

TURKISH AUTOMOTIVE INDUSTRY

2023-2024 SUSTAINABILITY REPORT



OTOMOTIV SANAYİİ DERNEĞİ
AUTOMOTIVE MANUFACTURERS ASSOCIATION



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1. ABOUT THIS REPORT

This report covers the environmental, social, and governance (ESG) performance of The Automotive Manufacturers Association (OSD) and its member companies for the period from January 1, 2023, to December 31, 2024. The report has been prepared with reference to the Global Reporting Initiative (GRI) Standards, and the data presented relates solely to the operations of member companies within Türkiye. The report has not been subject to external assurance. All monetary values are presented in Turkish Lira (TRY), US Dollar (USD), and Euro (EUR).

A Double Materiality Analysis was conducted as part of this report. The priority topics identified through the analysis shaped the report's structure, ensuring the inclusion of disclosures and performance information that address both stakeholder expectations and the sector's financial and operational impacts.

The preparation of this report also took into account the United Nations Global Compact (UNGC) principles and the Sustainable Development Goals (SDGs).

We welcome your feedback, suggestions, and contributions regarding this report at: osd@osd.org.tr



2. AT A GLANCE: THE TURKISH AUTOMOTIVE INDUSTRY AND OSD

The year 2024 marked the 50th anniversary of OSD, which has brought automotive manufacturers in Türkiye together under one roof for half a century.

OSD's 50th Anniversary

The year 2024 marked the 50th anniversary of OSD, which has brought automotive manufacturers in Türkiye together under one roof for half a century. Our member companies continue to lead the development of the Turkish automotive industry through their production capacities, increasing global competitiveness, and long-standing export achievements. They contribute to the national economy while creating social impact through the employment they generate and their responsible supply chain practices.

OSD brings together these strong industry players on a single platform, serving as the common voice of the sector and enabling the Turkish automotive industry

to act collectively. This unity, maintained for half a century, has been a key factor in strengthening the industry's position in the global arena. Throughout 2024, OSD carried out its activities under the 50th Anniversary theme of "The Power of Today, The Reality of Tomorrow," reflecting both its long-standing legacy and its vision for the future in its communications.

This milestone was celebrated with a special event held on July 9, 2024, bringing together former leaders who contributed to the industry's development as well as key stakeholders. During the ceremony, "50th Anniversary Commemorative Plaques" and a "50th Anniversary Honorary Plaque" were presented to industry pioneers, former OSD chairpersons, and member companies in recognition of their significant contributions to the sector.



Economic Developments

Türkiye ranks **15th** in the world and **6th** in Europe in automobile production

1.47
MILLION
vehicles produced
in 2023,

Türkiye ranks **10th** in the world and **2nd** in Europe in light commercial vehicle production

1.37
MILLION
in 2024

Share in national exports:

%17 in 2024

16 R&D centers,
approximately **6,000**
R&D personnel, **197** patents,
and USD
221 million
in R&D exports

Export leader
18 TIMES
in 19 years

In the last
10 years

over **USD 11** BILLION in investment
USD 248 BILLION in exports, and
USD 65 BILLION in foreign trade
surplus

Environmental Developments

<p>in energy consumption per vehicle produced in light vehicles</p> <p>13.1%</p> <p>REDUCTION</p> <p>(1,187 kWh/vehicle in 2021, 1,032 kWh/vehicle in 2024)</p>	<p>in greenhouse gas emissions per vehicle produced in light vehicles</p> <p>31.8%</p> <p>REDUCTION</p> <p>(0.27 tCO₂e/vehicle in 2021, 0.19 tCO₂e/vehicle in 2024)</p>	<p>in greenhouse gas emissions per vehicle produced in other vehicles</p> <p>8%</p> <p>REDUCTION</p> <p>(1.38 tCO₂e/vehicle in 2021, 1.26 tCO₂e/vehicle in 2024)</p>
<p>in total greenhouse gas emissions of light and other vehicles</p> <p>20.3%</p> <p>REDUCTION</p> <p>(459,650 tCO₂e in 2021; 366,476 tCO₂e in 2024)</p>	<p>in water withdrawal per vehicle produced in light vehicles</p> <p>10.9%</p> <p>REDUCTION</p> <p>(2.51 m³/vehicle in 2021, 2.24 m³/vehicle in 2024)</p>	<p>reduction in wastewater per vehicle produced in light vehicles</p> <p>45.4%</p> <p>REDUCTION</p> <p>(1.47 m³/vehicle in 2021, 0.80 m³/vehicle in 2024)</p>
<p>Energy consumption per vehicle in the paint process for light vehicles below the EU Best Available Techniques (BAT) limit values</p> <p>(0.76 MWh/vehicle in 2021, 0.32 MWh vehicle in 2024)</p>	<p>Water consumption per vehicle in the paint process for light vehicles below the EU Best Available Techniques (BAT) limit values</p> <p>(1.24 m³/vehicle in 2021, 1.02 m³/vehicle in 2024)</p>	

Consolidated environmental investment expenditures of OSD members reached **TRY 936 MILLION** in 2024, with a **125%** increase compared to 2023

Social Developments

<p>16%</p> <p>of total employment is female employees;</p> <p>9%</p> <p>increase in women employment in 2024 compared to 2023; 29% women employment in office workers</p>	<p>Increase in female representation from 2023 to 2024:</p> <p>in boards of directors from 14.1% to 14.9%</p> <p>in senior management from 14.9% to 16.3%</p> <p>in middle management from 18% to 19.4%</p>	
<p>12 MEMBERS</p> <p>hold the ISO 45001 Occupational Health and Safety Management System Standard</p>	<p>More than 10 MEETINGS from the OSD Human Resources Committee in 2024 supporting the transformation of the sector's human capital</p>	<p>82%</p> <p>of OSD members' employees are covered by collective bargaining agreements</p>
<p>53.1%</p> <p>INCREASE</p> <p>in average training hours per employee from 2023 to 2024</p>	<p>33.2%</p> <p>INCREASE</p> <p>in OHS training hours per employee from 2023 to 2024</p>	
<p>Over 58,000 applications to the 4th Automotive Summer Camp held in 2024, with a total of 900 minutes of training</p>	<p>Direct employment for 59,000 people; over 550,000 people employed through the value chain</p>	
<p>Within the scope of earthquake aid: 32 donated vehicles, allocation of 62 vehicles, and dispatch of over 100 vehicles delivering materials</p>	<p>The "OSD 50th Anniversary Stronger Tomorrows Scholarship" launched in cooperation with the Turkish Education Foundation (TEV) as part of OSD's 50th anniversary; scholarship support provided to 50 university and vocational high school students for four years</p>	



2. AT A GLANCE: THE TURKISH AUTOMOTIVE INDUSTRY AND OSD

VISION AND MISSION

Vision

The Vision of OSD is to increase the share of the Turkish Automotive Industry in global mobility.

Mission

Our mission is to create, implement, and inform related parties of policies that contribute to the local and global competitiveness of all of the members of the Turkish Automotive Industry.



2. AT A GLANCE: THE TURKISH AUTOMOTIVE INDUSTRY AND OSD

BOARD OF DIRECTORS AND ORGANIZATIONAL STRUCTURE

Board of Directors



Chairman of the Board
Tofaş



Deputy Chairman of the Board
Mercedes-Benz Türk



Vice Chairman of the Board
Otocar



Vice Chairman of the Board
Oyak Renault



Vice Chairman of the Board
Toyota Türkiye



Treasurer Member
of the Board
Anadolu Isuzu



Member of the Board
Ford Otosan



Member of the Board
Hattat Traktör



Member of the Board
Hyundai Motor Türkiye



Member of the Board
Karsan



Member of the Board
Man Türkiye



Member of the Board
Türk Traktör



Member of the Board
Ford Otosan

* You can access OSD's current Board of Directors as of October 2025 via our [website](#).

2. AT A GLANCE: THE TURKISH AUTOMOTIVE INDUSTRY AND OSD

BOARD OF DIRECTORS AND ORGANIZATIONAL STRUCTURE

OSD Management



**ÖZLEM
GÜÇLÜER**

Secretary General



**M. AYŞİN
BEKTAŞ
CEBECİ**

International Trade and
Workforce Coordinator



**İREM
BAÇDAR**

Economic Research and Corporate
Communication Coordinator



**NECATİ
CAM**

Financial Policies and
Incentives Coordinator



**AZİZ
BORA
PEKİÇTEN**

Automotive Technologies
and Supply Eco-System
Coordinator



**BETÜL
TAVACI
SAYGILI**

Sustainability and Environmental
Coordinator



**HİLAL
FIRAT**

Project Assistant



**OSMAN
KÜÇÜKÇEŞME**

Administrative Affairs Staff

**BİRSEN
GÜL**

Assistant of Secretary
General

MEMBERS



OSD has been operating since 1974 as the umbrella organization of the Turkish automotive industry, with 13 member companies that are each significant global players.

2. AT A GLANCE: THE TURKISH AUTOMOTIVE INDUSTRY AND OSD

ABOUT THE TURKISH AUTOMOTIVE INDUSTRY AND OSD

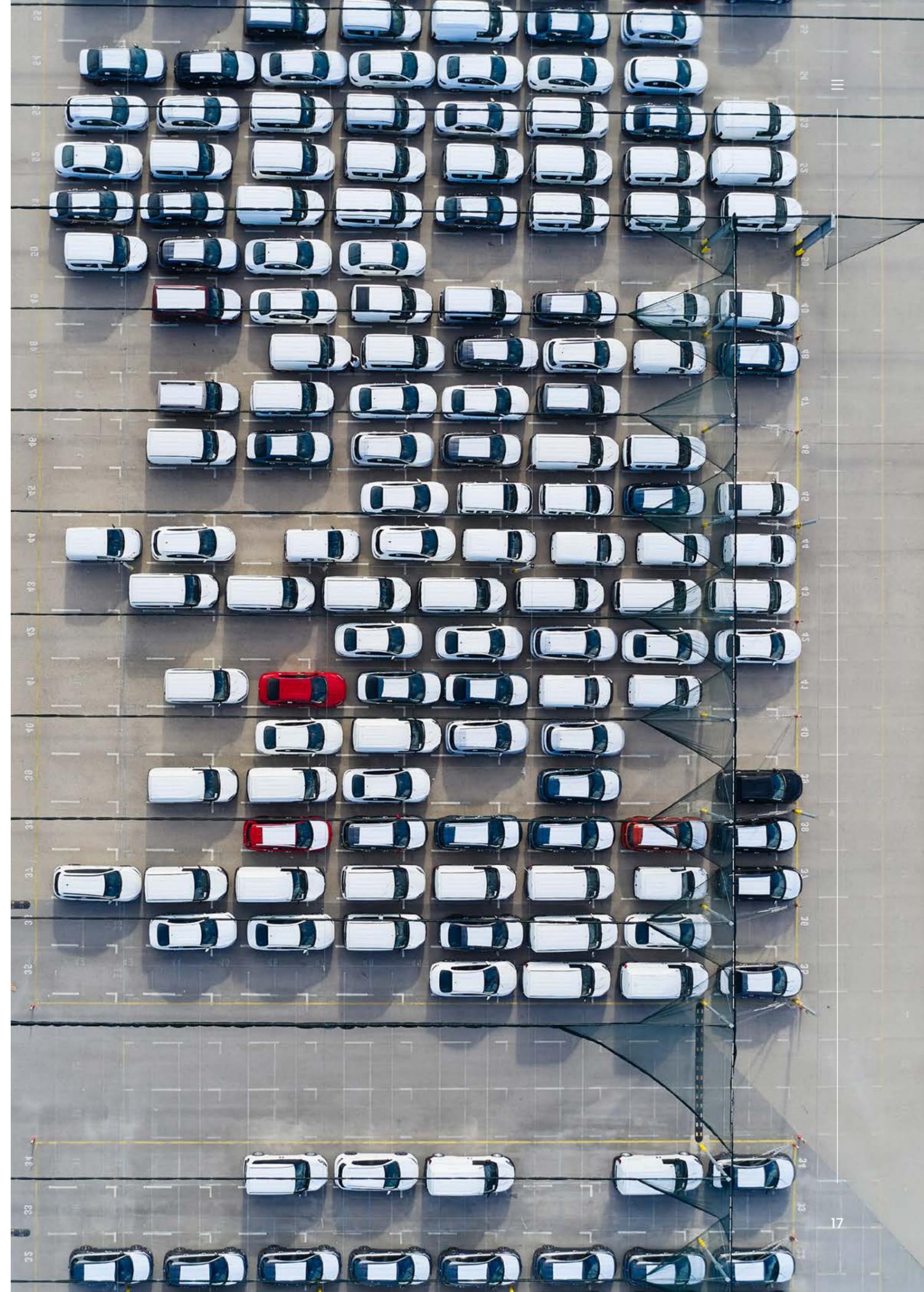
For OSD, 2024 marked a historic milestone as its 50th anniversary. Various events held throughout the year with the participation of sector stakeholders highlighted OSD's half-century of industrial experience and its vision for the future.

The Automotive Manufacturers Association (OSD) has been operating as the umbrella organization of the Turkish automotive industry since 1974, representing 13 member companies that are all significant global players. Established in 1974 through the collaboration of 11 automotive manufacturers, the Association has supported the development of the automotive industry in Türkiye from its inception and continues to work toward enhancing its global integration and competitiveness.

Since January 1995, OSD has been a member of OICA (International Organization of Motor Vehicle Manufacturers), and since March 2006, a member of the Liaison Committee within ACEA (The European Automobile Manufacturers' Association), representing the Turkish automotive industry in the European Union and on international platforms. Through these memberships, OSD closely follows developments in global trade, technical regulations, and competitiveness, and actively contributes to these areas.

The association is also a founding member of the Automotive Technology Platform (OTEP) and Intelligent Transportation Systems Association (ITS Türkiye). With its work carried out together with member companies, active participation in technology and innovation platforms, and close cooperation with public institutions, OSD continues to create value at the national and international levels in line with the common interests of the Turkish automotive industry.

For OSD, 2024 marked a historic milestone as its 50th anniversary. Various events held throughout the year with the participation of sector stakeholders highlighted OSD's half-century of industrial experience and its vision for the future.



3. MESSAGES FROM LEADERSHIP

MESSAGE FROM THE CHAIRMAN OF THE BOARD

As we carry our half-century of experience into the vision of future mobility under the motto “Today’s power, tomorrow’s reality,” we are determined to strengthen the competitiveness of our value chain with a focus on sustainability.



**CENGİZ
EROLDU**

Dear Stakeholders,

We are pleased to share with you the 2023–2024 Sustainability Report of the Turkish Automotive Manufacturing Industry prepared by OSD. This report demonstrates the progress made in our industry’s transformation journey and its commitment to transparency. At the same time, it underlines the special significance that 2024 carries for OSD, marking the 50th anniversary of our establishment.

As we carry our half-century of experience into the vision of future mobility under the motto “Today’s power, tomorrow’s reality,” we are determined to strengthen the competitiveness of our value chain with a focus on sustainability. The global automotive ecosystem is being reshaped by technology, energy transition, and digitalization. This new equation transforms not only vehicle technology and production operations for the Turkish automotive industry but also supply chain management, workforce development, and the design of cooperation with the public sector. OSD’s role is to strengthen collective intelligence in this transformation; to unite our members, public institutions, and other stakeholders around the same vision and provide a clear direction.

Over the past 50 years, we have produced more than 30 million vehicles in Türkiye, and by exporting approximately 20 million vehicles, we have secured a lasting place in global value chains. In 2024, we increased our total installed capacity from 2 million to 2.2 million units. With the commissioning of decided and upcoming investments, our country’s automotive production scale will reach a level approaching 3 million units in the medium term. Closing 2024 with 37 billion dollars of exports at a historical record level, while strengthening our position as the leading export sector, is a clear indicator of our position in global competition and our production capability.

For the continuation of the contribution of our automotive industry to the national economy, alignment with the European Green Deal is the key to maintaining and increasing our competitiveness. OSD adopts an approach that not only follows

regulations but also guides the adaptation process and collectively develops sectoral capacity. In this context, in 2024 we started the activities of the “Reaching the EU Green Deal Targets by Turkish Automotive Industry” which we were entitled to implement under the EU Instrument for Pre-Accession Assistance (IPA-III) grant program. Our guidance efforts, regulatory monitoring, knowledge sharing, and standardization steps responding to the needs of our members and the supply ecosystem accelerate the technical preparation required by the transformation, while also supporting market access and reputation management.

Our governance perspective is based on the early identification of risks and opportunities, evidence-based policy recommendations, and continuous dialogue with stakeholders. Through our committees and working groups, we aim to disseminate good practices, produce solutions in common problem areas, and translate transformation into tangible outcomes in the field. In this way, we are turning our industry’s sustainability agenda into a strategic roadmap, opening the way for measurable progress both today and in the future.

In the upcoming period, our focus is to deepen our technological capabilities with R&D and innovation, to create momentum in digitalization and clean technologies, to strengthen our talent pool with the skills of the future, to build a responsible and resilient supply chain, and to reinforce the principles of transparency and accountability in all our work. We believe that with the strong cooperation we establish with the public sector, academia, international stakeholders, and the entrepreneurship ecosystem, we will advance towards these goals more quickly and effectively.

I would like to thank all our members and stakeholders who contributed to this journey. We will continue to work together for the sustainable development of the Turkish automotive industry.

Cengiz Eroldu
Chairman of the Board

3. MESSAGES FROM LEADERSHIP

MESSAGE FROM THE SECRETARY GENERAL

OSD is not only monitoring regulations but also maintaining a working model that translates compliance into concrete steps together with its members; it guides the automotive industry through committees and working groups in different areas of expertise.

**ÖZLEM
GÜÇLÜER**



Dear Stakeholders,

We are pleased to publish our 2023–2024 Sustainability Report of the Turkish Automotive Manufacturing Industry. As OSD, we have been working for 50 years for the development of the Turkish automotive industry; today, together with our members, we continue to move forward with the same focus, turning the accelerating global transformation into a concrete path that will preserve the competitiveness of our industry.

Since 2020, the global automotive agenda has been reshaped around regulations such as the European Green Deal, the Industrial Emissions Directive, the Carbon Border Adjustment Mechanism (CBAM), the Emissions Trading System, and the EU Taxonomy Regulation. Within this framework, OSD is not only monitoring regulations but also maintaining a working model that translates compliance into concrete steps together with its members; it guides the automotive industry through committees and working groups in different areas of expertise. To respond to the pace of transformation, we renewed our prioritization analysis and clarified and updated the Turkish automotive industry's focus under the environmental, social, and governance pillars.

For many years, our industry has continued to be the leading export sector of our country, with the European Union remaining its main market. At OSD, we believe that alignment with sectoral developments, particularly the European Green Deal, must be addressed together with competitiveness. Our members are working diligently on renewable energy use, energy efficiency projects, and circularity in waste. We are clarifying roadmaps on topics such as Euro 7 standards and industrial emissions, and we provide guidance on data and reporting requirements in the CBAM processes. We support localization in the supply chain and aim to reduce environmental impact across the value chain.

In the Turkish automotive industry, investments have exceeded 10 billion dollars over the last 10 years; investments continue without slowing down. Within the scope of R&D and innovation, OSD members are integrating new technologies into product development from the design stage; they are expanding connected systems, managing data securely, and strengthening cybersecurity.

The automotive industry ecosystem in our country provides direct and indirect employment for more than 550,000 people. This scale requires us to collectively promote a work culture that is people-centered, safe, and supportive of development. Together with our members, we are increasing capacity through common standards and drills in areas such as critical risk programs, digital emergency management, and disaster preparedness. While our members highlight reskilling, access to technical roles, and young talent programs in talent management, OSD carries out joint projects to attract new talent to the automotive industry.

At the same time, we use the strength of the automotive industry for social solidarity. Following the earthquake of February 6, 2023, with the contributions of our members, we established the OSD 50th Anniversary Stronger Tomorrows Scholarship under Turkish Education Foundation (TEV); we provide four-year scholarships and internship opportunities in our member companies to 50 university and vocational high school students affected by the earthquake.

Under the leadership of our Board of Directors and with the disciplined work of our committees, we are leading the sustainability transformation of the Turkish automotive industry. I would like to thank our member companies that contribute to these processes, all our stakeholders who cooperate, and the OSD team. I believe that this determination we have demonstrated together with all our stakeholders will continue to reflect the transformation of the Turkish automotive industry into tangible results.

Özlem Güçlüer
Secretary General

4. AUTOMOTIVE INDUSTRY ECONOMIC PERFORMANCE

CONTRIBUTION OF THE AUTOMOTIVE INDUSTRY TO THE TURKISH ECONOMY

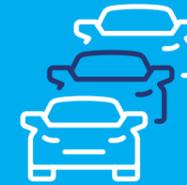
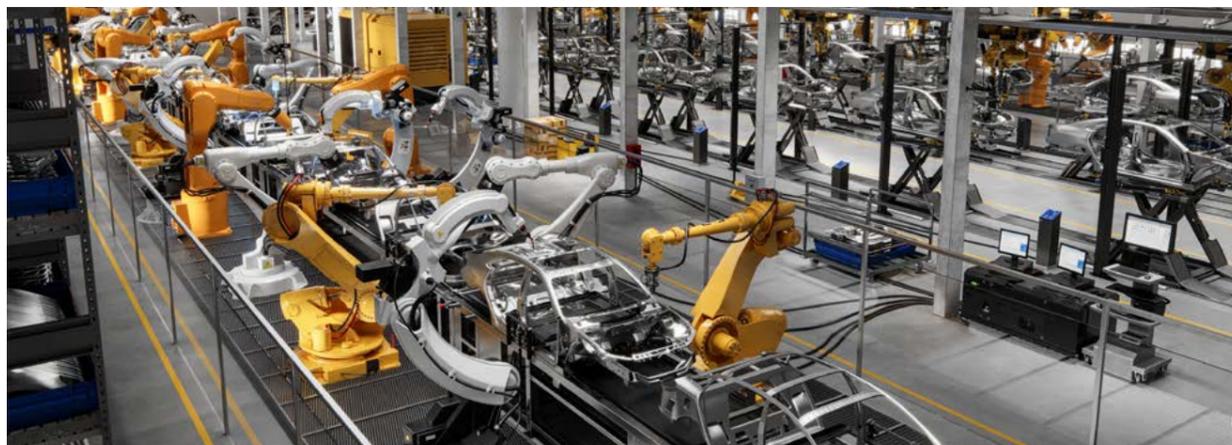
The industry, which has developed through investments based entirely on domestic capital as well as foreign partnerships, creates demand for many different industrial sectors such as iron and steel, plastics, petrochemicals, glass, electronics, and textiles, while also serving as a supplier in many areas such as transportation, tourism, defense, construction, and agriculture.

The Turkish automotive industry holds a strong position in the global market with products and technologies it has developed from design to production, while also gaining recognition worldwide through its engineering exports.

As one of the fundamental sectors of industrialization and economic development, the automotive industry began its production journey in Türkiye in the 1950s and today continues as a global player. The industry, which has developed through investments based entirely on domestic capital as well as foreign partnerships, creates demand for many different industrial sectors such as iron and steel, plastics, petrochemicals, glass, electronics, and textiles, while also serving as a supplier in many areas such as transportation, tourism, defense, construction, and agriculture.

The automotive industry provides direct employment for approximately 60,000 people, 16% of whom are women, while the value chain—including the supply industry, sales, after-sales, and logistics—creates indirect employment for more than 550,000 people. Beyond its economic outputs, the automotive industry also serves Türkiye's development goals through its technology development capacity, high value-added production, qualified workforce employment, and contribution to the perception of global brands.

With production facilities equipped with advanced technology, efficient, flexible, and in compliance with international environmental standards, along with a strong supply chain, the Turkish automotive industry reinforces its role as the driving force of the national economy while also making a long-term and sustainable contribution to the trade balance.



Over 50 Years

	Production (units)	Exports (units)
Automobiles	19 million	12 million
Commercial Vehicles	11.5 million	7 million
Total	> 32 million	> 19 million

From 1974 to the Present

Since its establishment, OSD has overseen a 14-fold increase in the production capacity of the Turkish automotive industry, surpassing 2 million units. From 1974 to 2024, total production exceeded 32 million units, while total exports surpassed 19 million units. Over 50 years, automobile production reached approximately 12 million units, and commercial vehicle production reached 11.5 million units.

The Last 10 Years

In the past ten years, the Turkish automotive industry has made investments of more than 11 billion dollars. During the same period, total exports reached 248 billion dollars, while the industry recorded a foreign trade surplus of 65 billion dollars.

These indicators demonstrate the industry's long-term and sustainable contribution to both the national economy and the foreign trade balance.

Over 10 years

USD **11** BILLION INVESTMENT

USD **248** BILLION EXPORTS

USD **65** BILLION FOREIGN TRADE SURPLUS

4. AUTOMOTIVE INDUSTRY ECONOMIC PERFORMANCE

AUTOMOTIVE INDUSTRY PRODUCTION

With the easing of the impacts of supply chain disruptions experienced in the post-pandemic period and the normalization process in global demand, total production increased by 9% in 2023 to reach 1.47 million units, thereby returning to pre-pandemic levels.

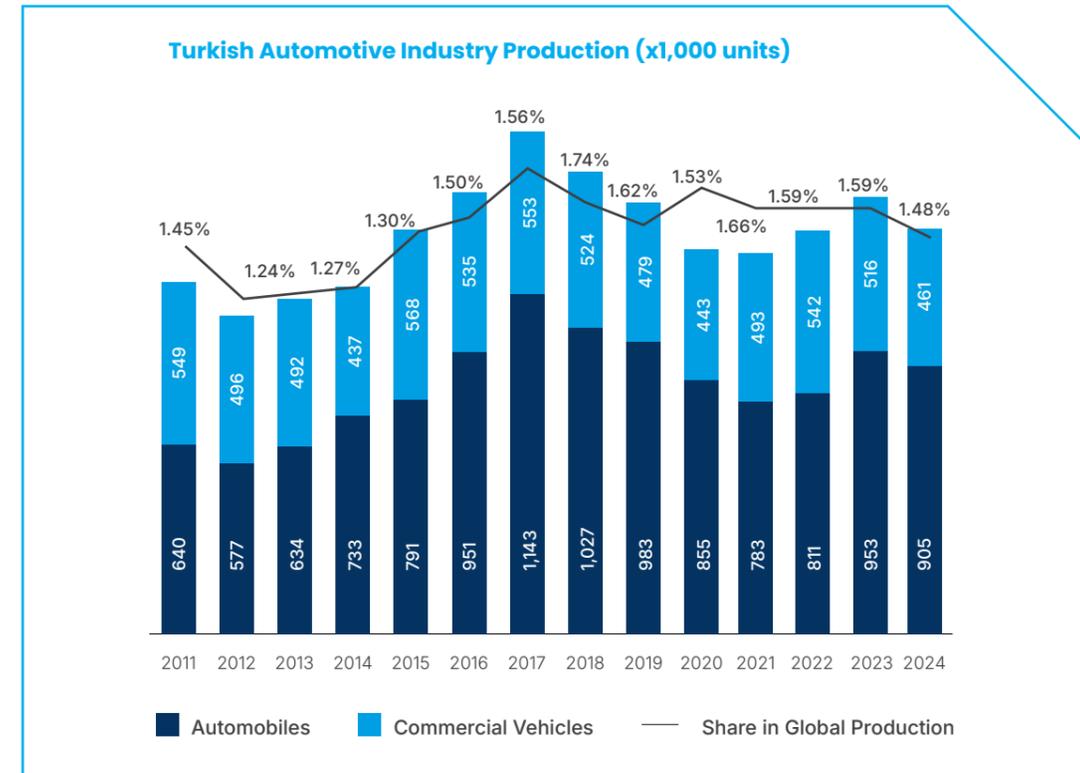
The year 2023 was a strong recovery year for the Turkish automotive industry. With the easing of the impacts of supply chain disruptions experienced in the post-pandemic period and the normalization process in global demand, total production increased by 9% in 2023 to reach 1.47 million units, thereby returning to pre-pandemic levels. In contrast, 2024 was a challenging year for the global automotive industry. Geopolitical developments and supply chain disruptions, shrinking demand in the European market, intensified competition from China's aggressive export policies, and

rising costs created pressure on production. Under these conditions, Türkiye's total automotive production decreased by 7% to 1.37 million units. Tractor production, which was 57.6 thousand units in 2023, declined by 21% to 45.6 thousand units in 2024.

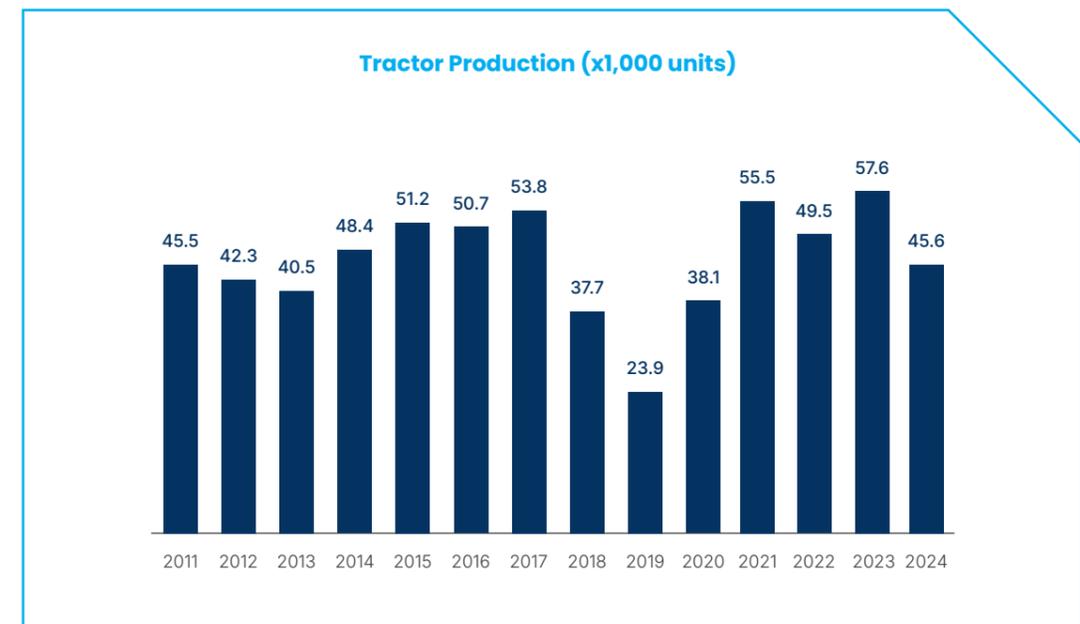
In 2024, Türkiye maintained its position in Europe while experiencing partial declines in global rankings. It ranked 15th worldwide in automobiles, 10th in light commercial vehicles, and 13th in total light vehicles. Within the European Union, it ranked 6th in automobiles, 2nd in light commercial vehicles, and 5th in total light vehicles.

GLOBAL POSITION OF THE TURKISH AUTOMOTIVE INDUSTRY

	Automobiles	Light Commercial Vehicles	Total Light Vehicles
European Union			
Production 2023	6 th	3 rd	4 th
Production 2024	6 th	2 nd ▲	5 th ▼
Worldwide			
Production 2023	14 th	10 th	12 th
Production 2024	15 th ▼	10 th	13 th ▼



Source: OSD members, OICA



Source: OSD members

4. AUTOMOTIVE INDUSTRY ECONOMIC PERFORMANCE

AUTOMOTIVE INDUSTRY EXPORTS

The Turkish automotive industry has been Türkiye’s export champion in 18 of the past 19 years and has maintained its position as the sector with the highest share in the country’s total exports.

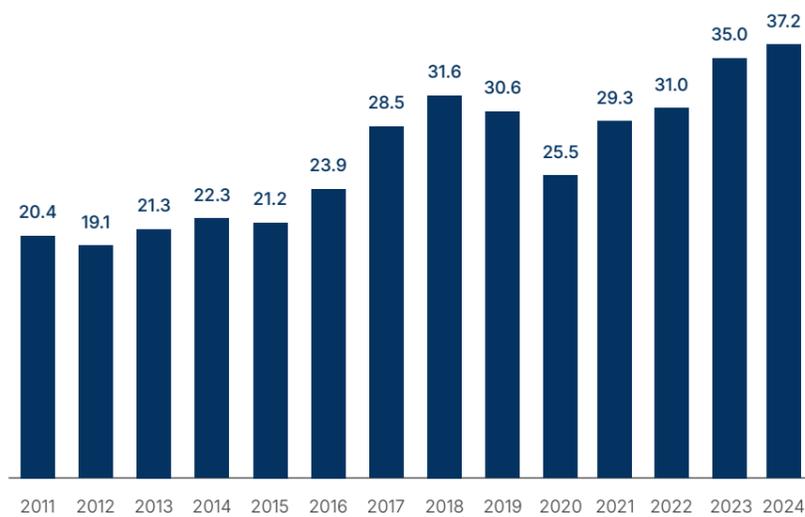
The years 2023 and 2024 were periods in which challenging conditions continued for the global automotive industry. The contraction of demand in the European market, China’s aggressive competition, and the cost pressures brought by the electrification process were among the main factors shaping global trade.

Despite all these challenges, the Turkish automotive industry has been Türkiye’s export champion in 18 of the past 19 years,

maintaining its position as the sector with the highest share in the country’s total exports. The industry’s share in Türkiye’s exports was 16% in 2023 and 17% in 2024.

