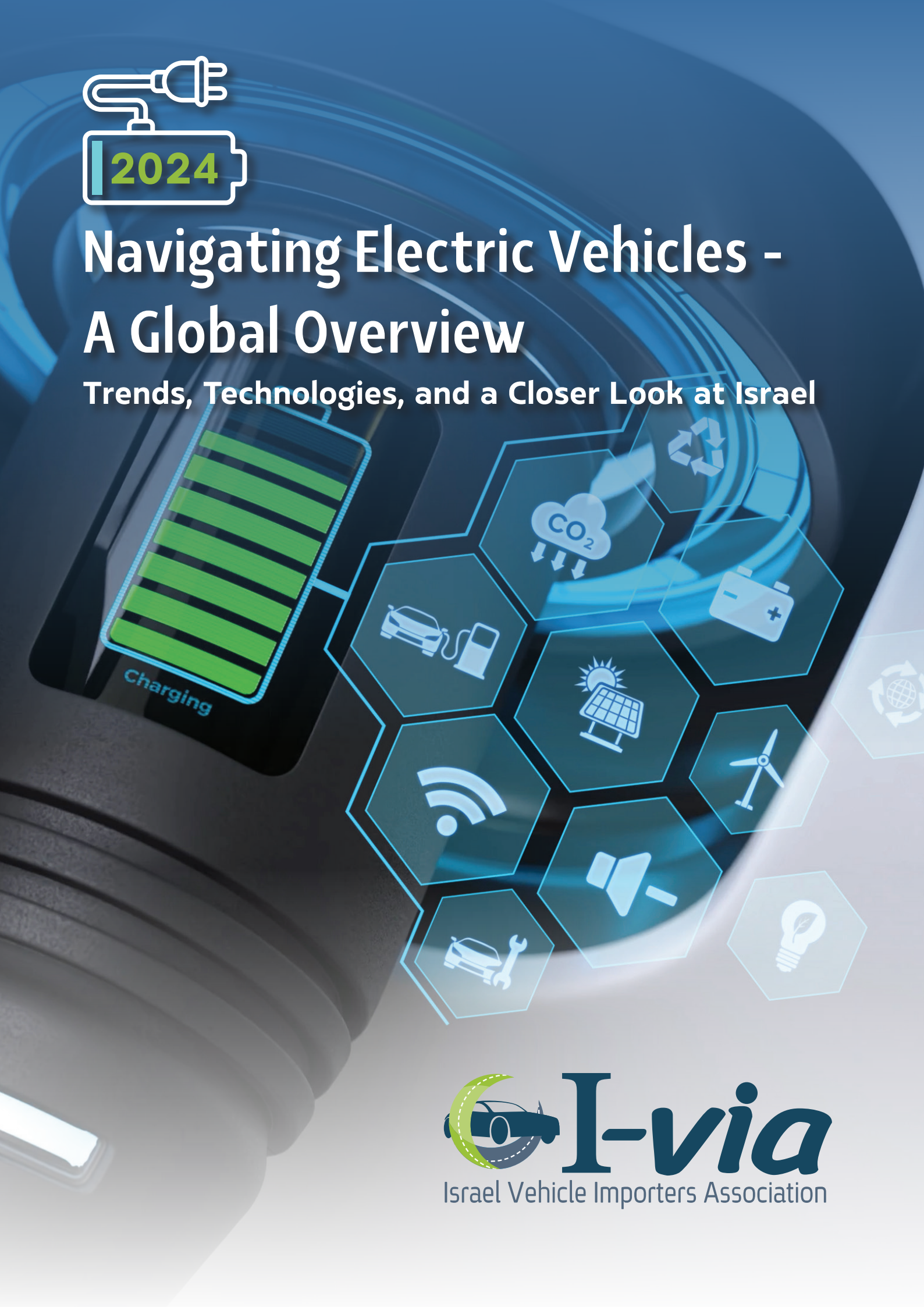
2024

Navigating Electric Vehicles - A Global Overview

Trends, Technologies, and a Closer Look at Israel



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Israel Vehicle Importers Association

Foreword

The global automotive market has been undergoing a significant transformation as it advances towards developing and establishing innovative transportation technologies, focusing on green energy and electric vehicles.

These developments are not just a matter of changing engines and propulsion systems; they also include upgrades in advanced safety systems, smart energy management, and enhanced driving experiences, among other features.

Combining all these elements leads to the creation of more environmentally friendly, safe, efficient, and sophisticated vehicles.

In Israel, the electric revolution is gaining momentum at an impressive pace. As of mid-2024, one in every four new cars sold in the country is an electric vehicle. At the same time, the number of electric car brands imported to Israel continues to grow, with the variety of brands available in the country expanding from around 50 in 2019 to over 70 in 2024. This expanding selection allows consumers to choose from a broader range of models that meet various needs while maintaining high-quality standards, technology, and design.

This review aims to provide an in-depth overview of the electric vehicle market, both globally and locally, in Israel. It examines the regulatory and tax aspects that impact the sector, discusses charging infrastructure, and offers forecasts regarding the developments expected in the coming years, both worldwide and in Israel.

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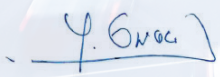

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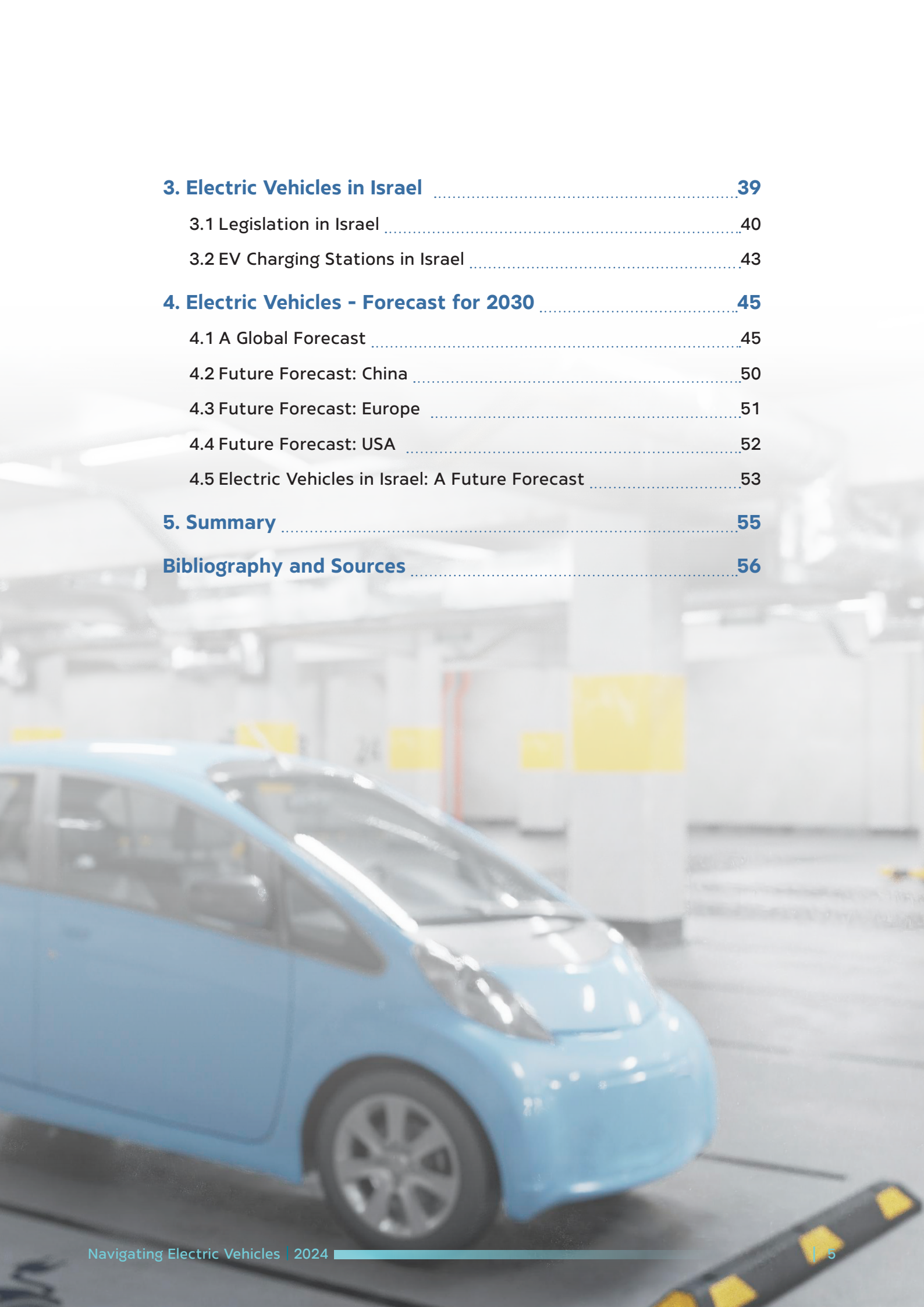


Executive Summary

Electric vehicle (EV) sales have broken records and recorded significant growth during the past few years. The beginning of this trend is the aspiration of countries and governments to reduce air pollution caused by the emission of pollutants from transportation and the translation of this desire into a long series of regulations, legislation, and goals for the transition to electric propulsion.

The review discusses the trend of EV adoption and presents data on EV sales in different parts of the world, on policies and regulations that pertain to EVs, and on various forecasts and scenarios regarding the future of EVs worldwide.

The review presents the current situation in terms of the penetration rate of EVs in the world, among others, in China, Europe, the USA, and Israel, the leading EV manufacturers in the world, the state of the charging infrastructure, and new technologies in the field of electric vehicles. Globally, over 10 million EVs were sold during 2023, a 35% increase compared to 2022. Around the world, there are about 35 million EVs on the roads today, a 40% increase compared with the year before.

China, Europe, and the USA are the largest EV markets in the world. Sales in them accounted for 95% of all EV sales in the world during 2023: 8.4 million units in China (about 30% market share), 2 million units in Europe (15.7%), and 1.6 million units in the US (10.5%).

The first chapter of the review also presents the leading electric vehicle manufacturers in the world: Tesla, BYD, SAIC, VW, and Geely-Volvo. At the end of the chapter, new technologies in the EV field that may affect its future are presented, including fuel cell technology, solid-state batteries, battery replacement, and wireless charging.

The second chapter discusses the regulation concerning EVs in the world (in the USA, the EU, and Israel) and presents different types of indirect and direct policies to promote the production and consumption of EVs.

The third chapter of the review is dedicated to Israel, where 48,219 EVs were sold during the year 2023 (17.9% market share). The chapter also presents the relevant legislation in Israel, including economic incentives and travel tax.

The fourth chapter of the review presents various scenarios and forecasts for EV sales worldwide, among others, in China, Europe, the USA, and Israel, until the year 2030.

The review provides a current and future picture of the EV field and is intended to be used as a basis for discussion, policy-making, and decision-making in the field. Based on this review, it is possible to learn what the main trends in the field of electric vehicles have been over the past few years, both in terms of sales and regulation, what changes have taken place over the past few years, and what the future scenarios regarding EVs in Israel and around the world are.

Introduction

Over the past few years, there has been a rapid transition in the automotive industry towards electric drive and electric vehicles. This change had and still has a considerable impact on the automotive industry and, at the same time, also on consumers and policymakers.

At the end of 2020, there were approximately 11 million EVs worldwide, while according to the data of the research company Rho Motion, during the year 2023 alone, approximately 9.5 million pure electric vehicles (BEVs) were sold worldwide, in addition to 4.1 million Plug-in hybrid vehicles (PHEVs).

The increase in the number of EVs is currently also characterized by an increasing pace: in 2012, EV sales reached approximately 100,000 units, and it took them five years, until 2017, to reach approximately one million units per year. In contrast, in the five years that have passed, from 2017 to 2022, the amount has increased ten times to about 10 million units.

The scientific and technological foundations for electric vehicle propulsion already existed at the end of the 19th century but were abandoned in favor of internal combustion engines (ICE). The electric vehicle was "Resurrected" a few times throughout the twentieth century, for example, following the fuel crisis in the seventies and later, thanks to the regulation that dealt with reducing pollutant emissions from vehicles in the state of California in the nineties. However, the great push and revival of the EV that we are experiencing today are the result of a policy change in the areas of sustainability and environmental protection by countries and governments during the 2000s.

In the years 2009-2012, there were critical changes in China's policies regarding air pollution arising from transportation. During these years, China became the country responsible for the highest amount of carbon emissions in the world, and the Beijing Olympics held in 2008 also exposed the world to the air pollution problems it faced. The reaction of the Chinese authorities was the enactment of laws that included many incentives for the production and purchase of electric vehicles that do not pollute, alongside a massive transition of the public transportation companies to electric buses, steps that made it within a few years the EV market in the world.

Another significant change at the global level came in 2015 with the signing of the Paris Agreement to reduce greenhouse gas emissions, signed by 195 countries, including Israel. The agreement aimed to limit global warming by reducing greenhouse gas emissions, primarily carbon dioxide. Since the transportation sector is responsible for approximately 23% of greenhouse gas emissions (in Europe, approximately 25%, and in the US, approximately 29%), the importance of cleaner transportation came to the surface in full force. It opened the door to a renewed global revival of electric vehicles.

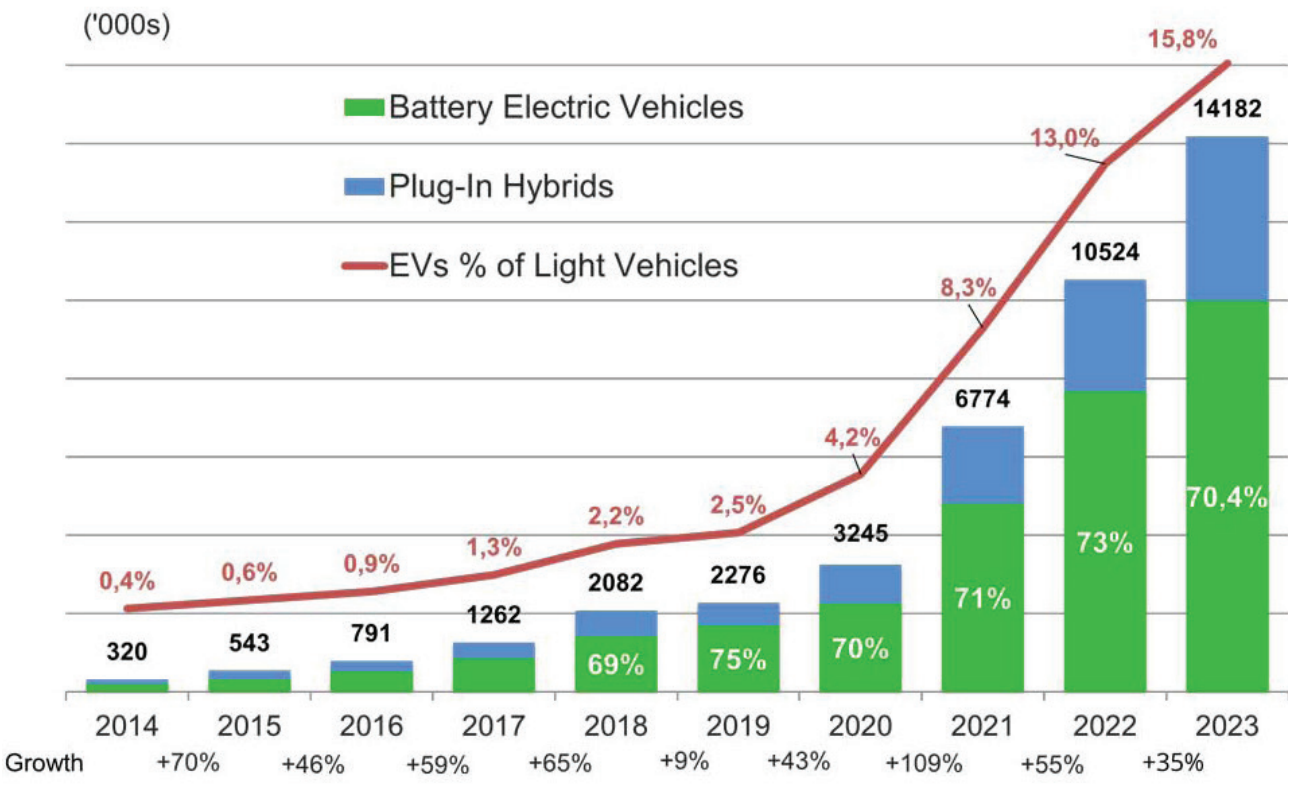
1. A Global Perspective on Electric Vehicles - Data and Trends

1.1 General Information

According to data retrieved from ev-volumes.com, during the year 2023, 14.2 million vehicles with electric drive (BEV and PHEV) were sold all over the world, an increase of 35% compared to 2022. The sale of pure electric vehicles jumped by 30% to approx. 10 million units. The research company Roh Motion reports that during this year, EV sales in the US and Canada jumped by 50% compared to last year, 27% in Europe, and 15% in China. Furthermore, for the first time, an EV - the Tesla Model Y - was the best-selling car in the world, with approximately 1.23 million units in 2023.

