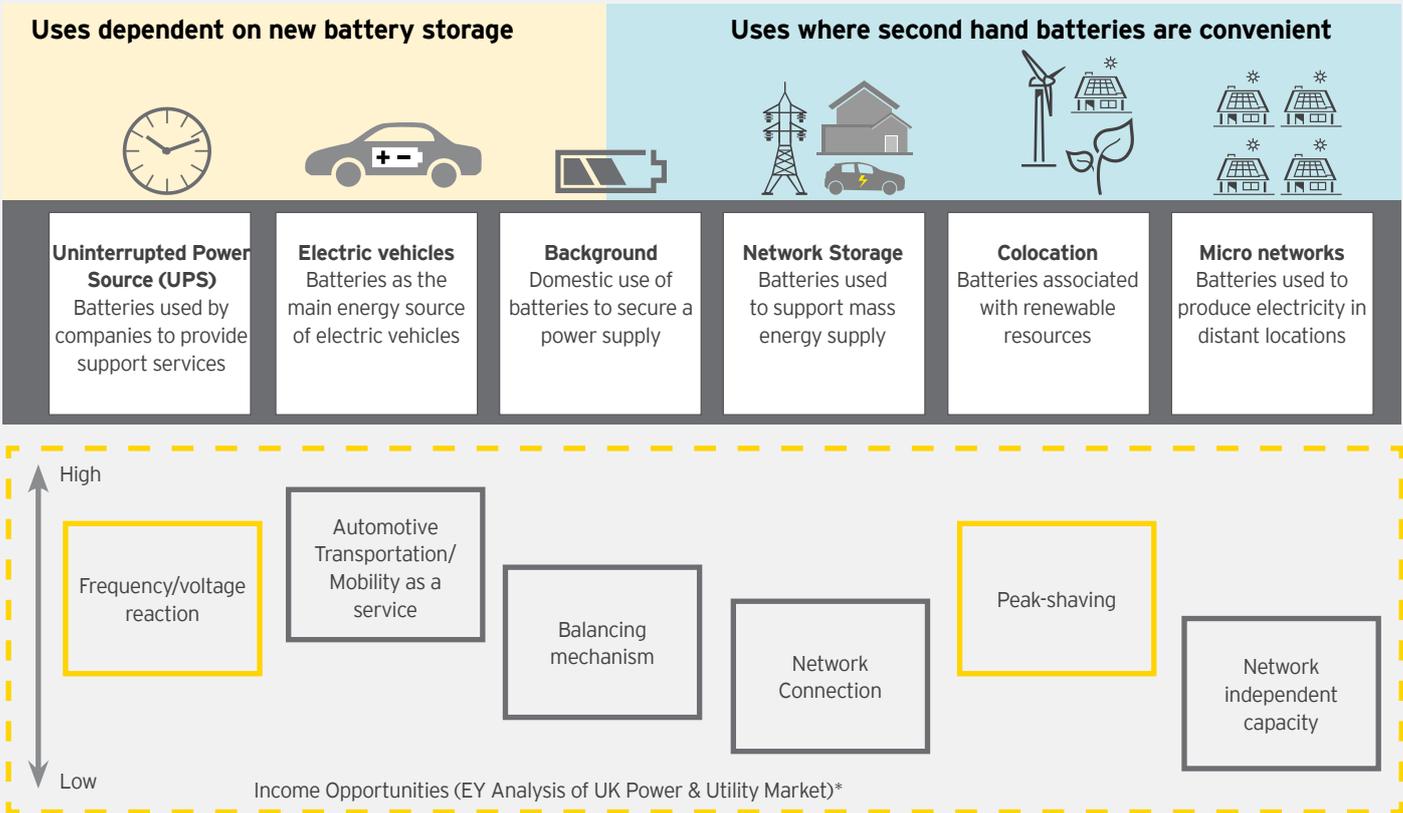
5 different scenarios about reuse

Electric vehicle battery life: Value chain and key elements of scenarios



Source: EY Analysis

Income opportunities would vary according to different conditions; EY considers frequency/voltage reaction and “peak-shaving” applications as high income opportunities.