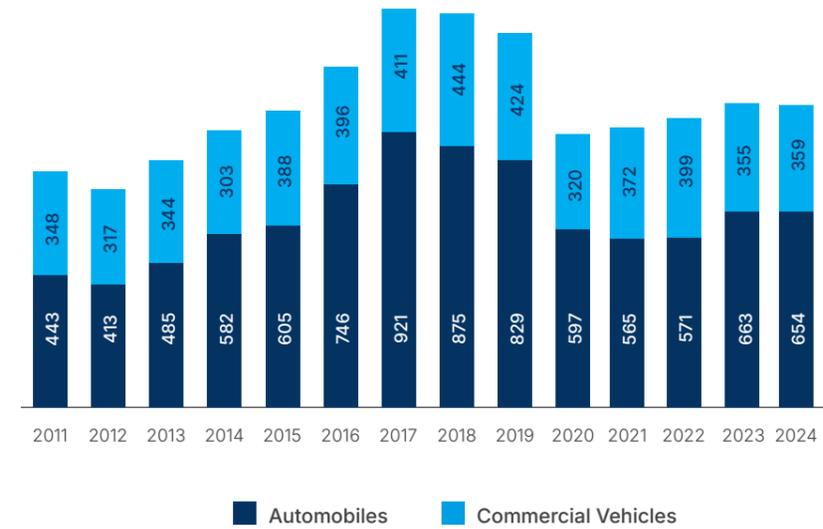
In 2023, automotive industry exports reached 1.02 million units and USD 35 billion, while in 2024, the number of units remained at similar levels, and the value increased by 6.3% to USD 37.2 billion. In value terms, exports reached historical record levels in both 2023 and 2024 consecutively.

Turkish Automotive Industry Exports (Billion USD)



Source: Türkiye Exporters Assembly (TİM) Sector-Based Export Figures

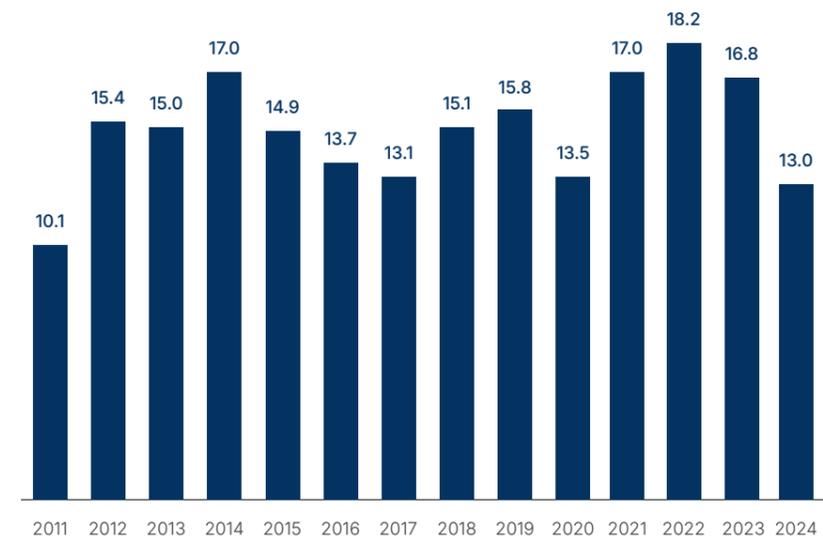
Turkish Automotive Industry Exports (x1,000 units)



Source: OSD members

Tractor exports were recorded at 17,000 units in 2023, with an 8% decrease, and at 13,000 units in 2024, with a 22% decrease.

Tractor Exports (x1,000 units)



Source: OSD members

4. AUTOMOTIVE INDUSTRY ECONOMIC PERFORMANCE

FOREIGN TRADE BALANCE

Between 2016 and 2022, the industry's positive contribution to the foreign trade balance totaled more than USD 65 billion.

Since 2016, the automotive industry has made a steady contribution to the national economy through foreign trade surplus. Between 2016 and 2022, the industry's positive contribution to the foreign trade balance totaled more than USD 65 billion. In 2023, for the first time in many years, the industry recorded a foreign trade deficit. The nearly USD 1.6 billion deficit resulted from high domestic demand in

the automobile group and the decline in the share of domestic vehicles in the local market.

In 2024, a foreign trade surplus was achieved again; however, compared to the high levels observed in previous years, this surplus remained limited, and the automobile group continued to post a deficit.

Turkish Automotive Industry Foreign Trade Balance (Million USD)



Source: Turkish Statistical Institute (TurkStat), Customs Tariff Statistics Position (GTIP) 87.00

In the automobile group, the Turkish automotive industry recorded a foreign trade deficit of USD 6.6 billion in 2023 and USD 4.8 billion in 2024.

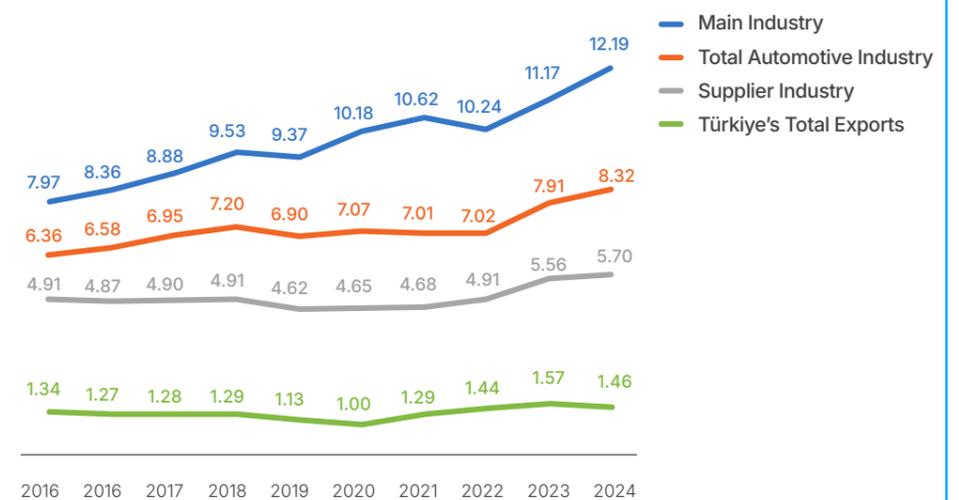
Turkish Automobile Foreign Trade Balance (Million USD)



Source: TurkStat, Customs Tariff Statistics Position (GTIP) 87.03

In the past two years, export values per kilogram have increased, averaging USD 7.91 in 2023 and USD 8.32 in 2024 in the automotive industry. In Türkiye's total exports, the same indicators were recorded at USD 1.57 and USD 1.46, respectively. In the automotive industry, the main industry stands out with the high added value it generates. The export value per kilogram in the main industry reached USD 11.17 in 2023 and USD 12.19 in 2024, far above the national average. This picture shows that the production capacity based on advanced technology and the high value-added product structure of the main industry are the key factors that differentiate the Turkish automotive industry on a global scale.

Development of Export Value per Kg (USD)



Source: Automotive Industry Exporters' Association (OİB)

4. AUTOMOTIVE INDUSTRY ECONOMIC PERFORMANCE

DEVELOPMENT OF THE TURKISH AUTOMOTIVE MARKET

The automotive market reached historical record levels in 2023 and 2024, surpassing the 1 million units mark.

When the data of the last ten years are evaluated, the automotive market has shown a fluctuating trend, reaching historical record levels in 2023 and 2024 and surpassing the 1 million units mark.

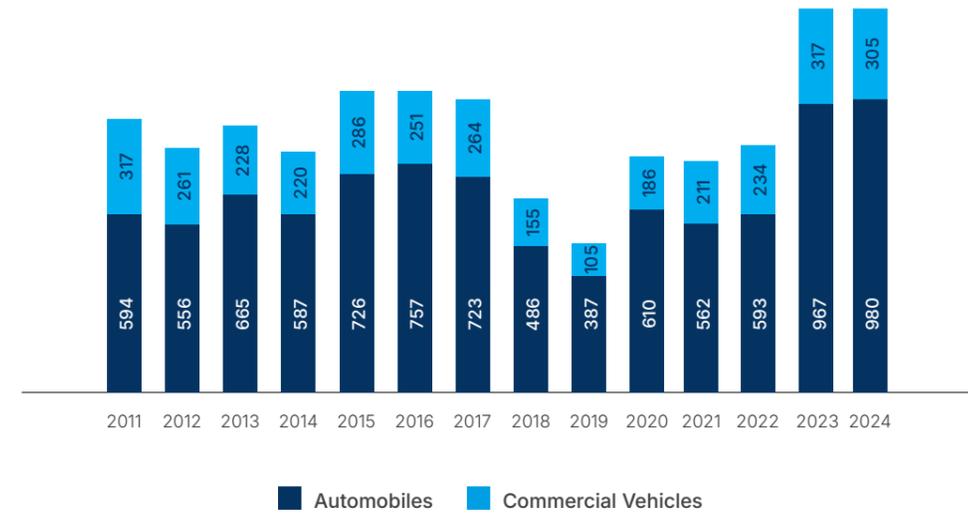
The year 2023 was a strong growth year for the market, with total sales reaching around 1,284,000 units. Of this, 967,341 units were automobiles and 316,611 units were commercial vehicles. This performance was shaped by the combined effects of demand being brought forward due to inflation

expectations, improved supply conditions in the second half of the year, new brand/ model launches and campaigns, balance achieved in the second-hand market through regulations, and the strong momentum in the alternative fuel vehicle group.

In 2024, the total market reached approximately 1,286,000 units, with automobile sales recorded at 980,341 units and commercial vehicle sales at 305,291 units.



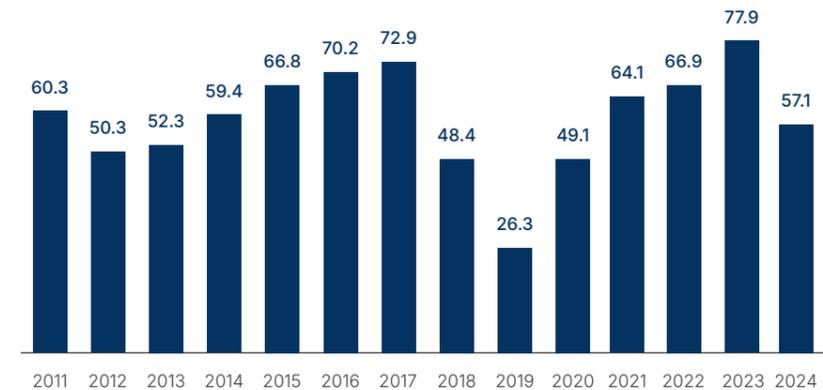
Turkish Automotive Market (x1,000 units)



Source: Automotive Distributors' and Mobility Association (ODMD), OSD, Heavy Commercial Vehicles Association (TAİD), TurkStat

The tractor market also reached a historical peak in 2023, with around 78,000 units, while in 2024 it stood at 57,000 units, showing a significant contraction compared to the previous year.

Turkish Tractor Market (x1,000 units)



Source: TurkStat

The share of domestically produced vehicles in the domestic market continued its downward trend. In 2023, the share of domestic vehicles in the automobile market was 39%, and 46% in light commercial vehicles; in 2024, this declined to 30% in automobiles and 27% in light commercial vehicles. In the total market, the domestic vehicle share, which in the past exceeded 40%, fell from 37% in 2023 to 31% in 2024. This situation indicates that imported vehicles have increased their share in the domestic market, negatively affecting the foreign trade balance, limiting the capacity utilization of domestic production, and consequently undermining the competitiveness of locally produced vehicles.

4. AUTOMOTIVE INDUSTRY ECONOMIC PERFORMANCE

INVESTMENTS IN THE AUTOMOTIVE INDUSTRY

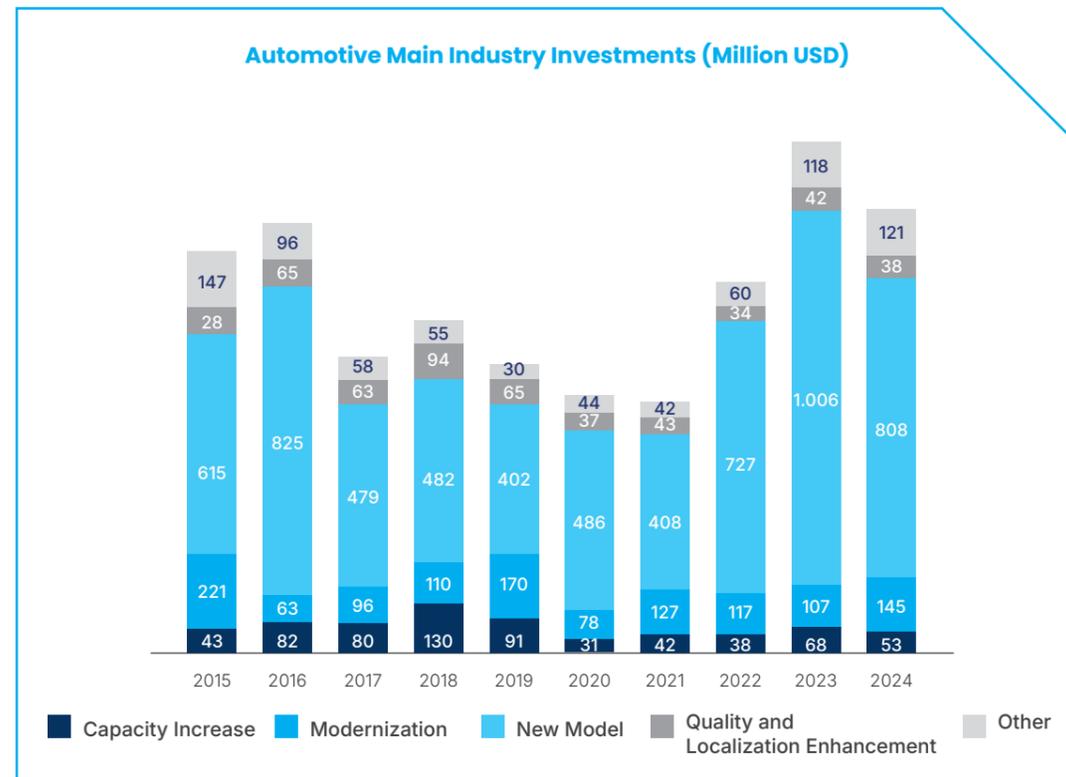
During the reporting period, the total investment amount exceeded USD 2.5 billion.

The Turkish automotive industry continued its investments in electrification, new model development, and modernization without slowing down in 2023 and 2024. In this period, the total investment amount exceeded USD 2.5 billion.

In 2023, the industry made investments amounting to USD 1.341 billion. Of this, more than USD 1 billion was allocated to new model development, while modernization investments were recorded at USD 107

million, capacity increase at USD 68 million, and quality and localization efforts at USD 42 million.

In 2024, total investment amounted to USD 1.165 billion. Once again, the focus was on new model development projects, with USD 808 million allocated to this area. Modernization investments reached USD 145 million, capacity increase USD 53 million, and quality and localization investments USD 38 million.



Source: OSD members

By its nature, the automotive industry operates with long-term plans and requires continuous investment to maintain its competitiveness. Data from the past two years show a significant increase in the share of new model development in the investment distribution; this trend supports the renewal of the product range and underlines that the transformation process in the sector is continuing rapidly. With the impact of new model production decisions announced by OSD members, investments in this area have increased, while investments in production operations aimed at keeping pace with technological developments, improving efficiency, and expanding capacity have also continued.

- Anadolu Isuzu expanded its electric commercial vehicle investments by adding new models such as Citivolt and Big-e to its product range, taking an active role in the electrification process.
- Ford Otosan commissioned Türkiye's first integrated electric vehicle plant, including battery production, at its Kocaeli facilities and began production of new generation PHEV and BEV models. Within the scope of 1-ton medium commercial vehicle investments, Ford Otosan plans to invest EUR 1.39 billion during the 2021–2025 period.
- Hattat Traktör continued its modernization efforts in tractor production and localization in agricultural machinery, while also pursuing R&D investments to increase efficiency in the sector.
- Hyundai Assan accelerated preparations for the transition to electric vehicle production at its Izmit plant, announcing investment plans targeting the start of electric model production by 2025–2026.
- Karsan increased its investments in electric bus and minibus production, continuing its growth in the European market with export-oriented capacity development projects.
- MAN Türkiye continued its localization and new model investments during the 2023–2024 period.
- Mercedes-Benz Türk invested in test technologies at its Aksaray R&D Center and expanded its work on electric charging infrastructure and alternative fuel vehicles within the scope of its sustainable and carbon-neutral transportation vision. In addition, a new "Consolidation Center" for parts logistics was commissioned.
- Otokar invested approximately TRY 3 billion in 2024, strengthening its position in Europe with hybrid and electric bus projects, while also continuing export and production investments in the defense vehicle segment.
- Oyak Renault announced an investment plan of approximately EUR 400 million for the production of four new models by 2027. Within this scope, Renault Duster production started at the Bursa plant in 2024.
- Temsa continued its investments in electrification and mobility solutions, strengthening Türkiye's representation in the electric bus field by increasing its exports in the European market.
- Tofaş launched production in December 2024 under the K0 project, targeting the production of 1 million units during the 2024–2032 period with an investment of EUR 256 million. Thus, its product range was expanded within the framework of the Stellantis partnership.
- Toyota Automotive Industry Türkiye began production of the country's first plug-in hybrid car, the C-HR PHEV, at its Sakarya plant in 2023, accompanied by a battery production investment, reaching a total investment of EUR 308 million.
- TürkTraktör invested in the localization of tractor cabins and developed solutions to meet the needs of modern agriculture through its R&D activities.

5. SUSTAINABILITY APPROACH

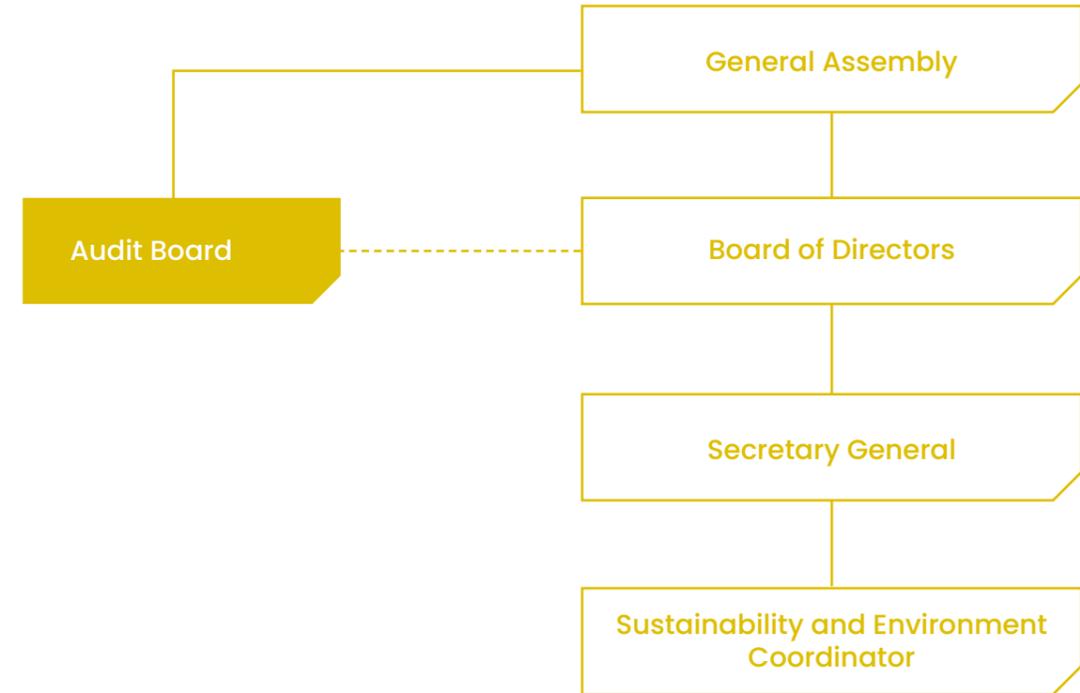
SUSTAINABILITY GOVERNANCE

OSD regards sustainability as one of the fundamental elements of long-term success and sectoral transformation and assumes full ownership of its efforts in this area. Within OSD, the highest authority in sustainability governance is the General Assembly. The prioritization analyses, preparation of sustainability reports, and other strategic sustainability-related activities are carried out by the Sustainability and Environment Coordinator. The coordinator submits the work performed for the approval of the Secretary General, who then conveys it to the Board of Directors, to which they report directly. Following the approval of the Board of Directors, the final decisions are submitted to the General Assembly.

The Audit Board conducts audits at intervals not exceeding one year in accordance with the principles and procedures specified in the Association's Bylaws:

- It verifies that the Association operates in line with the objectives stated in its Bylaws.
- It evaluates whether the activities planned to achieve these objectives are being effectively implemented.
- It examines whether the books, accounts, and records are maintained in compliance with the Associations Law and the Association's Bylaws.

The audit results are presented in a report to the Board of Directors and to the General Assembly, which convenes every March. The Audit Board may call for a General Assembly meeting when deemed necessary.



5. SUSTAINABILITY APPROACH

MATERIAL ISSUES

OSD regularly evaluates and updates its material issues in sustainability in line with the strategic priorities of the automotive sector, stakeholder expectations, and global and regional developments.

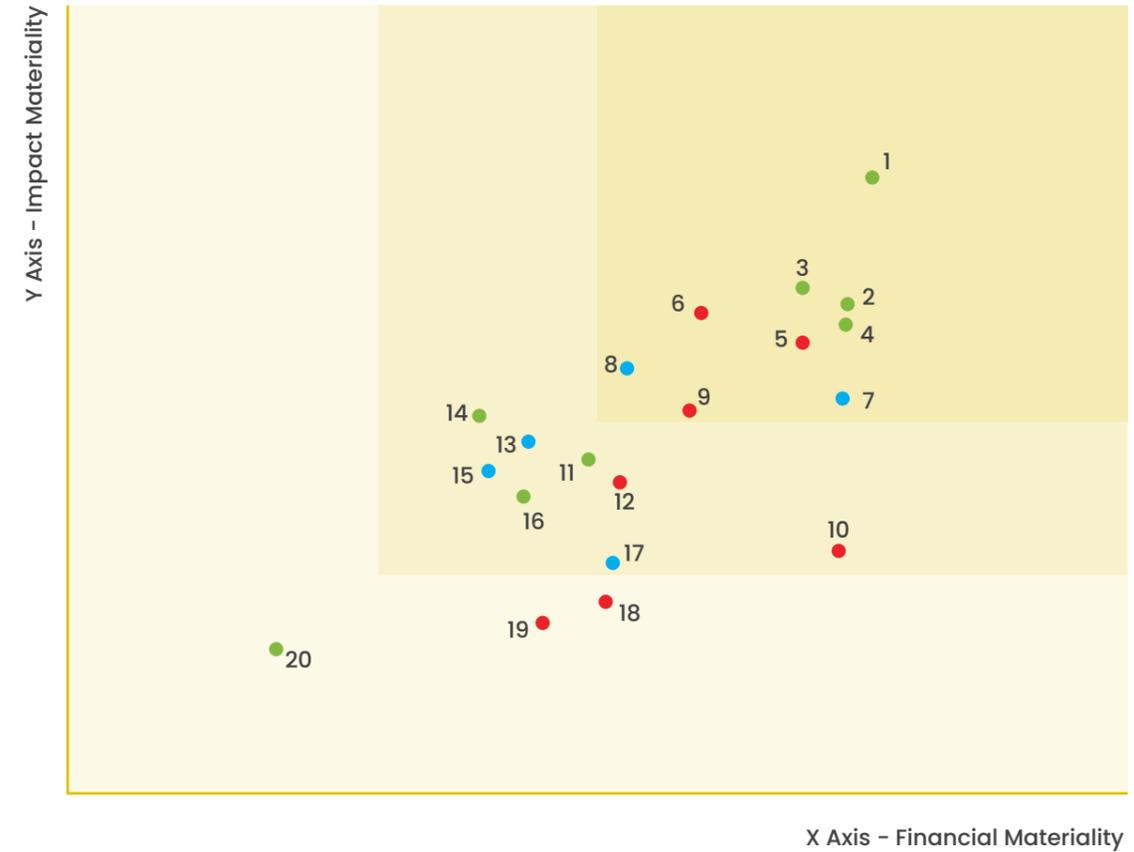
OSD's most recent prioritization analysis was carried out within the framework of the double materiality approach. In this context, both the impacts on the financial performance of OSD and its member companies, as well as the impacts on the environment, society, and the economy, were assessed from a holistic perspective.

During the analysis process, the views of OSD and member company executives were gathered regarding the financial impacts of the issues, while external stakeholders provided assessments on the environmental, social, and economic implications of managing these issues.

The outcomes of this study enabled OSD to update its material issues, thereby clarifying which topics OSD and its members will focus on by evaluating financial, environmental, and social impacts together.



A new material analysis was conducted using the double materiality approach.



Very High Important Issues	High Important Issues	Important Issues
1. Climate action	10. R&D, innovation, and digitalization	18. Customer experience
2. Energy efficiency	11. Air quality	19. Data management and cybersecurity
3. Clean technologies and alternative fuels	12. Corporate governance and business ethics	20. Biodiversity
4. Low-carbon production and services	13. Multi-stakeholder collaborations and contribution to local development	
5. Responsible supply chain	14. Natural resource use, waste management, and circular economy	
6. Vehicle quality and safety	15. Human rights and fair working conditions	
7. Occupational health and safety	16. Water and wastewater management	
8. Talent management and workforce transformation	17. Equal opportunity, diversity, and inclusion	
9. Risk management and compliance with regulations		



5. SUSTAINABILITY APPROACH

SUSTAINABILITY FRAMEWORK

We aim to leverage the power of today's Turkish automotive industry to adapt to the reality of tomorrow and to lead the transformation of the sector.

With the sustainability framework developed in line with its new material issues, OSD directs the existing strength of the Turkish automotive industry toward adapting to the requirements of the future and leading the transformation of the sector. This approach is structured under the focus areas of Automotive Industry Ecosystem Transformation, Climate-Focused Transformation and Resource Efficiency, Responsible Employment and Social Contribution, and Transparent Corporate Governance Culture.



Focus Area	Material Issue	Level of Importance	How Is It Managed?	Contribution to the SDGs
Automotive Industry Ecosystem Transformation	R&D, innovation, and digitalization	Very high important	OSD and its members, through R&D and digitalization investments ranging from electric and autonomous vehicles to AI-based production systems, are increasing operational efficiency while leading the development of sustainable mobility solutions.	
	Vehicle quality and safety	Very high important	OSD members are enhancing vehicle quality and strengthening road safety with solutions ranging from quality management and AI-supported safety applications to advanced testing technologies.	
	Customer experience	Important	OSD members are improving customer experience and increasing competitive advantage with innovative solutions ranging from connected vehicle technologies to sustainability-focused services.	
	Responsible supply chain	Very high important	OSD members are strengthening responsible supply chain management with practices ranging from transparent and traceable models to green logistics solutions, ensuring compliance with environmental and social standards.	
Climate-Focused Transformation and Resource Efficiency	Climate action	Very high important	OSD, in line with the net zero target, provides guidance to its members on regulatory compliance, emission reduction, and resource efficiency, while members implement climate-friendly solutions across the entire value chain, from production to product use.	
	Energy efficiency	Very high important	OSD and its members place energy efficiency at the core of their net zero targets; members are leading the low-carbon transition through Scope 1 and 2 emission reductions, renewable energy investments, internal carbon pricing, and the sharing of best practices.	
	Air quality	Very important	OSD members are improving air quality with advanced emission control technologies and regular regulatory compliance efforts, while developing innovative solutions to meet Euro 7 standards.	

5. SUSTAINABILITY APPROACH

Focus Area	Material Issue	Level of Importance	How Is It Managed?	Contribution to the SDGs
Climate-Focused Transformation and Resource Efficiency	Clean technologies and alternative fuels	Very high important	OSD members closely follow EU and global regulations in the field of clean technologies and alternative fuels, contributing to the development of electric and hydrogen vehicle infrastructure, regulatory compliance, and enhanced competitiveness.	
	Low-carbon production and services	Very high important	OSD members are accelerating the transition to low-carbon production and services with practices ranging from the production of electric and hybrid vehicles to the use of recyclable materials and Euro 7 compliance processes.	
	Natural resource use, waste management, and circular economy	Very important	OSD and its members aim to improve the sector's environmental performance with projects to reduce natural resource consumption and to recover waste in line with circular economy principles.	
	Water and wastewater management	Very important	OSD and its members are implementing water conservation, recovery, and wastewater treatment projects at their facilities to reduce pressure on water resources, increasing efficiency and ensuring compliance with regulations.	
	Biodiversity	Important	OSD members are carrying out responsible practices to reduce the impacts of production and the supply chain on ecosystems, managing biodiversity alongside regulatory compliance efforts.	
Responsible Employment and Contribution to Society	Occupational health and safety	Very high important	OSD and its members ensure safe working environments through international occupational health and safety standards, regular risk assessments, and training programs.	
	Talent management and workforce transformation	Very high important	OSD and its members aim to build a qualified workforce that adapts to the transformation of the sector by strengthening employee competencies through training, reskilling, and career development programs.	

Focus Area	Material Issue	Level of Importance	How Is It Managed?	Contribution to the SDGs
Responsible Employment and Contribution to Society	Equal opportunity, diversity, and inclusion	Very important	OSD and its members promote equal opportunities and an inclusive work culture, increasing female employment and diversity to ensure a fair and inclusive working environment in the sector.	
	Human rights and fair working conditions	Very important	OSD and its members guarantee working conditions that are respectful of human rights, fair, and free from discrimination, in compliance with local regulations and international standards.	
	Multi-stakeholder collaborations and contribution to local development	Very important	OSD and its members carry out programs that support local development and social welfare through projects conducted with public institutions, civil society, academia, and the private sector.	
Transparent Corporate Governance Culture.	Corporate governance and business ethics	Very important	OSD conducts its activities within the framework of the principles of transparency, accountability, fairness, and responsibility, ensuring compliance with national legislation and international governance standards, and setting an example for its members in this area.	
	Risk management and compliance with regulations	Very high important	OSD provides guidance to its members to identify and manage risks at an early stage and to ensure compliance with national and international regulations, thereby supporting sustainable growth and competitiveness in the sector.	
	Data management and cybersecurity	Important	OSD and its members promote compliance with international standards in data management and cybersecurity, ensuring operational continuity, customer trust, and sectoral competitiveness in the digitalization process.	

6. ECOSYSTEM TRANSFORMATION OF THE AUTOMOTIVE INDUSTRY

Through uniting its members around a common vision, OSD contributes to the development of policies aligned with global trends and creates value across the entire ecosystem by promoting the sharing of best practices.

On a global scale, the automotive industry has evolved from a production-oriented structure into a multi-dimensional ecosystem encompassing energy, technology, digitalization, logistics, finance, and services, driven by the transformations of our era. Electrification, sustainability-oriented regulations, automation, and changing customer expectations are among the key dynamics of this transformation, reshaping the sector globally.

As the umbrella organization of the Turkish automotive industry, OSD assumes a guiding, enabling, and steering role in this transformation. By bringing its members together around a common vision, OSD contributes to the development of policies aligned with global trends and adds value to the entire ecosystem through the sharing of best practices. In this way, OSD supports the positioning of the Turkish automotive industry not only with its production strength but also as an ecosystem that develops innovative and sustainable solutions.



6. ECOSYSTEM TRANSFORMATION OF THE AUTOMOTIVE INDUSTRY

R&D, INNOVATION AND DIGITALIZATION

The automotive industry is transforming from a production-oriented structure into a multi-dimensional ecosystem encompassing technology, sustainability, and services. In this transformation, steps taken in the fields of R&D, innovation, and digitalization play a decisive role. Electric and autonomous vehicles, battery technologies, lightweight and low-carbon materials, AI-supported production systems, and circular economy practices are among the key innovative areas shaping the future of the sector.

In addition, low-carbon products and services have also become strategic focus areas of R&D investments. Electric, hybrid, and plug-in hybrid vehicles (PHEV), hydrogen fuel cell vehicles (FCEV), and low-emission engines constitute pioneering product groups contributing to emission reduction in the sector. Alongside these products, the development of EV charging infrastructure, the implementation of battery recycling technologies, green logistics practices, and circular economy solutions are also gaining importance within low-carbon services. This orientation demonstrates that the automotive industry is assuming an active role not only in vehicle development processes but also in innovative service models that reduce the carbon footprint along the entire value chain.

The R&D Committee operating under OSD plays an important role in shaping the sector's R&D agenda. Through studies carried out with the participation of stakeholders, the committee contributes to the development of national and sectoral policies; supports efforts to determine the role of the sector in areas foreseen within The Scientific and Technological Research Council of Turkey (TÜBİTAK) incentives, restructuring processes, and the Automotive Sector Strategy Document.

Digitalization and automation, meanwhile, are complementary elements of this transformation. Internet of Things (IoT), big data analytics, robotic systems, automated production lines, and smart factories not only enhance efficiency in production processes but also raise quality standards and strengthen occupational safety. Recent global analyses also reveal that new players, particularly in product development and digital technologies, are gaining speed and altering competitive dynamics.¹ While the European automotive industry is struggling to maintain its competitiveness, Chinese manufacturers, in particular, are standing out with their speed in product development, cost advantages, and capabilities in digital technologies—reshaping global competitive dynamics.²

¹ McKinsey & Company, *Automotive Product Development: Accelerating to New Horizons*, August 2025.

² McKinsey & Company, *European Automotive Industry: What It Takes to Regain Competitiveness*, March 2025.

6. ECOSYSTEM TRANSFORMATION OF THE AUTOMOTIVE INDUSTRY

OSD members are responding strongly to this global transformation through R&D and digitalization investments. Practices such as AI-based occupational safety systems, automatic risk notification mechanisms, data-driven decision-making processes, and robotic production lines are not only enhancing operational efficiency but also pioneering sustainable mobility solutions. These steps demonstrate that members are developing innovative solutions that contribute not only to today's needs but also to the vision of future mobility and sustainability.