Global BEV & PHEV Sales

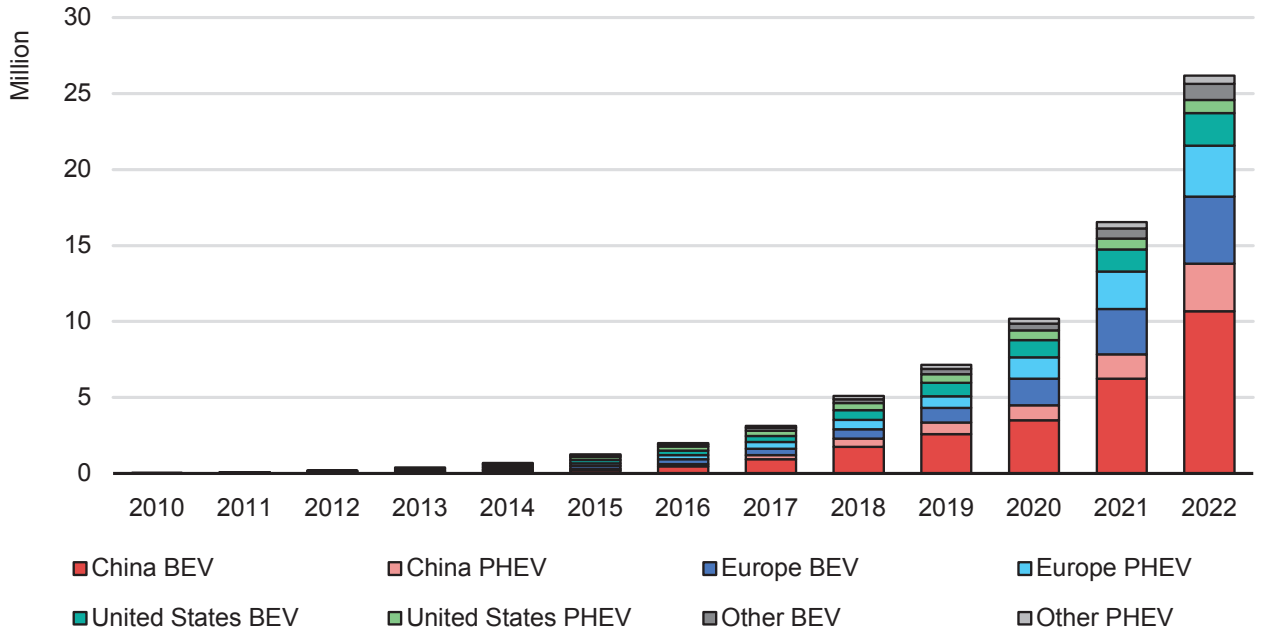
EV VOLUMES



This graph shows global pure electric vehicle BEV and plug-in hybrid vehicle PHEV sales from 2014-2023 in thousands of units. The green columns represent BEV sales (the percentage marked in white is the percentage of BEVs out of all electric vehicles BEV+PHEV), and the blue part represents only PHEV sales. The red graph represents the share of electric vehicles from all passenger vehicle sales. The row in black at the bottom of the graph represents the increase in EV sales YOY. Source: www.ev-volumes.com

The number of EVs moving on the world's roads today is about 36 million, an increase of 60% between 2021 and 2022 and about 40% between 2022 and 2023. The peak occurred in 2021, likely influenced by recovery efforts from the COVID-19 crisis, maintaining a high growth rate from 2018 through 2023. However, during 2023, there was a certain slowdown in the growth of the sales rate when explanatory factors could be the cancellation of subsidies, the expectation of new and cheaper models, and high interest rates.

Global electric car stock in selected regions, 2010-2022



Notes: BEV = battery electric vehicle; PHEV = plug-in hybrid electric vehicle. Electric car stock in this figure refers to passenger light-duty vehicles. In "Europe", European Union countries, Norway, and the United Kingdom account for over 95% of the EV stock in 2022; the total also includes Iceland, Israel, Switzerland and Türkiye. Main markets in "Other" include Australia, Brazil, Canada, Chile, Mexico, India, Indonesia, Japan, Malaysia, New Zealand, South Africa, Korea and Thailand.

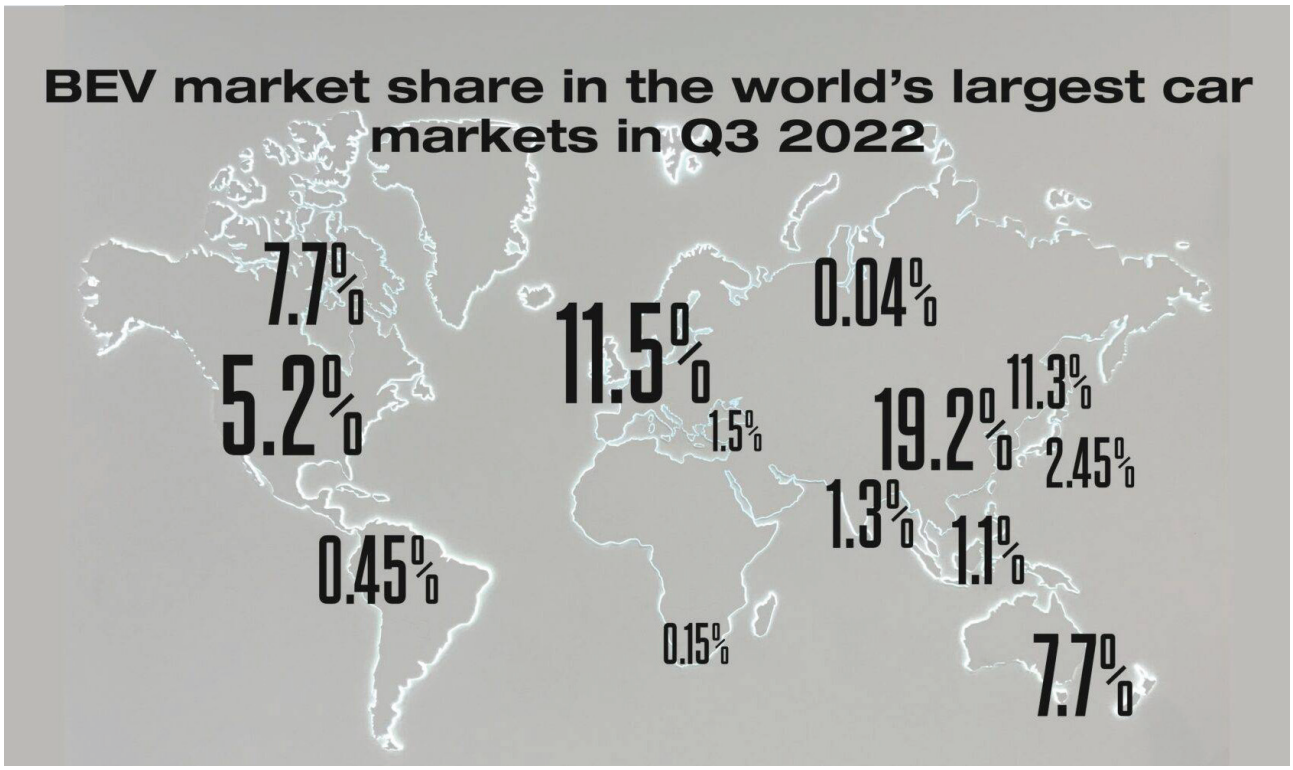
The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Source: IEA analysis based on country submissions, ACEA, EAFO, EV Volumes and Marklines.

This graph shows the number of EVs in different regions of the world in millions of units between 2010-2022. Each color represents a different region and a different EV type (BEV or PHEV). Source: IEA

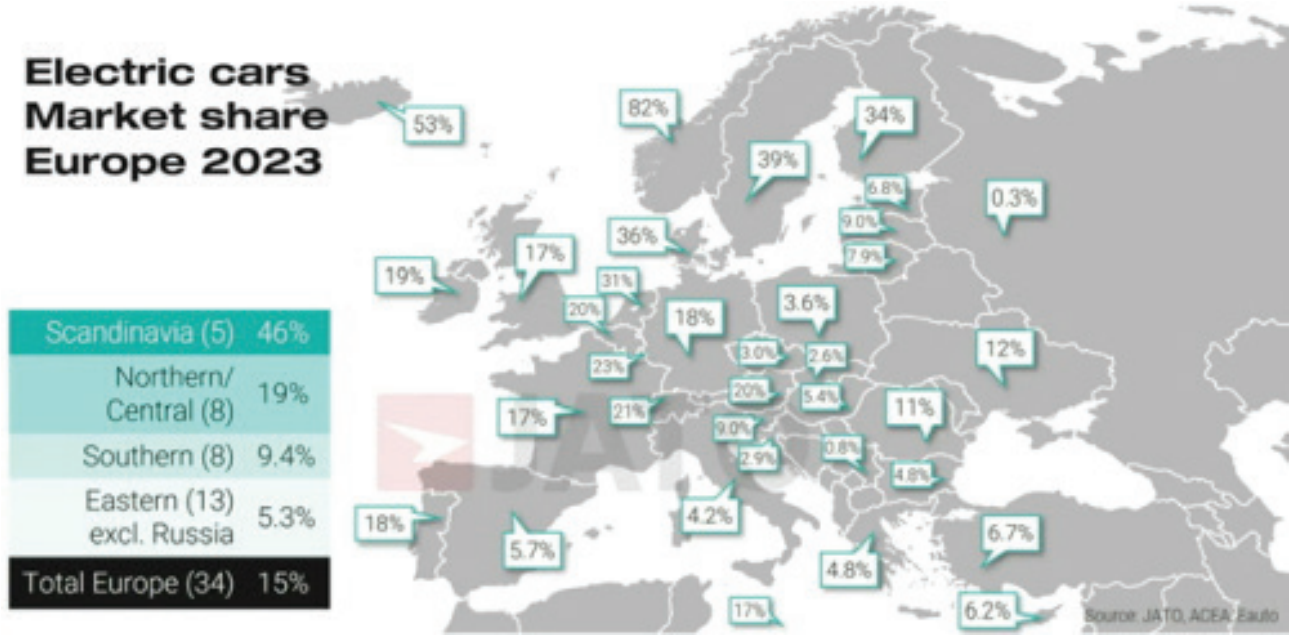
1.2 Global Distribution

The EV boom is not evenly distributed across geographic regions and markets, and there are countries where sales volumes and market shares are significant compared to other countries where almost no EVs are sold for various reasons. The regions that stand out, especially concerning EV penetration, are China, Northern Europe (Scandinavian countries and Western Europe), and North America. As the graph below shows, in developing countries and the rest of the world, the penetration rates of EVs are still very low, and this is mainly due to their high price, the lack of regulatory incentives to switch to EVs, and outdated air pollution regulations that allow the use of polluting ICE vehicles.



This graph shows the market share of pure electric vehicles (BEV) in selected regions of the world during the third quarter of 2022. Source: JATO DYNAMICS

This is even more evident when looking at Europe alone. Evidently, for example, there are very large differences between countries within Europe due to massive tax incentives that brought EVs very high market shares during 2023 in Scandinavian and Northern European countries, such as Norway with 82% of deliveries, Iceland with 53%, Sweden with 39%, Denmark with 36%, and Finland with 34 %, while in Europe as a whole, the average market share is only 15%.



This map shows the EV market share in selected European countries in 2023. Source: JATO DYNAMICS

1.3 Rest of the World

China, Europe, and North America are the largest markets in the world for EVs - approximately 95% of sales in 2023, according to the IEA (International Energy Agency) data. Sales in emerging markets and developing countries (EDME) constitute only a fraction of the global demand for EVs, and despite an increase in demand, the level of sales in such markets and countries is still low.

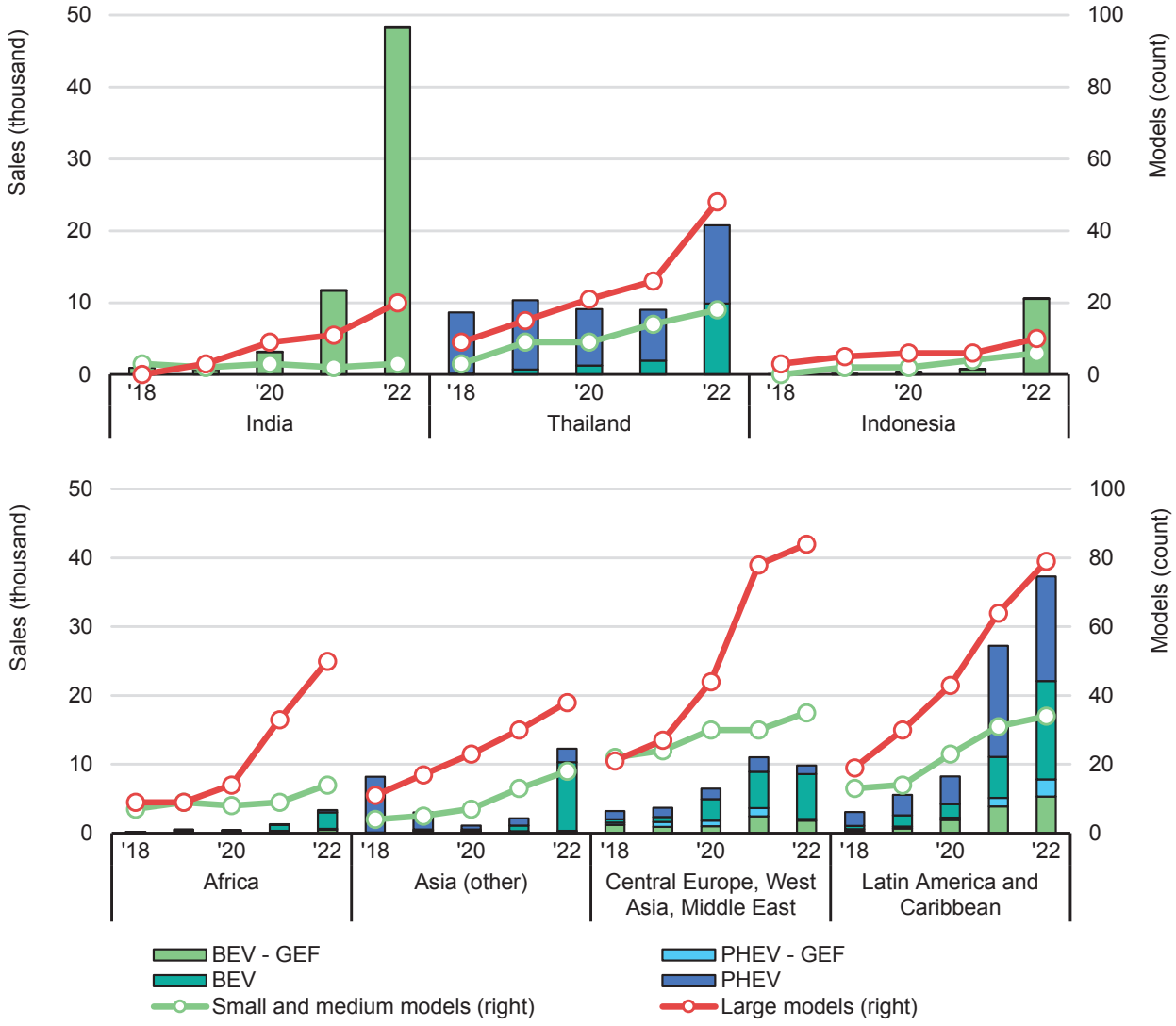
In certain countries, such as India, Thailand, and Indonesia, EV sales have increased up to seven times in 2022 compared to 2019 before the COVID crisis and three times more than in 2021. Close to 80,000 deliveries have been made in these countries, of which 50,000 have been in India, most of them manufactured by Tata.