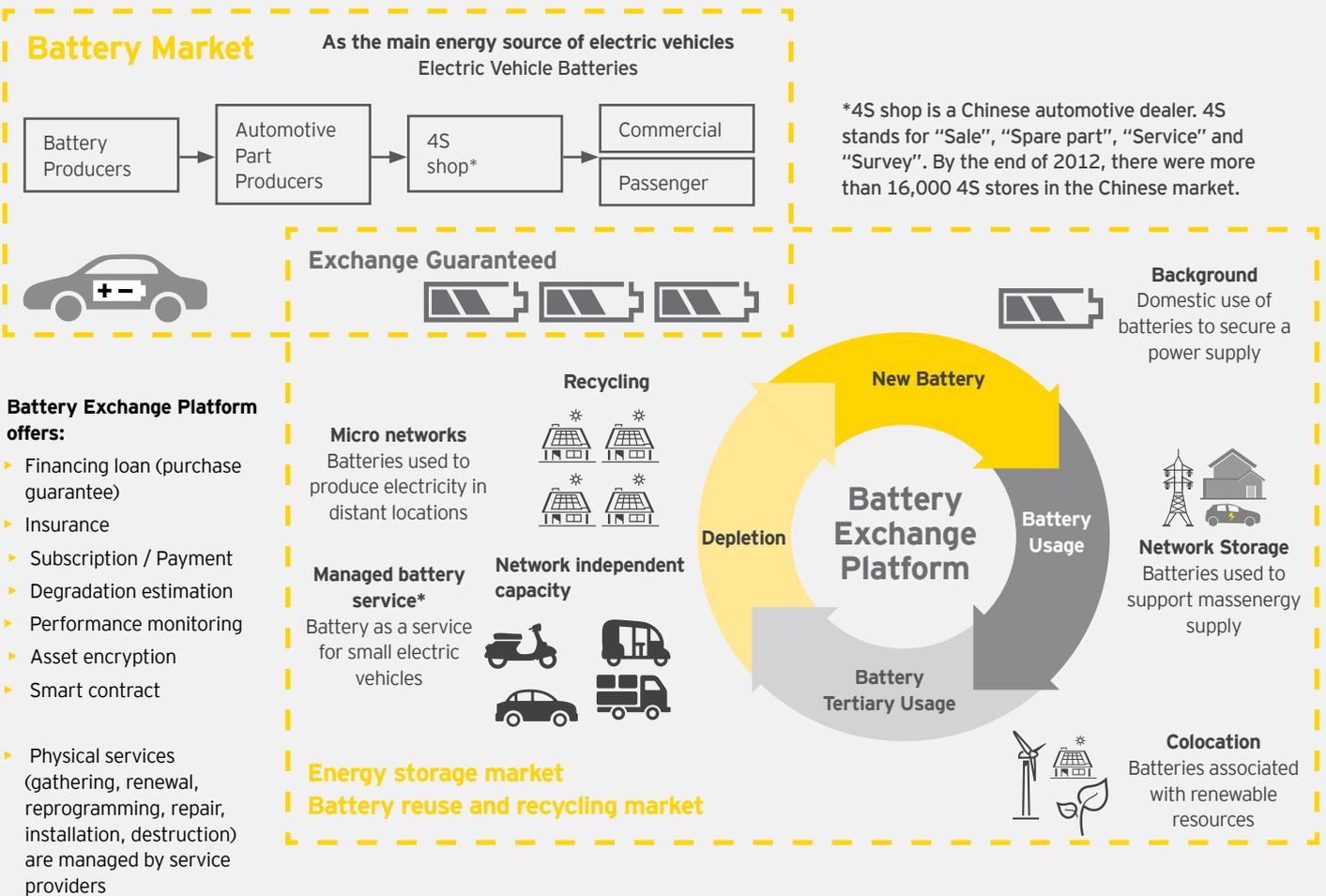
- ▶ Costs of electricity, subsidies and restrictions on renewable energy and electric vehicles, used battery volumes, usage status and market growth are factors that will affect income.
- ▶ New income models can be designed depending on the discovery of unprecedented usage scenarios and as a result, income sources are not stable.

How to turn electric vehicle battery products into a service model?