R&D expenditures, which were TRY 11.7 billion in 2023, increased by %82 to reach TRY 21.3 billion in 2024. With 16 R&D centers, approximately 6,000 R&D personnel, 197 patents, and USD 221 million in R&D exports in 2024, innovation capacity has been strengthened.

OSD has been among the organizers of the IAEC (International Automotive Engineering Conference), one of the leading events of the sector, since 2016, with the aim of closely following international R&D and technology trends and contributing to the development of all stakeholders in the sector in these areas. In 2023, the conference was held under the theme 'Green and Digital Future,' during which electric vehicles, alternative fuel technologies, smart manufacturing systems, and circular economy solutions came to the forefront. In 2024, the conference was organized under the theme 'Mobility and Beyond,' focusing on the transformation of the mobility ecosystem and future-oriented visions.

These participations enable OSD to closely monitor global developments on behalf of its members, provide an international perspective to the R&D agenda of the Turkish automotive industry, and strengthen sectoral collaborations.



in 2024

197 PATENTS
and
221 MILLION USD
R&D exports

Employment and R&D Activities in the Automotive Industry - 2024

<p>Employment: 550,000+</p>	<p>Direct Employment: 59,000+</p>	<p>Female Employment: 16%</p>
<p>1% increase</p> <p>R&D Employment: ~6,000</p>	<p>Share in Industrial Employment: 5%</p>	<p>Patents: 197</p>
<p>82% increase</p> <p>R&D Expenditures: TRY 21.3 billion</p>	<p>R&D Centers: 16</p>	<p>3% increase</p> <p>R&D Exports: USD 221 million</p>

Employment and R&D Activities in the Automotive Industry - 2023

<p>Employment: 550,000+</p>	<p>Direct Employment: 60,000+</p>	<p>Female Employment: 14%</p>
<p>R&D Employment: ~5,900</p>	<p>Share in Industrial Employment: 4.6%</p>	<p>Patents: 200</p>
<p>R&D Expenditures: TRY 11.7 billion</p>	<p>R&D Centers: 15</p>	<p>R&D Exports: USD 215 million</p>

6. ECOSYSTEM TRANSFORMATION OF THE AUTOMOTIVE INDUSTRY

Life Cycle Assessment (LCA)

Life Cycle Assessment is an approach in the automotive industry that evaluates the environmental impacts of products not only during the use phase but holistically— from raw material sourcing to production, logistics, use, and the recycling or disposal stages after the end of the product’s life. With electrification, the share of emissions originating from production and batteries in the total carbon footprint of vehicles has increased, making LCA results a critical guide in decisions related to material selection, energy efficiency, recyclability, and design.

Within this scope, OSD has prepared the “Product Life Cycle Assessment Report” to serve as a reference for reducing environmental impacts in the Turkish automotive industry.

You can access the report [here](#).

Below, you can find the Life Cycle Assessment practices of OSD member companies.



Karsan conducts life cycle assessments (LCA) using a “cradle-to-grave” approach to scientifically evaluate the environmental impacts of its production processes. In these studies, carried out with the SimaPro software and the Ecoinvent database, Karsan’s own raw material records and supplier data are integrated into the system, while the environmental impacts of logistics processes are calculated based on road and air transport distance measurements.

TürkTraktör

Through the LCA studies initiated in 2024, the environmental impacts of four tractor models were evaluated in accordance with ISO 14040-44 standards. The results revealed that 67% of emissions originated from the usage phase, leading to the development of low-carbon material strategies. These analyses have provided R&D-focused scientific data to TürkTraktör’s product development processes, making them one of the first examples conducted in Türkiye’s industry.

Otokar

In 2024, Otokar completed LCA studies for three different products and, based on the findings, identified improvement areas aimed at enhancing the environmental performance of both existing and new products.





From Waste to Art: Temsa ART

Temsa ART has recycled approximately 2.5 tons of waste since 2021, transforming it into more than 100 works of art. With the participation of 46 young artists, the project has generated both environmental and social impact. Revenues from the sale of the artworks have been allocated, through the Temsa Hayal Ortakları Association, to support students in disadvantaged village schools.

The project has stood out as an innovative practice integrating art into the corporate structure through the appointment of Mehmet Salih Göçemen with the title of "Circular Impact Artist." Temsa ART received the Climate Action Award at the 2023 Global Business Excellence Awards and the Innovation in Energy and Sustainability Award at the 2023 Stevie Awards MENA (Middle East and North Africa). In the coming period, the project aims to involve more young artists in the process and to expand collaborations with universities.

TürkTraktör

Electric and Autonomous Agricultural Solutions

Within the scope of its Impact for the Future sustainability strategy, TürkTraktör continues its R&D activities focused on electric and autonomous products that will accelerate transformation in the agricultural sector. The electric tractor development project, ongoing since 2020, aims to introduce a zero-emission and environmentally friendly product, while the AI-supported electric agricultural robot R3S enhances efficiency and enables precise agricultural applications such as spot spraying and irrigation.

The Autonomous Spraying Machine reduces chemical use, mitigates environmental impacts, and improves farmer safety. Although still in the commercialization phase, these projects stand out as innovative solutions developed by Turkish engineers, combining digitalization and sustainability in agriculture.



SCADA System Installation

Hyundai Türkiye enhances operational control and process safety by implementing digital monitoring systems in its production processes. Within this scope, the SCADA (Supervisory Control and Data Acquisition) infrastructure enables real-time monitoring of temperature, humidity, and equipment status, particularly in paint shop processes, making the production environment more stable and traceable. The data collected through the system are stored for up to five years, contributing to long-term process analysis and improvement efforts.

Otokar

Hydrogen Fuel Technology

Otokar has developed Kent Hydrogen, Türkiye's first bus equipped with hydrogen fuel cell technology. In the vehicle, only water vapor is emitted, as the electricity used for operation is produced through the combination of hydrogen and oxygen. In this way, the project contributes to preventing harmful emissions and improving air quality in urban areas.

The company also supports academic collaborations aimed at advancing hydrogen technologies. In this context, Otokar contributed to the activities of Koç University's Hydrogen Technology Development Center and shared its experiences on fuel cell applications during the center's opening.



Digital Factory and Octopus Integrated Logistics

Since 2021, Ford Otosan has been implementing the Digital Factory Project, which integrates production operators as connected components of new manufacturing technologies. Through a mobile application used especially in assembly areas, accurate operator-operation matching is ensured, processes can be monitored in real time, performance can be tracked based on data, and paperless production is supported. This application has significantly improved both efficiency and quality by enabling right-first-time production.

In 2023, Ford Otosan fully integrated in-plant logistics processes at its Yeniköy Plant through the internally developed Octopus Application. The application connects objects, people, and technologies within the plant, determining the dynamic part requirements of vehicles on the line and ensuring that materials reach the correct station for the right vehicle. Automated shelving systems, AGVs (Automated Guided Vehicles), and operators are coordinated based on data, thereby supporting a zero-inventory strategy and achieving significant efficiency gains in production, quality, and logistics processes.



Ford Trucks - Level-4 Highway Pilot and Early Fault Prediction

Ford Otosan has developed an early fault prediction and maintenance system by analyzing data collected from connected Ford Trucks vehicles using big data, artificial intelligence, and machine learning methods. Through this system, potential malfunctions are detected before they occur, maintenance planning is optimized, and vehicle lifespan is extended. At the same time, emissions, warranty, and roadside assistance costs are reduced, while customer satisfaction increases.

In addition, the company successfully tested its Level-4 autonomous driving technology for heavy-duty transportation on a closed highway in 2024. With this achievement, Ford Otosan received first place in the "Traffic Management and Intelligent Transportation Systems" category at the World Congress of the International Road Federation.

Otokar

Electric Light Truck e-ATLAS

In line with its vision for sustainable transportation, Otokar made the first sale of its 100% electric e-ATLAS model. With this sale, an electric light truck was offered for commercial use in Türkiye for the first time, and the vehicle entered service in the fleet of the company Standart Katı Atık (as a garbage collection truck).

Fully powered by electricity, the e-ATLAS offers an environmentally friendly solution suitable for urban use with zero emissions, silent driving, and low operating costs. The e-ATLAS won the Gold Medal in the "Innovation" category at the 78th Plovdiv International Technical Fair held in Bulgaria.

TürkTraktör

AI-Supported Fault Detection Application

TürkTraktör, with the collaboration of KoçDigital, has accelerated the warranty claim control process through the AI-Supported Failure Control Application it developed. The system analyzes failure descriptions and labor times with artificial intelligence, enabling instant responses to service dealers. This application reduces the manual workload of operators, minimizes human errors, and continuously improves data quality.

Otokar

Otokar Digital Transformation Projects

- **MATISSE:** Virtual models of industrial systems are developed using digital twin technology, enabling the simulation of vehicle and process behaviors and providing early validation to improve quality.
- **SA4CPS:** Data obtained from IoT devices is analyzed with artificial intelligence, enhancing the safety and durability of logistics equipment and strengthening the security and confidentiality of systems against unexpected events and cyber threats.
- **TAST:** Synthetic images of fault types in industrial systems are generated, AI-based models are trained with these images, and faults are detected more quickly and accurately.

6. ECOSYSTEM TRANSFORMATION OF THE AUTOMOTIVE INDUSTRY

VEHICLE QUALITY AND SAFETY

OSD member companies implement innovative solutions across a wide range—from quality management systems and advanced testing technologies to AI-supported safety applications and smart tracking systems.

Vehicle quality and safety are among the fundamental priorities of the automotive industry and directly shape the sector's sustainable success. Evolving global safety standards, regulations, and customer expectations require manufacturers to develop vehicles that are not only high-performing but also reliable and user-friendly. In this context, quality and safety have become critical factors determining competitiveness in the automotive industry.

OSD member companies implement innovative solutions across a wide spectrum—from quality management systems and advanced testing technologies to AI-supported safety applications and smart tracking systems. These efforts not only raise standards in production processes but also enhance road safety and customer satisfaction.

Vehicle Safety and Euro NCAP Achievements

Ford Otosan regularly participates in the global safety testing program Euro NCAP (European New Car Assessment Programme) to measure the safety performance of its vehicles in accordance with international standards. In 2024, the tests of the new passenger versions of the Tourneo Courier and Custom models were completed, while the commercial versions of the Transit Courier and Custom models were evaluated under Euro NCAP's commercial vehicle protocol.

As a result of the tests, the Transit Courier commercial vehicle achieved the highest rating, Platinum level, reaching a score of 93%—the highest ever obtained in commercial vehicles to date. This result confirms Ford Otosan's commitment to safety and the high standards of its products at the international level.



6. ECOSYSTEM TRANSFORMATION OF THE AUTOMOTIVE INDUSTRY

CUSTOMER EXPERIENCE

A wide range of innovative approaches are being implemented—from connected vehicle technologies and digital service platforms to applications that enhance quality in after-sales services and customer solutions focused on sustainability.

Customer experience in the automotive industry is evolving beyond the traditional approach focused solely on vehicle sales, becoming a holistic value area encompassing all services offered throughout the vehicle's lifecycle. Alongside regulations, intelligent transportation systems, other infrastructure investments, technological advancements, and model diversity, consumers are positioned at the center of the electric vehicle transition, and their preferences largely shape how this transformation is adopted globally.³ As a result, customer experience stands out as a strategic factor determining competitive advantage.

OSD member companies are making strong contributions to this transformation. A wide range of innovative approaches are being implemented—from connected vehicle

technologies and digital service platforms to applications that enhance quality in after-sales services and customer solutions focused on sustainability. These efforts not only increase customer satisfaction but also strengthen the industry's brand value and global competitiveness.

At the same time, the Intelligent Transportation Systems Committee closely monitors trends in intelligent transportation systems developing within the European Union and globally and supports the formation of national policies in cooperation with public authorities. The committee works closely with government institutions on infrastructural and regulatory issues that will enable the deployment of connected vehicles and also contributes to the dissemination of monitoring and control technologies that enhance traffic safety.

³ McKinsey & Company, *New Twists in the Electric-Vehicle Transition: A Consumer Perspective, Nisan 2025.*



TürkTraktör

Digital Transformation in Agriculture with TrakBot

TürkTraktör has introduced its digital assistant, TrakBot, to farmers through the Tarlam Cepte web and mobile applications. Accessible 24/7, TrakBot provides instant responses to frequently asked questions as well as weather reports, campaign announcements, and recommendations on fertilization and irrigation.

This innovative application, which offers quick solutions to farmers' daily challenges, accelerates digitalization in agriculture and contributes to the wider adoption of efficient and sustainable farming practices.

ANADOLU ISUZU

Qualisu Digital Quality Tracking System

In 2024, Anadolu Isuzu launched the Qualisu system to enhance vehicle quality and prevent defects from reaching customers by digitalizing its production processes. Previously, defect reporting for each vehicle was carried out through printed documents; with this system, all processes have been consolidated into a single digital platform.

Through the application, all stakeholders can monitor quality controls in real time and easily access details of issues encountered in vehicles as well as the actions taken.



Annual Training Program for Authorized Services

Launched by Hattat Traktör in 2024 and planned to continue in 2025, the Annual Training Program for Authorized Services is organized to enhance the technical knowledge and practical skills of service teams for new tractor models and newly established service centers. Conducted by the After-Sales Services Department, the training sessions are delivered to authorized service employees through hands-on practice on tractors.

Within the scope of the program, training documents are prepared, tractors are made available in training areas for practical sessions, logistics needs of service teams are planned, and the training sessions are concluded with a certification process. In this way, the technical competence of authorized services is strengthened, ensuring accurate diagnosis of failures and complete reporting to the Hattat Digital system.

As a result of the training, misdiagnoses have been prevented, and by reducing unnecessary parts usage, approximately TRY 8 million in savings was achieved in 2024.



Ford Otosan's Customer Experience Enhancement Practices

- **Technology and Customer Center:** By monitoring the health status of connected vehicles and proactively resolving potential issues, the center has improved customer satisfaction and achieved a 13% reduction in complaint submissions in 2024.
- **FordPass Mobile Application:** Through an ecosystem covering more than 60,000 vehicles, the app provided instant action recommendations to 8,762 users and maintenance suggestions based on oil life to 1,210 users. In 2024, it reached 49,000 users, enabling safer and more efficient vehicle management.
- **Digital Experience and Chatbot:** A co-pilot and AI-based chatbot were launched on the Ford Türkiye website, providing customers with 24/7 support.
- **Customer Complaint Management:** Agile Customer Loyalty Teams worked in an integrated manner across different departments to identify issues proactively. In 2024, customer complaints decreased by 13%, while resolution times improved by 22%.



Maintenance School

The Karsan Maintenance School was established to enhance the technical competencies of maintenance teams, ensure adaptation to new technologies, and improve efficiency. Knowledge gaps identified through needs analysis are addressed through basic, intermediate, and advanced modules prepared by internal trainers and experts. The training is conducted through theory sessions, workshops, simulations, and mentoring.

The program has delivered tangible results: participants' knowledge levels increased by 81%, and their multi-skill scores improved by 18%. Line downtime was reduced by 74%, repair time by 41%, while the time between failures increased by 70%. Fault-related costs decreased by 74%.

By developing employees' technical skills, the Karsan Maintenance School contributes to the company's operational excellence and customer satisfaction.



6. ECOSYSTEM TRANSFORMATION OF THE AUTOMOTIVE INDUSTRY

RESPONSIBLE SUPPLY CHAIN

OSD supports the dissemination of common standards among its members and guides the development of a supply chain ecosystem aligned with international requirements.

Responsible supply chain management is becoming a critical strategic area in the automotive industry's sustainability journey. Increasing global regulations, climate change mitigation targets, and stakeholder expectations are driving companies to develop responsible practices not only within their own production processes but throughout their entire value chains. In this context, ethical business principles, respect for human rights, occupational health and safety, and environmental leadership are among the key elements of sustainable supply chain management.⁴

In line with this approach, OSD member companies are developing transparent and traceable supply chain models that uphold environmental and social standards, standing out with circular economy practices, green logistics solutions, and responsible procurement policies. These efforts not only enhance global competitiveness but also ensure that the automotive industry fulfills its responsibilities toward society and the environment.

OSD supports the dissemination of common standards among its members and guides the development of a supply chain ecosystem aligned with international requirements. Within this scope, the Supplier Industry Sustainability Committee operates in line with the challenges and opportunities brought by the Green and Digital Transformation taking place globally in the automotive sector. The committee carries out activities aimed at contributing

to compliance with sustainability-oriented regulations, supporting the transformation processes of supplier industry companies that produce components expected to have lower utilization rates due to the transformation in vehicle technologies, and developing cooperation mechanisms to maintain and increase localization rates during this critical transition.

The committee's current areas of work are as follows:

- Contributing to compliance with national and international sustainability-focused regulatory targets to ensure the continuity of supplier industry production (Transformation Sessions in the Automotive Supply Chain),
- Carrying out studies on the structural and non-structural measures required for facility safety,
- Supporting the development of roadmaps for the transformation of supplier industry companies that produce parts whose usage is expected to decline and are therefore at risk,
- Contributing to pre-competitive collaboration efforts carried out under the umbrella of OTEP to maintain and increase localization rates,
- Implementing initiatives to strengthen cooperation between the main and the supplier industry,
- Promoting a culture of transparency and continuous improvement in the sector through initiatives such as supplier industry achievement awards and supplier industry satisfaction surveys.

⁴ Drive Sustainability, Automotive Sustainability Guiding Principles, 2022.

FORD OTOSAN

Responsible Supply Chain Practices by Ford Otosan

- **Sustainability Criteria:** As of 2025, sustainability metrics have been integrated into supplier selection criteria, supporting suppliers in gaining a competitive advantage through early compliance with regulations. The company aims to make more than 300 suppliers and logistics operations carbon neutral by 2035.
- **Supplier Sustainability Committee:** Established in 2024, the committee meets regularly with key suppliers to discuss topics such as ethical management, talent management, environmental practices, energy efficiency, and digital solutions. In 2024, a total of 1,681 hours of environmental training, 451 hours of social training, 1,158 hours of governance training, and 289 hours of ethics training were conducted. In addition, an interactive conference on diversity, equity, and inclusion was held in collaboration with the Automotive Suppliers Association of Türkiye (TAYSAD).
- **Logistics Suppliers Conference:** Sustainability goals were shared with logistics service providers, evaluation surveys were prepared, and for the first time, 19 logistics suppliers participated in the assessment process.
- **Suppliers Summit:** In 2024, the summit was held with 400 participants, where innovative and sustainable practices were evaluated, and a total of 14 awards (5 Gold, 4 Silver, 4 Bronze, and 1 Incentive) were presented to high-performing suppliers.
- **Earthquake Preparedness:** To enhance earthquake preparedness within its supplier and dealer ecosystem, Ford Otosan conducted earthquake risk analyses for critical suppliers and encouraged the implementation of corrective measures based on the results. Similar analysis and reinforcement processes were also initiated for domestic dealers, systematically strengthening seismic resilience across the network.

ANADOLU ISUZU

Supply Chain Sustainability Program

In 2024, Anadolu Isuzu launched a comprehensive sustainability program aimed at integrating human rights, occupational health and safety, ethics, and social and environmental standards into its supply chain. The program also seeks to reduce commercial risks by ensuring compliance with the European Union's Carbon Border Adjustment Mechanism (CBAM).

Within this scope, part-based emission reporting was implemented, and a data collection guideline was provided to suppliers. Throughout 2024, 85 suppliers were included in the CBAM reporting process, and the number of reported parts increased from 70 to 620. In addition, a carbon footprint survey was sent to all critical suppliers, and feedback analysis has begun.

7. CLIMATE-FOCUSED TRANSFORMATION AND RESOURCE EFFICIENCY

The World Economic Forum’s Global Risks Report 2025 reveals that environmental issues must now be addressed not merely as a matter of ecological awareness but as a structural crisis influencing economic, social, and geopolitical risks.

Global Risks Ranked by Severity Over the short (2-year period) and long term (10-year period)

2 Years	10 Years
1. Misinformation and Disinformation	1. Extreme Weather Events
2. Extreme Weather Events	2. Biodiversity loss and ecosystem collapse
3. State-on-State Armed Conflict	3. Critical Changes to Earth Systems
4. Societal Polarization	4. Natural resource shortage
5. Cyber espionage and warfare	5. Misinformation and disinformation
6. Pollution	6. Adverse outcomes of AI technologies
7. Inequality	7. Inequality
8. Involuntary migration or displacement	8. Societal polarization
9. Geoeconomic confrontation	9. Cyber espionage and warfare
10. Erosion of human rights and/or civic freedoms	10. Pollution

Risk Categories:

Economic	Environmental	Geopolitical	Societal	Technological
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Source: World Economic Forum (2025) The Global Risks Report 2025, 20th Edition



According to the report, among the environmental risks expected to stand out over the next two years, extreme weather events rank second and pollution ranks sixth. This indicates that, in terms of short-term risk management, climate-related events (such as floods, droughts, and wildfires) will continue to place pressure on economic activities and societies. Over the next ten years, environmental risks dominate the top four positions among the most critical global risks: extreme weather events, biodiversity loss and ecosystem collapse, critical changes in Earth systems, and natural resource shortages.

The EU’s 2030 and 2050 targets set under the Green Deal present both a compliance requirement and an opportunity for sustainable competitiveness for the Turkish automotive industry.⁵ With the goal of becoming climate-neutral by 2050, the EU places significant emphasis on developing a sustainable mobility system based on cleaner modes of transport and cleaner fuels to achieve this objective.⁶

Transport was responsible for about a quarter of the EU’s total CO₂ emissions in 2019, of which 71.7% came from road transportation, making it the largest contributor within the transport sector, according to a report from the European Environment Agency.⁷

In alignment with the Green Deal, Türkiye’s 2053 Net Zero and Green Growth target also represents both a profound transformation and a strategic opportunity period for the automotive industry.⁸ This target signifies a transition toward a low-carbon and environmentally friendly model across the entire value chain of the automotive industry - from production to product design, from the supply chain to after-sales services.

Aligned with the 2053 Net Zero and Green Growth targets, the roadmap defined for the transport sector envisions an increase in the number of electric vehicles and the wider adoption of hydrogen-powered and alternative energy solutions by 2035. This transformation mandates the use of renewable energy in production facilities, the implementation of energy efficiency projects, and the reduction of carbon footprints. At the same time, compliance with EU regulations such as the Green Deal and CBAM has become one of the key factors in maintaining Türkiye’s competitiveness in export markets. Considering that 68.2% of Türkiye’s automotive exports are directed to EU countries, the ability of the Turkish automotive industry to sustain its presence in the EU market is directly linked to compliance with these environmental standards.⁹

⁵ European Environment Agency (2025) State of Europe’s environment, European Environment Agency.

⁶ European Commission 2050 long-term strategy, European Commission.

⁷ European Parliament (2024) CO₂ emissions from cars: facts and figures (infographics), European Parliament.

⁸ Türkiye 2053 Long Term Climate Strategy.

⁹ Uludağ Automotive Industry Exporters’ Association (2025), Automotive Sector.

7. CLIMATE-FOCUSED TRANSFORMATION AND RESOURCE EFFICIENCY

Türkiye's Alignment with EU Climate Reporting Standards

The Türkiye Sustainability Reporting Standards are the localized versions of the IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information and IFRS S2 Climate-related Disclosures standards, issued by the International Sustainability Standards Board. Published by the Public Oversight, Accounting and Auditing Standards Authority of Türkiye, TSRS S1¹⁰ and S2¹¹, have been adapted to align with Türkiye's regulatory framework, institutional structure, and reporting calendar. These standards aim to enhance investor confidence and support Türkiye's sustainable development and green transition goals by enabling companies to report on ESG matters in a transparent, comparable, and internationally consistent manner.

TSRS contributes directly to Türkiye's climate action by ensuring that companies measure and transparently disclose their climate-related risks and opportunities, greenhouse gas emissions, and energy and resource use in accordance with international standards. In this context, TSRS facilitates the generation of reliable and comparable emissions data required for compliance with the EU CBAM—one of the key components of the European Green Deal—and accelerates low-carbon production and green transformation processes.

TSRS provides strategic-level support for both Türkiye's goal of achieving net zero emissions by 2053 and for strengthening commercial and environmental alignment with the European Union.

¹⁰ Public Oversight Accounting and Auditing Standards Authority (KGK), Sürdürülebilirlikle İlgili Finansal Bilgilerin Açıklanmasına İlişkin Genel Hükümler (TSRS 1)

¹¹ Public Oversight Accounting and Auditing Standards Authority (KGK), İklimle İlgili Açıklamalar (TSRS S2)

¹² The EU BREF serves as a widely adopted technical reference across the European Union, establishing environmental performance standards for industrial sectors.

You can access the 2024 TSRS compliant sustainability reports of OSD members in [Annex 3](#).

Activities of the OSD Environment and Climate Change Committee

The OSD Environment and Climate Change Committee carries out activities on environmental issues that closely concern the automotive industry in line with the 2050 net zero target. These include clean production, circular economy, product standards, and the transformation taking place in the EU and Turkish markets. In this context, the committee closely monitors developments in both the EU and Türkiye, fostering multi-stakeholder collaborations that support the necessary steps for the sector's alignment. It also provides guidance to members on technical matters and regulatory compliance through training programs, seminars, and regular consultation meetings.

In 2023 and 2024, the OSD Environment and Climate Change Committee maintained active communication with public authorities on topics such as environmental permitting processes, industrial emissions, circular economy, and greenhouse gas regulations. The Committee also conveyed its opinions and recommendations on EU AB BREF¹² limits, CBAM, and plastic pollution.

The Committee consolidated feedback from members on draft regulations and formally submitted it to TOBB and the Ministry of Environment, Urbanization and Climate Change (MoEUCC). In addition, the Committee organized briefing and

consultation meetings on key policy areas, including the EU Deforestation Regulation, green transformation initiatives, energy incentives for wastewater treatment facilities, soil pollution, and integrated chemical management.

In 2023, the Environment and Climate Change Committee held training sessions on ISO 14064, CBAM, the EU Batteries and Waste Batteries Regulation¹³, fluorinated greenhouse gas data controls, carbon pricing, the Science Based Targets, CDP reporting, and water footprint assessment. In 2024, information sessions were organized under the scope of CBAM to guide OEMs and suppliers on how to manage the process and submit declarations. Accordingly, a sub-working group was established to define the content of upcoming training sessions, and a three-day training program was implemented.

¹³ Regulation (EU) 2023/1542 of the European Parliament and of the Council of 12 July 2023 concerning batteries and waste batteries, amending Directive 2008/98/EC and Regulation (EU) 2019/1020 and repealing Directive 2006/66/EC (Text with EEA relevance)



Throughout 2023 and 2024, the OSD management team participated in national and international events related to the Green Deal targets, shared sectoral insights with members on battery regulations and recycling, and carried out technical studies for the design of the OSD environmental data system to enable a more systematic collection of environmental data from member companies.



7. CLIMATE-FOCUSED TRANSFORMATION AND RESOURCE EFFICIENCY

OSD IPA Project

As of February 1, 2024, OSD has initiated a four-year project titled Reaching the EU Green Deal Targets by Turkish Automotive Industry under the framework of the EU Instrument for Pre-Accession Assistance (Civil Society Action towards European Green Deal - IPA III/2023/451-966).

The project aims to contribute to efforts to tackle climate change, enhance the institutional and technical capacity of OSD as well as of the automotive manufacturers and suppliers in line with the objectives of the European Green Deal, strengthen synergy and collaboration with relevant NGOs and public institutions, establish new networks with EU bodies, and create a reliable source of information for all stakeholders.

To enhance the alignment of the Turkish automotive industry with EU regulations and support the sector in achieving its sustainability goals, gap analysis reports will be prepared within the scope of the project. Based on these reports, a current state assessment will be carried out, and a roadmap for the EU alignment process will be developed accordingly.

Further details on the Supporting the Turkish Automotive Industry in Achieving the EU Green Deal Targets project are available [here \(information available in Turkish\)](#).



Reports prepared within the scope of the project:

- Gap Analysis Report on the Alternative Fuels Infrastructure Regulation
- Gap Analysis Report on the Regulation on CO₂ Emission Performance Standards for New Passenger Cars and New Light Commercial Vehicles
- Gap Analysis Report on the Regulation on CO₂ Emission Performance Standards for New Heavy-Duty Vehicles
- Gap Analysis Report on Compliance with the EU Batteries and Waste Batteries Regulation
- Gap Analysis Report on the End-of-Life Vehicles (ELV) Directive¹⁴
- Gap Analysis Report on the Industrial Emissions Directive¹⁵

• Gap Analysis Report on the Draft Euro 7 Regulation¹⁶

Planned Reports:

- Preparation of the Gap Analysis Report on the Regulation on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)
- Preparation of the Gap Analysis Report on the Critical Raw Materials Act
- Preparation of the Gap Analysis Report on the EU Net-Zero Industry Act
- Preparation of the Gap Analysis Report on the Corporate Sustainability Due Diligence Directive (CSDDD)
- Combining Gap Reports into a Current Situation Analysis Report
- Preparing a Road Map derived from Current Situation Analysis and Gap Analyses*

¹⁴ It will be completed by the end of 2025.

¹⁵ Prepared in 2025.

¹⁶ Prepared in 2025.

* It will be completed by the end of 2025.



7. CLIMATE-FOCUSED TRANSFORMATION AND RESOURCE EFFICIENCY

CLIMATE ACTION

Setting measurable and trackable climate targets for the automotive industry holds strategic importance for managing the sector's transition to a low-carbon economy in an effective, transparent, and accountable manner. Science-based and quantitative targets enable the regular monitoring and reporting of progress in reducing greenhouse gas emissions, improving energy efficiency, and minimizing environmental impacts throughout the product life cycle. This approach not only ensures compliance with national and international regulations but also builds credibility among investors, suppliers, and customers, while laying the foundation for long-term strategies aligned with global frameworks such as the European Green Deal and the SBTi.

In line with the SBTi's Transport Guidance, establishing emission reduction targets for the automotive industry necessitates a comprehensive and holistic approach. The automotive industry is responsible not only for the greenhouse gas emissions arising from its production processes (Scope 1 and Scope 2) but also for those generated throughout the lifetime use of the vehicles it manufactures (Scope 3 – Category 11: Use of Sold Products). This situation directly links the industry's climate targets to its product strategies and drives accelerated investments in electrification, alternative fuel technologies, and energy efficiency.

In March 2024, the SBTi published its updated guidance for road vehicles, shared new target-setting criteria and recommendations for the transport sector.¹⁷ The guidance includes a commitment to the gradual

phase-out of new internal combustion engine (ICE) vehicles by 2035 in leading markets and by 2040 globally. Companies may publicly announce these commitments by signing the international Zero Emission Vehicles Declaration.¹⁸

Climate targets encompass not only emission reduction but also a range of other environmental areas, including water and wastewater management, waste reduction, resource efficiency, and biodiversity. The automotive industry, due to its high-water consumption in paint shop and surface treatment processes as well as its energy-intensive production lines, prioritizes the transition to closed-loop water systems and the establishment of advanced treatment facilities to improve water efficiency. Similarly, waste management targets aligned with circular economy principles include increasing material recycling rates, minimizing hazardous waste, and promoting the reuse of production by-products.

In this respect, compared with many other sectors, the automotive industry has a much broader scope of responsibility in supply chain management and for impacts arising during the use phase of the final product. Therefore, achieving climate, water, waste, and biodiversity targets is possible not only through transformation at production facilities, but also through the implementation of a shared transformation vision across the entire value chain, extending from suppliers to dealers and ultimately to end users.

Ford Otosan, Mercedes-Benz Türk, and MAN Türkiye A.Ş., which manufacture heavy-duty vehicles in Türkiye, have signed the ACEA's Joint Statement on the Heavy-Duty Vehicle Roadmap. Through this declaration, a target has been set for all new trucks sold in the EU to be fossil fuel-free as of 2040, contributing to the EU's goal of achieving carbon neutrality by 2050.

You can access the climate targets of OSD members in [Annex 4](#).

¹⁷ Science Based Targets Initiative (2024) Land Transport Guidance, Version 1.0

¹⁸ Zero Emission Vehicles Declaration (ZEV Declaration)





7. CLIMATE-FOCUSED TRANSFORMATION AND RESOURCE EFFICIENCY

ENERGY EFFICIENCY

OSD members monitor and certify their energy efficiency performance through management systems aligned with national and international standards. All OSD members hold the ISO 50001 Energy Management System certification, and 7 members also hold the ISO 14064 Greenhouse Gas Emissions Management System certification.

The global automotive industry produces approximately 80 million vehicles each year, requires 112 million tons of materials, and accounts for more than 10% of global CO₂ emissions.¹⁹ Within the framework of the EU's targets for the automotive industry, it is envisaged that light commercial vehicles will achieve zero CO₂ emissions by 2035, while emissions from heavy-duty vehicles will be reduced by 90% by 2040.²⁰ ²¹As of 2027, road transport is planned to be included within the scope of the ETS 2.²²

The OSD Energy Efficiency Working Group continued its activities in 2023 and 2024 to contribute to efforts carried out in line with Türkiye's 2053 carbon neutrality target. After three years of online meetings during the pandemic, all meetings in 2023 were held at member company facilities. This approach increased interest in observing energy efficiency practices on-site and provided valuable opportunities for experience sharing among group members.

In 2023, energy efficiency, renewable energy investments, solar panels, carbon certificates, ETS, and LEED Green Building Standards were among the key topics on the working group's agenda. The Climate Change Action Plan led by the Ministry of Environment, Urbanization and Climate Change and the Energy Efficiency Action Plan prepared by the Ministry of Energy and Natural Resources were closely followed. The publication of the latter in 2024 and the integration of its sub-actions into the group's work were planned.

In 2024, the meetings were conducted both online and through site visits. Particularly in the context of Türkiye's climate and greenhouse gas reduction targets, developments in legislation related to energy efficiency and renewable energy, certification processes, the Emissions Trading System, and LEED Green Building practices were at the center of the Working Group's agenda.