In Thailand, 21,000 electric vehicles (BEV and PHEV) were sold, during 2022, largely thanks to the accelerated penetration of Chinese manufacturers such as Great Wall Motors, which entered the Thai market in 2021 and already a year later, its Ora 03 model (previously Ora Funky Cat) became the best-selling EV in the country. The second best-selling model is manufactured by the Chinese SAIC, which also entered the Thai market for the first time in 2021.

In Indonesia, the number of EVs sold was multiplied 14 times between 2021 and 2022, and this was after the Indonesian government's entry into force of a new subsidy program. Indonesia, as a country with the largest nickel mines in the world, also plays an important role in the EV supply chain, attracting foreign investment that may make it a major player in the production of batteries and components for EVs.

One of the main issues in the sale of EVs in EDME countries is the range of models, which mainly includes large electric SUVs that are not accessible to the majority of the population.

Electric car sales by powertrain (columns) and available models by car size (lines) in selected regions, 2018-2022



Notes: BEV = battery electric vehicle; PHEV = plug-in hybrid electric vehicle. "GEF" refers to the Global Environment Facility's Global E-Mobility Programme, which was launched in 2019 and supports 27 countries in their shift to electromobility. In Africa, GEF includes Burundi, Côte d'Ivoire, Madagascar, Seychelles, Sierra Leone, South Africa, Togo, and Tunisia. In Asia, GEF includes Bangladesh, India, Indonesia, Maldives, Philippines, and Sri Lanka, but India and Indonesia are shown separately. In Central Europe, West Asia and Middle East, GEF includes Albania, Armenia, Jordan, Ukraine and Uzbekistan. In Latin America and Caribbean, GEF includes Antigua and Barbuda, Chile, Costa Rica, Ecuador, Grenada, Jamaica, Peru and St Lucia. Other countries in Africa include: Algeria, Egypt, Ethiopia, Ghana, Kenya, Mauritius, Morocco, Nigeria, Rwanda, Zambia and Zimbabwe. Other countries in Asia include: Cambodia, Fiji, Laos, Malaysia, Mongolia, Nepal, Pakistan, Thailand and Viet Nam. Other countries in Central Europe, West Asia, Middle East include Azerbaijan, Bahrain, Belarus, Bosnia, Georgia, Iraq, Kazakhstan, Kosovo, Kuwait, Lebanon, Moldova, North Macedonia, Oman, Qatar, Russia, Saudi Arabia, Serbia and the United Arab Emirates. Other countries in Latin America and Caribbean include Argentina, Bahamas, Bolivia, Brazil, Colombia, Dominican Republic, Panama, Paraguay and Uruguay. The number of available models refers to unique models across the selected sample of countries. The number of available models includes BEVs and PHEVs.

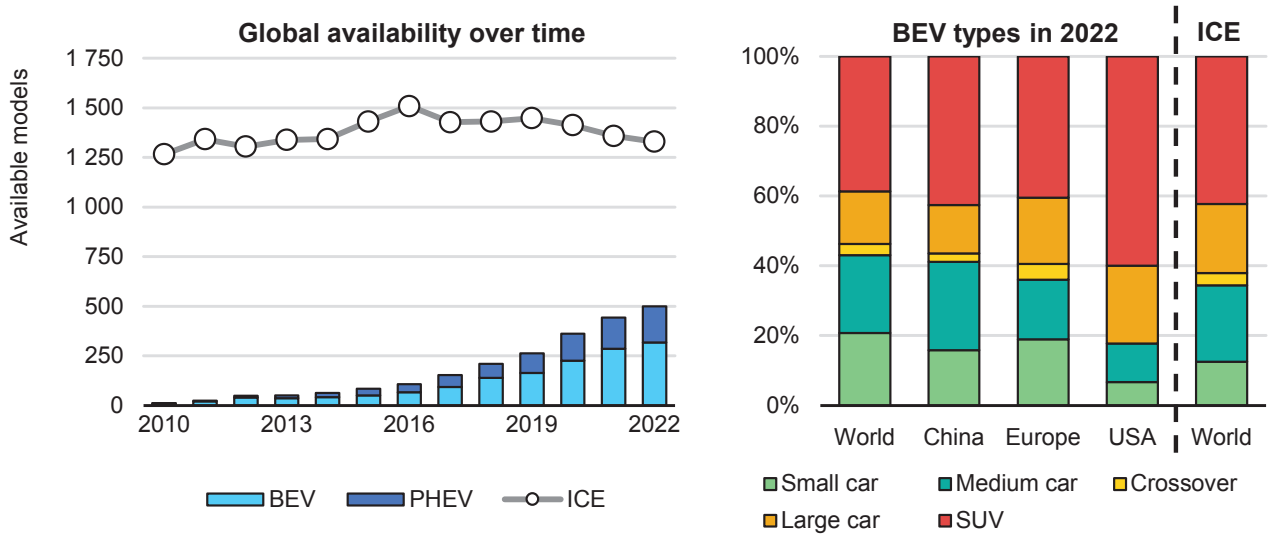
Source: IEA analysis based on EV Volumes.

These graphs show BEV and PHEV sales in thousands of units according to the number of models offered in different countries and regions of the world between the years 2018-2022. The red graph represents the number of large models offered in the market, while the green graph represents the number of small and medium models. It can be seen that there has been a more significant increase in the number of larger models offered in various markets. Source: IEA

1.4 More BEV, Less ICE

The electrification race has resulted in more and more EV models being offered. In 2018, around 220 pure electric models were sold worldwide, in 2021, the number doubled to around 450 models, and in 2022, there were already around 500 different models. The widest range is in China, with nearly 300 different models - twice as many as in European countries such as Norway, Britain, Germany, Sweden, the Netherlands, and France, each with about 150 electric models offered on the market. In the US, the number of electric models offered on the market reached 100 in 2022, double the number before the COVID-19 epidemic. While these are impressive numbers, they are still far from the supply of internal combustion models that reached their peak in the middle of the last decade with 1,500 models and have since been stable at around 1,250 models. However, it should be noted that while the number of electric models on the market is on an increasing trend, the number of ICE models offered has decreased by 2% per year since 2016.

Car model availability by powertrain, 2010-2022 (left), and breakdown of available cars by powertrain and segment in 2022 (right)

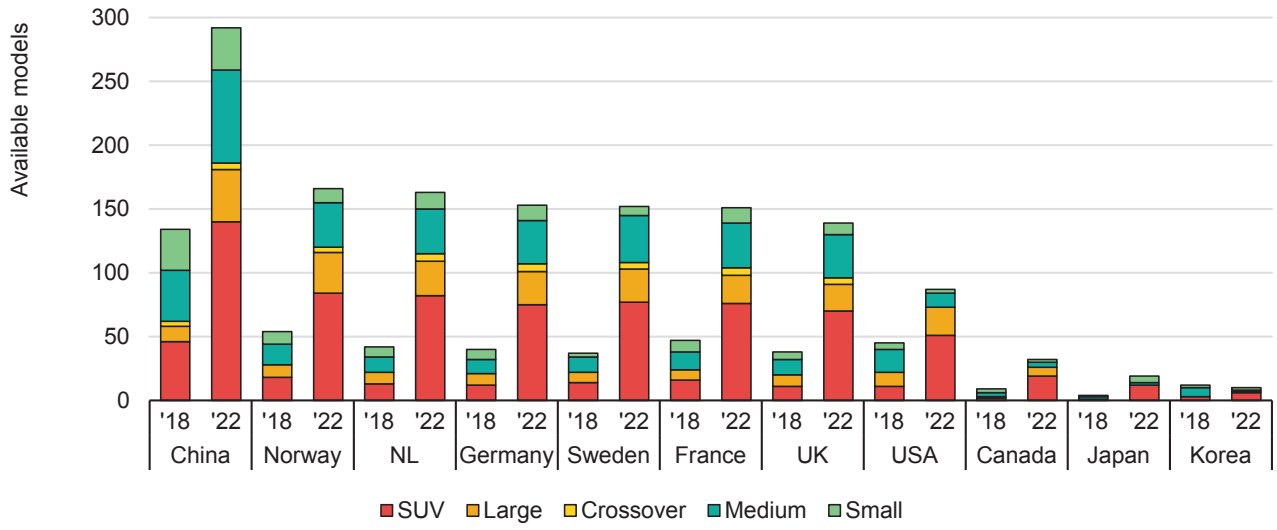


Notes: BEV = battery electric vehicle; PHEV = plug-in hybrid vehicle; ICE = internal combustion engine; SUV = sports utility vehicle; USA = United States. Analysis based on models for which there was at least one new registration in a given year; a model on sale but never sold is not counted, and as such actual model availability may be underestimated. In the chart on the right-hand side, distribution is based on the number of available models, not sales-weighted. Small cars include A and B segments. Medium cars include C and D segments. Crossovers are a type of sports utility vehicle (SUV) built on a passenger car platform. Large cars include E and F segments and multi-purpose vehicles.

Source: IEA analysis based on Marklines.

These graphs show the availability of different car models (according to the number of models in thousands) by type of drive between the years 2010-2022 (left graph) and the distribution of the types of models by segment in different regions of the world (right graph). In the left graph, it can b seen that over the years there has been an increase in the number of BEV and PHEV models offered in the world alongside a slight decrease in the number of ICE models. In the graph on the right, it can be seen that of all the BEV models that are offered, a large part are SUV models and large vehicles, mainly in North America. Source: IEA

Electric car model availability in selected countries by size, 2018-2022



Notes: NL = the Netherlands; UK = United Kingdom; USA = United States; SUV = sports utility vehicle. Includes battery electric vehicles and plug-in hybrid electric vehicles. Countries are ordered by the number of available models in 2022. Analysis based on models for which there was at least one new registration in a given year; a model on sale but never sold is not counted, and as such actual model availability may be underestimated.

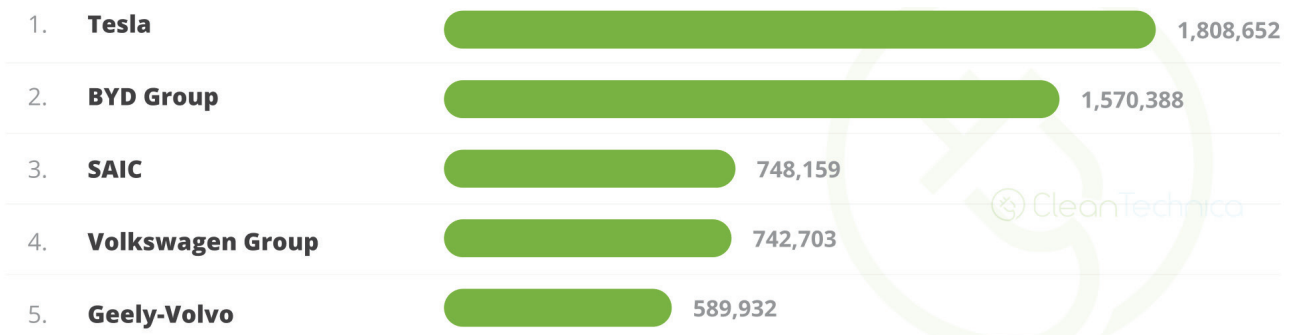
Source: IEA analysis based on Marklines.

This graph shows the number of electric models that are offered in different markets in the world according to the segment to which they belong in 2022 compared with 2018. It can be seen that besides a significant increase in the number of models offered, most of them are SUV models; on the other hand, the smaller models represent only a minor percentage. Source: IEA

1.5 Leading Global EV Manufacturers

Most car manufacturers registered an increase in sales during the year 2023, with EV sales growing by 35% compared with 2022. Chinese BYD increased the gap at the top thanks to an extensive product line that includes 30 different models in 10 segments and the sale of over 3 million units, including PHEV models. The largest pure electric vehicle (BEV) manufacturer is Tesla, with a global market share of 18%.

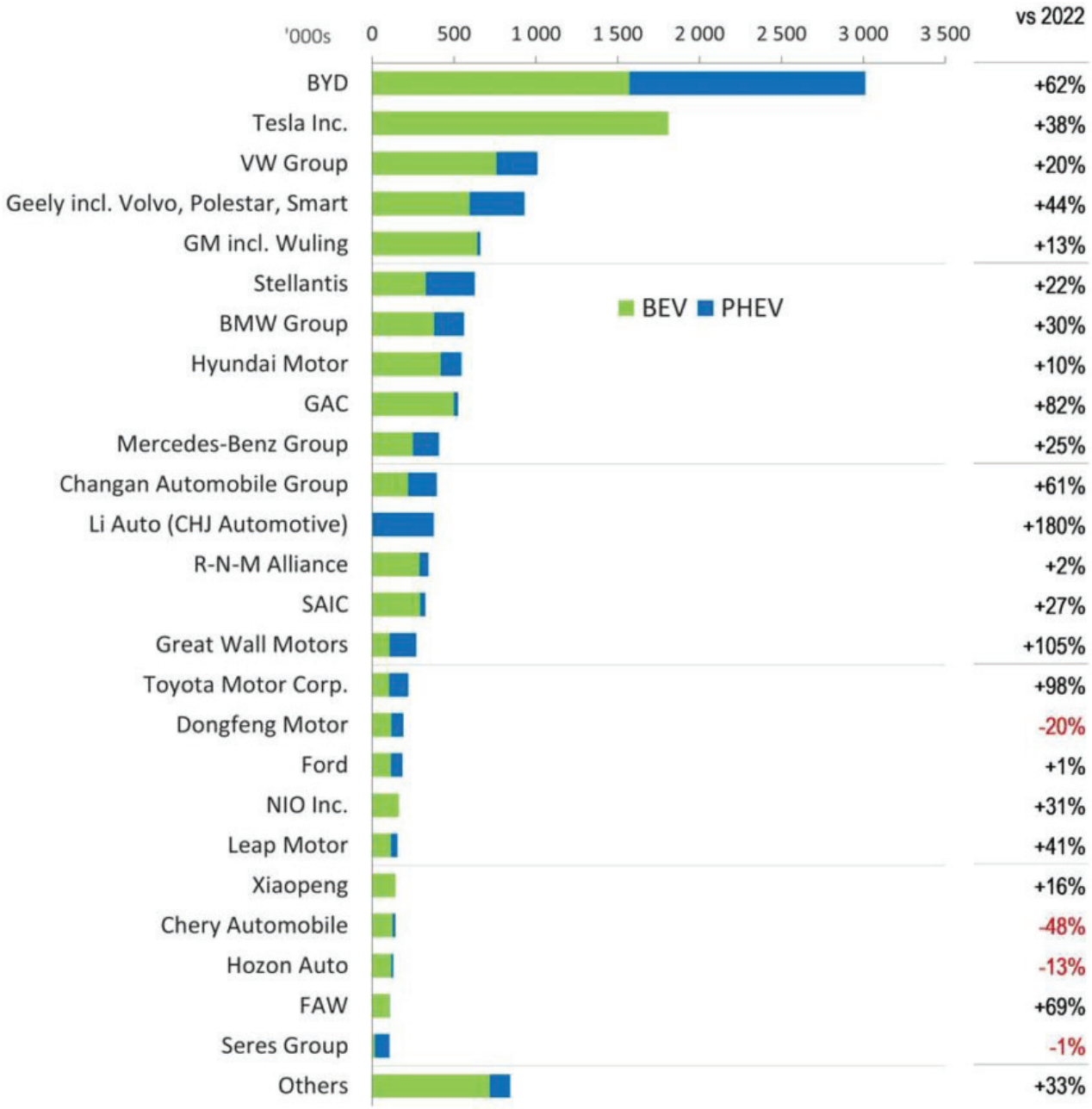
Top auto alliances that sell plugin Vehicles January - December 2023