Electric Vehicle Service Model Battery Exchange Platform

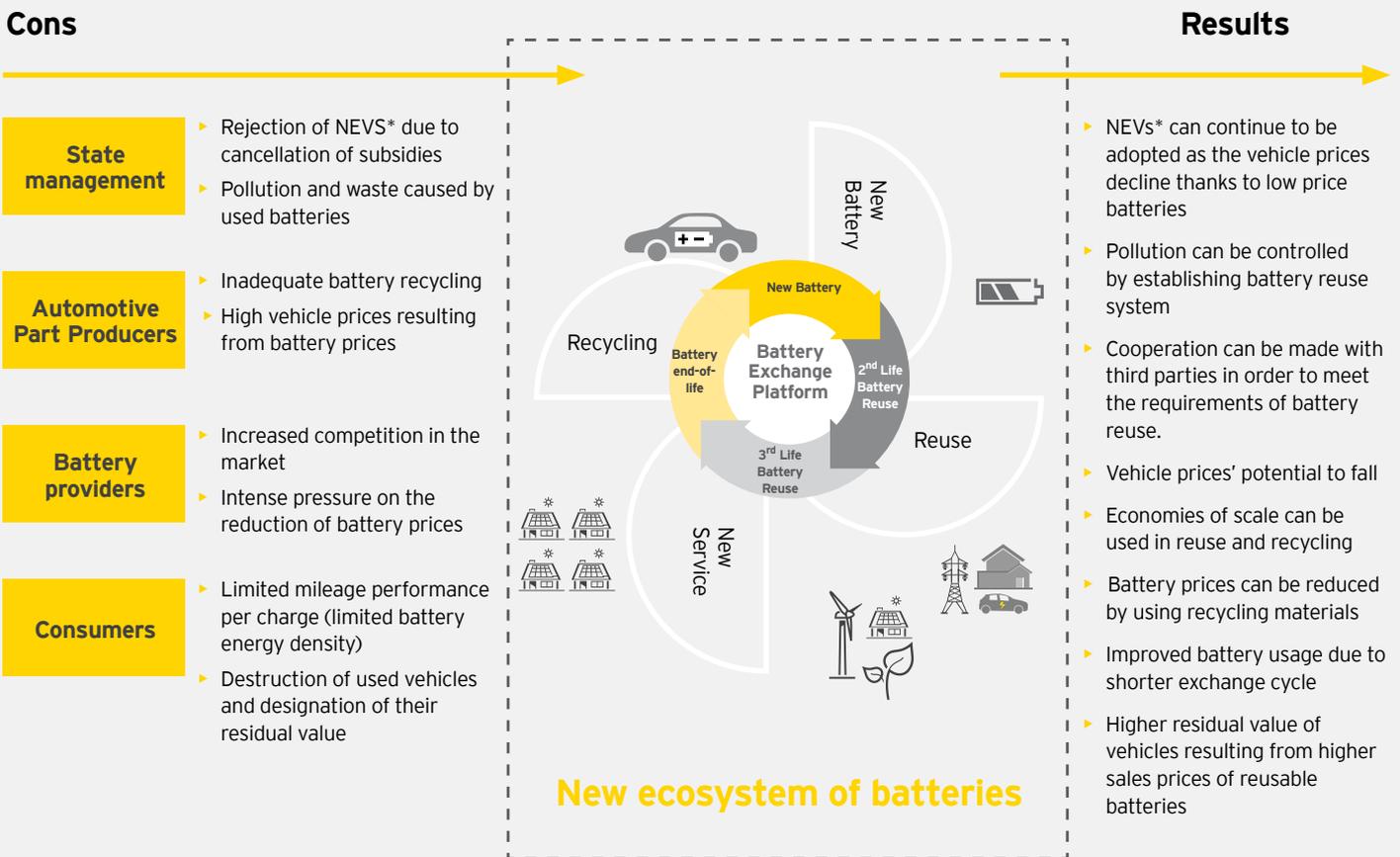
EY's hypothesis: Battery Exchange Platform can shape and improve the battery's reuse and cycling ecosystem.

Battery Exchange Platform (shaping ecosystem) may be a key element for the reuse of electric vehicle batteries.



Source: EY Analysis

The battery exchange platform will solve stakeholders' problems



* NEV: Small electric vehicles with a maximum speed of 40km/h, and GVWR of no more than 1,400 kg.



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About the Investment Office

Established in 2006, under the auspices of the Prime Ministry and under the name of the "Investment Support and Promotion Agency of Turkey", as part of an overall action plan to create a more business-friendly economic environment in Turkey both for domestic and international investors, the Investment Office is the official organization for promoting Turkey's investment opportunities to the global business community and for providing assistance to investors before, during, and after their entry into Turkey.

Investment Office is in charge of encouraging investments that are needed for the further economic development of Turkey. To this end, the Office supports high-technology, value-added, and employment-generating investments with its facilitation and follow-up services during whole processes of relevant investments.

Active on a global scale, the Investment Office operates with a network of local consultants based in countries such as UK, Germany, Japan, Singapore, Saudi Arabia, Spain, the UAE, and the USA. The Office offers an extensive range of services to investors through a one-stop-shop approach, ensuring that they obtain optimal results from their investments in Turkey. Investment Office's team of professionals can assist investors in a variety of languages, including Arabic, Chinese, English, French, German, Italian, Japanese, and Spanish.

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