¹⁹ World Economic Forum (2024) *How to navigate sustainability in the automotive industry*. World Economic Forum.

²⁰ European Commission *Light-duty vehicles (transport decarbonisation)*. European Commission.

²¹ Council of the European Union (2024) *Heavy-duty vehicles: Council signs off on stricter CO₂ emission standards*.

²² EU ETS 2 (Emissions Trading System 2) focuses on road transport, buildings, and other sectors, and is planned to enter into force in 2027 alongside the existing ETS 1. The cap set for ETS 2 is 1,040 million allowances, which is slightly lower than the 1,125 million allowances determined for ETS 1 – including aviation and maritime sectors – in the same year. Ecologic Institute (2024) *Climate Target Potential Contributions of Transport*.



The Climate-Focused Transformation and Resource Efficiency section covers the environmental performance indicators related to the production activities of OSD member companies' facilities. The assessment has been conducted using indicators such as energy consumption, greenhouse gas emissions, water consumption, wastewater generation, and waste quantities, and includes data for the years 2021–2024.

For the metrics Best Available Techniques – Energy Consumption (other vehicles) and Water Consumption and Waste Generation (other vehicles) in the painting process, data could only be obtained for the years 2023 and 2024.

Environmental performance indicators are analyzed in two main categories based on the type of production:

- **Light vehicle production:** Passenger cars and light commercial vehicles
- **Other vehicle production:** Buses, minibuses, midibuses, trucks, and tractors

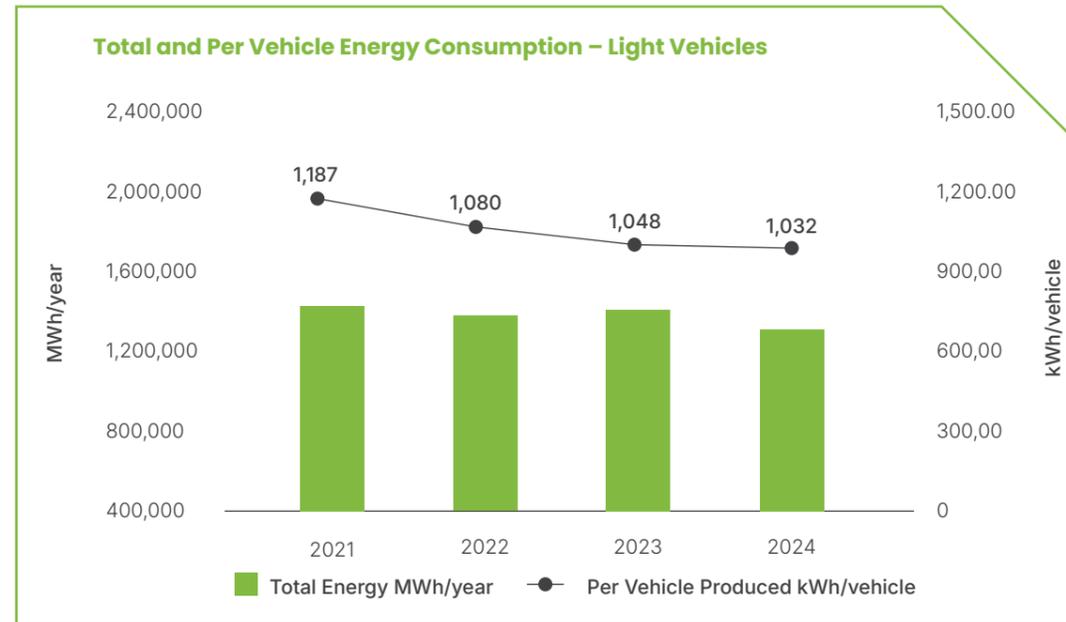
Accordingly, the performance of the facilities has been evaluated comparatively based on the averages of light vehicle production and other vehicle production. The production scope of facilities manufacturing other vehicles varies: some facilities produce only buses or trucks, some only tractors, while others manufacture pickups, buses, and minibuses together.

Data scope:

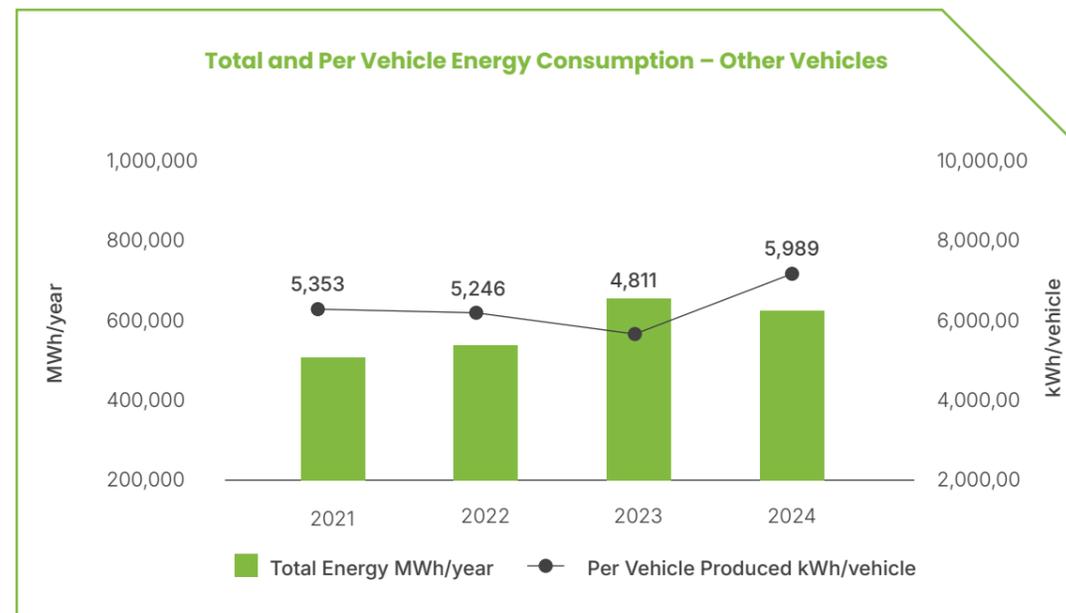
- **2021–2024 Scope 1 and 2 emissions – Other Vehicles: Data from Hattat Traktör are not included.**
- **Total Energy Consumption in Painting Process – Other Vehicles: Data from Anadolu Isuzu and Otokar are not included.**
- **Best Available Techniques – Waste Generation in Painting Process (Light Vehicles): Data from Toyota are not included.**
- **Best Available Techniques – Waste Generation in Painting Process (Other Vehicles): Data from Karsan and Hattat Traktör are not included.**
- **Best Available Techniques – Water Consumption in Painting Process (Other Vehicles): Data from Anadolu Isuzu, Karsan, Otokar, and Hattat Traktör are not included.**
- **Karsan data is not included in the VOC emissions figures for buses (M2/M3).**
- **For the years 2021 and 2022, Hattat Traktör data was not included in the following metrics: Total and Per-Vehicle Energy Consumption – Other Vehicles; Existing Best Available Techniques in Paint Processes – Energy Consumption – Other Vehicles; Water and Wastewater Volumes – Other Vehicles; and Total and Per-Vehicle Waste Volumes – Other Vehicles. However, it has been included for the first time in 2023 and 2024.**

7. CLIMATE-FOCUSED TRANSFORMATION AND RESOURCE EFFICIENCY

An analysis of total equivalent energy consumption per light vehicle produced by OSD members between 2023 and 2024 shows a continued decrease over the past four years, reaching 1,032 kWh/vehicle in 2024. Compared to 2021, energy consumption per light vehicle decreased by 13.1%, while total energy consumption fell by 5.4% in 2024.



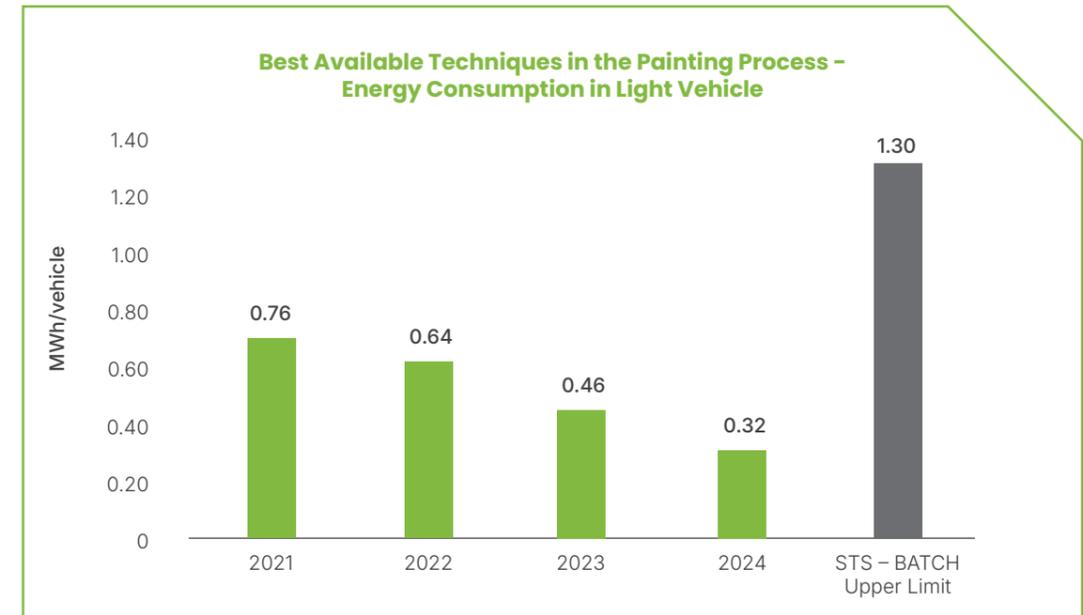
For other vehicle groups, energy consumption per vehicle reached 5,989 kWh in 2024. Compared to 2021, the number of other vehicles produced increased by 2%, total energy consumption rose by 14.1%, and energy consumption per vehicle grew by 11.9% in 2024.



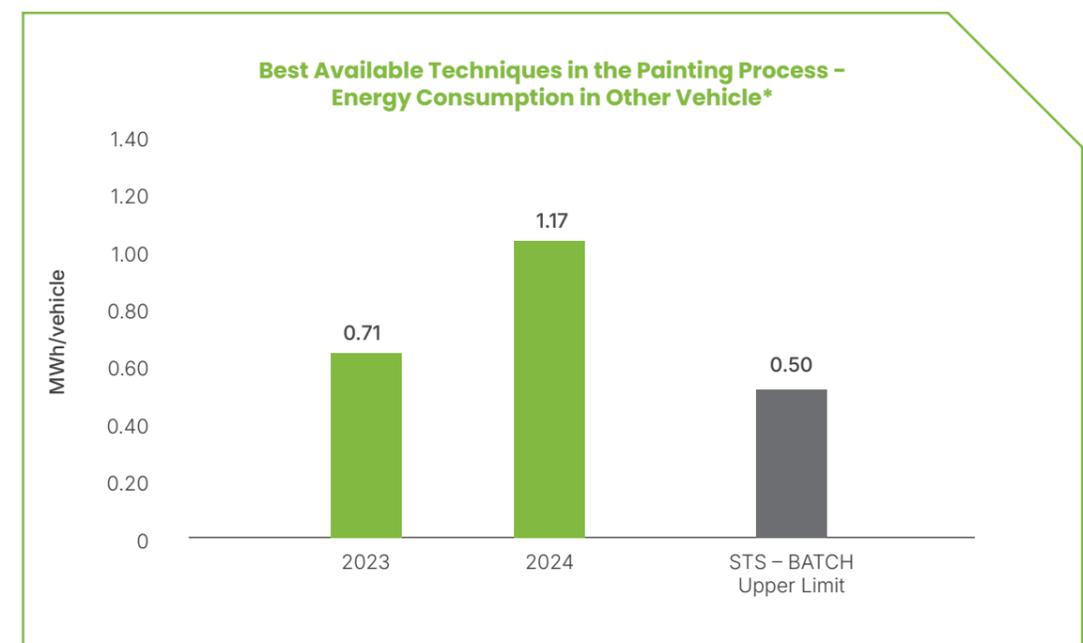
*Hattat Traktör data are not included in the figures for 2021 and 2022 but are included for 2023 and 2024.

Studies show that approximately 70–75% of total energy consumption in automotive manufacturing occurs in paint shop facilities. Under Directive 2010/75/EU on Industrial Emissions, the Best Available Techniques (STS-BAT) applicable to coating processes have been defined. In line with this, the STS BAT Reference Document for Surface Treatment Using Organic Solvents, published by the EU on December 9, 2020, specifies that the achievable energy consumption using best available techniques in automotive paint shops is 1.30 MWh/vehicle for light-duty vehicle production and 0.5 MWh/vehicle for other vehicles such as buses, minibuses, midibuses, trucks, and tractors.

An analysis of OSD members' light-duty vehicle production facilities shows that the average energy consumption of paint processes remains below the defined threshold value.



In facilities producing other vehicle groups, the average energy consumption of paint processes has been observed to exceed the specified threshold value.



* Data for the Other Vehicles category are not available for 2021 and 2022, and Anadolu Isuzu and Otokar are not included.



Compressor Energy Project

Implemented by Hattat Traktör in 2024, the Compressor Energy Project was carried out to increase energy efficiency in production. By lowering the operating pressure range of the compressors, their activation frequency was reduced, resulting in an electricity saving of 25 kWh per tractor.

TürkTraktör

Renewable Energy Investments (Ankara Rooftop SPP Project)

TürkTraktör aims to meet its entire electricity demand through its own renewable energy investments by the end of 2026. In this context, a 3.6 MWe rooftop solar power plant commissioned at the Ankara Factory in 2024 is expected to prevent 2,578 tons of CO₂ emissions annually. These SPP projects hold strategic importance not only for emission reduction but also for ensuring energy supply security and operational resilience.



Energy Efficiency Award

At the launch event of Türkiye's Energy Efficiency 2030 Strategy and the 2nd National Energy Efficiency Action Plan 2024–2030, Ford Otosan received the Jury Special Award from the Ministry of Energy and Natural Resources within the scope of the SENVER 2023 Industrial Energy Efficiency Project Competition for its Energy Management System Project.



Green Energy Use and Rooftop SPP Project

As of 2024, Karsan has initiated the certification process to ensure that 100% of the electricity used in production is verified through I-REC certificates, with green energy procurement starting in April. In addition, preparations are underway for a Rooftop Solar Power Plant (SPP) project to enable in-house electricity generation.



AI-Powered Central Heating Energy System

In February 2024, Tofaş commissioned its AI-Powered Central Heating Energy System, enhancing energy efficiency and reducing carbon emissions across its production facilities. This initiative represents a best-in-class example of digital transformation integrated with energy management within the automotive sector.

Developed in collaboration with Koç University and specialized engineers, the system uses machine learning algorithms to calculate the amount of heat required to reach the target temperature, integrating these outputs into the automation system. As a result, energy management has been fully digitalized, and the heat energy distributed to workshops is optimized in real time. This has reduced the need for manual intervention, simplified operational processes, and improved employee comfort through balanced temperature conditions.

The system has achieved an annual saving of 149,933 Sm³ of natural gas and reduced emissions by 293 tons of CO₂ equivalent, resulting in approximately 1.8 million TL in financial savings. With its self-learning capability, the system continues to improve its predictive accuracy and overall performance over time.

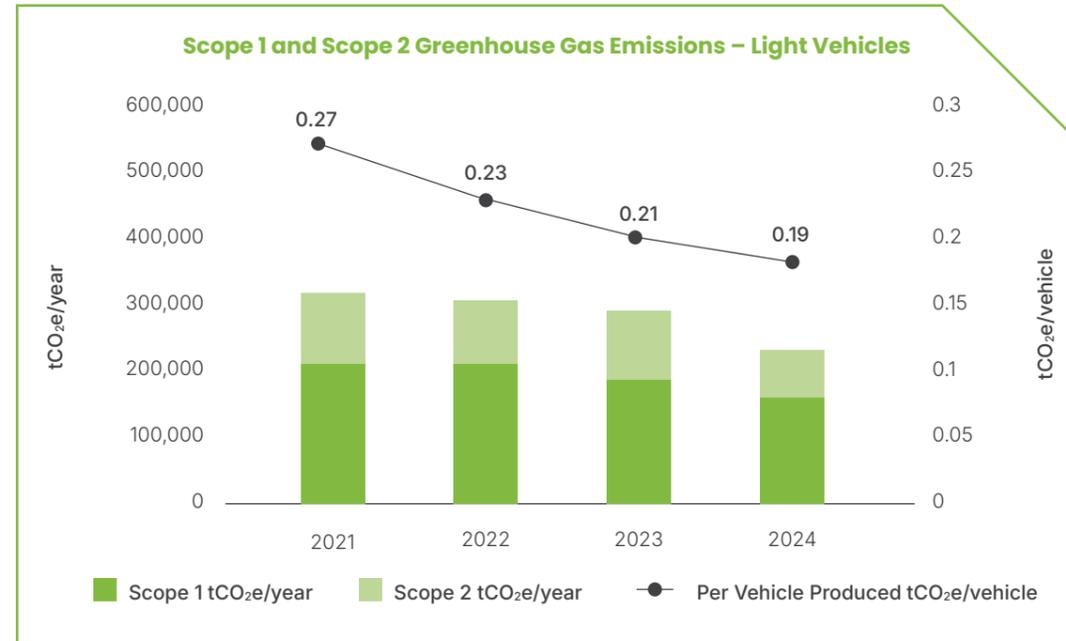
This success has also received recognition at both national and international levels. The project won second place at the International Data Corporation (IDC) Türkiye 2025 Sustainability Awards and was honored by the Ministry of Energy and Natural Resources in the Industrial Energy Efficiency Project Competition (SENER-25).



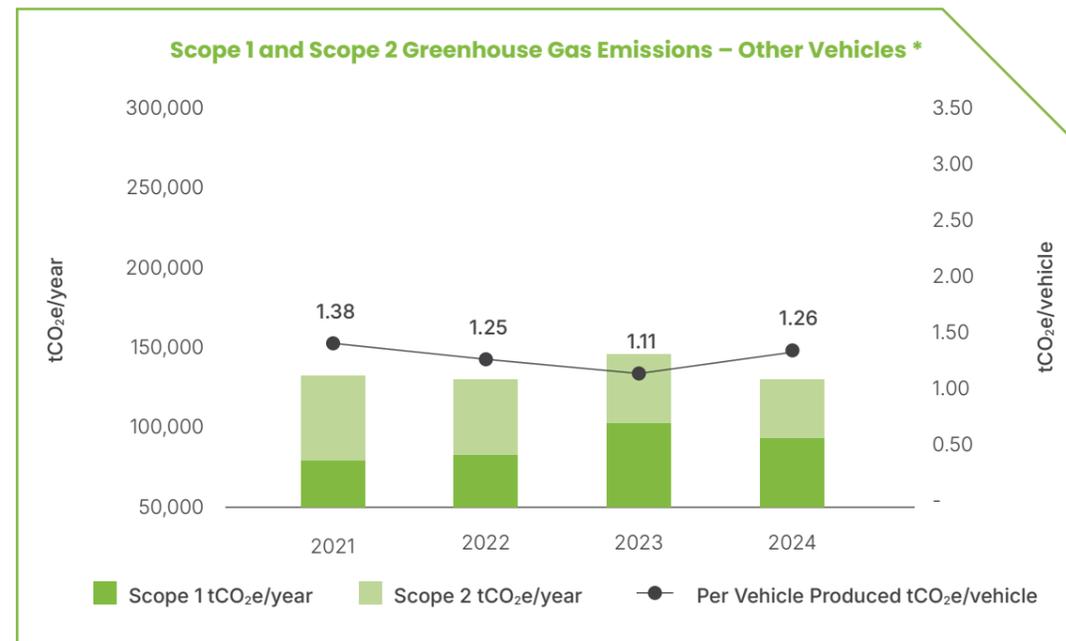
7. CLIMATE-FOCUSED TRANSFORMATION AND RESOURCE EFFICIENCY

Greenhouse Gas Emissions

In 2024, the emission intensity per light vehicle produced reached 0.19 tons of CO₂e, marking an improvement of about 31.8% compared to 2021.



In the production of other vehicles, per-vehicle emissions amounted to 1.26 tons of CO₂e, indicating an approximate 8% reduction compared to 2021.



*2021–2024 Scope 1 and Scope 2 Greenhouse Gas Emissions – Other Vehicles: Data from Hattat Traktör are not included.



Block Train Project

Ford Otosan launched the Block Train Project on the Craiova (Romania) – Istanbul route to reduce transport-related emissions. In 2024, infrastructure works at the Craiova Plant were completed, and the trial run was successfully carried out. The shift to rail transport on this route enables a 63% reduction in carbon emissions.

With the start of regular block train shipments in 2025, the project aims to achieve an annual reduction of approximately 15,000 tons of emissions. This initiative serves as a concrete example of transitioning to low-carbon logistics operations and sets a precedent for the industry.

In the long term, Ford Otosan plans to expand the use of electric and hydrogen-powered vehicles in road transport by 2035, and to achieve up to 95% emission reductions in sea and air transport through alternative fuels, while offsetting remaining emissions with carbon credits.

In line with the Net Zero 2050 roadmap, OSD members have established emission reduction targets and taken steps to meet the more ambitious goals introduced by the SBTi's March 2024 guidance for the transport sector. These efforts include calculating, monitoring, and verifying Scope 1 and Scope 2 emissions in accordance with ISO 14064 or the GHG Protocol. In addition, members monitor their Scope 1 emissions under MRV obligations within national and international emission trading systems and perform calculations to assess potential inclusion in the ETS. Members also closely monitor current carbon taxes and develop and/or carry out efforts to develop internal carbon pricing practices within their companies.



Solar Energy

In December 2023, MAN Türkiye A.Ş. commissioned its Solar Power Plant project, enabling the facility to source its electricity from renewable energy. Electricity generated from solar power now meets 38% of the company's total energy demand. In the upcoming period, the company plans to expand its solar energy capacity and further increase the use of renewable energy across the entire facility.

7. CLIMATE-FOCUSED TRANSFORMATION AND RESOURCE EFFICIENCY

AIR QUALITY

Member companies are implementing advanced filtration systems, emission control technologies, and effective waste management practices in their production facilities to protect and improve air quality.

OSD closely follows national and international environmental regulations and provides regular updates to its members through committees and sub-working groups. Due to the challenges experienced in flue gas measurements and reporting during the environmental permit renewal process, the Environmental Permit Processes Sub-Working Group was established in 2024. Online meetings were held with the Ministry of Environment, Urbanization and Climate Change, with participation from group members. During these meetings, the Draft Industrial Emissions Regulation,²³ EU BREF limits, and their implementation in Türkiye were evaluated. In addition, OSD proposed adopting the mass balance method, as applied in the EU, instead of flue gas measurements in paint shop processes.

The European Union's new Euro 7 emission standard introduces comprehensive regulations for passenger cars, light commercial vehicles, and heavy-duty vehicles.²⁴ This regulation not only limits exhaust emissions but also sets restrictions on particle emissions from tire wear and braking, while defining battery durability requirements for electric vehicles. For heavy-duty vehicles, it targets a 50% reduction in nitrogen oxides (NO_x), hydrocarbons, carbon monoxide, particulate matter, and ammonia emissions compared to Euro 6 standards, and for the first time, includes greenhouse gases such as N₂O and CH₄ within its scope. Through a new on-board monitoring system, compliance with emission targets will be verified throughout the vehicle's lifetime. These developments are accelerating R&D efforts in areas such as low-wear brake pads, innovative tire designs, and advanced coating technologies. Through its Technical Committee, OSD has monitored EU developments on this issue and, in cooperation with experts, published a report offering recommendations to public authorities on the risks and advantages of aligning Euro 7 legislation in Türkiye with market dynamics.

²³ Regulation On The Management Of Industrial Emissions- Key Provisions And Compliance Framework, published in the Official Gazette dated 14 January 2025
²⁴ United Nations Economic Commission for Europe (UNECE) (2025) GRPE-92-08r1e: Working Party on Pollution and Energy (GRPE), 92nd session



7. CLIMATE-FOCUSED TRANSFORMATION AND RESOURCE EFFICIENCY

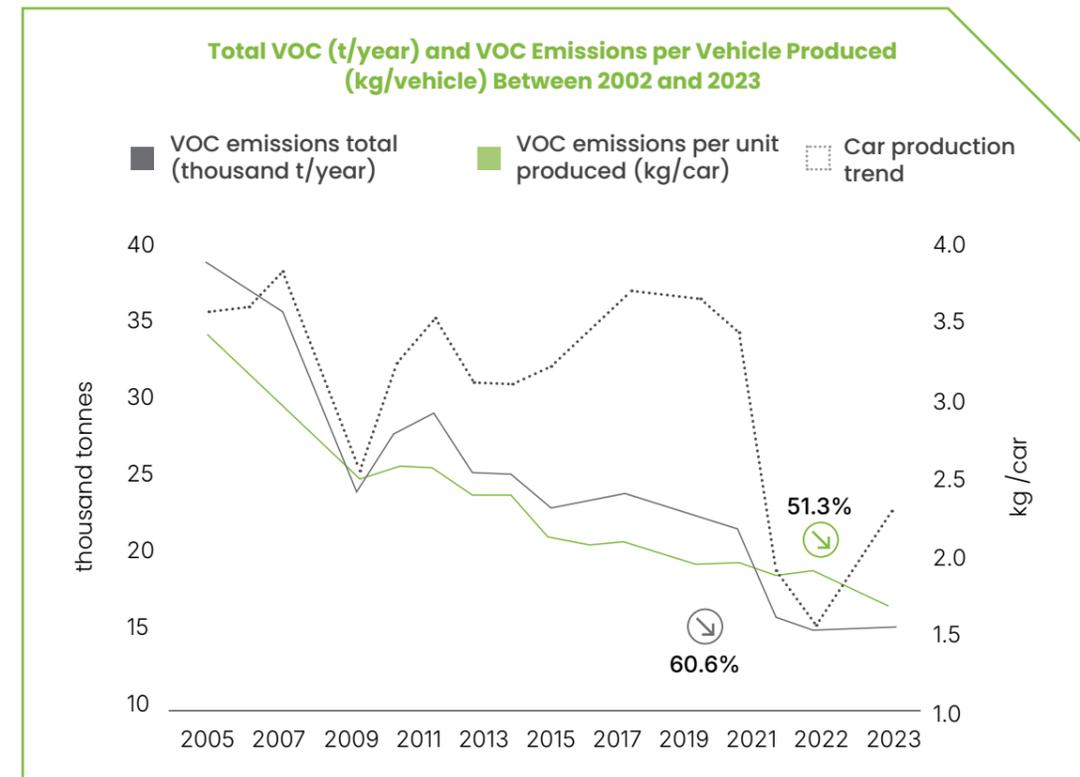
VOLATILE ORGANIC COMPOUND (VOC) EMISSIONS

In the European Union, the limit values and applicable techniques for reducing volatile organic compound (VOC) emissions from automotive coating processes were defined in the BAT Conclusions for Surface Treatment Using Organic Solvents, published on December 9, 2020.²⁵ The document outlines environmentally conscious best practices for automotive paint shops, such as using water-based paints, adopting solvent-free materials, controlling VOC emissions via incineration and treatment systems, and applying waste heat recovery techniques. These practices have also been widely adopted by the Turkish automotive industry.

According to the ACEA Automotive Industry Pocket Guide 2024/2025, which presents

data on VOC emissions per vehicle produced and total absolute emissions of all car manufacturers between 2005 and 2023, European car manufacturers have reduced VOC emissions per vehicle by 51.3% since 2005. Through the adoption of new technologies—such as replacing solvent-based paints with water-based alternatives—manufacturers have achieved a total reduction of 60.6% in VOC emissions over the 18-year period between 2005 and 2023.²⁶

Based on the EU STS BAT Conclusions, the VOC limit values for automotive paint shop facilities employing best available techniques are set at 30 g/m² for passenger cars, 40 g/m² for light commercial vehicles, 50 g/m² for trucks, and 150 g/m² for buses.



Source: European Automobile Manufacturers' Association (ACEA) (2024) VOC emissions from car production in the EU & European Automobile Manufacturers' Association (ACEA) (2024) The Automobile Industry Pocket Guide 2024/2025

²⁵ Joint Research Centre (2020) Best Available Techniques (BAT) Reference Document

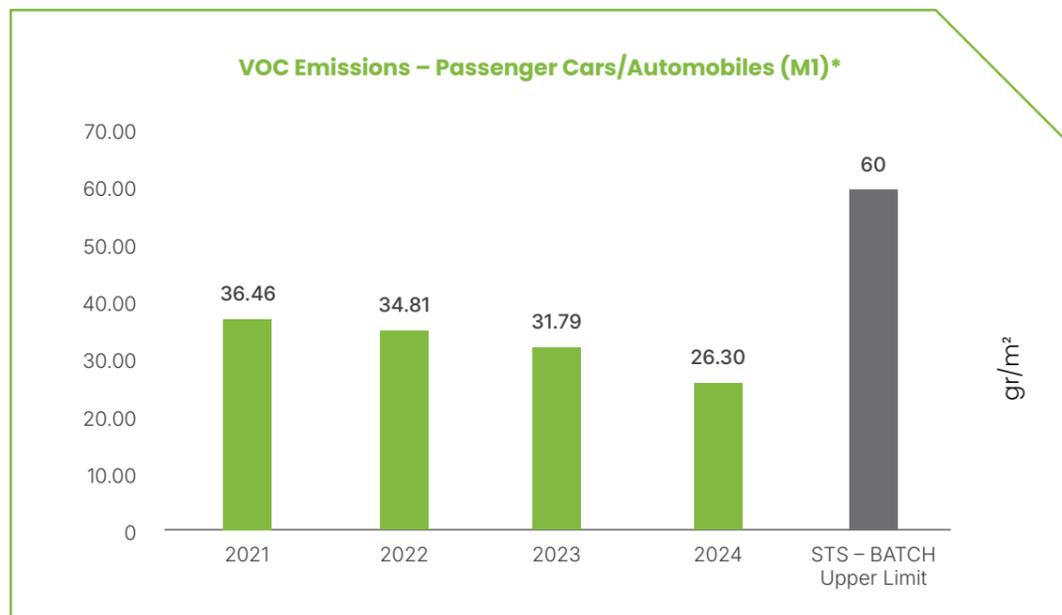
²⁶ European Automobile Manufacturers' Association (ACEA) (2024) The Automobile Industry Pocket Guide 2024/2025

7. CLIMATE-FOCUSED TRANSFORMATION AND RESOURCE EFFICIENCY

Automotive facilities in Türkiye take EU limit values into account in their new investments, and as a result of recent projects and investments, VOC emissions have been significantly reduced in recent years.

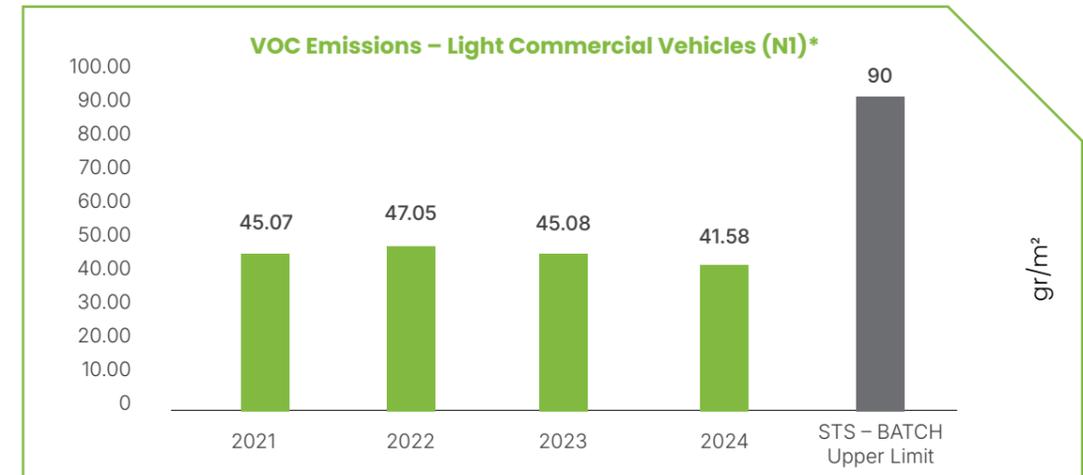


The charts present a comparison between the average values of OSD member facilities for the years 2021–2024 and the limit values determined within the scope of the Regulation on the Control of Air Pollution from Industrial Sources (SKHKKY). In 2024, compared to 2021, VOC emissions for the Passenger Car (M1) category decreased by 27.9%. They are below the limit value set for passenger cars under SKHKKY.



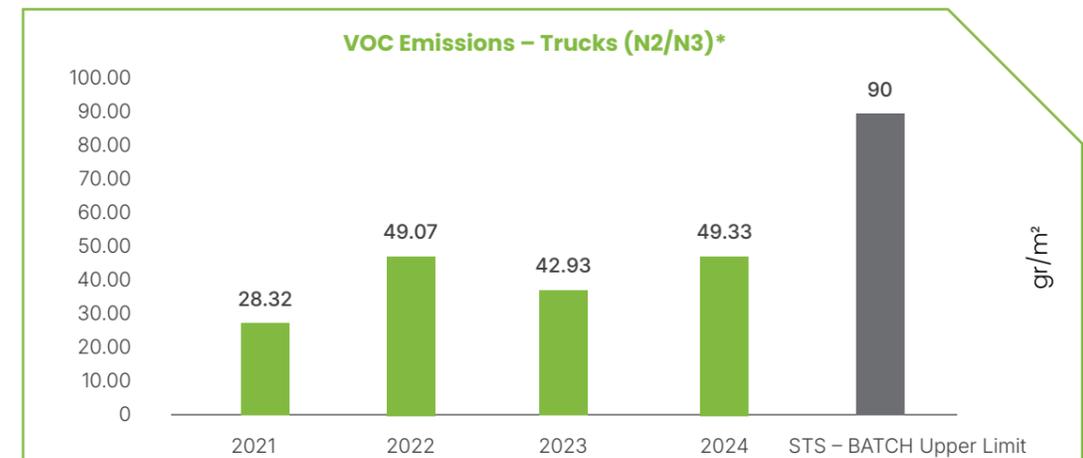
*The verification process for the 2024 data has not yet been completed by all member companies.