This table shows BEV sales of the top five manufacturers in the world by number of units during the year 2023. Source: www.ev-volumes.com

Global EV sales by OEM / OEM GROUP FOR 2023

EVVOLUMES.COM



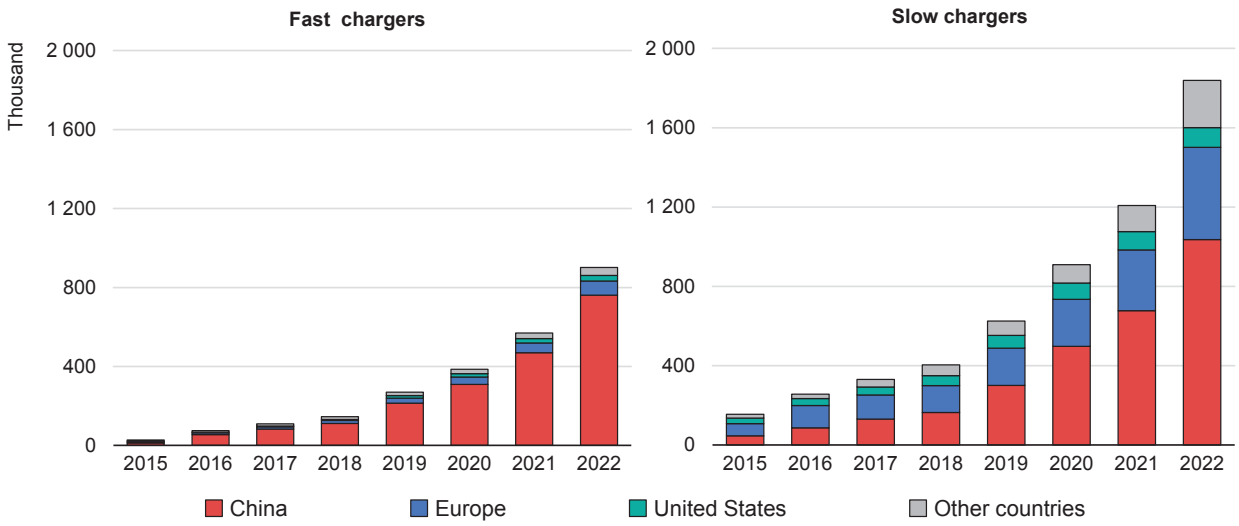
This table shows BEV+PHEV sales of different car manufacturers in the world in thousands of units during the year 2023. The right column represents the percentage change in sales compared with 2022. Source: www.ev-volumes.com

1.6 Charging Infrastructure for EVs

Widespread deployment of EV charging infrastructure is critical to the adoption of EVs, especially in dense urban areas where access to home charging is more complicated, although the latter currently meets most of the charging demand. According to IEA (International Energy Agency) data, at the end of 2022, there were around 2.7 million public charging stations worldwide - around 900,000 of which were installed during 2022.

China, with about a million standard charging stations (22kW or less), is a global leader, followed by Europe with 460,000 stations. Concerning fast charging stations, the picture is similar; when at the end of 2022, there were 760,000 fast charging stations in China compared to 70,000 in Europe and 28,000 in the USA.

Installed publicly accessible light-duty vehicle charging points by power rating and region, 2015-2022

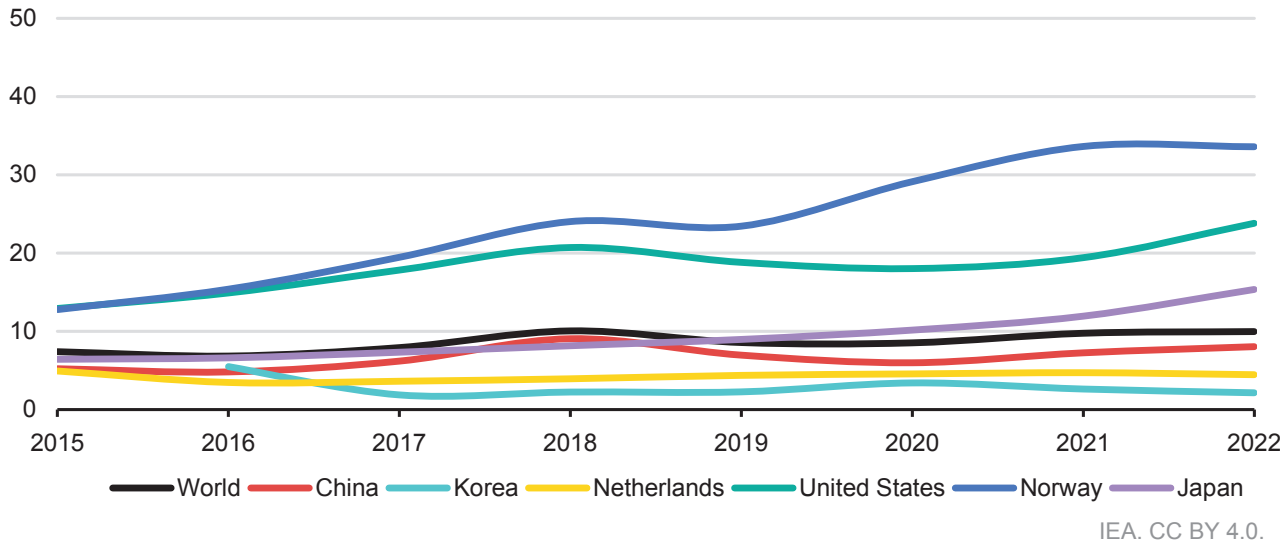


Note: Values shown represent number of charging points.
Source: IEA analysis based on country submissions.

These graphs show the number of charging stations that exist in different regions of the world between the years 2015-2022 by type of station (fast stations in the left graph, regular stations in the right graph). Source: IEA

Different regulatory initiatives in various countries have been formulated to speed up the deployment of charging infrastructures - for example, the AFIR (Alternative Fuels Infrastructure Regulation) agreement in Europe or the NEVI (National Electric Vehicle Infrastructure Formula Program) in the USA, but as it can be seen in the following graph, the accelerated growth in the purchase of EVs means that the charging infrastructures, in most countries of the world, are lagging in relation to the number of vehicles that they are supposed to cater for.

Electric light-duty vehicle per public charging point, 2010-2022



Note: Charging points include only publicly available chargers, both fast and slow.
Source: IEA analysis based on country submissions.

This graph shows the number of EVs (light vehicles) in relation to the number of charging stations in different countries in the world between the years 2015-2022. In most countries shown in the graph (except for Korea and the Netherlands), the amount of EVs per charging station is increasing over time, which means The current situation indicates that charging infrastructure is lagging behind the growth in electric vehicle numbers. Source: IEA

1.7 Electric Vehicles in China

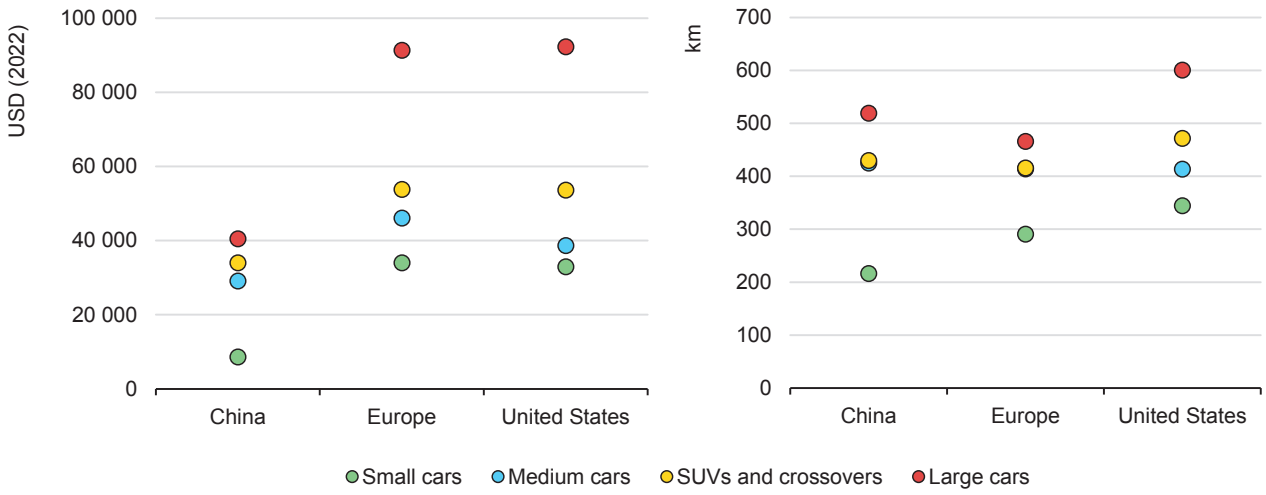
China constitutes the largest EV market in the world, with 8.4 million units, in 2023. China is also the largest EV producer - 65% of global EV sales come from China. About 900,000 EVs were exported from China during the year 2023, and the major exporters were Tesla, SAIC (MG, Maxus), Geely (Volvo, Polestar, Lynk, Smart), BYD, and Renault (Dacia).

According to data from the China Passenger Car Association (CPCA), about 9.5 million of the 30 million new vehicles that hit the roads in 2023 were "New Energy Vehicles" (NEVs), mainly electric and plug-in vehicles. This is about 39% YOY growth, bringing the total number of new energy vehicles in China to 20.41 million at the end of 2023, of which 15.52 million were pure electric vehicles (BEVs).

China VS. The World

The huge increase in EV sales in China compared to other countries is explained by regulatory support, but at the end of the day, this is mainly reflected in EV prices, and those in China are significantly cheaper compared to the rest of the world. In 2022, the average price (sales-weighted average price) of a small EV was less than $10,000 - this compared to Europe and the USA, where the corresponding price was more than $30,000.

Sales-weighted average retail price (left) and driving range (right) of BEV passenger cars in selected countries, by size, in 2022



Notes: BEV = battery electric vehicle; SUV = sports utility vehicle. 'Europe' is based on data only from France, Germany and the United Kingdom. Retail prices collected in 2022-2023, before subsidy.

Source: IEA analysis based on EV Volumes.

These two graphs show the average price (left graph, in US$) and driving range (right graph, in Km) of EVs in different markets worldwide according to segments. Source: IEA

The best-selling models in China a year ago were the Wulling Mini BEV, priced at less than $6,500, and the BYD Dolphin, priced at less than $16,000. These two models alone accounted for about 15% of electric passenger car sales in China in 2022. In contrast, the cheapest electric models that year in France, the UK, and Germany were the Fiat 500e, Peugeot e-208, and Renault Zoe, all priced at more than $35,000. Almost no small EVs are offered in the US, mainly the Chevrolet Bolt and Mini Cooper BEV, whose prices are around $30,000. The best-selling model in both Europe and the US, was the Tesla Model Y, at a cost of about $50,000 in the US and $65,000 in Europe.

The Chinese manufacturers have concentrated on developing small and cheap models and thanks to the intense competition in the local market, have become more efficient and reduced costs over the years. Moreover, vertical integration in the supply chains, from mineral processing to batteries to the production of EVs, as well as cheap labor, helped them offer cheap models and make EVs accessible to the customers. The car manufacturers in Europe and the USA, on the other hand, like Tesla, for example, concentrated mainly on the development of large and luxury models.

1.8 Electric Vehicles in Europe

General

The auto industry is the jewel in the crown of the European economy and for many years has contributed to its growth. According to data from the McKinsey consulting firm, a network of approximately 17,300 companies, including car manufacturers, OEM manufacturers, and suppliers of all levels, constitutes approximately 7% of Europe's GDP and directly or indirectly employs approximately 14 million people.

However, over the past few years, the industry has encountered many challenges, chief among them the transition to electric propulsion, which allowed the penetration of new competitors into the European market, led by the Chinese auto industry. In 2022, China overtook Germany in vehicle exports with about 3 million units compared to 2.6 million of the traditional auto superpower. These changes add to inflation and soaring energy costs, which also challenge the European automotive industry.

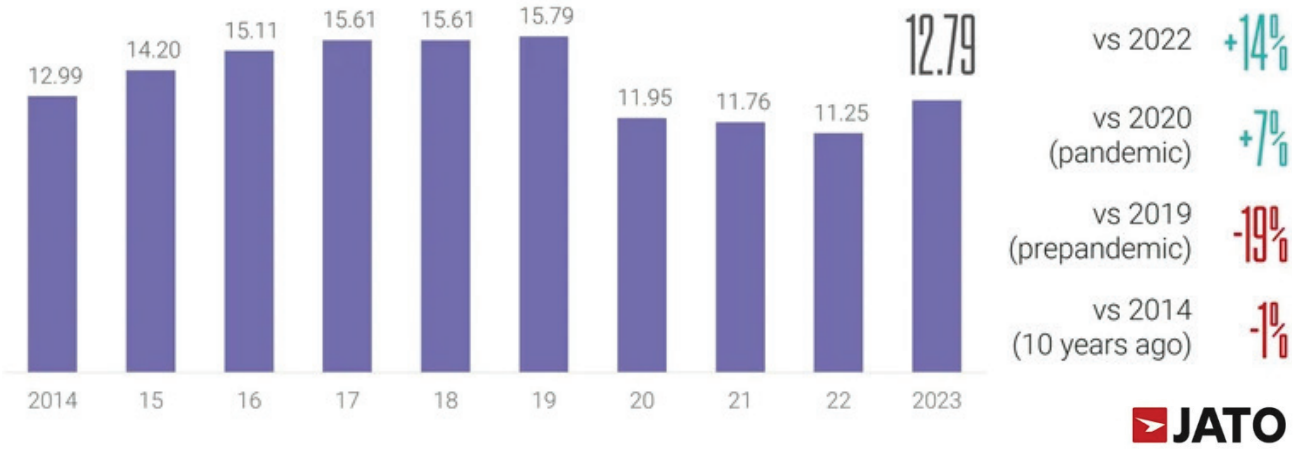
In recent years, various industries in Europe have undergone a significant change that did not favor the local industry; for example, according to the data of the research company McKinsey, European smartphone manufacturers lost 90% of their market share in just six years, and a similar process went over the European camera industry. In the automotive industry, new players specializing in EV production hold a market share of 51% of the global BEV market. In order to deal with the changes in the market, the European automotive industry will have to adapt to the new situation and recently the various car manufacturers announced the launch of no less than 150 new electric models by 2030.

The transition to electric drive also brings along a shift in emphasis from hardware to software, not only in the drive unit but also in everything related to safety and driver assistance systems and connectivity. This change turns the semiconductor and battery industries into control points in the industry, something that did not exist before and requires new capabilities. A modern car, for example, can contain up to 150 different control units in a distributed software architecture - this is a significantly larger amount than it was a few years ago.

EVs Fuel the Increase in Car Sales

The European car market recovered from the COVID crisis during the year 2023 and recorded the largest number of deliveries since the outbreak of the epidemic, with approximately 12.8 million units delivered, an increase of 14% compared to last year.