In 2024, compared to 2021, VOC emissions for the Light Commercial Vehicle (N1) category decreased by approximately 7.8%. They are below the limit value set for light commercial vehicles under Regulation on the Control of Industrial Air Pollution (SKHKKY).



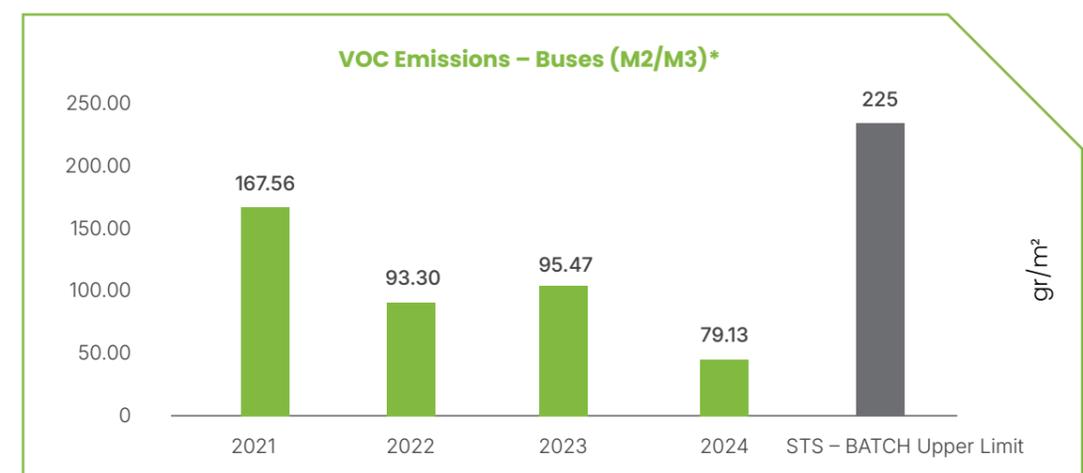
*The verification process for the 2024 data has not yet been completed by all member companies.

In 2024, VOC emissions for the Truck (N2/N3) category were 49.3 g/m², remaining below the limit value of 90 g/m² set for trucks under the Regulation on the Control of Industrial Air Pollution (SKHKKY).



*The verification process for the 2024 data has not yet been completed by all member companies.

In 2024, VOC emissions for the Bus (M2/M3) category decreased by approximately 52.8% compared to 2021 and remain below the limit value set for buses under the Regulation on the Control of Industrial Air Pollution (SKHKKY).



*The verification process for the 2024 data has not yet been completed by all member companies. Karsan data are not included in the VOC emissions figures for the Bus (M2/M3) category.

7. CLIMATE-FOCUSED TRANSFORMATION AND RESOURCE EFFICIENCY

CLEAN TECHNOLOGY AND ALTERNATIVE FUELS

Globally, regulatory initiatives are accelerating in line with the transition to a low-carbon economy and carbon neutrality targets, focusing on reducing transport-related greenhouse gas emissions and promoting the sale of low- and zero-emission vehicles. The International Energy Agency's Global EV Policy Explorer report outlines the policies, measures, and targets adopted by countries to support the shift toward low-emission and alternative-fuel vehicles.²⁷

The EU, in pursuit of its climate-neutral objectives, has established a comprehensive roadmap to accelerate the transition to zero-emission vehicles within the transport sector. This roadmap covers emission standards for both light- and heavy-duty vehicles, setting targets to reduce greenhouse gas emissions by 55% for cars by 2030 and to achieve 100% reduction by 2035. However, delays in implementation timelines and postponements of penalty mechanisms have been observed, posing challenges to progress.

In Türkiye, a comprehensive and binding regulation directly targeting vehicle-related CO₂ emission reductions has not yet been introduced. Nevertheless, steps have been taken to establish a legal framework aligned with the 2053 net-zero target. Law No. 7552 on Climate Change includes provisions on emission reduction, climate adaptation, emission trading, and the promotion of clean technologies. Under the draft Turkish Emission Trading System, a pilot phase covering 2026–2027 is planned, introducing emission permit requirements for operators. However, there is still no regulation specifically addressing CO₂ emissions in the automotive sector.

The careful development of a national roadmap aligned with EU regulations holds significant importance for Türkiye. In particular, the preparation of a dedicated

regulation for vehicle-related CO₂ emissions, the development of a regulatory framework for hydrogen refueling and electric charging infrastructure, and the implementation of policy instruments consistent with EU mechanisms such as CBAM stand out as key priorities.

Developments in vehicle emission standards in both Türkiye and the EU are closely monitored by the OSD Technical Committee. In order to enhance the competitiveness of the industry, the Committee works in close cooperation with the Ministry of Industry and Technology on the alignment of EU technical legislation with domestic legislation; at the same time, it actively takes part in the subcommittees of the Motor Vehicles Technical Committee. At the international level, OSD regularly participates in the Liaison Committee meetings of ACEA and the Technical Committee of OICA, following global and local developments and sharing insights with its members and relevant institutions.

Within the scope of the IPA Project, OSD— together with sectoral experts—has conducted a comprehensive gap analysis to assess Türkiye's alignment with the EU's Green Deal objectives, focusing on the Alternative Fuels Infrastructure Regulation (AFIR, 2023/1804). The analysis evaluates the sector's current state in terms of electric vehicle charging infrastructure, hydrogen refueling infrastructure, and policy frameworks.

In terms of targets for electric vehicle charging infrastructure, Turkish legislation is seen to be partially aligned. In particular, there are regulations aimed at the expansion of infrastructure for light vehicles. However, the lack of binding targets for heavy-duty electric vehicles, the absence of clarity regarding infrastructure standards on urban and intercity routes, and the failure to ensure technical standards along the

Trans-European Transport Network (TEN-T) are among the significant gaps. In this context, increasing financial and regulatory incentives and the modernization of transport infrastructure emerge as priority needs.

From a technical perspective, partial compliance is also observed. Strengthening the integration of renewable energy, digitalization, transparent pricing, and user-friendly payment systems within the charging infrastructure is essential. Ensuring interoperability and accessibility of charging points along the TEN-T network in line with international standards is critical for advancing sustainable mobility goals.

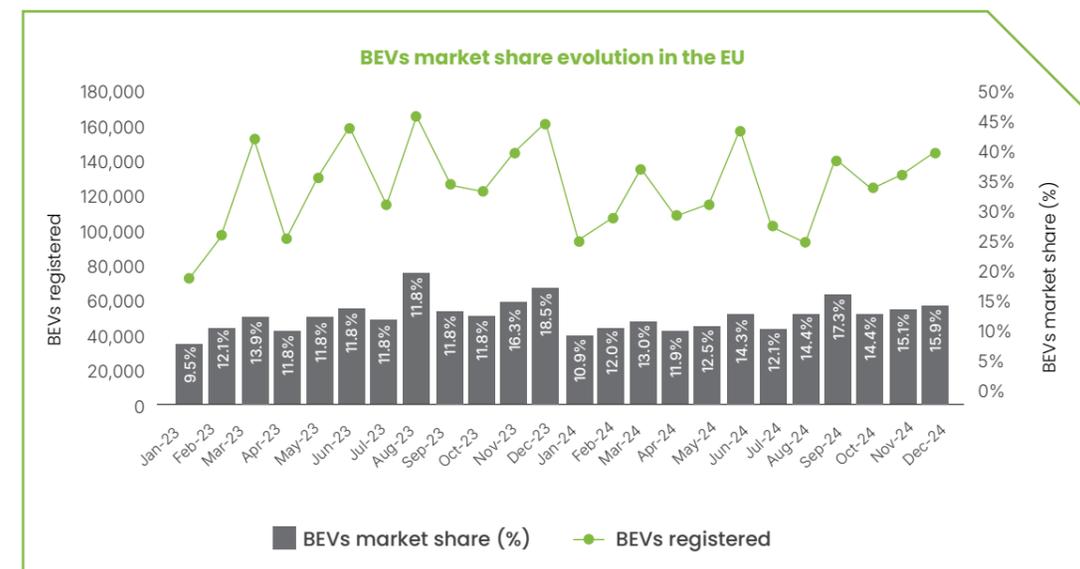
Türkiye's hydrogen refueling infrastructure legislation is not yet aligned with EU targets. According to the EU, hydrogen refueling stations must be installed at intervals of no more than 200 km along the TEN-T network by 2030, with at least one publicly accessible station in major cities, each operating at 700 bar and capable of supplying a minimum of one ton of hydrogen per day. In addition, pricing must be transparent and easily accessible to users.

The national policy framework and reporting mechanisms in this area also lack alignment. A comprehensive national policy framework for alternative fuels has not yet been established, and progress reporting is not conducted systematically. To ensure EU alignment, Türkiye needs to prepare a structured national policy framework, update

it through periodic evaluations, and publish publicly available progress reports every two years. This approach would enable effective monitoring of target achievement and guide policy adjustments when necessary.

AFIR Targets by Year²⁸

- o By 31 December 2025: Preparation of the national policy framework for alternative fuels infrastructure.
- o By 13 April 2026: Implementation of electronic payment systems at publicly accessible charging points.
- o By 14 October 2026: Ensuring that all publicly accessible charging points are digitally connected.
- o By 14 October 2026: Preparation of guidelines on the content, structure, and reporting format of national policy frameworks.
- o By 31 December 2026: Evaluation of the implementation of national policy frameworks and the level of achievement of national targets.
- o By 31 December 2027 and every two years thereafter: Preparation and publication of implementation reports on national policy frameworks.
- o By 31 December 2027: Establishment of initial indicators on the capacity of infrastructure along the TEN-T core network.
- o By 31 December 2030: Deployment of hydrogen refueling stations along the TEN-T core network at maximum intervals of 200 km, with at least one publicly accessible station in each urban node.



Source: European Automobile Manufacturers' Association (ACEA) (2024) Penalty relief for 2025 for cars and vans. Why it matters and what's at stake

²⁸ European Commission, Alternative fuels infrastructure. Directorate-General for Mobility and Transport

²⁷ International Energy Agency (IEA) Global EV Policy Explorer. IEA Data and Statistics

7. CLIMATE-FOCUSED TRANSFORMATION AND RESOURCE EFFICIENCY

LOW-CARBON PRODUCTION AND SERVICES

Low-carbon production and services encompass products, processes, and solutions aimed at reducing greenhouse gas emissions. In this context, electric and hybrid vehicles (PHEV), hydrogen fuel cell vehicles (FCEV), low-emission engines, and lightweight or recycled materials stand out as key low-carbon products. Services such as EV charging infrastructure, battery recycling, green logistics, and circular economy solutions are also integral to this framework. Low-carbon production and services contribute to the reduction of GHG emissions, the management of environmental risks, compliance with legal and regulatory obligations, and alignment with the sector's sustainable development goals. However, this transition may also entail challenges such as high investment costs, product price increases, and potential job losses. Additionally, the shift to low-carbon production can introduce further complexity and operational risks within supply chains due to new technologies, materials, and processes.

Sustainable Products

OSD member companies are accelerating sustainable product development processes, focusing on reducing the environmental impacts of vehicles throughout their entire life cycle. The

increase in electric and hybrid vehicle production, innovations in battery technologies, and the use of recyclable and lightweight materials are key elements of this approach.

Within the framework of circular economy practices, the recycling, reuse, and remanufacturing of vehicle components are becoming increasingly widespread. This not only reduces production-related emissions but also ensures energy efficiency and a lower carbon footprint throughout the vehicle's operational lifetime.

According to Regulation (EU) 2023/851²⁹, which sets CO₂ emission standards for passenger cars and light commercial vehicles, a low-emission vehicle is defined as one with tailpipe CO₂ emissions of 50 g/km or less. This definition primarily includes plug-in hybrid vehicles (PHEVs) and other partially electric models. A zero-emission vehicle, on the other hand, refers to vehicles with 0 g/km CO₂ emissions — namely, fully electric and hydrogen fuel cell vehicles.

In EU legislation, the concept of a sustainable product is not limited solely to emission values. The European Commission's Sustainable Products Initiative and the draft Ecodesign for Sustainable Products Regulation (ESPR)³⁰ expand the definition to encompass the entire product life cycle, including aspects such as recyclability, material efficiency, and overall environmental footprint.

²⁹ Regulation (EU) 2023/851 of the European Parliament and of the Council of 19 April 2023 amending Regulation (EU) 2019/631 as regards strengthening the CO₂ emission performance standards for new passenger cars and new light commercial vehicles in line with the Union's increased climate ambition

³⁰ European Commission, Ecodesign for sustainable products regulation. European Commission



Stage 5 Emission Engine Tractor Series Design

The Stage 5 Emission Engine Tractor Series Design Project, carried out by Hattat Traktör between 2021 and 2023, was implemented to develop environmentally friendly, high-performance tractors fully compliant with EU emission standards. The project brought together R&D, production, procurement, marketing, and quality teams, with active participation from dealers and suppliers.

In line with the new regulations, extensive redesign work was undertaken to replace Stage 3a engines with Stage 5 engines. Critical components such as engine selection and placement, exhaust and filtration systems, fuel and cooling systems, hood design, and front axle mounts were re-engineered. Homologation tests were successfully completed in compliance with Regulation (EU) 2015/96. Additionally, the integration of Electronic Control Unit (ECU) and On-Board Diagnostics (OBD) systems enhanced the tractors' performance, efficiency, and maintenance convenience.

As a result of the project, the company met all emission and safety requirements necessary for entry into the European Union market, strengthening its export capacity. In 2023 and 2024, a total of 1,325 tractors were sold, generating approximately 2.65 billion TL in revenue. The project provided farmers with more eco-friendly, low-noise, ergonomic, and fuel-efficient tractors, contributing to the advancement of the domestic tractor industry, foreign exchange savings, and the expansion of technological expertise.



You can access our members' definitions of sustainable products and their best practices through the sustainability and integrated reports provided in Annex 4.

In 2024, OSD members' environmental investment expenditures increased by 125% compared to 2023, reaching 936 million TL.

Environmental Investments and Expenditures (TL)	2023	2024
	415,990,783	936,966,719

7. CLIMATE-FOCUSED TRANSFORMATION AND RESOURCE EFFICIENCY

TÜRKİYE'S EMISSION REDUCTION JOURNEY, EMISSION TRANSITIONS, AND VEHICLE FLEET

In line with its 2053 net-zero emissions target, Türkiye is taking steps to enhance the transport sector's contribution to carbon reduction. Lowering greenhouse gas emissions from transportation is directly linked to the widespread adoption of electric vehicles and the development of charging and refueling infrastructure. However, Türkiye's vehicle fleet still has a high average age, which poses a challenge to achieving these emission reduction goals. Renewing the fleet and increasing the share of low- and zero-emission vehicles will be key. In this regard, tax regulations and purchase incentives are gaining growing importance.

Efforts to reduce emissions from road transport require analyzing the structure of Türkiye's current motor vehicle fleet—its age, technology level, and pollutant intensity—to develop appropriate and effective policies.

At OSD, we are working closely with public institutions and other stakeholders on a multi-stakeholder approach to design a vehicle fleet renewal program. This program would not only contribute to climate goals but also enhance road safety, improve the trade balance by reducing oil imports, strengthen the domestic market and production, and promote circular economy practices.

According to the Euro 7 Regulations and Gap Analysis prepared by OSD, the EU's new emission standard for vehicles—Euro 7—covers not only exhaust emissions but also particulate emissions from tires and brakes, while introducing durability requirements for electric vehicle batteries. For heavy-duty vehicles, the regulation aims to halve emissions compared to Euro 6 and, for the first time, includes greenhouse gases such as N₂O and CH₄.

The Euro 7 Regulations and Gap Analysis Report highlight that while the regulation delivers significant sustainability and public health benefits, some provisions are designed with concerns about alignment with the zero-emission vehicle transition in mind. It emphasizes that Türkiye's simultaneous and coordinated adaptation to this transition is critical to preventing disruptions in product planning and development programs. The report also notes that while the process presents opportunities for vehicle manufacturers and suppliers, the expected increase in imported content, potential penalties, and cost pressures may necessitate government support.

The EU's transport policies address not only emissions but also competitiveness and market regulation. The gradual implementation of policies outlined in the Draghi Report is expected, while ACEA continues to call for market-driven transformation, state support to offset CO₂ compliance costs, and legislative measures to enhance competitiveness. These approaches serve as a useful reference point for Türkiye. Additionally, mechanisms such as the Clean Industrial Deal, CBAM, ETS, and the EU Taxonomy play crucial roles in the EU's green transition.

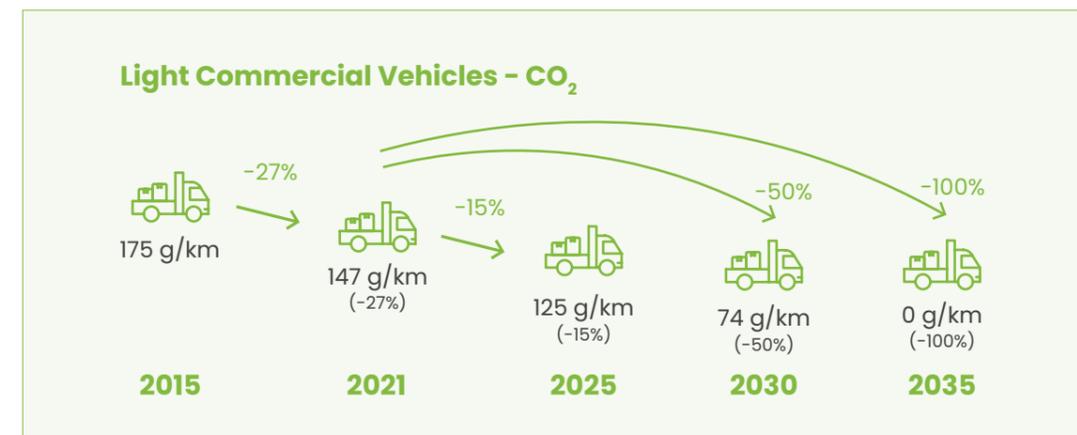
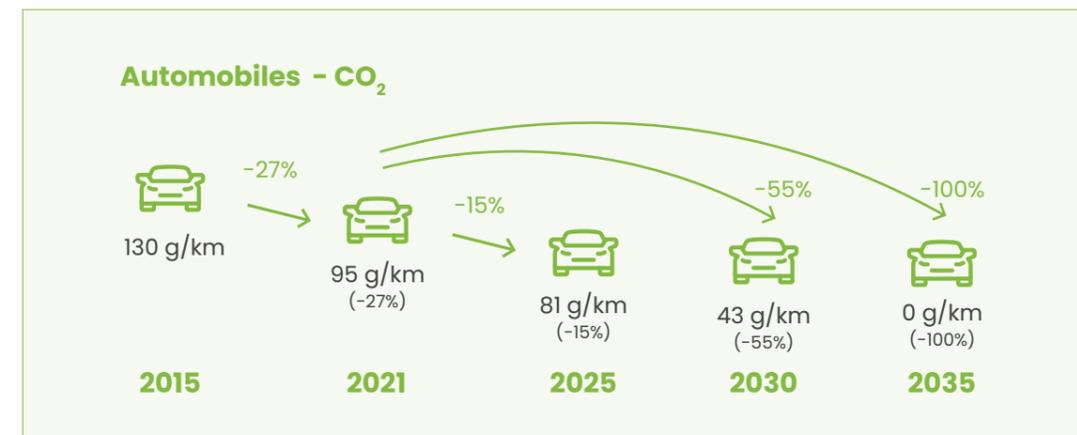
Clean Industrial Deal³¹ supports the decarbonization of industrial production, while CBAM ensures fair competition by imposing a carbon cost on imports. ETS provides companies with a market-based tool to reduce emissions, and the EU Taxonomy guides financial markets by defining criteria for sustainable investments. Collectively, these frameworks influence not only the transformation of the EU economy but also the industrial and financial policies of countries trading with the EU.

In cases of limited resources, it is recommended that priority be given to the EU Regulation 2023/851, while the CO₂ Emission Performance Standards Regulation for Heavy-Duty Vehicles (EU 2024/1610) may be addressed at a slower

pace until the end of 2027. Supporting the small number of manufacturers operating in the heavy-duty vehicle segment is essential both for compliance with emission targets and for strengthening product development capabilities.

For Türkiye to successfully manage this transformation, it is essential to conduct critical academic literature reviews, establish a data monitoring office to ensure reliable data collection, and expand existing collaborations with ACEA and the European Commission's Joint Research Centre.

Between 2015 and 2021, CO₂ emissions from light-duty vehicles in the EU decreased by 27%. Light vehicles produced in Türkiye already comply with EU emission targets.



³¹ European Commission (2025). Clean Industrial Deal. European Commission

7. CLIMATE-FOCUSED TRANSFORMATION AND RESOURCE EFFICIENCY

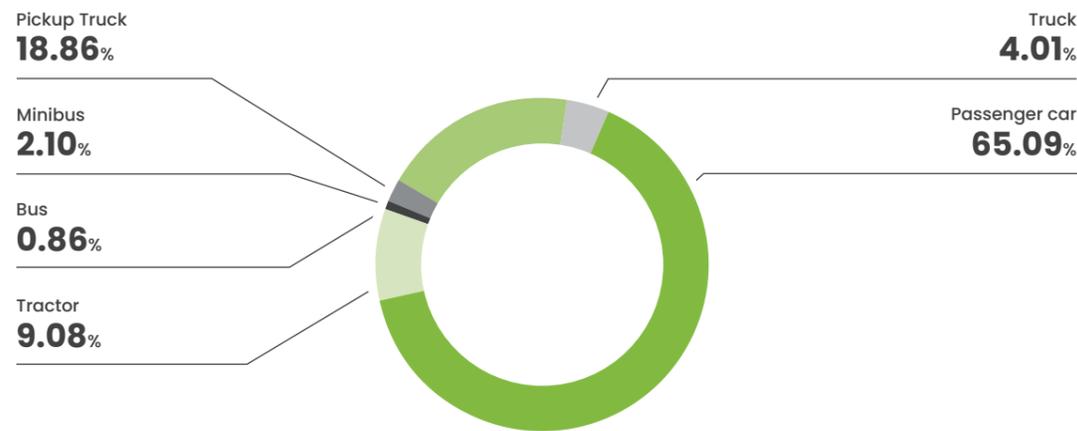
Türkiye Vehicle Fleet 2021-2024 data

Years	Passenger car	Truck	Pickup Truck	Minibus	Bus	Tractor	Overall
2021	13,706,065	886,303	4,115,205	484,806	208,882	2,025,006	21,426,267
2022	14,269,352	919,125	4,277,424	487,381	208,442	2,093,933	22,255,657
2023	15,221,134	959,793	4,487,244	502,628	210,740	2,186,150	23,567,689
2024	16,232,458	1,000,326	4,703,287	522,608	213,416	2,265,267	24,937,362

Source: TurkStat, Türkiye Vehicle Fleet Data (2021-2024)

By the end of 2024, passenger cars represented 65.09% of Türkiye's vehicle fleet. They were followed by light commercial vehicles (pickups) with 18.86%, tractors with 9.08%, trucks with 4.01%, minibuses with 2.10%, and buses with 0.86%.

VEHICLE FLEET IN TÜRKİYE BY VEHICLE TYPE (AS OF END-2024)



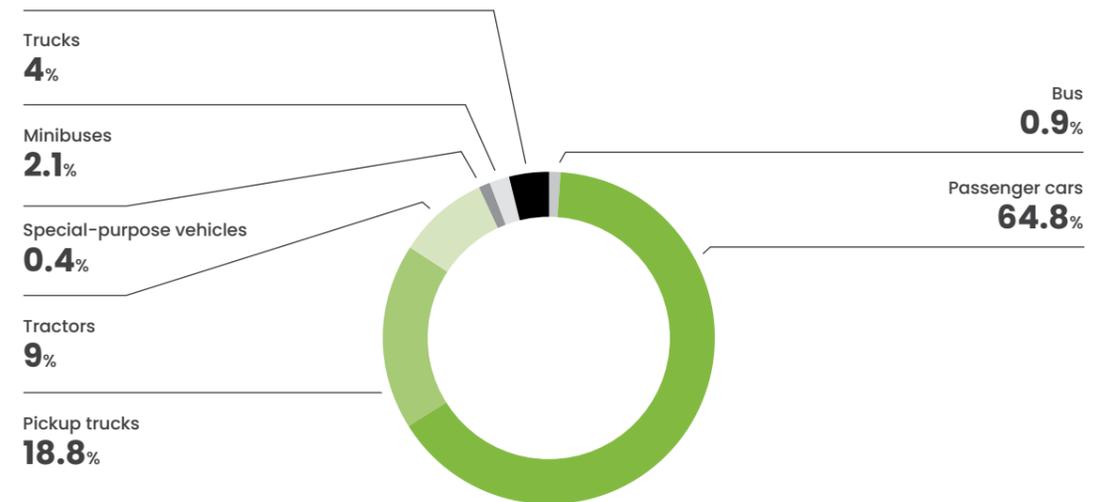
Source: TurkStat, Türkiye Vehicle Fleet Data, 2024

Vehicles Registered in Traffic in Türkiye

According to TurkStat data, as of the end of December 2024, there are 16,232,458 registered motor vehicles in Türkiye. Among these, 34.1% are diesel, 31.9% use LPG, 30.2% are gasoline-powered, 2.4% are hybrid, and 1.1% are electric vehicles. The share of vehicles with an unknown fuel type is 0.2%.

As of the end of December, passenger cars accounted for 64.8% of registered motor vehicles, followed by light commercial vehicles (pickups) at 18.8%, tractors at 9%, trucks at 4%, minibuses at 2.1%, buses at 0.9%, and special-purpose vehicles at 0.4%.

Total Number of Registered Motor Vehicles (as of end-2024)



Source: TurkStat, Total Number of Registered Motor Vehicles, 2024 (excluding motorcycles)



7. CLIMATE-FOCUSED TRANSFORMATION AND RESOURCE EFFICIENCY

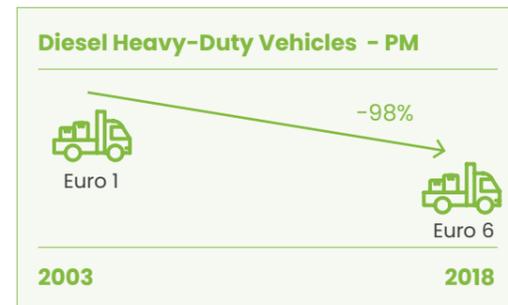
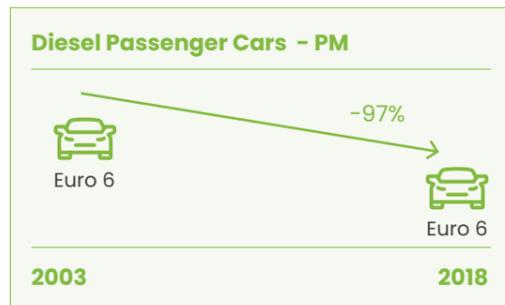
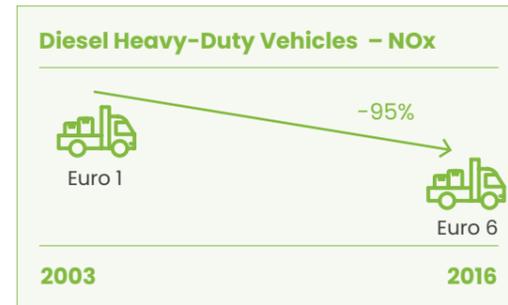
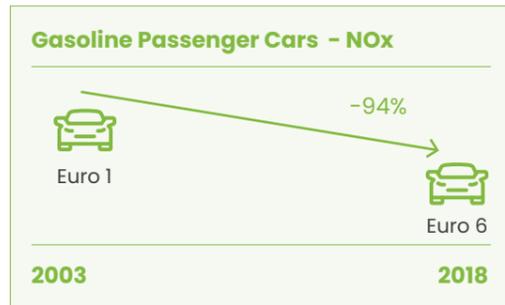
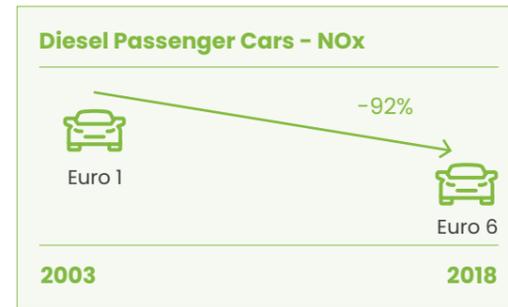
Technological advancements in the automotive industry have led to significant reductions in pollutant parameters (NO_x, PM) and greenhouse gas emissions in both the EU and Türkiye over the years. Pollutant levels from vehicles produced today are more than 95% lower than those of vehicles registered before 2009.

According to the end-of-2023 traffic registration data, vehicles registered before 2009 represent 41% of Türkiye's vehicle fleet but account for over 90% of total particulate matter (PM) emissions and around 80% of nitrogen oxide (NO_x) emissions. Therefore, phasing out vehicles older than 15 years and replacing them with newer, cleaner technologies is considered a critical step toward achieving the 2053 net-zero goal.

As of the end of 2024, the average age of Türkiye's 31,301,389 registered motor vehicles was calculated as 14.3 years. The average age was 14.2 for passenger cars, 16.0 for minibuses, 16.2 for buses, 13.9 for pickup trucks, 18.1 for trucks, 10.2 for motorcycles, 15.3 for special-purpose vehicles, and 24.5 for tractors.

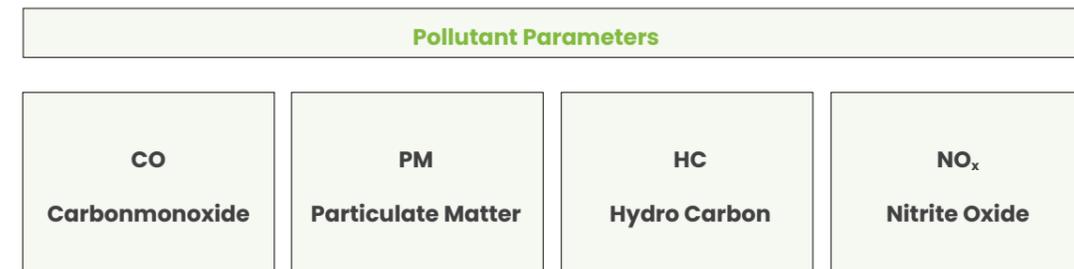
In line with the EU emission standards harmonization process, Türkiye has achieved significant reductions in pollutant emissions (NO_x and PM) from both heavy-duty vehicles and passenger cars. Between 2003 and 2016, NO_x emissions from heavy-duty vehicles decreased by approximately 95%, while particulate matter (PM) emissions dropped by 98%. Similarly, NO_x emissions from passenger cars fell by 92–94%, and PM emissions by 97%.

Emission Reduction Rates of National Type-Approved Vehicles in Türkiye by Emission Transitions



Distribution of Türkiye's Vehicle Fleet by Euro Emission Standards (2024)*

	Before Euro Norm	Euro 1	Euro 4 (Euro IV)	Euro 5 (Euro V)	Euro 6 (Euro VI)	Overall
Automotive	-	31.12.2002	01.01.2009	01.01.2012	01.01.2018	-
Light Commercial Vehicle	-	31.12.2002	01.01.2009	01.01.2013	01.01.2018	-
Vehicle Fleet (Light Duty)	4,927,960 23%	3,289,661 15%	2,377,176 11%	5,290,731 25%	5,572,825 26%	21,458,353 100%
Heavy duty vehicle	-	31.12.2002	01.01.2009	01.01.2012	01.01.2016	-
Vehicle Fleet (Heavy Duty)	417,857 32%	242,680 18%	106,359 8%	233,138 18%	315,808 24%	1,315,842 100%
Overall Vehicle Fleet	5,345,817	3,532,341 16%	2,483,535 11%	5,523,869 24%	5,888,633 26%	22,774,195 100%
						~ > 15 years old 39% ~ < 15 years old 61%
CO						~ 72% ~ 28%
PM						~ 92% ~ 8%
HC + NO _x						~ 78% ~ 22%



Source: TurkStat, Motor Vehicles Statistics

* The calculation is based on the transition dates specified in the national legislation. Annual mileage has been disregarded. HC + NO_x values cover only light-duty vehicles.

7. CLIMATE-FOCUSED TRANSFORMATION AND RESOURCE EFFICIENCY

NATURAL RESOURCE USE, WASTE MANAGEMENT AND CIRCULAR ECONOMY

While the automotive industry remains one of the driving forces of global economic growth and technological progress, it also exerts significant environmental pressure through intensive natural resource consumption, high energy demand, and waste generation throughout its production chain and product life cycle. In line with national and international regulations, the efficient management of natural resources, minimization of waste, and systematic integration of circular economy principles

into production processes have become critical imperatives for the sector. Although the integration of circular economy principles presents short-term challenges, according to the UN Environment Programme's Global Waste Management Outlook 2024, implementing a circular economy model offers a potential annual net gain of USD 108.5 billion through waste prevention, business strategies aligned with long-term sustainability goals, and effective waste management practices.³²

³² *United Nations Environment Programme (UNEP) and International Solid Waste Association (ISWA) (2024) Global Waste Management Outlook 2024: Beyond an age of waste – Turning rubbish into a resource*



7. CLIMATE-FOCUSED TRANSFORMATION AND RESOURCE EFFICIENCY

NATURAL RESOURCE USE

OSD develops efficiency-oriented projects in collaboration with its members to ensure full environmental compliance, focusing on reducing natural resource use, following innovative processes, preventing pollution, and minimizing environmental impacts.

The quality and environmental management systems implemented in OSD members' production processes are subject to national and international audits. During the reporting period, all OSD members have an ISO 14001 Environmental Management System certification. According to regular inspections conducted by the Ministry of Environment, Urbanization and Climate Change, no environmental non-compliance was identified in 11 out of 13 member

³³ Includes data from 12 OSD members.

companies in 2023, with only one company receiving an environmental penalty. In 2024, 10 out of 13 member companies were found to be in full compliance, while two companies were subject to environmental fines.³³

Through the collaboration, knowledge sharing, and teamwork carried out under the OSD Environment Committee, the environmental performance of member companies is continuously improved. In addition, significant steps are being taken toward the implementation of Best Available Techniques (BAT) as envisaged by European Union regulations, alongside national legislation.

7. CLIMATE-FOCUSED TRANSFORMATION AND RESOURCE EFFICIENCY

WASTE MANAGEMENT

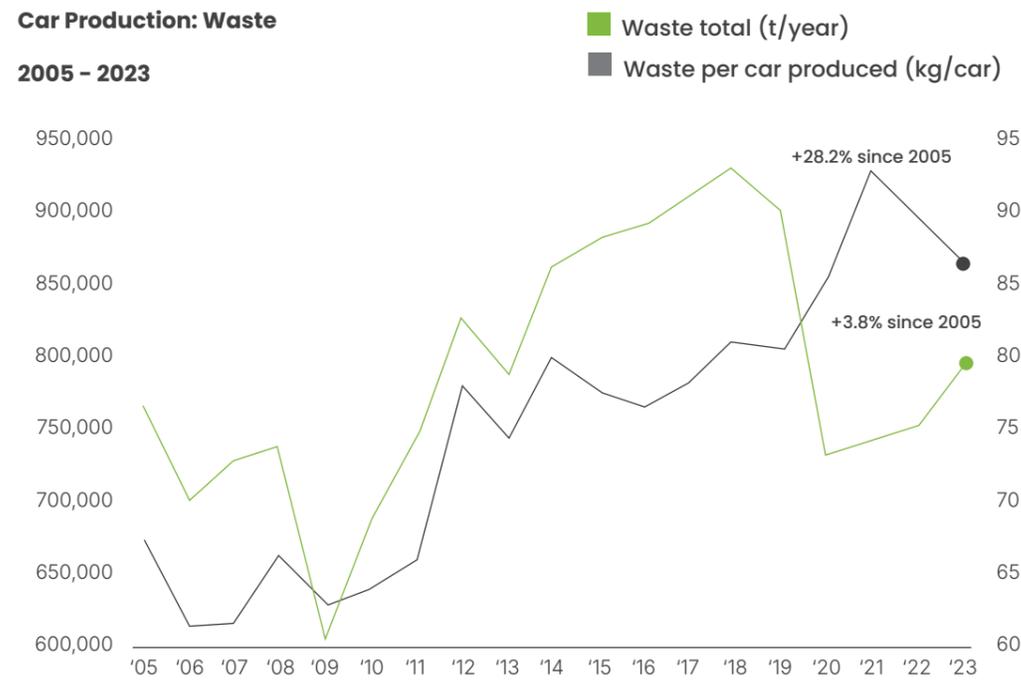
The increase in industrial waste generation worldwide and the rising costs of final disposal have made waste management a critical agenda item across all sectors, including the automotive industry.

OSD members carry out studies on reducing waste at its source, using resources more efficiently, and re-evaluating waste within the framework of the circular economy. In this regard, research is being conducted on the use of waste as an alternative raw material, and various projects are being implemented to

reduce the amount of waste sent to landfill sites.

Studies show that the total amount of waste generated during automobile production in the EU has increased by 3.8% since 2005. This means that despite the EU's strict environmental standards and technological developments, the automotive sector produces more waste today compared to nearly twenty years ago. The amount of waste generated per vehicle produced has increased by 28.2% over 18 years.³⁴

Total Waste From Automobile Production and Waste per Vehicle Between 2005 and 2023



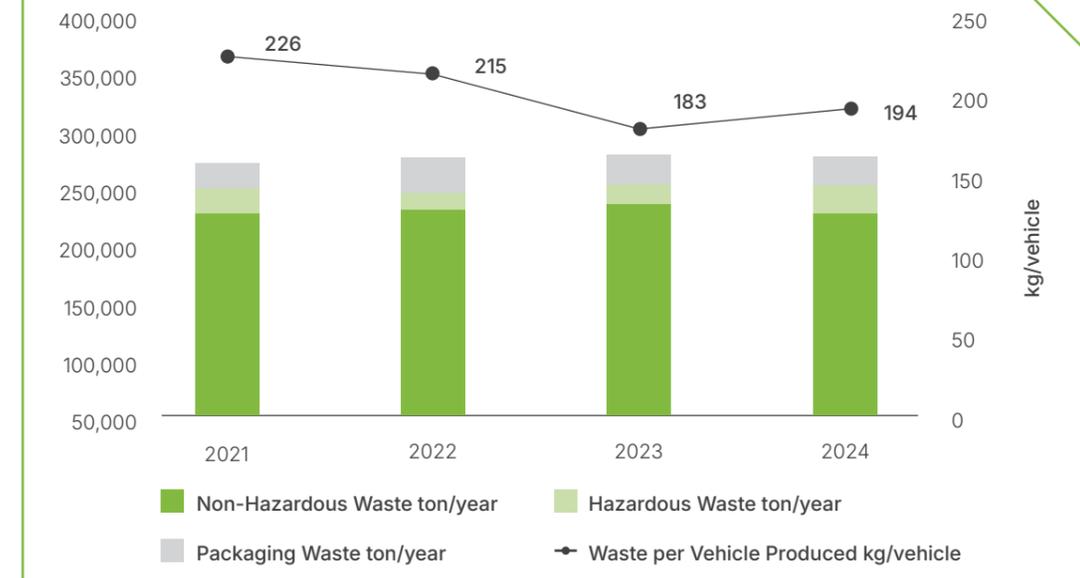
Source: European Automobile Manufacturers' Association (ACEA) (2024) Waste from car production in the EU

³⁴ European Automobile Manufacturers' Association (ACEA) (2024) Waste from car production in the EU

An assessment of total waste distribution at the facilities of OSD members producing light vehicles indicates that 89.7% of the waste generated consisted of non-hazardous waste, while 10.3% was classified as hazardous. The amount of waste per vehicle decreased from 226 kg/vehicle in 2021 to 183 kg/vehicle in 2023, before increasing to 194 kg/vehicle in 2024. Due to changes in process specifications at certain member facilities, waste generation rose; however, part of

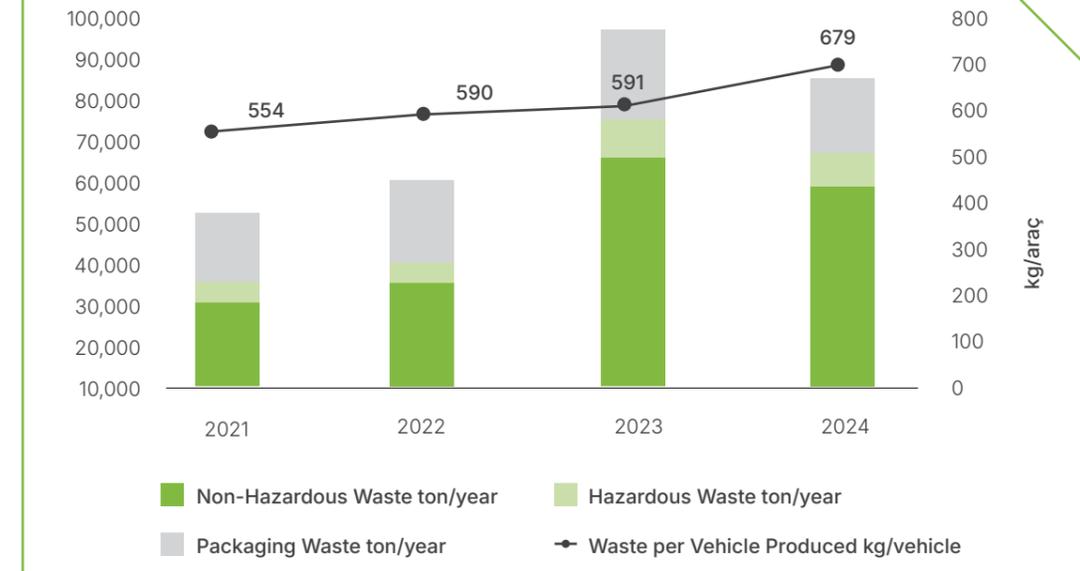
this waste was utilized as an alternative raw material in other plants, supporting the implementation of industrial symbiosis practices. During this period, non-hazardous waste accounted for the majority of total waste, while hazardous and packaging waste remained at comparatively lower levels. At the facilities of OSD members producing other vehicle types, 88.6% of total waste was non-hazardous and 11.4% was hazardous.

Total Waste and Waste Amounts Per Vehicle – Light Vehicles



For other vehicles, the amount of waste generated per vehicle increased by 22.7% in 2024 compared to 2021.

Total Waste and Waste Amounts Per Vehicle – Other Vehicles



*Hattat Traktör data are not included in the figures for 2021 and 2022 but are included for 2023 and 2024.

TOYOTA

Chemical Sludge Reduction

Toyota implemented a process improvement in its chemical treatment plant to reduce environmental impacts and increase resource efficiency. Within the scope of the “Kaizen – Chemical Sludge Reduction in the Chemical Treatment Plant” project, the amount of chemicals used was optimized. As a result of the changes made, monthly chemical consumption decreased, and no negative effect was observed on other parameters of treatment performance. Consequently, waste generation, as well as energy and water consumption, decreased. The amount of chemical sludge generated per vehicle was reduced by 0.32 kg.

CIRCULAR ECONOMY

Both globally and in Türkiye, the automotive industry has been undergoing transformation in areas such as energy efficiency, electrification, battery technologies, and the use of circular materials. Within the framework of circular economy policies and resource efficiency targets, sustainable production processes and the extension of product life cycles have become priorities. The transition to a circular economy is considered a prerequisite for ensuring a climate-neutral, resource-efficient, and competitive EU economy, as well as for halting the loss of biodiversity.³⁵

In line with their sustainability goals, OSD member companies prioritize recycling over disposal in waste management practices. This approach enables resources to be reintegrated into the economy and contributes to the advancement of the circular economy. In this context, 97.8% of waste generated by member companies was recovered in 2023, increasing to 98.4% in 2024.

³⁵ Republic of Türkiye Ministry of Foreign Affairs Directorate for EU Affairs Chapter 27. Environment and Climate Change.



7. CLIMATE-FOCUSED TRANSFORMATION AND RESOURCE EFFICIENCY

USE OF RECYCLED PLASTIC

The use of plastic and recycled plastic is one of the key areas in the circular economy and is of critical importance for the automotive industry.

The EU is working on legal regulations that will make the use of recycled plastic in automotive products mandatory. The European Commission published the draft Regulation on Circularity Requirements for Vehicle Design and on the Management of End-of-Life Vehicles (to replace Directive 2000/53/EC on End-of-Life Vehicles) on 13 July 2023. According to the draft, a minimum share of recycled plastic use will be required for M1 and N1 vehicle categories, and the evaluation process of alternative target scenarios is ongoing in the EU. With this regulation, there will be obligations such as ensuring that the mandatory recycled plastics used in automotive products consist of “post-consumer”³⁶ waste and that part of this waste is recovered from end-of-life vehicles (ELVs).

Under the umbrella of TOBB, OSD, in its capacity as the Chair of the Automotive Industry Council, carried out the “TOBB Automotive Industry Recycled Plastic” study together with the Waste and Recycling Industry Council, the Plastics, Rubber and Composite Industry Council, and the Automotive Supplier Industry Council, and published the report in December 2024, which includes the current status of recycled plastic production capacity in Türkiye, the future needs of the automotive industry, and recommendations regarding infrastructure and legislation.

The main topics highlighted in the report are as follows:

- More effective collection of plastic waste at the source in Türkiye

- Increasing the collection and recycling capacity of plastic waste from end-of-life vehicles (ELVs)
- Increasing the recycling (upcycling) capacity of plastic waste into higher-quality products
- Increasing the production capacity of granules/polymers through the use of recycled plastic
- Establishing traceability and certification system for post-consumer plastic waste
- Enabling its reuse in automotive products

OSD members continue their efforts to reduce plastic use and promote more sustainable alternatives. Activities carried out within this scope include eliminating single-use plastics from personal use by 2030, increasing the use of recycled and bio-based plastics in trucks, focusing on bio-based and biodegradable plastics in production processes, and implementing practices for the recovery of biologically degradable waste.

In 2023, within the scope of the UN Intergovernmental Negotiating Committee on Plastic Pollution, OSD shared with the Ministry of Environment, Urbanization and Climate Change (MoEUCC) the briefing note it prepared on recycled plastics and submitted its views on the draft text of the UN UNEP ‘International Legally Binding Instrument on Plastic Pollution, Including in the Marine Environment.’ In 2024, the same draft text was re-evaluated within the Environment and Climate Change Committee; information was provided on the Business World Plastics Initiative (BWPI) Final Report; a summary of the presentations from the CLEPA Materials Regulations and Sustainability Event 2024 was shared within the scope of the EU Green Deal objectives; the TOBB Recycled Plastics Working Group Report was discussed; and an OSD executive participated as a speaker at the PAGÇEV Plastic Recycling Conference.

³⁶ Discarded/Disposed of by the consumer.

7. CLIMATE-FOCUSED TRANSFORMATION AND RESOURCE EFFICIENCY

BATTERY RECYCLING

Legislative studies on batteries, which are among the priority product groups under the Circular Economy Action Plan, were initiated by the European Commission prior to the Sustainable Products Initiative. The legislative process for the draft Battery and Waste Batteries Regulation, published on 10 December 2020, has been completed, and the regulation was published in the Official Journal of the EU on 28 July 2023. This regulation covers the entire life cycle of all types of batteries, including those used in electric vehicles, from design to end-of-life, and introduces sustainability and safety requirements for batteries to be placed on the EU market.³⁷

In 2024, OSD contributed to various national and international initiatives in the field of battery recycling. In September 2024, within the Environment and Climate Change Committee, an update was provided on the launch meeting of the “Project on Ensuring Compliance with the New Battery Regulation and Establishing a Management System for Electric Vehicle Batteries,” carried out in cooperation with TOBB and the EU, and the project’s first stakeholder workshop was held in December. OSD representatives participated in the 29th International Battery Recycling Congress held in Basel on 10–12 September 2024, where they exchanged information on global regulations, Black Mass regulations, the EU’s battery production and recycling capacity, funding mechanisms,

the international use of critical raw materials, battery passport practices, and recycling technologies. The outcomes of the congress were shared with members.

Between 21–23 October 2024, technical visits were carried out to Primobius GmbH, Electrorecycling GmbH, and Duesenfeld GmbH facilities in Germany, where the implementation of the EU Battery Directive was examined on site, and current technologies and compliance processes with sustainability targets were evaluated.

The first draft of the OSD Gap Analysis Report on the Battery Directive has been completed, and further work is in progress.

FORD OTOSAN

FO&US

The FO&US project, launched by Ford Otosan in 2022, aims to contribute to the circular economy by reusing end-of-life electric vehicle batteries in energy storage systems. Developed in cooperation with Pomega Energy Storage Technologies, the project created a system with a capacity of 142.2 kWh using battery modules removed from production, thereby targeting savings of more than 60% in energy storage costs. The developed system has high safety standards and increases energy efficiency. FO&US, which was launched in 2024, aims to transform into an integrated value chain that will enable the reuse of electric vehicle batteries as of 2025. The project has been awarded many national and international awards, including the Henry Ford Technology Award, Sustainable Business Awards, and the TIM Innovation Award.



7. CLIMATE-FOCUSED TRANSFORMATION AND RESOURCE EFFICIENCY

WATER AND WASTEWATER MANAGEMENT

The increasing impacts of climate change are disrupting the global water cycle and the balance of basins, placing pressure on existing water resources and leading to a growing population living under water stress. According to UNESCO's 2024 World Water Development Report, approximately half of the world's population faces water scarcity for at least part of the year, while 2.2 billion people live without access to safe drinking water. Insufficient access to water leads not only to environmental but also to economic and social consequences. Between 2002 and 2021, 1.4 billion people worldwide were directly affected by droughts, while floods caused an estimated total economic loss of 832 billion USD.³⁸

According to TurkStat data, Türkiye's population as of 31 December 2024 is 85,664,944. Based on international classifications, a country is considered "water rich" if the amount of available water per capita exceeds 1,700 m³ per year. Considering Türkiye's technically and economically usable water potential of 112 billion m³, the amount of water available per capita in 2024 is 1,308 m³ per year.³⁹ This figure indicates that Türkiye is not a water-rich country, and considering the effects of population growth and climate change, it is projected to be among the countries experiencing water scarcity in the coming years.

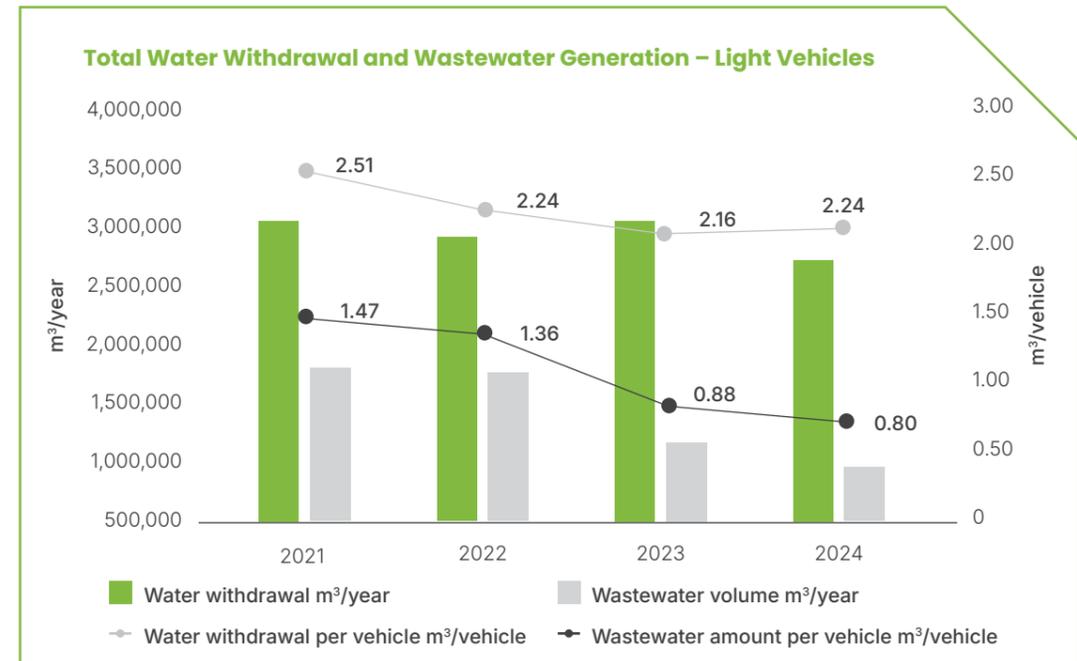
Agriculture accounts for 72% of global freshwater withdrawals, while industry and domestic use account for 20% and 10%, respectively. The UN's 2025 Sustainable Development Goals Progress Report highlights that improving water efficiency,

particularly in regions experiencing water stress, is a critical necessity. Achieving this improvement requires not only technological innovation but also strong governance mechanisms, effective policy frameworks, and institutional capacity-building activities as fundamental components.⁴⁰

OSD members systematically assess risks related to access to water resources and carry out water saving and recovery projects. Through investments and improvement activities implemented during the 2023–2024 period, water efficiency in paint shops, coating, and cooling lines has been enhanced, and concrete projects for water reuse in facilities have been put into practice. With a responsible production approach, thanks to advanced water technologies, 724,989 m³ of wastewater was recovered in member facilities in 2023 and 577,835 m³ in 2024.⁴¹

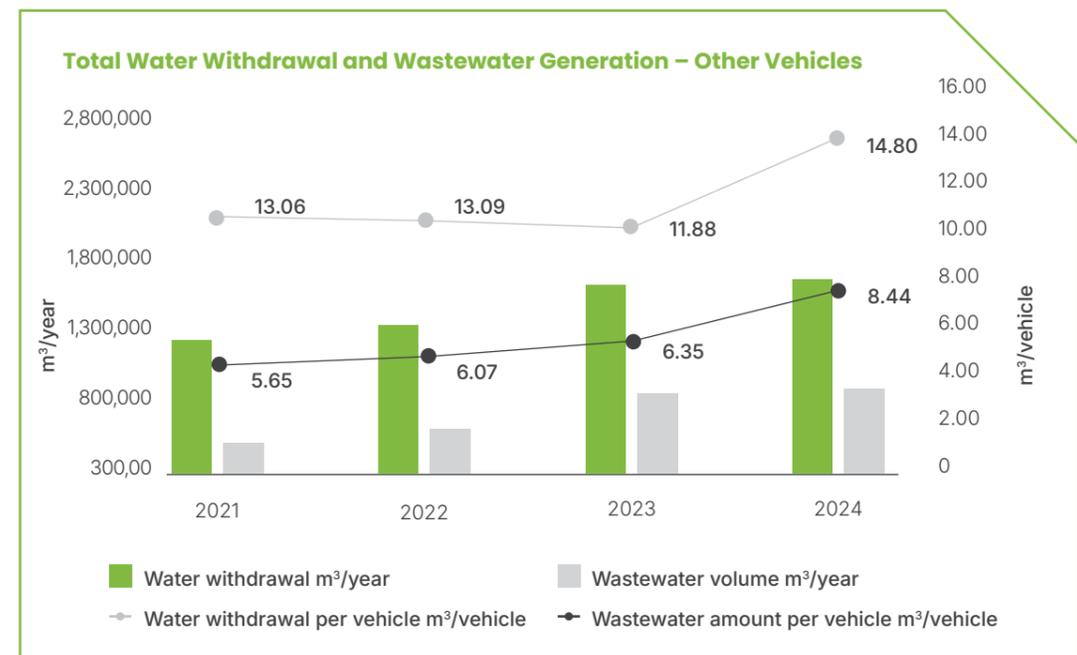
OSD members obtain the water used in their operational processes from both municipal and groundwater sources. Groundwater use is monitored under the applicable legislation; the impacts on aquifers are regularly tracked, and all related obligations are fully met. Industrial and domestic wastewater is treated in treatment units, and discharges into receiving environments are carried out in compliance with the parameters and limits specified in Table 18.2 of the Water Pollution Control Regulation.

The Water Efficiency Regulation, published on December 27, 2024, has been evaluated in terms of the activities to be implemented within its scope.



While water withdrawal per vehicle was 2.51 m³ in 2021, it decreased to 2.24 m³ in 2024. Similarly, wastewater generation per vehicle dropped from 1.47 m³ in 2021 to 0.80 m³ in 2024.

Over the 2021–2024 period, OSD members achieved a reduction of approximately 10.9% in water consumption per light vehicle and 45.4% in wastewater generation. In contrast, water consumption per other vehicle increased by 13.3%, while wastewater generation rose by 49.6%.



*Hattat Traktör data are excluded from the 2012 and 2021 figures but included in those for 2023 and 2024.

An upward trend is observed in total water withdrawal and total wastewater quantities. Water withdrawal per vehicle increased from 13.06 m³ in 2021 to 14.80 m³ in 2024. Similarly, wastewater per vehicle rose from 5.65 m³ in 2021 to 8.44 m³ in 2024.

³⁸ UNESCO (2024) United Nations World Water Development Report 2024: Water for Prosperity and Peace

³⁹ Devlet Su İşleri Genel Müdürlüğü (DSİ) (2024) 2024 Yılı Faaliyet Raporu

⁴⁰ United Nations (2025) The Sustainable Development Goals Report 2025

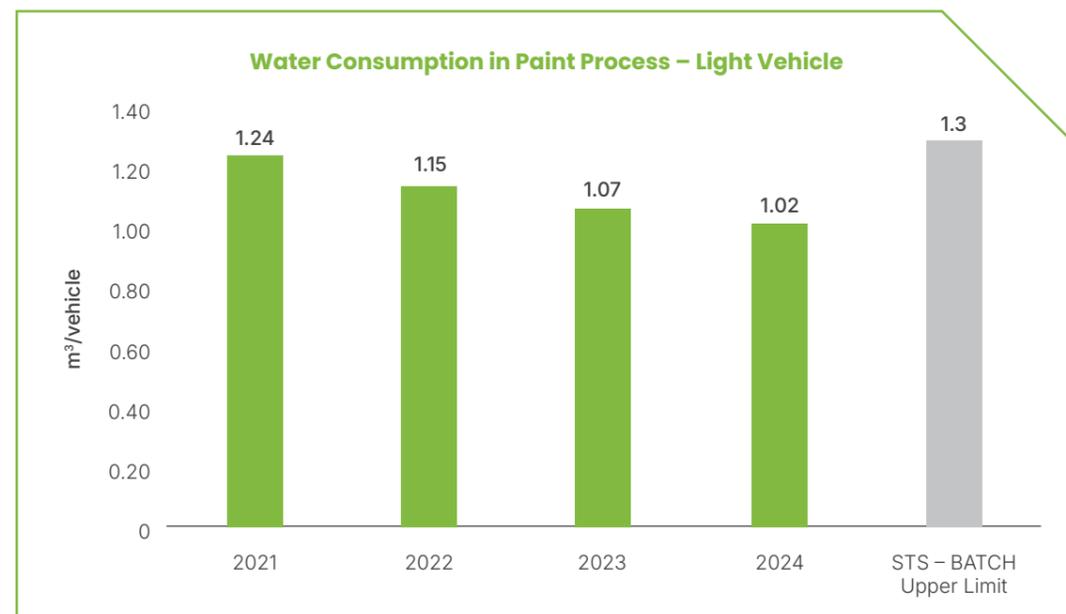
⁴¹ These figures include data from 6 of the 13 OSD members.

7. CLIMATE-FOCUSED TRANSFORMATION AND RESOURCE EFFICIENCY

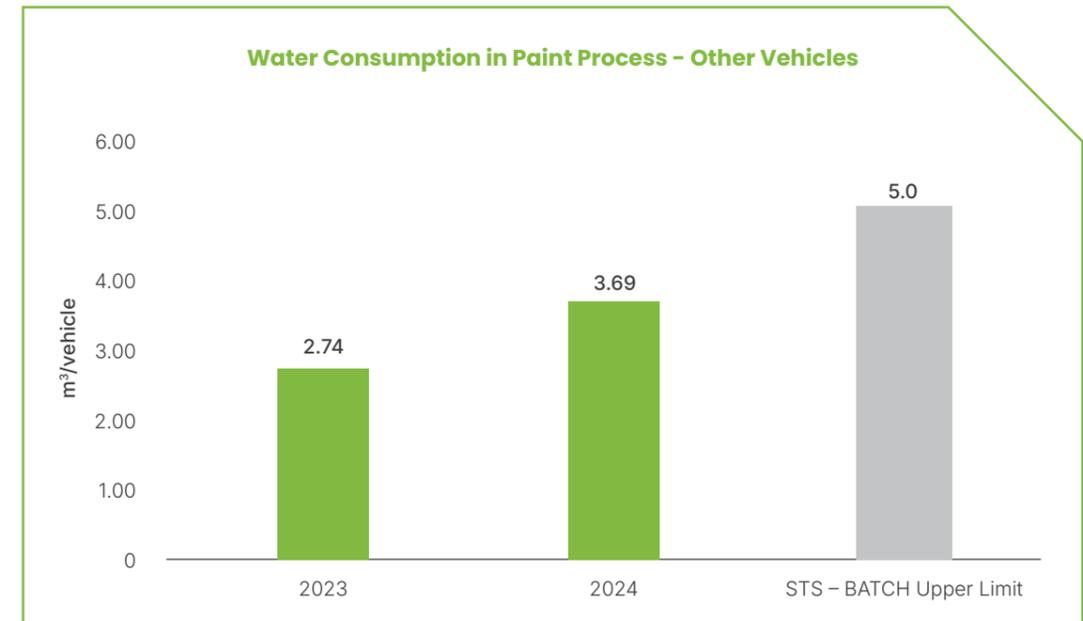
WATER AND WASTEWATER MANAGEMENT

In the production activities of OSD members during the 2021–2024 period, water consumption per light vehicle decreased by approximately 10.9%, while wastewater generation declined by 45.4%. Conversely, in the production of other vehicle types, water consumption per vehicle increased by 13.3%, and wastewater generation rose by 49.6%. This trend demonstrates the progress achieved in water efficiency and wastewater management for light vehicles.

In automotive manufacturing facilities, water consumption in the painting and coating processes—one of the stages with the highest environmental impact—is monitored as a separate metric. According to the “STS BAT Conclusions for Surface Treatment Using Organic Solvents” published by the EU on 9 December 2020, the upper limit of achievable water consumption in automotive plant paint shops, when applying the best available techniques, is defined as 1.3 m³ per vehicle.



In 2024, water use intensity in the painting process for light vehicles declined by 18.1% from 2021 levels, staying below the STS-BATC upper limit of 1.3 m³ per vehicle.



For other vehicles, water consumption per vehicle in the paint process increased from 2.74 m³ in 2023 to 3.69 m³ in 2024; however, both values remained below the upper limit of 5 m³ per vehicle specified in the STS-BAT.



Reuse of Reverse Osmosis Discharge Water

With the project initiated by the vehicle washing department in 2023, a portion of the Reverse Osmosis (RO) system discharge water has been stored and started to be used in the degreasing stage of the vehicle washing process. Through this project, the use of municipal water for vehicle washing has been eliminated, wastewater has been minimized, and 5,300 m³ of water savings were achieved in 2024. The project stands out as an innovative step taken by MAN in water management.



7. CLIMATE-FOCUSED TRANSFORMATION AND RESOURCE EFFICIENCY

BIODIVERSITY

Climate change and biodiversity loss are addressed as interconnected global crises; therefore, the success of climate strategies is considered to be directly linked to the sustainable management of natural ecosystems.⁴²

In addition to the global greenhouse gas emission regulations for 2030 and 2050, a significant part of policies and regulations has focused on circularity strategies aimed at securing the supply of critical minerals.⁴³

The automotive industry has both direct and indirect impacts on natural ecosystems through raw material supply, value chain management, plant locations, and production processes. OSD members conduct their activities with a responsible production approach to minimize these impacts and contribute to the protection of biodiversity. They share their biodiversity-related initiatives with the public through statements and reports prepared in various global reporting formats, particularly CDP, TSRS, and sustainability reports.

In 2024, within the scope of the Automotive Supply Chain Transformation Sessions, a webinar was organized with the participation of 100 representatives from OSD and TAYSAD members to provide information on the impacts of the EU Regulation on Deforestation-Free Products on the automotive industry, present implementation examples, and assess the sector's preparedness needs.

According to Regulation (EU) No. 2023/1115, published on 23 June 2023, in order for products subject to the legislation to be placed on the EU market as of 30 December 2024, it must be demonstrated that the product has not caused deforestation and that it has been legally produced. Within this framework, companies are required to fulfill due diligence obligations.

During the webinar, the scope of the regulation and its potential impacts on the automotive industry were presented, implementation examples were shared, and the steps required for the sector's preparation process were discussed. In addition, product groups relevant to OSD members under the CBAM framework were identified, and it was emphasized that supplier awareness activities should be carried out accordingly.

You can access the Biodiversity Strategy of our member Ford Otosan here.

You can access the standards, guidelines, and approaches outlining the steps that companies should follow for biodiversity assessment and prioritization in [Annex 5](#).



IONIQ Forest

Hyundai Motor Türkiye aims to capture carbon and preserve biodiversity through the IONIQ (ion and unique) Forest project, which it launched in 2016. Within the scope of this global project, innovative practices such as the planting of endangered Korean fir trees and tulip saplings with high carbon absorption capacity, the use of smart forest management technologies, and the establishment of IONIQ drone stations for forest road operations are being implemented.

In addition to Korea, the project is being carried out in North America, the Czech Republic, Vietnam, Brazil, Germany, Türkiye, and India, with a global target of planting one million saplings by July 2025. Within this global initiative, Hyundai Motor Türkiye established its first IONIQ Forest in Kocaeli in 2024 with 10,000 saplings. During the opening event, volunteers from Hyundai Motor Türkiye, 27 TEV scholarship students, teachers, and representatives of the İzmit Forestry Directorate participated in the tree-planting activities.

⁴² Greenpeace International (2025) Maximizing synergies: Legal briefing

⁴³ Republic of Türkiye Ministry of Foreign Affairs Directorate for EU Affairs, Chapter 27 - Environment and Climate Change.



8. RESPONSIBLE EMPLOYMENT AND CONTRIBUTION TO SOCIETY

OSD systematically carries out its activities to strengthen responsible employment and increase social benefit in the automotive industry.

The automotive industry provides direct employment to more than 59,000 people and indirect employment to more than 550,000 people in Türkiye. On a global scale, it creates direct employment for approximately 9 million people each year; with indirect employment up to five times this level, the industry as a whole, together with its supply industries, provides job opportunities for more than 50 million people.⁴⁴

OSD systematically carries out its activities to strengthen responsible employment and increase social benefit in the automotive industry.

Member companies continuously improve occupational health and safety (OHS) standards to minimize workplace accidents. They also offer talent management and workforce transformation programs to meet the sector's need for a qualified workforce. With equal opportunity, diversity, and inclusion policies, they support greater representation of women and different groups in the sector. Respect for human rights and fair working conditions form the foundation of all practices. Through multi-stakeholder collaborations, the socio-economic and cultural development of stakeholders is supported, and contributions are made to local development projects.