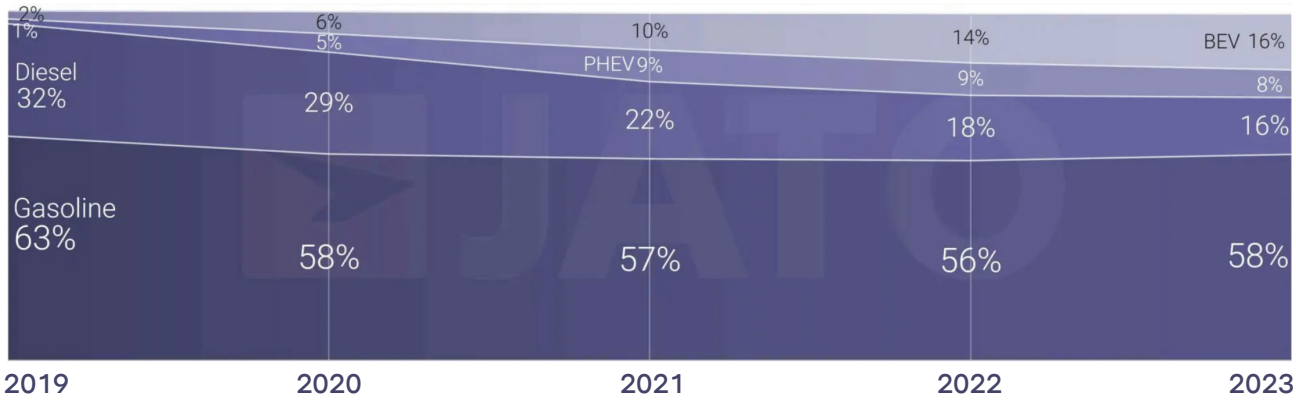
New passenger cars registrations in Europe-28 (million units) 2014-2023



This graph shows passenger car licensing data in Europe from 2014-2023 in millions of units. The right column represents the percentage of change between the year 2023 and previous years. Source: JATO DYNAMICS

A significant part of the increase in sales in Europe during 2023 was driven by EVs that reached a market share of 15.7% with just over two million units, according to JATO Dynamics data. These data strengthened Europe's position as the second-largest EV market in the world after China (about 5 million units) and before North America (1.07 million units). Also, there is a significant change in the sales mix in terms of the type of propulsion and fuel, where EV sales are almost equal to diesel vehicle sales, with a market share of 16% for each of them. In this context, it should be noted that the best-selling model in Europe during the year 2023, as well as in the entire world, was the Tesla Model Y, with 251,504 units, representing an 84% increase in sales compared to the year before it. However, this model is the only electric one in the list of the ten best-selling models on the continent.

New passenger cars registrations mix by fuel-type Europe-28 (million units) 2019-2023



This graph shows the sales mix of new cars in Europe by drive type (ICE, BEV, or PHEV) and fuel (diesel or petrol) between 2019-2023. It can be seen that the share of electric cars is increasing while sales of diesel cars are decreasing, and sales of gasoline cars remain stable. Source: JATO DYNAMICS

JATO Dynamics published another interesting figure regarding EV sales. According to this figure, the sale of EVs to businesses and fleets grew by 51% during 2023 compared to a growth of only 4% in sales to private customers. At the end of the day, JATO people claim that only 39% of EV sales in Europe are to private customers, a decrease of 9% from 2022.

ACEA (European Auto Manufacturers Association) data shows that EV sales grew in 2023 by approximately 28%, although in December, they decreased by approximately 25% compared to December last year (mainly due to sales data in Germany where EV sales were cut in December by about 50% due to the advance of the EV subsidy cancelation). Some of the manufacturers, including the VW Group, Mercedes, and Tesla, announced that they were absorbing the cancellation of the subsidy, but this was not enough to stop the drop in demand.

According to forecasts by leading analysts, in 2024, the trend of slowing demand will continue due to the increase in the cost of financing, slow economic growth in some countries, and a decrease in demand for EVs. According to some forecasts, sales growth in Europe will be only about 5% in 2024.

The Penetration of Chinese Brands and Tesla

Chinese brands have greatly influenced and continue to influence the European car market. During 2022, 23 Chinese car brands operating in Europe were joined by seven more. Together, these recorded approximately 322,000 deliveries, an increase of 79% compared to 2022. However, the Chinese brands' market share out of total deliveries still reaches only 2.6% (1.7% in 2022).

Only eight Chinese brands registered over a thousand deliveries in Europe, with the MG brand responsible for 72% of the total deliveries of all Chinese brands. It has more than doubled its deliveries compared to 2022 and holds a market share of 1.81% in Europe.

According to JATO Dynamics data, MG's largest market is the UK (35% of sales), but it also recorded tremendous growth in other markets in the past year, such as France (+165%), Italy (+311%), and Spain (+321%). Its MG4 model was the fourth best-selling EV in Europe in 2023.

A growing trend is also evident in Tesla's European sales, which in 2023 registered approximately 362 thousand deliveries in Europe and captured a market share of 2.83% - a record figure for it and an increase of 56% compared to last year.

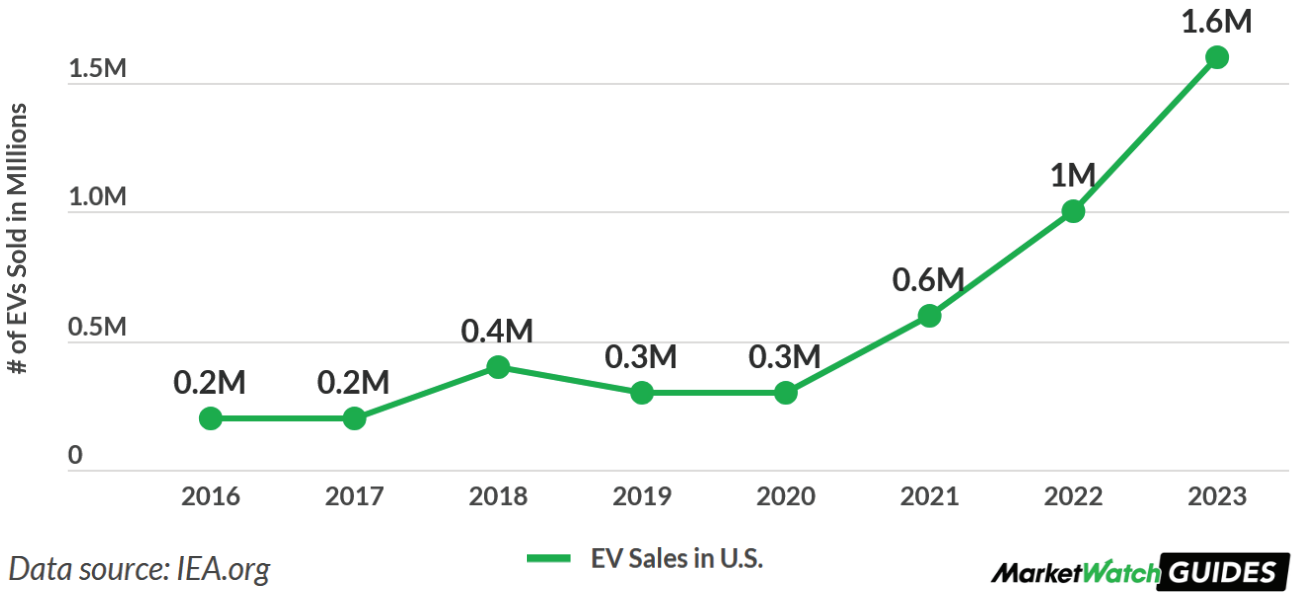
Leading EV Models

As mentioned, the best-selling EV in Europe during 2023 was the Tesla Model Y, with approximately 252,000 units sold. In second place is the Tesla Model 3, with 100,883 units, followed by VW ID.4 (85,088), MG4 (72,212), Skoda Enyaq (66,247), Fiat/Abarth e500 (64,244), VW ID.3 (63,460), Dacia Spring (59,186), Volvo XC40 (50,976), and BMW i4 (48,958).

1.9 Electric Vehicles in the US

EV deliveries in the US increased by 48% during 2023 to 1.617 million units (BEV+PHEV). This figure indicates only a limited impact of the IRA law, at least at this stage.

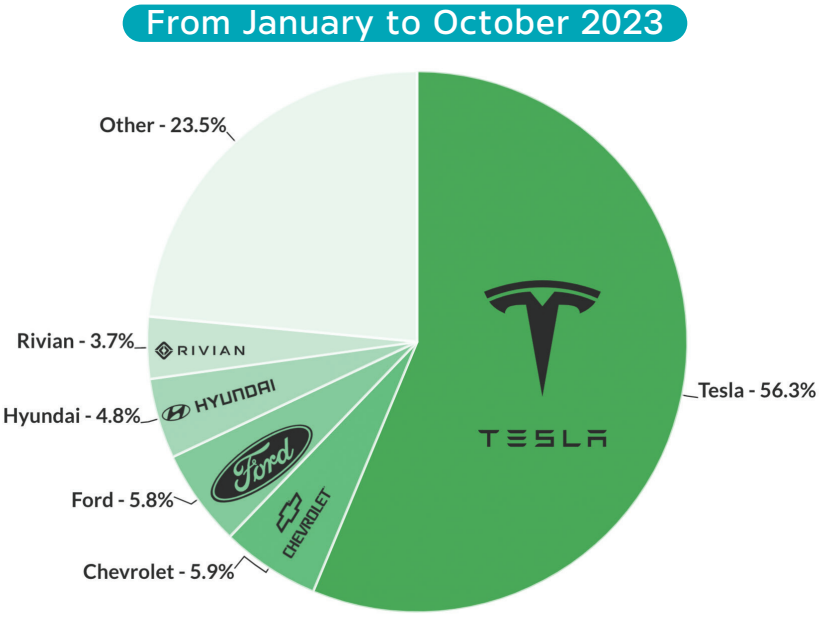
U.S. electric car sales 2016-2023



This graph shows EV sales in the US in millions of units between 2016-2023. Source: www.marketwatch.com

Similar to many other markets, Tesla's dominance stands out in the American market, whose sales make up more than half of the market.

U.S. EV market share



This graph shows the market shares of leading manufacturers in the US electric vehicle market between January and October 2023. Source: www.marketwatch.com

US Consumers enjoy the tax benefits provided as part of the Clean Vehicle Tax Credits and extended as part of the Inflation Reduction Act in 2022. The incentive program of the US government is spread out until 2032 and includes various limits on the price of the vehicle, its weight, where it is manufactured, and the annual income of the household that buys it.

1.10 Innovative and Alternative Technologies for EVs

Most pure electric vehicles (BEVs) today are based on lithium-ion batteries or similar. These have proven to be efficient and reliable, but at the same time, they are expensive to produce and based on critical raw materials that are in short supply. Alongside these batteries, several alternative and new technologies may change the way an EV is used; below is a brief overview of some of them.

Fuel-Cell Technology

Auto manufacturers such as Mercedes, Toyota, Hyundai, and others have developed fuel cell technology to drive electric vehicles. In contrast to lithium-ion, lithium-polymer, or nickel metal hydride batteries, which do not need fuel, in an electric motor powered by Fuel-Cell fuel cells, there is an electrochemical cell that converts chemical energy into an electric current. The fuel cell includes an electrolyte and a catalyst; inside it, a chemical reaction occurs between hydrogen and oxygen. The oxygen comes from the air, while the hydrogen comes from a hydrogen tank, similar to a fuel tank. In the electricity production process, there is no combustion and no emission of pollutants, only water.

FCEV (Fuel Cell Electric Vehicle) electric vehicles have proven themselves to be efficient and safe, with the main limitation of their use being the deployment of a liquid hydrogen refueling network. Such a network is part of plans to deploy charging and refueling networks for alternative fuels in both the US and Europe, but at this stage, the existence of hydrogen refueling stations (even in Israel there are few individual stations) is still limited.

Solid State Batteries

Lithium-ion batteries contain liquids (or gel) that damage the stability of the battery and take time to charge and discharge. To deal with this situation, batteries are currently being developed, which are based on solid materials that will replace the liquid or gel, and the electricity production process will take place inside them. The benefits of this change are efficiency over a much larger temperature range, faster loading and unloading, and a higher level of stability. Other advantages of solid-state batteries are high energy density, avoiding the use of toxic substances present in organic electrolytes, reduced risk of ignition, high voltage, and long cycle life.

Battery Swapping

Shai Agassi and Renault's Better Place project operated a fleet of electric vehicles that, instead of charging their batteries, set up stations to replace the empty battery with a full one. In other words, the vehicle battery was offered as a type of service for a monthly fee and not as part of the product, thereby reducing the purchase cost of an EV in which the battery is a central component. This venture failed for various reasons, but today, manufacturers and operators are again considering the option of replacing the battery instead of charging it.

But alongside the benefits of battery swapping, this mechanism also carries challenges. First, having more than one battery per vehicle is necessary to ensure availability at the exchange stations. Some companies base their activity on an average of two batteries per vehicle, a factor that may affect the demand for critical minerals to create batteries if the method is widely adopted. In addition, the cost of setting up battery swapping stations is high and ranges from $390,000 to $1.4 million - much more than an EV charging station.

Replacing batteries also requires a degree of standardization that will allow replacement between the different models of different manufacturers. Because of this, despite the interest of various bodies, the success of battery-swapping technology depends mainly on local factors, local regulations, and the market structure for EVs.

China, for example, is the world leader in this field, with over 2,000 battery swapping stations at the end of 2022 (an increase of 50% compared to 2021), of which 1,300 are from the manufacturer NIO, which produces models that enable battery replacement. The company has set itself a goal of operating 4,000 exchange stations in China by 2025. NIO exchange stations have also been established in Norway, Sweden, Germany, and the Netherlands.

The Chinese swapping station operator Aulton, for example, supports 30 models from 16 different manufacturers, in contrast to NIO's stations, which are only suitable for the company's models. There are also battery exchange stations in the US, for example, by Ample, which operates about 12 such stations in the San Francisco Bay area, mainly for Uber vehicles.

EV Wireless Charging

For several years now, companies worldwide, including Israeli Electreon, have been developing systems for wireless charging of electric vehicles. In addition to the possibility of wireless charging at a charging station, a promising technology that is in advanced trial stages in various parts of the world is wireless charging using a system located under the road, which means that the vehicle is charged while driving and does not require a stop to charge at all. In Europe and the USA, roads have been built in several places that include a wireless charging system and experiments are being carried out on them in advanced stages.

2. Electric Vehicle Regulation and Legislation

The differences between the various EV markets in the world are largely due to different levels of government support, and the three largest markets, China, Europe, and North America, grew mainly from regulatory initiatives designed to encourage demand for EVs by providing purchase benefits to customers and/or incentives for EV manufacturers. In these markets, which have reached a certain degree of maturity with increasing EV market shares, the benefit and incentive programs are on the decline; some have ended while others offer reduced, and the focus is shifting from concentrating on increasing the demand and supply of electric passenger vehicles to other areas such as electric transport and commercial vehicles or deployment charging infrastructure.

At the same time, many governments and countries are setting more ambitious goals than before for the adoption of EVs and with their plans to address other parts of the supply chain, for example, by supporting the production of batteries for EVs and building a supply chain for essential materials such as nickel, cobalt and lithium. In general, according to the IEA data, the expenditure of countries and governments for the promotion of EVs during 2022 amounted to about 400 billion dollars, and over 90% of the sales of electric passenger vehicles in the world were supported by government policies designed to encourage the use of EVs.

Two notable recent examples are the American Inflation Reduction Act (IRA) and the tightening of air pollution regulations in the EU, which have had and will continue to have a major impact on the road to pollution-free transportation in Europe and the US (see more detail on this topic below).

A central part of the policies, laws, and regulations regarding EVs are the goals set by the countries for their adoption, such as banning the marketing and sale of ICE vehicles, reaching 100% non-polluting vehicles, etc. Most of these goals are set for short or medium periods, and concerning electric passenger vehicles, over 50% of global sales today are related to goals set until 2035 or before.

2.1 Policy and Regulation Designed to Encourage the Adoption of EVs

The incentives provided by states and governments to encourage the use of EVs can be sorted into several types: regulatory incentives, economic incentives, incentives for infrastructure and national projects, incentives to increase awareness, and incentives for research and development. In addition, a distinction can be made between direct incentives, such as a discount on car prices, and indirect incentives, such as a discount on travel fees or free parking for EVs.

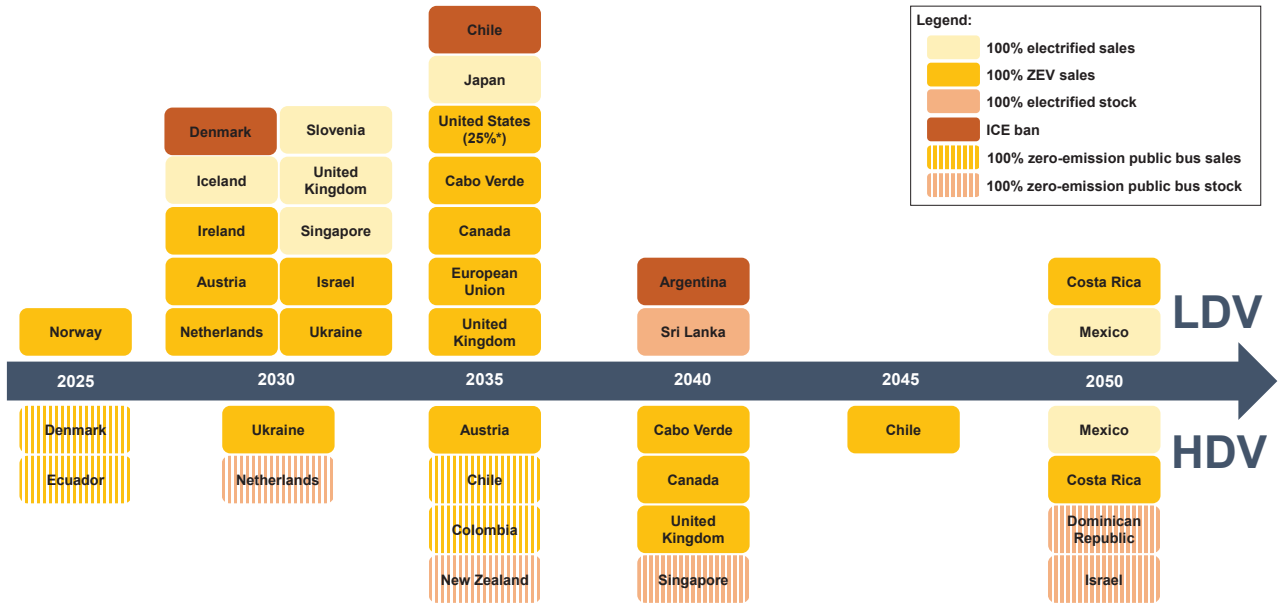
Regulatory Incentives

Regulatory incentives are those based on government goals such as goals for ZE (Zero-Emission) vehicle sales volume, mandatory goals for carbon dioxide emissions from new vehicles, and goals for the deployment of charging infrastructure.

In the EU, for example, the European Green Deal program was adopted for the transition to a green and sustainable economy, which was anchored in the climate law in the European Parliament in 2021 and includes reaching a state of zero emissions by 2050. Reaching the goal should happen thanks to a gradual reduction of the average emissions from vehicles - in the EU, manufacturers are required to reach a decreasing CO2 emission average, while a manufacturer that does not reach the targets is highly fined. This requirement causes the range of models offered on the market to pollute less and less when manufacturers are motivated to produce electric models or models with low emissions to reach the required average emissions and not be fined. "Clean" models, such as electric ones, are also overweighted in calculating the average CO2 emissions (Super Credits).

At the same time, countries also set goals for banning the sale of vehicles with an internal combustion engine (ICE) in the EU, for example, until 2035, as well as for the deployment of infrastructure as part of the European Alternative Fuels Infrastructure (AFID).

Global zero-emission vehicle mandates and internal combustion engine bans



* Refers to the share of passenger light-duty vehicle sales accounted for by Advanced Clean Cars II (ACC II) signatories or proposed signatories.

Notes: ICE = internal combustion engine; ZEV = zero-emission vehicle; "electrified" includes hybrid electric vehicles (HEVs) in addition to electric vehicles (EVs) and fuel cell electric vehicles. European Union countries with LDV targets earlier than the EU 2035 target are included separately. Only countries that have legislated or proposed an ICE ban or 100% electrification target have been included. The proposed EU heavy-duty vehicle CO_2 standards include a 100% emission reduction target only for urban buses, and are thus not included in the chart. The Global Memorandum of Understanding (MoU) on Zero-Emission Medium- and Heavy-Duty Vehicles is a pledge and is therefore also not included.

Source: IEA analysis based on announced policies; see the Global EV Policy Explorer for further details.

The table shows the goals of reaching ZE emission-free transportation and banning the sale of ICE vehicles in different countries worldwide by year, for passenger vehicles (LDV-Light Duty Vehicles) and heavy commercial vehicles (HDV-Heavy Duty Vehicles). The different colors of the boxes symbolize different types of targets (for example, in light yellow, the sale of electric vehicles only, or in brown, which symbolizes a ban on the sale of ICE vehicles). Source: IEA

Economic Incentives for EV Purchasing

These incentives are intended to make EVs accessible to customers and make their purchase cheaper and more profitable. Among the economic incentives for the purchase of an EV can be a reduced purchase tax, exemption or discount in licensing, exemption from VAT or import tax, government grants for the purchase of an EV, and special grants for those with low incomes.

In Israel, for example, EV buyers enjoy a reduced purchase tax (the scope of which changes over the years). In countries such as Belgium, Greece, Hungary, the Netherlands, and Portugal, a full exemption from registration tax is granted when purchasing an EV, and in Norway, an exemption from VAT is granted (up to a ceiling price of $52,000).

Economic Incentives to EV Owners

Even after the purchase, the ownership and maintenance of an EV can be made more profitable through an exemption or discount on the annual traffic tax (Annual Circulation Tax) as well as a tax reduction for EV owners or tax benefits for installing a home charging station.

An exemption or discount in the annual traffic tax is given, for example, to EV owners in Austria, Belgium, the UK, the Netherlands, and other countries. Belgium, Portugal, and Denmark grant tax reductions to companies that use EVs, and in Sweden, a tax discount is given to those who install a charging point in their home. In Israel, also, various benefits are provided, such as a reduced annual license fee and a reduced value of use for an EV compared to a vehicle with an internal combustion engine.

"Soft" Economic Benefits

Soft benefits are those that do not involve a direct transfer of funds, such as free city parking or priority in obtaining a parking ticket, free public charging stations, a permit to use bus lanes, access to ZE zones, etc. Free or discounted parking is given to non-polluting vehicles in several cities in the US, such as Nashville, Tennessee, Miami Beach, Florida, and Cincinnati, Ohio.

Additional Incentives

Among the other ways to encourage the use of EVs are incentives to expand the charging network, the purchase of EVs for the government/municipal fleet, electric public transportation, collaborative car ventures, incentives to increase public awareness, and financial incentives for research.

In the USA, for example, already at the end of 2021, a presidential decree was signed according to which the entire government vehicle fleet will be obliged to switch to ZE vehicles by 2035 and all light vehicle fleets will be zero-emission by 2027. In Israel, in accordance with the decision of the Accountant General, the Government Vehicle Administration is obliged to purchase or lease EVs only for the government fleet from 2025 onwards.

2.1.1. Indirect Policy for Promoting EVs

Promoting EVs can also be done in indirect ways, not through tax incentives or subsidies, but through making the EV more useful. The practice of demarcating and marking Low Emission Zones (LEZ), for example, is becoming more and more common over the past few years, with over 300 cities in Europe already doing so and London and Milan being prominent examples of this.

London introduced an Ultra-Low Emission Zone in 2021 and continues to expand the use of this tool. Only vehicles with the lowest level of emissions can move in such an area when a vehicle that does not meet the emission standard set by the municipality has to pay a fee for entering the area that can reach up to 12.5 GBP. A similar move was made in Milan when it banned the entry of polluting vehicles (according to their compliance with the EU EURO emission regulations) from entering the city on weekdays or being subject to a fine. The municipality of Milan has defined levels of pollution over time, and until 2030, only the cleanest vehicles will be able to move on its territory.

In France, the government requires the adoption of the LEZ (Low Emission Zones) practice in all municipalities with more than 150,000 inhabitants as of 2024. Spain requires LEZ zones in all cities with more than 50,000 inhabitants (more than 70% of the cities in Spain), and in the Netherlands, such zones exist in Amsterdam and Utrecht, also here, with the goal of achieving emission-free transportation in these cities by 2030.

Low-emission or Zero-emission zones give an EV that does not emit pollutants an advantage and thus make it more useful since it can also be driven within them. It is more profitable since it is not fined and does not have to pay to enter the zone.

Since January 2019, the "Clean Air Zone" program has been operating in Haifa, under which the entry of polluting commercial vehicles (EURO 4 standard and below) into residential areas of the city is prohibited. Initially, the regulation referred to vehicles with a diesel engine weighing over 3.5 tons, but it was later extended to light commercial vehicles as well. The reduced emissions zone in Haifa includes all residential areas in the city, but at this stage, entry to the Carmel tunnels, the bay factory areas, and the port from the east is permitted. A polluting vehicle caught driving in the clean air zone is fined.

A similar initiative was taken in Jerusalem when in August 2021 a municipal by-law came into effect prohibiting the entry of polluting vehicles into the city limits with the exception of Begin Road and Highway 1. A polluting vehicle is defined as a commercial vehicle with a diesel engine manufactured until 2005 without a particulate filter (EURO 4 standard).

2.1.2 Decreasing Levels of Support, Subsidies and Incentives

The initial stages in the development of the EV market were characterized by subsidies and tax incentives, but as these markets develop and mature, government support on the demand side changes.

In Norway, for example, the country with the highest EV penetration rate, an exemption from VAT was initially granted to EVs. Still, in 2023, the government decided to require

VAT on electric vehicles whose price is more than 500,000 kroner ($52,000) and reduce additional tax incentives.

In the UK, a grant was given for the purchase of an EV, the value of which decreased between 2016 and 2021 until the end of EV subsidies in 2022 after the target of a 20% market share was reached. Subsidies still exist for taxis, commercial vehicles, and electric trucks.

In Sweden, an incentive was given for the purchase of an EV that reached a peak of 70,000 kroner ($7,000) in 2022, but this benefit expired in November of that year.

France took a slightly different approach, where there was also a reduction in incentives (from $7,400 in 2021 to $5,300 in 2023), but unlike other countries, the benefit also depends on household income, with low-income households receiving a higher incentive.

In many other countries, including Israel, a gradual decrease in financial incentives and tax benefits for EVs can be seen in recent years, the most prominent example perhaps being Germany, which announced the end of support for the purchase of EVs as early as 2024.

2.1.3 Policy for Supporting the Supply Chain

Contrary to the first stages of EV adoption, where most of the benefits and tax incentives concerned encouraging demand, quite a few policy statements announced over the past few years refer to the development and production of EVs, batteries, and components for EVs as well as the deployment of charging infrastructures. A decade ago, laws and regulations were enacted in China (the world's largest EV market) to encourage manufacturers of vehicles and components for EVs and to support local production. Unlike many other countries, in China, it is also possible to identify involvement at the regional and municipal level, and some provinces have even set their own goals, such as Chongqing province, which has set itself the goal of producing about 10% of the new energy vehicles (NEV) in China by 2025, or the Jilin province which aims to reach a production capacity of about one million vehicles per year by 2025. Other countries have recently published plans to encourage local production, such as India, Indonesia, Ethiopia, and Morocco.

The last few years have greatly emphasized the dependence on critical minerals in the transition to electric propulsion. Countries and governments are looking for ways to strengthen their position in the supply chain while emphasizing local production, ethics, and sustainability in the new supply chains.

2.1.4 Support for Charging Infrastructure Deployment

In markets that have reached maturity, the benefits, incentives, and support intended for the penetration and increase of the market share of EVs are now increasingly directed to support the deployment of charging infrastructures. In many countries, the EV market share is already very significant, and at the same time, only a wide deployment of charging infrastructures will allow convenient and simple use of EVs and help reach the emission targets aimed by governments and countries.

In the UK, for example, the government announced in June 2022 its intention to reduce

the subsidy program for EVs and concentrate on charging. It has allocated around £1.6 billion ($2.1 billion) to support an EV charging strategy with the construction of 300,000 public charging stations by 2030.

Similarly, the Chinese government also identified the charging infrastructure as a burning issue and introduced a subsidy program to quickly deploy a wide charging network. In the city of Shenzhen, for example, the goal is to reach 43,000 fast charging stations and 790,000 slow charging stations by 2025. Germany, which canceled subsidies for EVs, increased the budget for the establishment of charging stations as part of its Climate Action, and similar trends can also be seen in Switzerland, Finland, Denmark, Poland, and other countries.

The US has allocated over 1.5 billion dollars to build a network of charging stations as part of the NEVI program (National Electric Vehicle Infrastructure Formula Program). The goal is to build such a network along the roads of North America so that eventually, about 500,000 charging stations will be installed, with the distance between each other not exceeding 80 Km by the year 2030. The support for charging infrastructure also exists within the framework of the IRA law, according to which the installation of a charging station can result in a tax credit of up to $100,000 for a public charging station or $1,000 for a private customer purchasing a home charging point.

In the EU, the AFIR (Alternative Fuel Infrastructure Regulation) replaced the 2014 directive, and as of March 2023, the European Council and the European Parliament have agreed to implement it, including requirements regarding the coverage of the TEN-T (Trans-European Network Transport) road network, which will be invested in at about 15 billion euros.

2.1.5 Setting ZE Goals by OEMs

Similarly to governments and countries, car manufacturers have also declared and continue to declare in recent years the goals they set for the production and sale of EVs and reducing the average emissions in their fleet. Some of the manufacturers formulate the goals in terms of sales, sales shares, and even turning the entire fleet electric.

These goals are, in many cases, ahead of the regulatory requirements and the governmental ambitions. Although these goals may not be legally binding, they can certainly be seen as a statement and a manifestation of the auto industry's intentions toward a full transition to electric propulsion.

The most ambitious goals are those of European car companies, and this is following the EU's intentions to reach ZE by 2035. The car companies back up their statements with investment commitments, when 7 of the largest companies in the world, which are responsible for selling about half of the passenger vehicles, have spent over 55 billion dollars on new car technologies, including the construction of factories since 2019. According to the IEA data, between the years 2019-2022, the R&D expenses and the CAPEX (Absolute Capital Expenditures) expenses of the VW group reached about 16 billion dollars, Ford 10 billion, Toyota about 8 billion, GM about 6 billion, Stellantis 5.5 billion and Mercedes almost five billion dollars.

Here are some examples of the goals OEMs have set for themselves:

Ford	600,000 BEVs by 2026
GM	Production of EVs only by 2033
Toyota	Introducing ten new EV models and selling 1.5 million BEVs by 2026
Nissan	44% of sales BEVs by 2026, 55% by 2030
Mitsubishi	50% EV sales by 2030 and 100% by 2035
BMW	30% of sales EVs by 2025 and 50% by 2030
Honda	30 EV models by 2030 with production of about two million units per year
Porsche	80% of sales EVs by 2030
Mercedes	50% of sales EVs by 2030

Other manufacturers have gone one step further, such as the Chinese BYD, which since March 2022 has been producing EVs only.

2.2 Legislation in the USA

The American IRA (Inflation Reduction Act) passed in August 2022 includes a variety of tax benefits and financing programs to create a clean energy economy. Part of the law directly refers to the adoption of EVs with a dedicated budget taken from a total budget of 369 billion dollars for investment in climate change.

Along with incentives for the purchase of EVs, this law also includes reference to the supply side with tax incentives for the production of EVs as part of the Advanced Manufacturing Production Tax Credits. The US government provides subsidies for local production of batteries for EVs of up to $35 per kWh and an additional $10 per kWh in the assembly of vehicle modules. Assuming that the average cost for a battery is around $150 per kWh, these incentives can lead to a decrease of about a third in the total price of the battery.

Another relevant law is the Clean Vehicle Tax Credit, which came into force in 2023 and sets a series of conditions that entitle an EV to tax incentives. The law states that the final assembly of the vehicle must take place on US soil, that the vehicle must have a battery with a capacity of at least 7kWh or more, the total weight of the vehicle must be less than 6.35 tons, and the price of the vehicle to the consumer must be lower than $50,000 or $80,000 In the case of vans, recreational vehicles or vans, in order to be eligible for the tax relief of $7,500 (and an additional $7,500 if the vehicle meets certain conditions regarding the battery and other components in the vehicle), the household that purchases it needs an annual income below the threshold set by the US Internal Revenue Service.

A critical requirement related to encouraging local production and reducing dependence on external suppliers is the Critical Mineral Requirement, according to which at least 40% of the value of the critical minerals present in the vehicle battery (lithium, nickel, magnesium,

graphite, and cobalt) must come from the US or be processed or recycled in the USA or in countries that have a free trade agreement with the USA. The percentage required in 2023 was 40%, which is supposed to increase by 10% every year until the beginning of 2027. The importance that the USA gives to critical minerals and raw materials used in the EV industry is reflected in the fact that about half of the subsidy for purchasing an EV depends on it meeting the critical mineral requirements.