⁴⁴ OICA, *A Growth Industry*

The automotive industry provides direct employment to more than 59,000 people and indirect employment to more than 550,000 people in Türkiye.



8. RESPONSIBLE EMPLOYMENT AND CONTRIBUTION TO SOCIETY

OCCUPATIONAL HEALTH AND SAFETY

OSD conducts comprehensive risk assessments, regular training, and inspections; develops policies, technical improvements, and infrastructure investments to prevent occupational accidents.

Occupational health and safety is increasingly becoming a corporate priority on a global scale; in 2022, the International Labour Organization (ILO) recognized a "safe and healthy working environment" as a fundamental principle and right.⁴⁵ As an indicator of how this need has become widespread at the corporate level, ISO 45001 certifications have expanded to hundreds of thousands of organizations worldwide.⁴⁶

At the same time, the increase in risks such as extreme heat, UV radiation, extreme weather events, and air pollution caused by climate change makes it necessary to implement new and strengthened measures to protect employee health.⁴⁷

In highly robotic and automated production environments such as the automotive industry, ISO 10218-1 (Robotics – Safety Requirements) and ISO/TS 15066 (Safety Guidelines for Collaborative Robots) stand out.⁴⁸

The automotive industry regards the protection of employees' physical and mental health and the provision of a safe working environment as an integral part of its operations. Classified as a hazardous sector under the "Regulation on Workplace Hazard Classes Related to Occupational Health and Safety," the industry regularly analyzes all OHS risks and takes the necessary measures to ensure the safety of both employees and contractors working at facilities.

In line with this approach, OSD conducts comprehensive risk assessments, regular training, and inspections; develops policies, technical improvements, and infrastructure investments to prevent occupational accidents. Ensuring the sustainability of a safe and healthy working environment increases employee motivation, productivity, and engagement, while also strengthening workplace culture and enhancing the sector's reputation.

⁴⁵ *International Labour Conference adds safety and health to the Fundamental Principles and Rights at Work*, 10 Haziran 2022

⁴⁶ *The ISO Survey 2023*

⁴⁷ *ILO, Ensuring Safety and Health at Work in a Changing Climate Report, 2024*

⁴⁸ *ISO/TS 15066:2016, Robots and robotic devices – Collaborative robot safety, 2022*

8. RESPONSIBLE EMPLOYMENT AND CONTRIBUTION TO SOCIETY

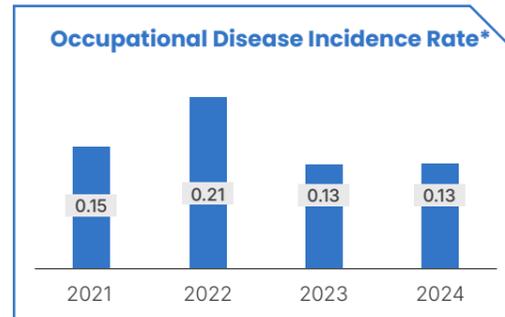
OCCUPATIONAL HEALTH AND SAFETY

12 member companies hold ISO 45001 certification.

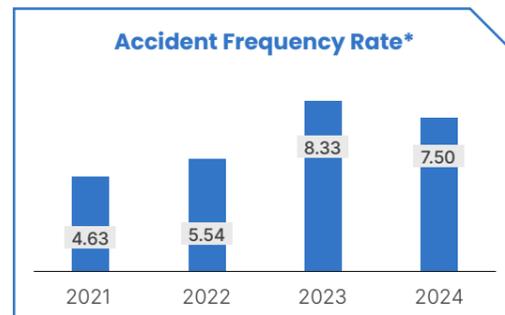
All OSD member companies have committees through which employees can communicate their suggestions and opinions on OHS. Members operate Occupational Safety Management Systems in compliance with national and international regulations. Twelve member companies are certified with the ISO 45001 Occupational Health and Safety Management System Standard. In addition, since 2016, OSD has been regularly monitoring its members' OHS data within the scope of sustainability, enabling benchmarking across the sector and the sharing of best practice.

The accident frequency rate of OSD members decreased from 8.33 in 2023 to 7.50 in 2024. The accident severity rate increased from 48.38 to 49.73, showing a rise of 1.35 points. The occupational disease rate remained stable at 0.13 in both years.

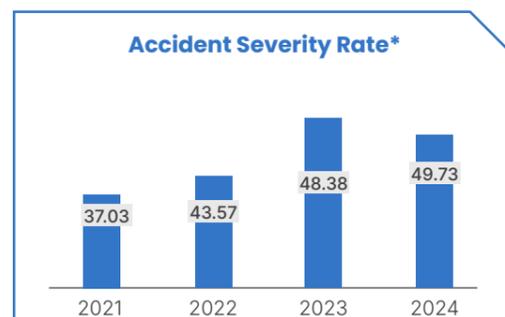
OHS Performance	2021	2022	2023	2024
Number of work accidents	429	596	1,053	924
Number of lost workdays	3,431	4,686	6,115	6,129
Accident frequency rate	4.63	5.54	8.33	7.50
Accident severity rate	37.03	43.57	48.38	49.73
Number of occupational disease cases	14	23	16	16
Occupational disease incidence rate	0.15	0.21	0.13	0.13



* Accident Frequency Rate = Total Number of Occupational Accidents / Total Working Hours × 1,000,000



* Accident Severity Rate = Total Lost Workdays Due to Occupational Accidents / Total Working Hours × 1,000,000



* Accident Severity Rate = Total Lost Workdays Due to Occupational Accidents / Total Working Hours × 1,000,000

8. RESPONSIBLE EMPLOYMENT AND CONTRIBUTION TO SOCIETY

The OHS training hours per employee increased by 33.2% from 2023 to 2024.

OHS Trainings

OSD member companies regularly conduct OHS trainings in line with the obligations set out in the Occupational Health and Safety Law No. 6331 and related regulations. Within this scope, health checks are carried out, preventive measures are taken for employees with a high risk of occupational disease, risk analyses are regularly updated, and action plans are implemented to monitor occupational accidents and near-miss incidents. The annual trainings aim to develop and ensure the continuity of a safe working culture. The OHS Committee within the Association follows national and international developments and shares best practice examples with member companies.

The total OHS training hours provided to employees of OSD members increased from 785,061 in 2023 to 1,025,890 in 2024. Accordingly, OHS training hours per employee rose from 13 to 17, an increase of 33.2%.

OHS Committee

Within OSD, the structure established in 2008 as the "OHS Working Group" has continued its activities since 2017 under the status of the "OHS Committee." The Committee provides monitoring of current legislation and information activities, cooperation with relevant institutions and organizations to resolve issues raised by member companies, and knowledge and experience sharing in areas such as

ergonomics, risk assessment, emergency drills, chemical management, OHS leadership, and culture development.

In 2023, the Committee held five meetings, and in 2024 it organized six meetings and two workshops, making a total of eight events. Throughout the year, the focus was on Supplier Disaster Risk Assessment, the Joint Disaster Action Plan, and Occupational Safety in Electric Vehicle Production. Within this scope:

- A Joint Disaster Action Plan workshop was held at Karsan; the structural and systemic preparedness of the supplier industry against disaster risks was evaluated, and the results were communicated to TAYSAD.
- A Li-ion battery fire drill was conducted in cooperation with Anadolu Isuzu and the Istanbul Metropolitan Municipality Fire Department, and the findings obtained were shared with the members.
- The Occupational Safety in Electric Vehicle Production Workshop was organized at the Anadolu Group Headquarters with the participation of the Istanbul Fire Department and sector representatives; current developments regarding Li-ion battery fire safety were shared, and an output report was prepared.

In the coming period, the Committee plans to focus on addressing fire safety and regulatory gaps in electric vehicle production, integrating artificial intelligence technologies into OHS processes, expanding the use of digital applications in daily subcontractor management, and increasing participation through meetings supported by company visits.



Hyundai Life Center Project

Launched in December 2024 and planned for completion in July 2025, the Hyundai Life Center was developed to enhance employee motivation and strengthen occupational safety practices. Conducted in cooperation with Hyundai Engineering Türkiye, the project established experiential training stations tailored to factory-specific risks and scenarios, including driving, forklift operation, earthquake simulator, virtual reality, confined space and rescue, fall prevention, crane use, personal protective equipment testing, electrical and chemical safety, first aid, and ergonomics.

The fitness center, football, volleyball, and basketball courts, along with recreation areas, support employees' physical health and well-being. Programs conducted under the guidance of professional trainers are held with high participation.



Smart Earthquake Detection and Early Warning System

In 2024, TürkTraktör launched the Smart Earthquake Detection and Early Warning System to enhance employee safety by enabling the early detection of seismic activity. The sensors installed within the scope of the project provide real-time alerts, allowing employees to be quickly evacuated to safe areas.

The system strengthens emergency management by reducing the risk of occupational accidents and loss of life, while ensuring long-term safety in regions with high earthquake risk. With its low energy consumption, the project offers an environmentally friendly approach and contributes to the continuous improvement of occupational health and safety standards.



Digital Emergency Management

In 2024, TürkTraktör launched the Digital Emergency Management project to maximize employee safety during potential emergencies at its facilities. Implemented in cooperation with the Turkish Employers' Association of Metal Industries (MESS) and Trio Mobil, the system tracks employees' real-time locations, digitally determines the number of people in assembly areas, and instantly detects employees who remain immobile. Thanks to SOS buttons available to employees, individual emergency notifications can be quickly transmitted to authorized personnel. The cloud-based system brings facility safety entirely into the digital environment.

During drills, the time required for counting at assembly areas was reduced from 4 minutes to 30 seconds, achieving a 50% improvement in emergency assembly time and a 60% improvement in the detection time of immobile employees. With this increase in response speed and improved risk awareness, the project was awarded first place in the MESS OHS Digitalization Awards.



Earthquake Safety Measures

Based on the risk analyses conducted by Anadolu Isuzu in 2022, structures requiring reinforcement were identified, and comprehensive structural reinforcements were completed at the Headquarters building in 2023–2024. In this way, the seismic resistance of the building was increased, ensuring employee safety. In addition, regular drills and training continuously improve earthquake awareness and operational preparedness.



Assembly Line 5S and Kanban System

Launched by Hattat Traktör in 2024, the Assembly Line 5S and Kanban System Project is implemented to increase production efficiency, reduce labor loss, and ensure a safe working environment. Ergonomic solutions were developed by incorporating operator feedback, and existing shelves and workbenches were revised. Stock management has been simplified, while labor loss in operations and urgent material needs have been minimized. In this way, both production efficiency and occupational safety standards have been strengthened.



OHS Practices at Ford Otosan

- Digital Risk Analysis and Monitoring: Ergonomic, industrial hygiene, and chemical risk analyses in all processes are conducted digitally through ERGOHİS (Ergonomics and Industrial Hygiene Operating System) and updated every two years. With the Job Card application, risks to which employees are exposed are recorded, occupational diseases are detected early, and health-related improvements are implemented.
- Global Awards: In 2024, Ford Otosan won five awards under the Ford Motor Company President's Health and Safety Awards (PHSA). In addition, the Ford Otosan Craiova Plant once again received the "Best of Ford" award, granted among Ford factories worldwide.



Karsan Innovative OHS Practices

- Accident Modeling with Machine Learning: Karsan, in cooperation with TÜBİTAK, is developing a machine learning-based accident modeling system. With this system, the potential days and severity of occupational accidents can be predicted in advance, enabling proactive measures. In addition, Robotic Process Automation (RPA) integration has been implemented, making risk management more effective and digitalized.
- QR Code Risk Notification System: Implemented to allow employees to easily report hazards in the field. In 2024, actions were taken regarding 116 unsafe behaviors identified through this system.
- AI-Supported Safety Systems: In cooperation with MESS, Karsan launched the AI-Supported Unsafe Behavior Detection System (Intenseye) in the field of occupational health and safety. With 20 cameras installed throughout the factory, 20 different behaviors such as lack of personal protective equipment (PPE), speeding violations, and unsafe vehicle use are automatically detected, and instant notifications enable quick action. In 2024, approximately 25,100 unsafe behaviors were detected, 3,853 of which were reported as high risk. The system, which reached a 93% rule definition rate, automatically forwards cases to the action module, ensuring that responsible parties produce timely solutions. In the same year, three additional projects were also implemented: AI-supported stopping at conveyor entry, enhancing forklift safety, and preventing entry to robotic lines without PPE.
- Smart Wristband Tracking System: As part of the Common Tomorrows Project, the heart rate data of employees working alone is continuously monitored, and if no data is received for 5 seconds, an automatic SOS alert is sent. This ensures rapid intervention and protection against risks.
- Action Quality Monitoring System: Implemented to measure the effectiveness of preventive measures taken. In 2024, the action quality score for 1,080 closed risks was 3.27, considered upper-middle level.

8. RESPONSIBLE EMPLOYMENT AND CONTRIBUTION TO SOCIETY

TALENT MANAGEMENT AND WORKFORCE TRANSFORMATION

In 2024, training per employee increased by 53.1%, reaching 72 hours.

OSD regards the development of a qualified workforce with the skills of the future as a strategic priority to maintain the global competitiveness of the automotive industry. In this context, the focus is on training, reskilling, career planning, and strengthening digital and automation skills. Continuous learning supports employee development, while effective talent management increases engagement and improves business outcomes.

The growing decarbonization efforts in the automotive sector require significant corporate transformation for companies. In the sector, 71% of employers foresee that reducing carbon emissions will transform their organizations.⁴⁹ This transformation necessitates employees acquiring new skills and further developing their existing ones.

In this context, evolving technologies and changing business models bring forward employees who are highly aware, invest in themselves, and add value to their companies. The work culture of the future is being built on innovative talents aligned with digital transformation. In 2024, the total number of employees of OSD members was 59,474. In 2023, women accounted for 14.2% of employees and men for 85.8%; in 2024, the share of women rose to 15.9%, while men represented 84.1%. The proportion of office employees was 25.6% and field employees 74.4% in 2023; in 2024, these ratios remained similar at 25.3% and 74.7%, respectively.

OSD members regularly conduct performance reviews to plan, measure, monitor, and improve employees' professional and personal development. In 2023, 91.9% of office employees and 69.3% of field employees were subject to performance evaluations; in 2024, these rates increased to 96.3% and 78.8%, respectively.

OSD member organizations position training as a fundamental management tool to support employee development and update competencies in line with corporate goals. The average training hours per employee increased from 47 in 2023 to 72 in 2024, marking a 53.1% rise. The average sustainability training hours per employee also improved significantly, rising from 0.41 hours in 2023 to 0.86 hours in 2024, more than doubling.

OSD members focus on preventing talent loss by identifying potential leaders, enhancing opportunities for advancement in technical fields, and preparing individual development plans; at the same time, strengthening employee engagement ensures the continuity of the qualified workforce needed by the sector. The employee turnover rate was 15% in 2023 and 15.8% in 2024. In 2023, OSD members hired a total of 13,872 employees, 19.2% of whom were women. In 2024, a total of 9,645 new hires were made, with women accounting for 22.3% of them.

Employees	2022	2023	2024
Total Number of Employees	56,722	60,619	59,474
Employees by Gender			
Number of female employees	6,970	8,625	9,430
Number of male employees	49,752	51,994	50,044
Employees by Category			
Field employees - female	3,332	4,503	5,119
Field employees - male	38,746	40,579	39,323
Office employees - female	3,638	4,122	4,311
Office employees - male	11,006	11,415	10,721

⁴⁹ World Economic Forum, Future of Jobs Report 2025



Automotive Summer Camp

Organized annually by OSD since 2021, the Automotive Summer Camp is an important development platform that offers young talents insights into the latest technologies, global trends, and career opportunities in the automotive sector. Held online, the camp enables participants to gain a closer understanding of the industry and interact directly with leading experts in the field.

Within the program, participants have the opportunity to share experiences with specialists from leading automotive companies, build networks with industry professionals, and enhance their knowledge through case studies. Panels, Q&A sessions, and interactive workshops held during the camp further strengthen participants' thinking and problem-solving skills. Certificates of Participation are awarded to those who regularly attend the program, while Certificates of Achievement are granted to those who succeed in the exam.

In 2024, the 4th Automotive Summer Camp received over 58,000 applications, with a total of 900 minutes of training provided. At the end of the camp, 50,344 participation certificates and 15,553 achievement certificates were awarded, while sessions recorded an average of 21,000 views. The "Board Talks with Youth" session reached approximately 41,000 views, and the "HR Leaders Talks with Youth" session exceeded 36,000 views.

The cumulative results achieved over four years demonstrate the impact of the program: 222,000 applications, 4,000 minutes of training, nearly 200,000 participation certificates, and 47 achievement certificates have made the Automotive Summer Camp one of the projects contributing most to the development of youth in the sector.

8. RESPONSIBLE EMPLOYMENT AND CONTRIBUTION TO SOCIETY

Human Resources Committee

The OSD Human Resources Committee carries out activities aimed at strengthening the human capital of the automotive industry. The Committee works in areas such as monitoring legislative changes and providing updates, sharing best practices, and forming opinions on draft regulations.

Guided by the Committee, the OSD HR Project Team implements projects that support employee development and training activities of member companies and contribute to the digital transformation process. This structure translates the Committee's strategic goals into concrete projects and puts them into practice.

As part of its 2024 activities:

- Issues related to the development of human capital in the automotive industry were discussed.

- Incentive proposals to support employment and human resources were prepared and submitted to the Board of Directors.
- Automotive Summer Camp activities were supported, with industry leaders and managers delivering presentations on sectoral transformation, future vision, and technical training.
- Some meetings were held at members' factories. Through these site visits, best practices were examined on site.

Throughout the year, meetings were held as planned, with the main agenda focusing on legislative regulations affecting working life and their sectoral implications. Active contributions were made to the Automotive Summer Camp, consultants were engaged to provide expertise on specialized topics, and visits to member companies were conducted. These activities, which members found valuable, are expected to continue in 2025 within the framework of competition rules.



8. RESPONSIBLE EMPLOYMENT AND CONTRIBUTION TO SOCIETY

EQUAL OPPORTUNITY, DIVERSITY, AND INCLUSION

Individuals with different characteristics such as gender, ethnicity, age, and disability status are provided with equal opportunities in recruitment, promotion, and compensation.

OSD and its member companies embrace equal opportunity, diversity, and inclusion in the workplace as one of their core values. Individuals with different characteristics such as gender, ethnicity, age, and disability status are offered equal opportunities in recruitment, promotion, and compensation, while an inclusive work culture is fostered in which all employees feel valued. Increasing women's employment—particularly strengthening representation in technical and leadership positions—remains among the sector's key priorities.

In the 2023–2024 period, OSD members recorded an increase in female representation, with the share of women among total employees rising from 14.2% to 15.9%. The proportion of women among field employees increased from 10% to 11.5%, while among office employees it rose from 26.5% to 28.7%. Additionally, six out of OSD's total nine employees are women.

In 2024, female representation reached:

- 19.4%, up from 18%, among mid-level managers.
- 16.3%, up from 14.9%, among senior managers.
- 14.9%, up from 14.1%, on boards of directors.



FORD OTOSAN

Ford Otosan – Equal Opportunity, Diversity, and Inclusion Practices

- **DEI Surveys:** Since 2021, Diversity, Equity, and Inclusion (DEI) surveys have been conducted to gather employee feedback and measure the effectiveness of policies. Based on the 2024 results, focus areas for 2025 will include work-life balance, diversity, and retaliation.
- **DEI Handbook:** A handbook published on the Ford Otosan website explains the definition, importance, and implementation of DEI concepts, encouraging employees to contribute to these goals.
- **Romania Diversity Charter:** The Ford Otosan Craiova Plant signed the charter, which provides a cooperation platform in diversity management, joining a network that covers 300,000 employees and enables the exchange of diversity and best practices.
- **Training and Awareness Programs:** In 2024, seminars were organized at all levels, and DEI training was made mandatory as part of orientation. A total of 418 hours of training were provided to 400 employees; additionally, 16 leaders received a total of 112 hours of “Unconscious Bias” seminars. Bias training was also implemented at the Craiova Plant.
- **Bloomberg Gender Equality Index:** Ford Otosan became the first and only Turkish automotive company to be included in the index and has continued to improve its score each year. A target has been set to increase the share of women in management positions to 50% by 2030.
- **Women’s Employment Targets:** By 2026, the company aims to raise the share of women working in STEM fields at its Türkiye sites from 20% to 30%, and to double the share in its dealer network from 11.54%.

TürkTraktör

One Sign is Enough Project

Launched in 2020 in cooperation with TürkTraktör and the MESS, the One Sign is Enough Project was designed to reduce communication barriers for hearing-impaired individuals in production environments and to increase their participation in the workforce. With the support of the European Union’s Erasmus+ program, and contributions from academics at Hacettepe and Koç Universities along with TürkTraktör’s hearing-impaired employees, technical sign language covering 101 machine parts was developed, and mobile and online training platforms were created. In addition, the project outcomes were documented in six different guides and two scientific articles, contributing to the literature.

Thanks to this initiative, the effectiveness of hearing-impaired employees in technical tasks has increased, while the project outputs are aimed to be expanded to other industries. In 2023, the project was recognized by the European Commission as a “Good Practice” and was honored with the Corporate Social Responsibility Project Achievement Award by the OSD.

FORD OTOSAN

My Dream for the Future Project

In March 2024, Ford Otosan launched the My Dream for the Future Project to support women in pursuing careers in STEM (Science, Technology, Engineering, and Mathematics) fields and to promote gender equality. Conducted with the support of the Vehbi Koç Foundation and in collaboration with seven NGOs and social enterprises, the project offers technology- and innovation-focused training, mentoring programs, and awareness activities entirely in an online format.

In 2024, the programs reached 35,282 women, with 218 trainings, webinars, and events organized:

- 1,400+ women participated in vocational empowerment trainings,
- 2,500+ women took part in mentoring and personal leadership trainings,
- 30,000+ women joined awareness activities.

The project has helped women clarify their career goals, recognize their potential, and increase representation in STEM fields, while also contributing to mentors’ self-esteem and sense of social impact. The initiative was honored with the OSD 50th Anniversary CSR Award in 2024.

8. RESPONSIBLE EMPLOYMENT AND CONTRIBUTION TO SOCIETY

HUMAN RIGHTS AND FAIR WORKING CONDITIONS

82% of OSD members’ employees are covered by collective bargaining agreements.

OSD and its member companies conduct all activities within the framework of respect for human rights, ethical business principles, and fair working conditions. A working environment is ensured in which employees’ fundamental rights are protected, including wages, working hours, trade union rights, freedom of association, and the prevention of discrimination. In this context, business processes are carried out in compliance with both national legislation and international standards such as the United Nations Universal Declaration of Human Rights, the International Labour Organization (ILO) Core Conventions, and the United Nations Global Compact.

The proportion of OSD members’ employees covered by collective bargaining agreements increased from 79% in 2023 to 82% in 2024. In 11 out of 13 member companies, hourly employees in Türkiye are covered by the Group Collective Bargaining Agreement signed between the Turkish Metal Union and the MESS, securing their rights under this agreement.

During collective bargaining processes, employees’ expectations are taken into account, and common ground with unions is established to support the continuity of labor peace.



8. RESPONSIBLE EMPLOYMENT AND CONTRIBUTION TO SOCIETY

OSD Members Achievement Awards – 2024

Category	Description	Winners
Export Achievement Awards	The top three OSD members with the highest export value during the year	Ford Otomotiv Sanayi A.Ş. (USD 8.6 billion) Toyota Otomotiv Sanayi Türkiye A.Ş. (USD 4.6 billion) Oyak Renault Otomobil Fabrikaları A.Ş. (USD 3.7 billion)
	The OSD member with the highest export growth in value during the year	Temsa Ulaşım Araçları Sanayi ve Ticaret A.Ş. (63%)
Technology Achievement Awards	The top three OSD members with the highest number of patent registrations during the year	Mercedes-Benz Türk A.Ş. (126 patents) Tofaş Türk Otomobil Fabrikası A.Ş. (30 patents) MAN Türkiye A.Ş. (9 patents) Oyak Renault Otomobil Fabrikaları A.Ş. (9 patents)
Corporate Social Responsibility Project Achievement Award	The OSD member selected based on the evaluation of an independent jury panel	Ford Otomotiv Sanayi A.Ş. – “My Dream for the Future” Project

Supplier Industry Achievement Awards – 2024

Category	Description	Winners
Supplier Industry Achievement Award	The supplier company selected based on the votes of all OSD members	Maxion Jantaş Jant Sanayi ve Ticaret A.Ş.
	The supplier company selected based on the evaluations of OSD members with a production capacity of over 100,000 units	Norm Cıvata Sanayi ve Ticaret A.Ş.
	The supplier company selected based on the evaluations of OSD members with a production capacity of under 100,000 units	Sanel Sanayi Elektronik İmalat ve Ticaret A.Ş.
Technology and Innovation Award	The supplier company selected for its project in technology and innovation	Yazaki Otomotiv Yan Sanayi ve Ticaret A.Ş.
Contribution to Sustainability Award	The supplier companies selected for their projects addressing the Sustainable Development Goals	Assan Hanil Otomotiv Sanayi ve Ticaret A.Ş. CMS Jant ve Makina Sanayi A.Ş. Toyota Boshoku Türkiye Otomotiv Sanayi ve Ticaret A.Ş.
Natural Disaster Awareness and Process Management Award	The supplier company selected for its project in natural disaster awareness and process management	Aisin Otomotiv Parçaları Sanayi ve Ticaret A.Ş.



OSD – 50th Anniversary Strong Tomorrows Scholarship

As part of its 50th anniversary, OSD launched the OSD 50th Anniversary Strong Tomorrows Scholarship in collaboration with the TEV. The program aims to promote equal opportunities in education by providing four years of scholarship support to 50 university and vocational high school students affected by the earthquake.

The scholarship program goes beyond financial support, also contributing to students' professional development. Scholarship recipients participate in events organized by OSD and its member companies, benefit from mentoring and career development programs, and gain the opportunity to reinforce their theoretical knowledge through internships. In this way, young people are supported in making a strong start to their professional lives, while ensuring the sustainability of the qualified workforce needed by the automotive industry.



Earthquake Relief Support by OSD Members

OSD members strengthened solidarity through the support they provided to the region following the earthquake. In this context, 32 vehicles were donated and 62 vehicles were allocated. More than 200 personnel took part in the earthquake-affected areas, and relief materials were delivered with over 100 vehicles.

TürkTraktör

Miracles of the Saplings Scholarship Fund

Since 2016, TürkTraktör has supported equal opportunities in education through the Miracles of the Saplings Scholarship Fund. Carried out in cooperation with the TEV, the program provides scholarships to vocational high school students selected based on financial need and academic performance, supporting them throughout their high school education.

In the 2023–2024 academic year, a total of 80 students received TEV scholarships.

With this program, TürkTraktör was honored with the OSD Corporate Social Responsibility Project Achievement Award.



Hyundai Motor Türkiye – TEV Education Partnership

Hyundai Motor Türkiye supports equal opportunities in education through projects carried out in collaboration with the Turkish Education Foundation (TEV). As part of the Hyundai Motor Türkiye x TEV Scholarship Program covering the 2022–2026 period, a total of 400 students – 200 university and 200 vocational high school students – receive scholarships each year. By the end of the program, 1,600 students will have benefited from scholarship support, with a total of TRY 16.35 million provided between 2022 and 2024. Scholarship recipients also gain personal development opportunities through internships, volunteering, and awareness programs.

Following the February 6 earthquakes, the Hyundai Motor Türkiye – TEV Kindergarten was established in Doğanşehir, Malatya to support children’s access to education in the region. The school has four classrooms, employs nine teachers, and provides education for 120 students.



From Waste to Education: C4Edu Science Laboratory Project

In March 2024, Temsa launched the C4Edu Project, transforming non-hazardous waste into educational materials and establishing a science laboratory in a disadvantaged village school. Completed in collaboration with the Temsa Dream Partners Association, Çukurova University, the Ministry of National Education of the Republic of Türkiye, and the Prison Administration, the project made it possible to improve the laboratory’s physical conditions and provide equipment with the support of multiple institutions.

The laboratory, built through the recycling of one ton of waste, enabled the school to become the top contributor to TÜBİTAK. Forty university students gained professional experience, school enrollment increased, and nearly all students decided to continue their education. With 18 projects implemented, the school was recognized by TÜBİTAK as the institution with the highest number of research and STEM projects, and its students achieved second and third places in national and international competitions.



Young Talent Communication: Talent Pick Up

In 2024, Anadolu Isuzu launched the Talent Pick Up program to reach young talent, strengthen its employer brand, and contribute to long-term human resource planning. The program brings together various initiatives under one umbrella, including university promotion activities, award-winning internship models, ideathons (brainstorming marathons), and mentoring support.

In 2024, direct engagement was established with 80 universities, reaching 85,000 students across 25 events. Within the scope of the program, 20 students completed internships and developed 7 projects, while more than 50% of the 15 students participating in Talent Pick Up Intro were women. Employees serving as mentors enhanced their leadership and coaching skills, while young participants developed innovative projects. The program was recognized with the “Internship Program of the Year” award at the METU Crystal Tree and Hacettepe Crystal Deer Awards, marking its success.



Opening Paths for Youth Project

Launched by Hattat Traktör in 2023–2024, the Opening Paths for Youth Project aims to support young people in gaining access to education and employment. Carried out in collaboration with the Ministry of National Education, the project provides students with theoretical training as part of the curriculum, while practical training is conducted under the supervision of master instructors. The project ultimately seeks to integrate qualified young talent into the sector.



Explorers Club

In 2024, Anadolu Isuzu launched the Explorers Club program to enable its employees to bring their innovative ideas to life. Through activities such as ideathons, discovery and validation camps, book analyses, AI workshops, and innovation labs, the program supports employees in developing entrepreneurial skills and creating projects that add value to business units.

So far, two ideathons and two discovery/validation camps have been organized, with more than 90 employees actively participating. Of the 19 ideas generated during the ideathons, 9 were prioritized and moved to the prototyping stage. In addition, 150 club members took part in training sessions and workshops focused on innovation and digital transformation.



Vocational Development Program

Anadolu Isuzu launched the Vocational Development Program in 2022 to train the qualified workforce needed in the automotive industry. The program provides both theoretical and practical training in the fields of Auto Painting, Automotive Electrician, and Welding, aiming to enhance the technical skills of young participants. Designed with a gender equality approach, half of the participants were selected from among female candidates.

To date, 65 young people have graduated from the program, with a total of 41,320 training hours delivered. Of these graduates, 45 have been employed and integrated into the workforce; currently, 17 women and 28 men continue to contribute to production processes. Beyond increasing the pool of qualified labor, the program has also advanced women’s representation in the sector. With this aspect, it was recognized with awards in the “Creating Value for Women” category at the 2023 TISK Common Tomorrow Awards and in the “Sustainability & Human Resources” category at Anadolu Group’s Bi Fikir Competition.

FORD OTOSAN

Support for Vocational High Schools

As part of the collaboration with the Ministry of National Education, Ford Laboratories have been established in six Vocational and Technical Anatolian High Schools, where training programs are conducted to enhance the technical competencies of students and teachers. Laboratory kits, equipment, engines, and vehicles are provided by Ford Otosan and its dealerships. In 2024, internship opportunities were offered to 290 vocational high school students and 202 vocational school of higher education students.

In addition, comprehensive e-learning content has been provided for students, and protocols have been maintained with two Vocational Training Centers, three Vocational and Technical Anatolian High Schools, and four Vocational Schools of Higher Education.

TürkTraktör

Agricultural Machinery Laboratories

As part of the "Vocational High School: A Matter of the Nation Project" carried out by Koç Holding in collaboration with the Ministry of National Education and the Vehbi Koç Foundation, TürkTraktör has established Agricultural Machinery Laboratories in Ankara, Amasya, and Şanlıurfa. To date, 685 students have received training, and 624 students have graduated.

The post-graduation employment processes of the students who completed the program have been evaluated; 60% of those who applied and met the necessary criteria have been employed at TürkTraktör factories and in its aftersales service network. Other students have either continued their undergraduate or associate degree studies or started working in the automotive industry.

TürkTraktör

Service Technician Training Program

TürkTraktör has launched the Tractor and Agricultural Equipment Service Technician Training Program to support employment in Hatay and surrounding regions. Under the program, participants receive both theoretical and practical training from expert teams, equipping them with technical competencies and providing vocational opportunities.

Participants who successfully complete the training are employed at TürkTraktör's authorized service centers, thereby contributing to regional development and addressing the industry's need for a qualified workforce.

TürkTraktör

New Holland Yaren Children's Libraries

Launched by TürkTraktör in 2016, the New Holland Yaren Children's Libraries project aims to instill reading habits in children at an early age. Implemented in cooperation with regional dealerships and schools, the project is particularly focused on village schools. The initiative covers the renovation, furnishing, and supply of books for the libraries. By the end of 2024, a total of 25 libraries had been established across Türkiye.



9. TRANSPARENT CORPORATE GOVERNANCE CULTURE

CORPORATE GOVERNANCE AND BUSINESS ETHICS

OSD builds its corporate governance approach on the principles of transparency, accountability, fairness, and responsibility. The Association conducts its activities in line with relevant national legislation and international good governance standards, while ensuring that the common interests of its members are observed in decision-making processes.

The highest governing body of OSD is the General Assembly. The Board of Directors prepares the regulations related to the Association's activities and submits them for the approval of the General Assembly. With the views and contributions of its members, decisions are made that guide the Turkish automotive industry.

The 50th Ordinary General Assembly of OSD was held in 2025, where OSD's annual activities and business results were shared with its members.