2.3 Legislation in the EU

In February 2023, the EU presented the Green Deal Industrial Plan, which includes four main elements to encourage the transition to emission-free propulsion: faster licensing and approval, financial support, increasing the level of manpower, and free trade. This plan also includes the Critical Raw Material Act, which aims to ensure the supply, mining, and recycling of critical materials to sustainable standards. The law set several goals related to the consumption of strategic raw materials - mining of about 10% of the annual consumption of materials, processing capacity of 40% of them, and recycling capacity of 15% of these materials by the year 2030, alongside the diversification of the sources from which these strategic raw materials come.

Faster approval and licensing for factories, including, of course, factories for the production of EV batteries, will be implemented through the Net Zero Industry Act, which is mainly a simpler and more transparent approval procedure. The financial part should make subsidies and loans available, compensate businesses for high energy costs, and help ensure liquidity. The program includes the retraining of workers who will be affected by the transition to clean energy and the establishment of industry training institutions. The part that refers to free trade focuses on strengthening supply chains in the EU by opening trade with new partners and attracting private capital. The Net Zero Industry Act ultimately aims to ensure that at least 40% of the EU's requirements for net zero technologies will be met by production capacity within Europe by 2030. These technologies expressly include technologies for battery production and energy storage, while concerning EV batteries, the ambition is to reach a self-supply of 90% of the demand in the EU by 2030.

2.4 Legislation in Other Countries

Attempts to encourage the local industry and ensure the supply chain can also be seen in other countries. In Australia, for example, the Australian Made Battery Plan was introduced, which allocates 100 million Australian dollars in grants to establish factories for the local production of batteries for EVs to ensure independence in the field of critical minerals.

Argentina aims to establish a battery industry that will create about 2,500 jobs by 2030 and is considering introducing a 5% quota of lithium for local production that will increase to about 20%. Japan aims to increase the production of batteries in its territory as part of the Green Growth Strategy. In 2022, it allocated about 2.5 billion dollars for the development of materials for magnets and batteries that will reduce dependence on materials such as lithium.

In Mexico, a body called Lithium for Mexico was established in 2022, which sees lithium as a strategic resource and has nationalized its supply chain in the country to achieve that by 2030, about 50% of the vehicles produced in the country will be emission-free. Russia has also set a goal of 10% emission-free electric vehicles by 2030 while leveraging the minerals found in its territory to develop an EV battery industry.

India, after in 2020-2021 imported lithium-ion cells worth about a billion dollars, mainly from China and Hong Kong, decided to reduce its dependence on imports and published the Battery Waste Management Rules, a new set of rules for recycling and refurbishing batteries for EVs, intending to reach 20% of recycled materials in EV batteries until 2030.

Other countries that have published strategy documents related to the supply chain and critical minerals include Brazil, Canada, Chile, Denmark, Colombia, Congo, Ecuador, Estonia, Finland, France, Italy, Korea, Norway, South Africa, Spain, Sweden, and the UK.

2.5 Legislation Regarding Batteries and Waste Batteries: New EU Regulations

In July 2023, the Parliament and the Council of the EU approved a new regulation that regulates the entire life cycle of batteries - from production to reuse and recycling at the end-of-life (End of Cycle), to ensure that batteries are safe, sustainable, and competitive, and to strengthen the sustainability rules for batteries and battery waste of all types and all uses, including for EVs.

The new regulations, (EU) 2023/1542, amending Directive 2008/98 EC, Regulation (EU) 2019/1020 and canceling Directive EC/2006/66, introduce changes in four key areas: sustainability and safety, supply chain management, labeling and information, and collection and recycling.

Sustainability and Safety

All EV batteries, LMT batteries, and industrial rechargeable batteries with a capacity of more than 2 kWh must have a "Clearly readable and un-erasable" carbon footprint statement and a label indicating, among other things, the levels of recycled cobalt, lead, lithium and nickel used to manufacture the battery. The regulation also limits the use of cadmium, mercury, and lead. Also, as a prerequisite, harmonization of the technical rules for calculating the carbon footprint will be established. The harmonization will apply to EVs starting in 2025, and compliance with the maximum carbon thresholds will apply from the entry into force of the designated law or from February 2027, whichever comes first.

Supply Chain Management

All operators except small and medium-sized companies recognized in the EU market are obliged to develop and implement due diligence that complies with international standards to deal with the risks arising from mining, processing, and trading the raw materials and secondary materials required for battery production. The due diligence will be approved by a third party that is approved to audit due diligence.

Labeling and Information

Each battery must have a ”Battery passport” with information on the model, the specific battery, and its use. All batteries will be required to include labels and QR codes detailing their capacity, performance, durability, and chemical composition. All batteries will need to be CE-marked to demonstrate compliance with the health, safety, and environmental protection standards applicable in the EU.

The commercial operators who bring the battery to the market will be obliged to ensure that the information in the battery passport is accurate, complete, and up-to-date. Upon transferring the battery for reuse or changing its status to waste batteries, the responsibility for fulfilling the information obligations will be transferred to the manufacturer that reuses it.

The labeling and information requirements will apply until 2026, and QR codes will not have to be implemented until 2027.

Collection and Recycling

All batteries must be collected by commercial operators free of charge regardless of the type, chemical composition, condition, brand, or origin of the waste batteries. In this way, the absolute ban on burying battery waste is maintained.

The regulations demand from the manufacturers an extended manufacturer’s warranty for the management of their batteries until the end of life. The duties will apply to all forms of supply, including distance selling. Battery manufacturers will take back free of charge and without obligation of the end user to purchase a new battery or will buy the battery from them, and will guarantee that every battery, regardless of its nature, condition, chemical composition, brand, or source, will be collected by the manufacturers in a collection system established by them.

The regulation establishes collection and recycling targets: collection targets have not yet been set for EV batteries, the recycling target for new EV batteries is from August 2031, 6% for lithium and nickel, 16% cobalt, and 85% lead. As of August 2036: 12% lithium, 15% nickel, 26% cobalt, and 85% for lead.

Binding Dates

The new regulation entered into force on August 17, 2023, and applies from February 18, 2024. The obligations of the commercial operators, except for due diligence and end-of-life management, will apply from August 18, 2024. The rules concerning the management of the battery’s end-of-life will apply from August 18, 2025.

2.5.1 Regulation in Israel Concerning EV Batteries

The EU regulations are expected to become the global standard and regulate battery sustainability, safety, and end-of-life management. In Israel, used batteries are considered hazardous waste according to the business licensing regulations. As of today, Israel does not have a plant for recycling non-lead batteries or lead accumulators, and the guidelines of the Ministry of Environmental Protection regarding waste removal state that it must be done by a licensed carrier for transporting hazardous waste. The battery waste would be sent to a treatment facility or a transit station, according to a list published by the Ministry of Environmental Protection, for export (subject to obtaining an export permit) or to the toxic waste site in Naot Hovav if the battery was in a hazardous materials incident or a fire.

The Ministry of Environmental Protection is conducting an RIA (Regulation Impact Assessment) survey on the vehicle manufacturer's warranty law, with an emphasis on EV batteries. This survey examines all possible aspects and mechanisms for implementing the new regulation in Israel.

2.5.2 The Position of the Israeli Vehicle Importers Association (I-Via) Concerning the New EU Directive

The new directive of the EU, approved in July 2023, regulates the life cycle of batteries from production to reuse and recycling at the end of their life. In addition, in the same month, was also published a draft regulation concerning circular economy requirements for vehicle design and end-of-life management. This directive does not contain instructions that regulate the design, production, and end of life of the batteries but refers to the vehicles as a whole, as well as their parts and components (except batteries) in a way that complements the European directive on batteries, to ensure reference to the overall environmental footprint of the vehicles. The draft also contains provisions designed to facilitate the removal of batteries from EVs to ensure that they are reused or recycled following the European directive on batteries.

The two directives, the one approved in July 2023 and the supplementary draft published in the same month and instituted at the time of writing these lines, have not yet been approved, cover in a complementary manner the treatment of all vehicle assemblies from production to end-of-life, including EV batteries.

The Israeli Vehicle Importers Association I-Via approached the Ministry of Environmental Protection with a request to adopt the European directive on batteries and regulate it in Israeli law. The I-Via's position, as a guideline in the field of regulation and not only in this case, is to adopt the original standards approved in Israel (European, Canadian, and Federal) as they are and to avoid burdening them with additional regulation that would constitute an import barrier - in this case, the European regulation and in accordance with the accepted practice in Israel to adopt an international standard. In addition, since this regulation is considered to be "Infant" and changes may be made from time to time, the regulator must ensure that the legislation is implemented in an architecture that will

follow the changes that will be made in the European standard in real-time, without the need for regulatory intervention in each change.

This request is consistent with the government's decision number 156 from 22.08.1999 - the adoption of European and American vehicle standards - according to which the government must act to compare the Israeli standards in full with EU or US standards.

In this case, the adoption of the European regulation, as in the other areas, prevents import barriers and allows the European car manufacturers to act in accordance with the manufacturer's warranty obligation imposed on them. The application of the European regulation already in the immediate time frame imposes a legal obligation on the European manufacturer to dispose of the batteries, while the regulation on the subject in Israel has not yet been formulated. It should be emphasized that already today, there are mechanisms for the collection and return of used vehicle batteries (also from countries outside the EU) to European manufacturers who reuse, repair, or use the batteries for other applications such as energy storage and vehicle charging as part of their economic model. As mentioned, any deviation from European standardization will cause import barriers, limit competitiveness in the market, and interfere with the proper conduct of the auto market.

3. Electric Vehicles in Israel

The Israeli EV market is a young market that has developed very quickly, mainly thanks to tax incentives that have made the purchase of an EV economically viable. In 2018, only two EV models were marketed in Israel - Renault Zoe and BMW i3, after the ending of the "Better Place" project that operated between 2013-2007. The number of EVs at that time in Israel was very small, about 700 units, and all over the country, there were several hundred private and semi-public charging stations.

From 2019, there was an increase in the number of EVs (BEV+PHEV): from 2% of total deliveries in 2019 to 3% in 2020, 7% in 2021, 15.3% in 2022 and up to 20.8% at the end of 2023. At the same time, the percentage of fully electrified vehicles (BEV) out of all electric vehicle sales (including PHEV), has been growing steadily.

EV Registrations in Israel 2019-2023			
Year	PHEV	BEV	BEV%
2019	4880	613	13%
2020	5555	1570	22%
2021	10991	8084	42%
2022	13495	27671	67.2%
2023	15157	48219	76%

In 2018, only two EV models were offered in Israel. In 2019, about 10 EV models were sold in Israel; in 2020, about 15 models; in 2021, the number of models increased to 41; in 2022, 66 models of fully electric vehicles were offered; and in 2023, over 100 BEV models.

The year 2019 was to a large extent, the year of the Early Adopters and it was also the first year in which a significant amount of fully electric vehicles were sold in Israel, when of the ten models offered, most of the deliveries were of the e-tron Audi (340 units), Renault Zoe (102), i-Pace Jaguar (68), Hyundai IONIQ Electric and Nissan Leaf.

The year 2020 continued the growth trend with over 1,500 deliveries of about 15 models. The Chinese electric SUV MG ZS EV led the list with 688 deliveries, followed by the Audi e-tron (315), the new Chinese brand GAC GE3 with 154 deliveries, Renault Zoe with 109, and Jaguar i-Pace with 61 units.

The year 2021 was the breakthrough year for Tesla, which entered the Israeli market by storm with its Model 3, of which it sold no less than 6,298 in direct marketing to customers. Tesla took over the EV market with a 57% market share in its first year, and its first model became one of the ten best-selling models in Israel. MG ZS EV continued its success with 1,546 units sold, followed by another new Chinese brand, AIWAYS U5, with 431 units, Audi e-tron with 228, and Peugeot e-208 with 168 units.

The year 2022 can be called the "Chinese year" of the EV market. During this year, many Chinese car brands joined the market, which brought about an immediate change thanks to the popular models and the attractive prices they offered. The EV market share has grown significantly, and the number of EVs sold has more than tripled compared to 2021.

In the annual summary, the Chinese brands that sold thousands of units stood out and took the first places: Geely Geometry C, of which 6,816 units were sold; Tesla Model 3 continued its' success with 4,658, and BYD entered the market for the first time, with the Atto 3 of which 3,704 units were sold. Hyundai IONIQ 5 was fourth with 1,784, followed by another Chinese brand, AIWAYS U5, with 1,312 units. Overall, 68% of sales in the EV segment were from Chinese brands, including Tesla and Polestar, which are made in China, or 51% without them.

In 2023, the EV has already taken center stage with close to 50,000 units, dozens of brands, over a hundred different models, and a market share of 17.9% of the overall vehicle market - even higher than in Europe. The BYD ATTO 3 became the best-selling model in Israel in general, and of course also in the EV segment, with 14,244 deliveries. The second place among EV models came to Geely Geometry C with 7,129 units (the fourth best-selling model in the car market in general), followed by Tesla Model Y with 4,150 units, Hyundai IONIQ 5 with 2,397 and Tesla Model 3 with 2,391 units. Chinese dominance has only increased, with 58% of deliveries in the electric segment coming from Chinese brands, not including Tesla.

In the first quarter of 2024, the EV market share in the Israeli auto market has already risen to 24%.

3.1 Legislation in Israel

In 2008, the Knesset's Research and Information Center prepared a review on electric vehicles in Israel to find out what steps are required in order to create a suitable infrastructure for the widespread use of EVs in Israel. In January of the same year, the government passed a decision to encourage the use of non-polluting vehicles (Resolution 2935, a program to encourage the use of clean energy), according to which, until the end of 2014, the purchase tax on a vehicle that does not emit pollutants will not exceed 30% and the purchase tax on a vehicle with an internal combustion engine will be no less than 60%. In the years 2015-2019, the purchase tax on non-polluting vehicles will not exceed 30%, and the difference between the purchase tax on such a vehicle and the purchase tax on an ICE vehicle will not be less than 30%. If the percentage of vehicles that do not emit pollutants exceeds 20% of all vehicles that will be purchased that year, the purchase tax rate will be reviewed.

The tax authority also decided to establish purchasing tax rates based on the level of pollution emitted by vehicles according to 15 taxation levels, which correspond to 15 pollution levels, starting from 2009 (The Green Tax). The pollution levels were determined based on the weighting of five pollutants (HC hydrocarbons, sodium NOx compounds, carbon monoxide CO, PM particles, and carbon dioxide CO2).

In 2018, ten years later, the Knesset Research and Information Center published another report on tools to encourage the use of EVs that was submitted to the subcommittee of the Science and Technology Committee for the promotion of renewable energy technologies. This report detailed the steps taken during the past decade to encourage electric vehicles within the framework of supervision and monitoring of the implementation of the Paris Conference decisions signed by Israel.

The economic incentives given were a reduced purchase tax of 10%, a benefit that was first given in 2009 and was extended from time to time until 2017, when a decree was signed extending it for two more years, and in 2015 regulations reducing the value of the use of EVs for tax purposes were approved as well.

Between 2020-2024, the reduced purchasing tax for EVs gradually increased:

Purchasing tax rates for hybrids, PHEVs, and EVs between 2020-2024

	2020	2021	2022	2023	2024
Hybrid and PHEV with a green score above 100	45%	50%	Normal purchasing tax without incentives		
Hybrid and PHEV with a green score below 100	25%	30%	40%	55%	Normal purchasing tax without incentives
Electric Vehicles (BEV)	10%	10%	10%	20%	35%

At the same time, a ceiling was set for the incentive, which decreased over the years:

Purchasing Tax Incentive ceiling (in NIS) for hybrids, PHEVs, and EVs between 2020-2024

	2020	2021	2022	2023	2024
Hybrid and PHEV with a green score of above 100	20,000	10,000			
Hybrid and PHEV with a green score of above 100	60,000	45,000	40,000	30,000	
Electric Vehicles (BEV)	75,000	75,000	75,000	60,000	50,000

In addition to this, in June 2018, the Minister of Finance signed a decree that applies the "Luxury tax", which is an additional purchase tax on luxury vehicles, to hybrid and electric vehicles as well. This tax came into effect for the first time in 2013, and,

as mentioned, in 2018, the tax was expanded to also include vehicles with advanced propulsion technologies that benefit from reduced tax rates - hybrid vehicles, plug-in vehicles, and EVs. The calculation of the additional tax rate for a vehicle whose price exceeds NIS 300,000 and whose total weight does not exceed 3.5 tons is 20% of the difference between the vehicle's price to the consumer (Importer's listed price including VAT) minus 300,000, divided by the vehicle's price to the consumer.