9. TRANSPARENT CORPORATE GOVERNANCE CULTURE

Working Groups and Committees

To strengthen its corporate governance approach and ensure effective policy dissemination, OSD carries out its activities through structured committees and working mechanisms. These structures promote transparency and participation in decision-making processes while enabling the development of focused solutions for the sector's diverse needs.

The committees coordinate studies carried out under main thematic areas and, when necessary, recommend the establishment of working groups or task forces to address specific issues in greater detail. In this way, the strategic monitoring and guidance of key topics are ensured.

Working Groups are responsible for the in-depth examination of specific issues as well as the organization and execution of events and activities. These groups report their findings to the relevant committees, thereby supporting decision-making processes.

Task Forces, on the other hand, are temporary structures established to produce concrete outputs (such as briefing notes, position papers, or reports) on specific topics. They are assigned by the Board of Directors and report directly to it, providing a flexible and results-oriented structure.

Through this organizational framework, OSD assumes a guiding, problem-solving, and coordinating role for its members while closely monitoring sectoral developments.

To ensure the effective functioning of its corporate governance structure, 11 active committees operated throughout the year, holding a total of 64 committee meetings. Each of these committees carries out policy development, regulatory follow-up, and sectoral coordination activities within its respective area of expertise.

1. Intelligent Transportation Systems Committee
2. R&D Committee
3. Environment and Climate Change Committee
4. Foreign Trade Committee
5. Human Resources Committee
6. Occupational Health and Safety Committee
7. Financial Affairs Committee
8. Public Affairs Managers Committee
9. After-Sales Services Committee
10. Technical Committee
11. Supplier Industry Sustainability Committee

In addition, the Human Resources Project Team, Energy Efficiency Working Group, Logistics Working Group, and Incentives Working Group actively continued their activities during the reporting years.

OSD upholds the principles of business ethics, maintaining the standards of integrity, impartiality, and professionalism in all its relations. The Association's employees and executives are committed to preventing conflicts of interest, adhering to the principle of confidentiality, and promoting fair competition. Ethical conduct rules are applied with diligence in all activities carried out with members, public authorities, and other stakeholders.

During the reporting period, there were no incidents of bribery, corruption, ethical misconduct, or violations of transparency at OSD.

9. TRANSPARENT CORPORATE GOVERNANCE CULTURE

RISK MANAGEMENT AND REGULATORY COMPLIANCE

OSD is implementing the Project on Reaching the EU Green Deal Targets by Turkish Automotive Industry.

The automotive industry operates in an environment characterized by high levels of both risk and opportunity due to global supply chains, rapid technological transformation, changing consumer expectations, environmental requirements, and increasingly stringent regulations. Within this dynamic structure, effective risk management is critically important for maintaining sustainable growth and competitiveness in the sector.

To support its member companies in operating within a competitive and sustainable ecosystem, OSD plays an active role in identifying, monitoring, and assessing potential risks and opportunities that may affect the industry. Risks are addressed comprehensively under key areas such as supply chain continuity, technological transformation, environmental and climate-related obligations, occupational health and safety, trade policies, and regulatory changes.

The Association encourages its members to take international best practices into account in their risk management and regulatory compliance processes. This approach enables the early identification of risks, the development of effective action plans, and the strengthening of crisis management capacity.

OSD's approach in this field reflects a proactive governance model aimed at preserving the sustainability, innovation capacity, and international competitiveness of the automotive industry.

Regulatory compliance is a strategic necessity for all organizations operating

in the automotive sector and serves as a determinant not only in meeting legal requirements but also in maintaining reputation and ensuring market access. OSD closely monitors legislative changes at both national and international levels, providing its members with up-to-date information, while offering coordination and guidance on regulatory compliance through its technical committees and working groups.

Within the framework of the European Union Green Deal—expected to bring fundamental changes to the industry—OSD supports its members' compliance with the new regulations. In this context, as of February 1, 2024, it has begun implementing a four-year project titled Reaching the EU Green Deal Targets by Turkish Automotive Industry.

The project aims to contribute to the fight against climate change and to strengthen the institutional and technical capacity of OSD, as well as that of the automotive manufacturers and suppliers, in line with the European Green Deal objectives. Additionally, it seeks to enhance collaboration with relevant NGOs and public institutions, establish new networks with EU bodies, and serve as a reliable source of information for all stakeholders. To contribute to the industry's sustainability goals, OSD has also prepared several gap analysis reports on various topics.

For more detailed information on environmental regulations, please refer to Sections [7.4 Clean Technologies and Alternative Fuels](#) and [7.5 Low-Carbon Production and Services](#).

9. TRANSPARENT CORPORATE GOVERNANCE CULTURE

DATA MANAGEMENT AND CYBERSECURITY

OSD plays a guiding role in data management and cybersecurity within the sector, supporting the sharing of best practices, awareness initiatives, and the exchange of technical knowledge among its member companies.

With rapid advancements in digitalization and connected vehicle technologies, the automotive industry is transforming into a data-driven ecosystem. The large volumes of data collected from vehicles, production lines, supply chains, and customer interactions not only enhance operational efficiency but also hold strategic value in new product and service development processes. However, the growing amount of data and increasingly interconnected systems also bring cybersecurity threats, data breaches, and intellectual property risks.

Therefore, effective data management and robust cybersecurity practices are critically important for the sustainability of the automotive industry, customer trust, and regulatory compliance. Ensuring that data across the sector is processed securely, accurately, accessibly, and in compliance with regulations supports both competitiveness and operational continuity. In particular, the vulnerability of electric vehicle charging infrastructure to malicious interference and the potential

manipulation of analyses related to battery life (Remaining Useful Life) have introduced new types of threats.⁵⁰

OSD plays a guiding role in data management and cybersecurity within the sector, supporting the sharing of best practices, awareness initiatives, and the exchange of technical knowledge among its member companies. All OSD members have ISO 27001 Information Security Management Systems in place. Through its relevant committees, the Association ensures sectoral coordination on data protection compliance, monitoring of cyber threats, early identification of risks, and the strengthening of incident response plans.

OSD's approach is to encourage its members to adopt global cybersecurity standards and best data management practices, to position security as a strategic component of digitalization, and to ensure that the digital transformation of the automotive industry progresses on secure foundations.



⁵⁰ Nature, (2025), Detection of cyber attacks in electric vehicle charging systems using a remaining useful life generative adversarial network

ANNEXES

ANNEX 1: ABBREVIATIONS

ACEA	Association des Constructeurs Européens d'Automobiles (European Automobile Manufacturers Association)
AFIR	Alternative Fuels Infrastructure Regulation
CBAM	Carbon Border Adjustment Mechanism
CH ₄	Methane
CLEPA	European Association of Automotive Suppliers
CO ₂	Carbon Dioxide
EEA	European Environmental Agency ()
ESG	Environmental, Social and Governance
ETS	Emission Trading System
EU	European Union
EU BREF	European Union Best Available Techniques Reference Document
EU Green Deal / Green Deal	European Green Deal
GES	Solar Power Plant
GW	Gigawatt
IAEC	International Automotive Engineering Conference
IFRS	International Financial Reporting Standards
IPCC	Intergovernmental Panel on Climate Change
I-REC	International Renewable Energy Certificate
ISSB	International Sustainability Standards Board
LEED	Leadership in Energy and Environmental Design
MoEUCC	Republic of Türkiye Ministry of Environment, Urbanization and Climate Change
MoIT	Republic of Türkiye Ministry of Industry and Technology
MRV	Monitoring, Reporting and Verification
MW	Megawatt
MWh	Megawatt Hour
NDC	Nationally Determined Contribution

OEM	Original Equipment Manufacturer
OICA	Organisation Internationale des Constructeurs d'Automobiles (International Organization of Motor Vehicle Manufacturers)
OİB	Uludağ Automotive Industry Exporters' Association
PAGÇEV	Recycling Economic Enterprise of the Turkish Plastics Industrialists Research Development and Education Foundation
STS - BAT	Surface Treatment Using Organic Solvents Best Available Techniques
TAYSAD	Automotive Suppliers Association of Türkiye
TASB	Public Oversight, Accounting and Auditing Standards Authority of the Republic of Türkiye
TEN-T	Trans-European Transport Network
TL	Turkish Lira
TOBB	Union of Chambers and Commodity Exchanges of Türkiye
TSRS	Türkiye Sustainability Reporting Standards
TUSIAD	Turkish Industry and Business Association
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNEP	United Nations Environment Program
VOC	Volatile Organic Compounds

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ANNEXES

ANNEX 2: PLATFORMS PARTICIPATED IN 2023 AND 2024

European Automobile Manufacturers Association (ACEA) Committees
Workshops organized by the Ministry of Environment, Urbanization and Climate Change (MoEUCC) within the scope of the project "Assessing Türkiye's Potential for Transition to a Circular Economy."
International Automotive Engineering Conference (IAEC) Steering Committee
Istanbul Chamber of Industry Sustainability Platform
Road Traffic Safety Action Plan – Vehicles Specialized Working Group
Automotive Technology Platform Working Groups
Middle East Technical University (METU) Digital Transformation Center EU IPA Project Workshops on "Türkiye's Digital Transformation Roadmap"
Motor Vehicles Technical Committee (MARTEK) and Sub-Committees coordinated by the Ministry of Industry and Technology (MoIT)
The Republic of Türkiye Presidency Science, Technology and Innovation Policies Council (BTYPK) Integrated, Efficient, Safe, Environmentally Friendly Intelligent Transportation Systems Technology Roadmap Working Group
Heavy Commercial Vehicle Charging Infrastructure Working Group coordinated by the Ministry of Industry and Technology (MoIT)
The Ministry of Trade – Specialized Working Groups on the European Green Deal
The Ministry of Trade – Customs Union Modernization and BREXIT Working Group
Turkish Industry and Business Association (TÜSİAD) – Environment and Net-Zero Policies Group
TÜSİAD Circular Economy and Waste Management Group
TÜSİAD Energy Working Group
TÜSİAD Energy Efficiency Group
TÜSİAD Water Working Group
TÜSİAD Sustainable Finance Group
TOBB – European Green Deal Working Group
TOBB Automotive Industry Assembly
TOBB Chemicals Regulation on the Registration, Evaluation, Authorization and Restriction of Chemicals Working Group
TOBB Digital Transformation Working Group
TOBB Recycled Plastics Working Group
International Organization of Motor Vehicle Manufacturers (OICA) General Assembly and Committees
Consultation Meetings with Industries Employing Flat Steel in Manufacturing Processes



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ANNEX 3: TSRS REPORTING BY OSD MEMBERS

OSD Members	2024 TSRS-COMPLIANT SUSTAINABILITY REPORT
Anadolu Isuzu	Integrated Report 2024
Ford Otosan	Ford Otosan TSRS – COMPLIANT SUSTAINABILITY REPORT
Hattat Traktör	Not within the scope of TSRS.
Hyundai Motor Türkiye	Not within the scope of TSRS.
Karsan	Karsan TSRS – COMPLIANT SUSTAINABILITY REPORT
Man	Not within the scope of TSRS.
Mercedes-Benz Türk	Not within the scope of TSRS.
Otokar	OTOKAR TSRS – COMPLIANT SUSTAINABILITY REPORT
Oyak Renault	Not within the scope of TSRS.
Temsa	Not within the scope of TSRS.
Tofaş	Tofaş TSRS – COMPLIANT SUSTAINABILITY REPORT
Toyota	Not within the scope of TSRS.
TürkTraktör	TürkTraktör TSRS – COMPLIANT SUSTAINABILITY REPORT



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ANNEX 4: ESG TARGETS AND REPORTING BY OSD MEMBERS

OSD Members	ESG Targets
Ford Otosan	<p>Short-Term Targets</p> <ul style="list-style-type: none"> Analyzing climate-related risks and opportunities, and developing action plans based on the outcomes. <p>Medium-Term Targets</p> <ul style="list-style-type: none"> Achieving carbon neutrality across all manufacturing facilities and R&D centers in Türkiye by 2034. Ensuring that, as of 2035, only zero-emission passenger and light/medium commercial vehicles are sold. Achieving carbon neutrality in logistics operations involving more than 300 Ford Otosan suppliers by 2035. Eliminating waste sent to landfills. Completely phasing out single-use plastics in personal use. <p>Long-Term Targets</p> <ul style="list-style-type: none"> Defining targets, strategies, and detailed roadmaps to reach net-zero emissions by 2050. Ensuring that, as of 2040, only zero-emission heavy commercial vehicles are sold. <p>For more information, please refer to the Ford Otosan 2024 Integrated Annual Report.</p>
Temsa	<p>2030 Emission Target</p> <ul style="list-style-type: none"> Reducing Scope 1 and Scope 2 greenhouse gas emissions by 68.6% by 2030, compared to the 2021 baseline year. Achieving net-zero greenhouse gas emissions across the entire value chain by 2050. <p>For more information, please visit the Temsa Sustainability website.</p>



OSD Members	ESG Targets
TürkTraktör	<p>Short-Term Target</p> <ul style="list-style-type: none"> Meeting 100% of total electricity demand from renewable sources by the end of 2026 through procurement and self-generation investments. <p>Medium-Term Targets</p> <ul style="list-style-type: none"> Reducing Scope 1 and Scope 2 greenhouse gas emissions by 42% by 2030 (2021 baseline year). Reducing electricity consumption per product by 30% by 2030 (2019 baseline year). Reducing water consumption per product by 40% by 2030 (2019 baseline year). Using 100% recycled water in production and operations by 2030 (2019 baseline year). Maintaining a 99% waste recovery rate in production activities. <p>Long-Term Target</p> <ul style="list-style-type: none"> Achieving carbon neutrality in logistics operations by 2040. <p>For more information, please refer to the TürkTraktör 2024 TSRS-Complaint Sustainability Report.</p> <p>You can find all companies with SBTi-approved targets and detailed information on their goals by clicking here.</p>

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ANNEX 5: GUIDELINES AND TOOLS FOR BIODIVERSITY ASSESSMENT

Standards, guidelines, and approaches that companies can follow to assess and prioritize biodiversity impacts and dependencies:

- [TNFD'nin LEAP Approach](#)
- [SBTN Technical Guidance for Step 1: Assess and Step 2: Prioritize](#)
- [WWF Biodiversity Risk Filter](#)
- [The Integrated Biodiversity Assessment Tool – IBAT](#)
- [UN Biodiversity Lab](#)
- [IUCN Global Ecosystem Typology 2.0](#)
- [Global Forest Watch](#)



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ANNEX 6: STAKEHOLDER LIST

Umbrella Organizations

- United Metal Workers' Union of Türkiye
- Chambers of Industry and Commerce
- Federation of Industrial Associations (SEDEFED)
- Business Council for Sustainable Development Türkiye – BCSD Türkiye
- Turkish Education Foundation – TEV
- Turkish Metal Union
- Turkish Industry and Business Association (TÜSiAD)
- Türkiye Exporters Assembly (TİM)
- Turkish Confederation of Employer Associations (TÜRKONFED)
- Turkish Confederation of Employer Associations (TİSK)
- Turkish Employers' Association of Metal Industries (MESS)
- Union of Chambers and Commodity Exchanges of Türkiye (TOBB)
- Uludağ Exporters' Association (UİB)
- International Investors Association of Türkiye (YASED)
- Green Development Association
- Independent Industrialists and Businessmen's Association (MÜSiAD)
- Turkish Intelligent Transportation Systems Association (AUS Türkiye)
- Republic of Türkiye Presidency of Strategy and Budget

Public Authorities and Related Institutions

- Municipalities
- Information and Communication Technologies Authority (Türkiye)
- Energy Market Regulatory Authority (EMRA)
- The Presidency of Revenue Administration
- Personal Data Protection Authority (KVKK)
- Turkish Competition Authority
- Digital Transformation Office (DTO) of the Presidency of the Republic of Türkiye
- Republic of Türkiye Investment and Finance Office
- Republic of Türkiye Ministry of Environment, Urbanization and Climate Change
- Republic of Türkiye Ministry of Foreign Affairs
- Republic of Türkiye Ministry of Energy and Natural Resources
- Republic of Türkiye Ministry of Treasury and Finance
- Republic of Türkiye Ministry of Interior
- Republic of Türkiye Ministry of Industry and Technology
- Republic of Türkiye Ministry of Agriculture and Forestry
- Republic of Türkiye Ministry of Trade
- Republic of Türkiye Ministry of Transport and Infrastructure
- Turkish Standards Institution (TSE)
- Scientific and Technological Research Council of Türkiye (TÜBİTAK)
- Governorships

Sectoral Associations and Unions

- Heavy Commercial Vehicles Association (TAİD)
- Association of Battery and Recycling Industrialists (AKÜDER)
- Steel Pipe Manufacturers Association (ÇEBİD)
- Association of Recyclable Waste Materials Industrialists (TÜDAM)
- Natural Gas Appliances Industrialists and Businessmen's Association (DOSİDER)
- Boiler and Pressure Vessel Manufacturers' Association (KBSD)
- Association of Tire Industrialists (LASDER)
- Automotive Distributors' and Mobility Association (ODMD)
- Uludağ Automotive Industry Exporters' Association (OİB)
- Automotive Technology Platform (OTEP)
- Authorized Automotive Dealers Association (OYDER)
- End of Life Vehicle Industrialists Association (ÖTASAD)
- Petroleum Industry and E Mobility Association (PETDER)
- Association of Cold Rolled, Galvanized and Coated Coil Manufacturers (SOGAD)
- Portable Battery Manufacturers and Importers Association (TAPDER)
- Automotive Suppliers Association of Türkiye (TAYSAD)
- Trailer Industrialists Association (TREDER)
- All Car Rental Organizations Association (TOKKDER)
- Turkish Plastics Industry Foundation (PAGEV)
- Turkish Association of Agricultural Machinery & Equipment Manufacturers (TARMAKBİR)
- White Goods Manufacturers' Association of Turkey (TÜRKBESD)
- Turkish Machinery Federation (MAKFED)
- Union of Notaries of Türkiye (TNB)

International Stakeholders

- European Commission
- Embassies
- International Organization of Motor Vehicle Manufacturers (OICA) and its members
- ODETTE International
- European Automobile Manufacturers' Association (ACEA) and its members

Universities / Techno parks / Technology Development Zones

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ANNEX 7: ECONOMIC AND R&D PERFORMANCE INDICATORS

Economic Performance

Indicator	Unit	2021	2022	2023	2024
Production	Thousand units	1,276	1,353	1,468	1,365
Exports	Billion USD	29.3	31	35	37.2
Exports	Thousand units	937	970	1,018	1,013
Foreign Trade Balance	Million USD	9,041	8,032	-1,588	536
Market	Thousand units	773	827	1,284	1,286
Investment	Million USD	662	976	1,341	1,165

R&D Performance

Indicator	Unit	2021	2022	2023	2024
R&D Expenditures	Billion TRY	3.4	7	11.7	21.3
R&D Exports	Million USD	125	253	215	221
R&D Employees	Thousand persons	4.6	5.2	5.9	6
Patents	Number	315	230	200	197

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ANNEX 8: ENVIRONMENTAL PERFORMANCE INDICATORS

ENERGY CONSUMPTION

Total Energy Consumption – Light Vehicles

	Unit	2021	2022	2023	2024
Total Energy	MWh/year	1,434,059.48	1,397,629.96	1,467,502.62	1,356,298.73
Per Vehicle Produced	kWh/vehicle	1,187.09	1,079.75	1,047.95	1,032.10

Total Energy Consumption – Other Vehicles

	Unit	2021	2022	2023	2024
Total Energy	MWh/year	508,105.64	539,701.72	604,281.55	579,901.35
Per Vehicle Produced	kWh/vehicle	5,353.16	5,246.44	4,810.78	5,989.48

Energy Consumption in Paint Process – Light Vehicle

	Unit	2021	2022	2023	2024
Total Energy	MWh/year	916,093.07	828,149.45	648,208.00	419,215.54
Per Vehicle Produced	MWh/vehicle	0.76	0.64	0.46	0.32

Energy Consumption in Paint Process – Other Vehicle*

	Unit	2023	2024
Total Energy	MWh/year	89,568.21	113,007.88
Per Vehicle Produced	MWh/vehicle	0.71	1.17

* Data for the Other Vehicles category are not available for 2021 and 2022, and figures for Anadolu Isuzu and Otocar are not included.

GREENHOUSE GAS EMISSIONS

Scope 1 and Scope 2 Greenhouse Gas Emissions – Light Vehicles

	Unit	2021	2022	2023	2024
Scope 1	tCO ₂ e/year	203,673.49	183,181.19	192,411.07	168,229.05
Scope 2	tCO ₂ e/year	125,436.37	114,733.12	96,867.24	75,797.76
Total Emissions	tCO ₂ e/year	329,109.85	297,914.31	289,278.31	244,026.81
Per Vehicle Produced	tCO ₂ e/vehicle	0.27	0.23	0.21	0.19

Scope 1 and Scope 2 Greenhouse Gas Emissions – Other Vehicles *

	Unit	2021	2022	2023	2024
Scope 1	tCO ₂ e/year	76,774.52	81,059.84	97,084.43	84,892.40
Scope 2	tCO ₂ e/year	53,766.07	48,018.85	42,599.90	37,556.68
Total Emissions	tCO ₂ e/year	130,540.59	129,078.69	139,684.33	122,449.08
Per Vehicle Produced	tCO ₂ e/vehicle	1.38	1.25	1.11	1.26

*Data for Scope 1 and Scope 2 Greenhouse Gas Emissions – Other Vehicles between 2021 and 2024 do not include the figures of Hattat Traktör.

WATER CONSUMPTION

Total Water Withdrawal and Wastewater Generation – Light Vehicles

	Unit	2021	2022	2023	2024
Water withdrawal	m ³ /year	3,031,706.72	2,903,434.77	3,022,969.00	2,939,484.00
Wastewater volume	m ³ /year	1,777,313.02	1,754,736.78	1,236,644.00	1,056,479.00
Water withdrawal per vehicle	m ³ /vehicle	2.51	2.24	2.16	2.24
Wastewater amount per vehicle	m ³ /vehicle	1.47	1.36	0.88	0.80

Total Water Withdrawal and Wastewater Generation – Other Vehicles

	Unit	2021	2022	2023	2024
Water Withdrawal	m ³ /year	1,240,049.70	1,347,026.23	1,492,620.00	1,433,138.00
Wastewater Generation	m ³ /year	535,819.56	624,226.18	797,914.50	817,430.00
Water Withdrawal per Vehicle	m ³ /vehicle	13.06	13.09	11.88	14.80
Wastewater Generation per Vehicle	m ³ /vehicle	5.65	6.07	6.35	8.44

Water Consumption in Paint Process – Light Vehicle

	Unit	2021	2022	2023	2024
Water Withdrawal	m ³ /year	1,503,326.01	1,486,419.42	1,498,601.42	1,338,932.82
Water Withdrawal per Vehicle	m ³ /vehicle	1.24	1.15	1.07	1.02

Water Consumption in Paint Process – Other Vehicles

	Unit	2023	2024
Water Withdrawal	m ³ /year	344,630.77	357,710.73
Water Withdrawal per Vehicle	m ³ /vehicle	2.74	3.69



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WASTE

Total Waste Amounts – Light Vehicles

	Unit	2021	2022	2023	2024
Non-Hazardous Waste	ton/year	228,591.04	231,362.42	237,599.73	228,978.49
Hazardous Waste	ton/year	16,331.96	14,924.45	18,386.63	26,332.75
Packaging Waste	ton/year	27,412.30	31,678.38	27,571.04	27,022.39
Total Waste	ton/year	260,000.00	270,000.00	255,986.35	255,311.24
Waste per Vehicle Produced	kg/vehicle	226	215	183	194

Total Waste Amounts – Other Vehicles

	Unit	2021	2022	2023	2024
Non-Hazardous Waste	ton/year	30,490.625	35,905.351	65,307.16	58,282.70
Hazardous Waste	ton/year	5,460.12	4,758.34	8,977.92	7,500.73
Packaging Waste	ton/year	17,038.27	20,182.60	20,665.72	17,625.00
Total Waste	ton/year	35,950.74	40,663.69	74,285.08	65,783.43
Waste per Vehicle Produced	kg/vehicle	554	591	591	679

Waste Generated in Paint Process – Light Vehicles

	Unit	2021	2022	2023	2024
Total Waste	ton/year	9,393.55	10,146.99	8,254.37	15,483.60
Waste per Vehicle Produced	kg/vehicle	7.8	7.8	5.9	11.8

Waste Generated in Paint Process – Other Vehicles

	Unit	2023	2024
Total Waste	ton/year	3,610.14	3,510.51
Waste per Vehicle Produced	kg/vehicle	28.7	36.3

VOLATILE ORGANIC COMPOUND (VOC) EMISSIONS

VOC Emissions – Passenger Cars/Automobiles (M1)*

	Unit	2021	2022	2023	2024
VOC Emissions	gr	-	3,288,360,000	2,355,720,000	1,723,680,000
Painted Area	m ²	-	94,465,628	74,107,339	65,528,238
g/m ²		36.46	35	32	26

*Verification process for 2024 data has not yet been completed by all OSD member companies.

VOC Emissions – Light Commercial Vehicles (N1)*

	Unit	2021	2022	2023	2024
VOC Emissions	gr	-	2,373,420,000	2,456,630,000	2,432,120,000
Painted Area	m ²	-	50,442,014	54,493,434	58,493,934
g/m ²		45.07	47.10	45.10	41.60

*Verification process for 2024 data has not yet been completed by all OSD member companies.

VOC Emissions – Trucks (N2/N3)*

	Unit	2021	2022	2023	2024
VOC Emissions	gr	-	412,610,000	401,790,000	374,040,000
Painted Area	m ²	-	8,409,385	9,359,393	7,582,590
g/m ²		28.32	49.10	42.90	49.30

*Verification process for 2024 data has not yet been completed by all OSD member companies.

VOC Emissions – Buses (M2/M3)*

	Unit	2021	2022	2023	2024
VOC Emissions	gr	-	605,893,507	749,987,179	621,596,418
Painted Area	m ²	-	6,494,296	7,855,765	7,855,765
g/m ²		167.56	93.30	95.47	79.13

*Verification process for 2024 data has not yet been completed by all OSD member companies.



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ANNEX 9: SOCIAL PERFORMANCE INDICATORS

OHS (Occupational Health and Safety) Performance

Indicator	Unit	2021	2022	2023	2024
Number of Accidents	Number	429	596	1,053	924
Lost Days	Number	3,431	4,686	6,115	6,129
Accident Frequency Rate	Rate	4.63	5.54	8.33	7.50
Accident Severity Rate	Rate	37.03	43.57	48.38	49.73
Number of Occupational Disease	Number	14	23	16	16
Occupational Disease Rate	Rate	0.15	0.21	0.13	0.13

Employee Demographics

	Unit	2022	2023	2024
Total Employees	Persons	56,722	60,619	59,474

Employees by Gender

Female Employees	Persons	6,970	8,625	9,430
Male Employees	Persons	49,752	51,994	50,044

Employees by Category

Field Employees – Female	Persons	3,332	4,503	5,119
Field Employees – Male	Persons	38,746	40,579	39,323
Office Employees – Female	Persons	3,638	4,122	4,311
Office Employees – Male	Persons	11,006	11,415	10,721

ANNEX 10: GRI CONTENT INDEX

Statement of use	The Automotive Manufacturers Association (OSD) has reported the information cited in this GRI content index for the period 01.01.2023–31.12.2024 with reference to the GRI Standards.
GRI 1 used	GRI 1: Foundation 2021

GRI Standard	Disclosure	Page Number and/or Direct References
GRI 2: General Disclosures 2021	2-1 Organizational details	16
	2-2 Entities included in the organization's sustainability reporting	4
	2-3 Reporting period, frequency and contact point	4
	2-4 Restatements of information	There is no information indicating any revisions.
	2-5 External assurance	No external audit has been conducted.
	2-6 Activities, value chain and other business relationships	15-16
	2-7 Employees	108, 140
	2-8 Workers who are not employees	No information has been shared.
	2-9 Governance structure and composition	12-14, 34
	2-10 Nomination and selection of the highest governance body	It is stated in the OSD Bylaws.
	2-11 Chair of the highest governance body	12, 34
	2-12 Role of the highest governance body in overseeing the management of impacts	34
	2-13 Delegation of responsibility for managing impacts	34
	2-14 Role of the highest governance body in sustainability reporting	34
	2-15 Conflicts of interest	122
	2-16 Communication of critical concerns	34, 122
	2-17 Collective knowledge of the highest governance body	34
	2-18 Evaluation of the performance of the highest governance body	Information is not available.
	2-19 Remuneration policies	Information is not available.
	2-20 Process to determine remuneration	Information is not available.
	2-21 Annual total compensation ratio	Information is not available.
	2-22 Statement on sustainable development strategy	18-21



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GRI Standard	Disclosure	Page Number and/or Direct References
GRI 2: General Disclosures 2021	2-23 Policy commitments	113, 124
	2-24 Embedding policy commitments	113, 124
	2-25 Processes to remediate negative impacts	123
	2-26 Mechanisms for seeking advice and raising concerns	123
	2-27 Compliance with laws and regulations	124
	2-28 Membership associations	128
	2-29 Approach to stakeholder engagement	133
	2-30 Collective bargaining agreements	113
GRI 3: Material Topics 2021	3-1 Process to determine material topics	36
	3-2 List of material topics	37
	3-3 Management of material topics	38-41
Corporate governance and business ethics		
GRI 3: Material Topics 2021	3-3 Management of material topics	122
GRI 205: Anti-corruption 2016	205-3 Confirmed incidents of corruption and actions taken	123
Energy efficiency		
GRI 3: Material Topics 2021	3-3 Management of material topics	66-67
GRI 302: Energy 2016	302-1 Energy consumption within the organization	68-69
	302-2 Energy consumption outside of the organization	68-69
	302-3 Energy intensity	68-69
	302-4 Reduction of energy consumption	68-69
	302-5 Reductions in energy requirements of products and services	76-77



GRI Standard	Disclosure	Page Number and/or Direct References
Water and wastewater management		
GRI 3: Material Topics 2021	3-3 Management of material topics	96
GRI 303: Water and Effluents 2018	303-2 Management of water discharge-related impacts	96
	303-3 Water withdrawal	97
	303-4 Water discharge	97
	303-5 Water consumption	97
Biodiversity		
GRI 3: Material Topics 2021	3-3 Management of material topics	100
GRI 304: Biodiversity 2016	304-3 Habitats protected or restored	100
Climate action		
GRI 3: Material Topics 2021	3-3 Management of material topics	64-65
GRI 305: Emissions 2016	305-1 Direct (Scope 1) GHG emissions	136
	305-2 Energy indirect (Scope 2) GHG emissions	136
	305-3 Other indirect (Scope 3) GHG emissions	136
	305-4 GHG emissions intensity	72
	305-5 Reduction of GHG emissions	72
	305-6 Emissions of ozone-depleting substances (ODS)	136
	305-7 Nitrogen oxides (NO _x), sulfur oxides (SO _x), and other significant air emissions	136

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GRI Standard	Disclosure	Page Number and/or Direct References
Natural resource use, waste management, and circular economy		
GRI 3: Material Topics 2021	3-3 Management of material topics	88-89
GRI 306: Waste 2020	306-1 Waste generation and significant waste-related impacts	90-91
	306-2 Management of significant waste-related impacts	90-91
	306-3 Waste generated	91
	306-4 Waste diverted from disposal	89, 138
	306-5 Waste directed to disposal	89, 138
Equal opportunity, diversity, and inclusion		
GRI 3: Material Topics 2021	3-3 Management of material topics	111
GRI 401: Employment 2016	401-1 New employee hires and employee turnover	109
GRI 405: Diversity and Equal Opportunity 2016	405-1 Diversity of governance bodies and employees	111
Occupational health and safety		
GRI 3: Material Topics 2021	3-3 Management of material topics	103
GRI 403: Occupational Health and Safety 2018	403-1 Occupational health and safety management system	103-104
	403-2 Hazard identification, risk assessment, and incident investigation	103
	403-3 Occupational health services	105
	403-4 Worker participation, consultation, and communication on occupational health and safety	105
	403-5 Worker training on occupational health and safety	105
	403-9 Work-related injuries	104
	403-10 Work-related ill health	104

GRI Standard	Disclosure	Page Number and/or Direct References
Talent management and workforce transformation		
GRI 3: Material Topics 2021	3-3 Management of material topics	108
GRI 404: Training and Education 2016	404-1 Average hours of training per year per employee	108-109
	404-3 Percentage of employees receiving regular performance and career development reviews	109
Multi-stakeholder collaborations and contribution to local development		
GRI 3: Material Topics 2021	3-3 Management of material topics	114
GRI 413: Local Communities 2016	413-2 Operations with significant actual and potential negative impacts on local communities	117-120
Material issues reported by OSD that are not included in the GRI Standards		
Clean technologies and alternative fuels		
GRI 3: Material Topics 2021	3-3 Management of material topics	78-79
Low-carbon production and services		
GRI 3: Material Topics 2021	3-3 Management of material topics	80
Responsible supply chain		
GRI 3: Material Topics 2021	3-3 Management of material topics	56
Vehicle quality		
GRI 3: Material Topics 2021	3-3 Management of material topics	51

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GRI Standard	Disclosure	Page Number and/ or Direct References
Risk management and compliance with regulations		
GRI 3: Material Topics 2021	3-3 Management of material topics	124
R&D, innovation, and digitalization		
GRI 3: Material Topics 2021	3-3 Management of material topics	43
Air quality		
GRI 3: Material Topics 2021	3-3 Management of material topics	74-75
Human rights and fair working conditions		
GRI 3: Material Topics 2021	3-3 Management of material topics	113
Customer experience		
GRI 3: Material Topics 2021	3-3 Management of material topics	52
Data management and cybersecurity		
GRI 3: Material Topics 2021	3-3 Management of material topics	125

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