In addition to incentives for the purchase of EVs, the state also offered incentives for infrastructure and public projects, which were given in the form of grants to companies that established charging infrastructures. Tenders were also published for the deployment of infrastructure, and incentives and grants were established for electric public transportation, and incentives, and grants were established for electric public transportation to increase awareness and research. The report of the Knesset's information and research center also indicated additional possible incentives such as a discount on the license fee, the possibility of preferential parking or use of bus lanes, incentives for government offices to switch to EVs, promotion of charging solutions in condominiums, and more.

At the beginning of January 2024, the Ministry of Finance presented a new outline for tax benefits on EVs and travel tax. The outline was included in the budget proposal and was even approved, but during the month, several changes took place, which currently create significant uncertainty regarding the outline of the green tax benefits from 2025 onwards.

On January 15, a final version of the "Draft resolution" of the same budget was presented, outlining a more moderate purchase tax than the original one, where the purchase tax on EVs should only increase to 45% in 2025, 52% in 2026, and 60% in 2027 with an incentive ceiling of 35,000, 30,000 and 25,000 NIS respectively. It should be noted that during the year 2023, the average purchase tax on a vehicle was 56%.

Year	2025	2026	2027
Purchase tax (%)	45%	52%	60%
Incentive ceiling (NIS)	35,000	30,000	25,000

As part of the budget proposal, the cancellation of the benefit in the annual license fee for EVs starting in 2025 was also approved. The cancellation of the benefit was approved by the finance committee on April 16, 2024, when the comparison of the annual license fees for an EV with that of an ICE vehicle is supposed to bring in 230 million NIS per year to the state. The cancellation of the benefit was supposed to go into effect in July 2024, although in the end, the new regulation will come into effect from January 2025.

This budget proposal also included, for the first time, a reference to a comprehensive reform of green taxation, which will replace the existing tax benefits. The proposal states that: "In consultation with the minister of energy and infrastructure and the minister of

environmental protection, it should be examined that starting from 2026, a mechanism will be implemented that includes targets for greenhouse gas emissions imported into Israel so that to encourage the import of EVs and vehicles with reduced greenhouse gas emissions... This is due to the methodology established by similar mechanisms in the world." Today, each model is given a green grade according to a unique Israeli formula that weighs several pollutants, and the intention is to move to an outline of setting an average CO2 emission target for each importer's fleet of models, where in case of exceeding the target, the importer will pay a fine. This plan was approved as part of the final budget, but it is still unclear at what operational stage the proposal is and whether it is implementable.

Travel Tax

Examining the issue from a global perspective shows that in the USA today only three states have imposed a travel tax: Oregon, Utah and Virginia, and other states such as Vermont and California are considering the issue, especially in relation to EVs. Even the Infrastructure Package approved by President Biden In 2021 included reference to the issue and even allocated 125 million dollars for its examination.

In Israel, the Ministry of Finance's budget proposal for 2024 included a reference to the vehicle tax, and it was stated that the plan to reduce the purchase tax on an EV is conditional on the approval of the travel tax, where without the travel tax there will be no continued plan for tax benefits on an EV and by default, the tax on an EV will be equal to this of ICE vehicles (83% minus the green grade benefit) starting in January 2025.

The intention is to impose a travel tax on EVs and PHEVs at a level of 15 NIS per km as a replacement for the excise tax on fuel that EVs do not pay. The travel tax was accepted as part of government resolution 1263, it also establishes a mechanism for establishing a collection system and updating the collection sums and is supposed to enter into force as of 2026. This decision has not yet undergone a legislative procedure.

3.2 EV Charging Stations in Israel

The deployment of the network of charging stations in Israel started slowly but has gained momentum over the last three years. According to estimates, as of the writing of these lines, there are approximately 6,000 public AC charging stations in Israel ("Normal/slow" AC charging stations), approximately 800 DC fast charging stations (direct current fast charging stations), and tens of thousands of home charging stations.

Below is an overview of the leading companies in the field of charging stations for EVs; all data (number and types of stations and sites) are approximate, sourced from the companies' websites or public information, and are correct at the time of publication of this document:

Ev Edge - the largest company in the field of public AC stations, with close to 1,300 stations in approximately 373 different sites. The company, owned by the Toyota importer, Union Group, has won local authority tenders, such as, in Tel Aviv (370) and Haifa (50), and

cooperates with MILGAM (Pango). The company also operates about 18 DC fast charging stations with 100 kilowatts or more capacity.

Afcon ON - a charging network jointly owned by Afcon from the Shlomo Group and Dor Alon with approximately 938 AC stations in approximately 289 different sites, including Ashdod (102), Holon (60), and the Emek Hafer Regional Council (48). The company operates about 48 DC fast charging stations with a power of 100 kilowatts or more, including the fast station at the Dor-Alon station at the Mesobim intersection with a power of 360 kilowatts.

Sonol EVI - Sonol's EV charging arm with approximately 840 AC stations in approximately 225 different locations, including Tel Aviv (52), Ra'anana (43), and Rishon Lezion (41). The company has 15 DC fast charging stations, some with a capacity of 160 kW.

Greenspot - about 420 positions in 100 different sites.

ZEN ENERGY - operates the charging site in the fast lane parking lot at the Shapirim interchange with about 80 AC stations and a total of about 280 stations in about 30 sites. In addition, the company operates about 23 high-speed DC stations, most of them in the periphery.

Scala Energy - belongs to the Allied group (Champion Motors) and operates about 233 public AC stations in about 26 sites. The company recently signed an agreement with the Melisron group (Ofer malls) as a result of which the number of stations and their layout is expected to increase significantly. The company also set up 8 DC fast charging stations.

PAZ - the fuel company, established about 64 charging sites - all with DC fast charging. All the charging points of PAZ are double, where charging at the same time means half the power in each of the sockets.

Tesla - Tesla established its Supercharger network (fast charging stations with high power) for the company's customers, which only has a capacity of 250 kilowatts. Today there are about 25 Tesla supercharger stations in Israel nationwide from Kiryat Shmona to Eilat.

Gnergy - established eight double ultra-high-speed stations with a capacity of up to 180 kW.

In addition to these companies, many other companies operate between individual public stations and several dozen public charging stations: Amisragreen (the charging arm of Amisragaz) with two fast stations, Seven, Inter EV, Edgecontrol, Enova-energy, Greenspot, and other companies. Another dominant company in the field of charging stations is EV Meter, which has installed about 1,500 stations (public, private, and managed in parking lots, etc.), but it does not serve as a charging provider but only as a marketer of charging stations.

4. Electric Vehicles - Forecast for 2030

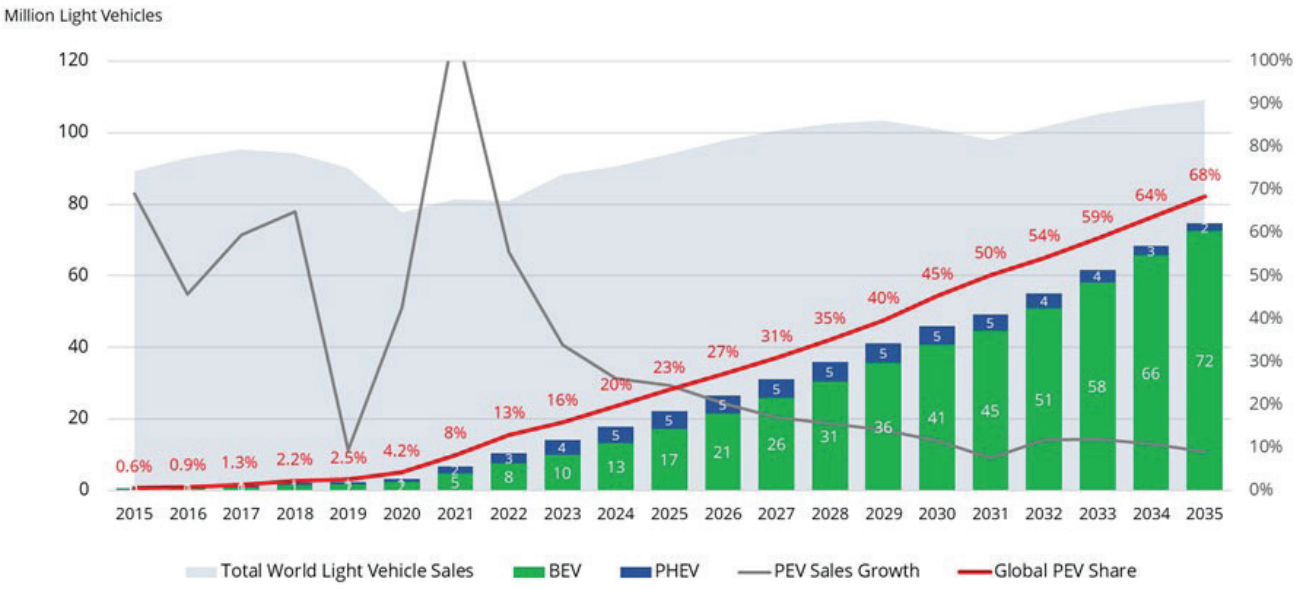
4.1 A Global Forecast

The adoption rate of the EV and its penetration rates in the world have changed over the years in light of the influence of many factors such as regulation, economic situation, consumer preferences, charging infrastructures, etc. Also, the economic incentives and the tax rates on EVs change and affect demand, and as a result, it is very difficult to accurately predict the future of electric vehicles.

Most forecasts are based on a linear growth rate that will bring the penetration rate of EVs in the world to 40-45% by the year 2030, when the share of BEV vehicles is increasing while the share of PHEV vehicles is decreasing, as in the forecast of the EV VOLUMES website (part of the J.D. Power).

Global BEV & PHEV demand

EV VOLUMES



This graph shows the forecast for growth in demand for light EVs in the world in millions of units until the year 2035. Source: https://ev-volumes.com/news/ev/evs-forecast-to-account-for-two-thirds-of-global -light-vehicle-sales-in-2035/

The IEA (International Energy Agency) uses three types of future scenarios to predict and forecast the future of EVs in the coming years. The first model is the STEPS (State Policy Scenario) model, which reflects the current policy of governments and countries as expressed in statements, laws and regulations, investments, and plans in the field of electric vehicles. This model should serve as a mirror that reflects the policymakers' plans and shows their results.

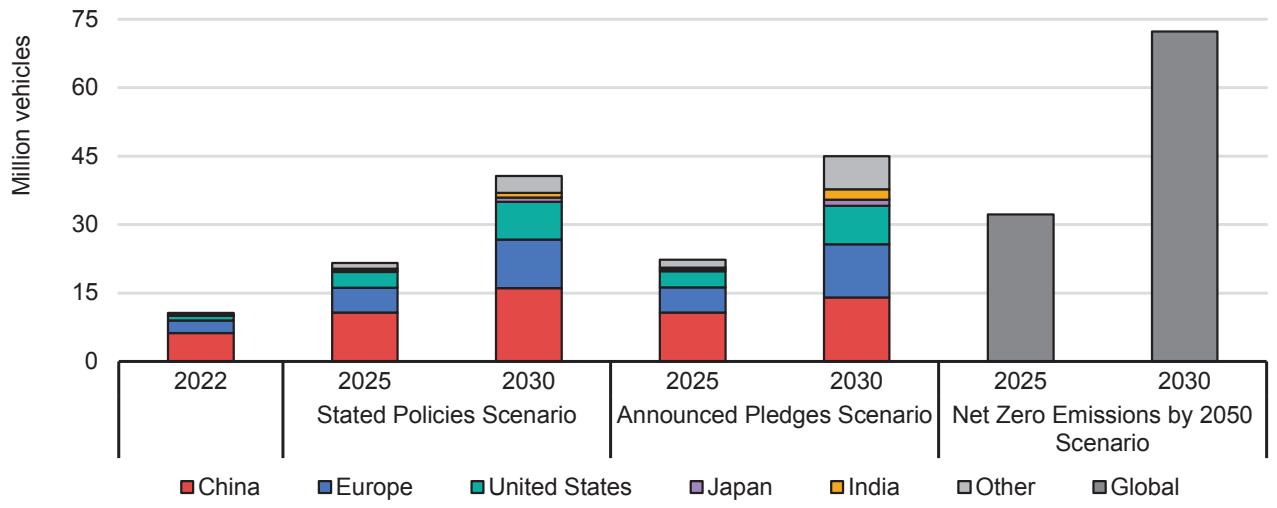
The second model is the APS (Announced Pledges Scenario) model, which assumes that the declarations and goals announced by countries will be realized in full and on time. This refers, for example, to electrification goals and future air pollution regulations.

The difference between the STEPS and APS models lies in the "Implementation gap" between the declarations and intentions of the governments and states and the laws and regulations that have already been enacted (or not) to achieve them.

And there is also a third model, the NZE (Net Zero Emissions by 2050) model. This is a model that offers a path to achieving the goal of zero emissions by 2050, a parallel goal of reducing global warming to 1.5 degrees per year.

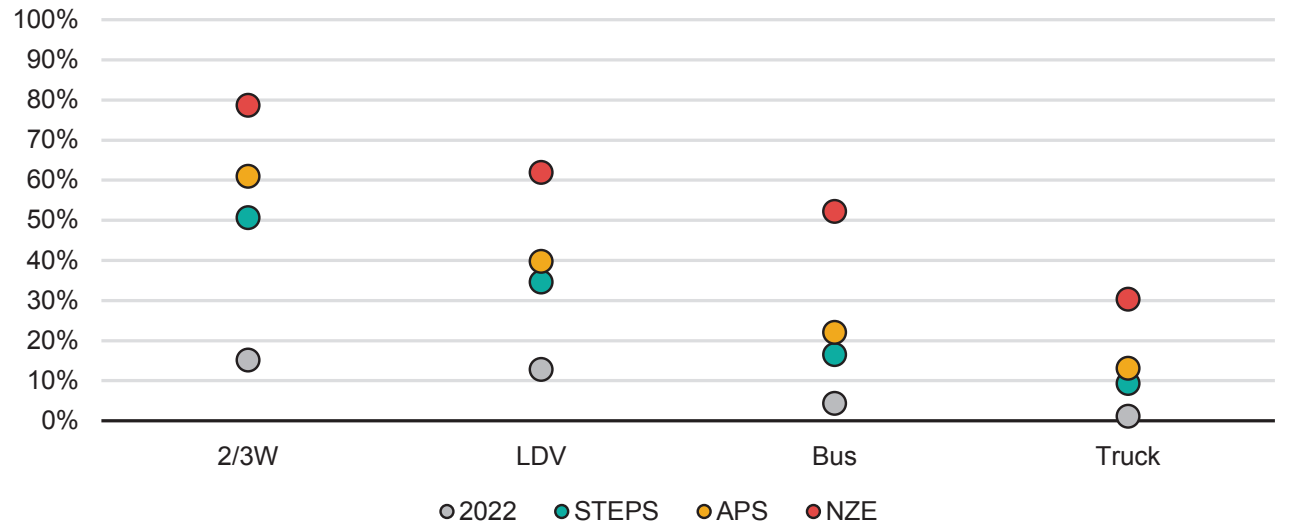
According to all three models, the global EV fleet will continue to grow over the next few years, significantly up to 240 million EVs in the world by 2030 according to the STEPS scenario, or 250 million according to the APS scenario. These figures reflect the sale of approximately 45 million EVs globally in 2030 or a market share of approximately 35%.

Electric vehicle sales by region, 2022-2030



This graph shows the sales forecast of EVs in millions of units by region and future scenario in 2025 and 2030. Source: https://www.iea.org/data-and-statistics/data-product/global-ev-outlook-2023

Electric vehicle sales shares by mode and scenario, 2030

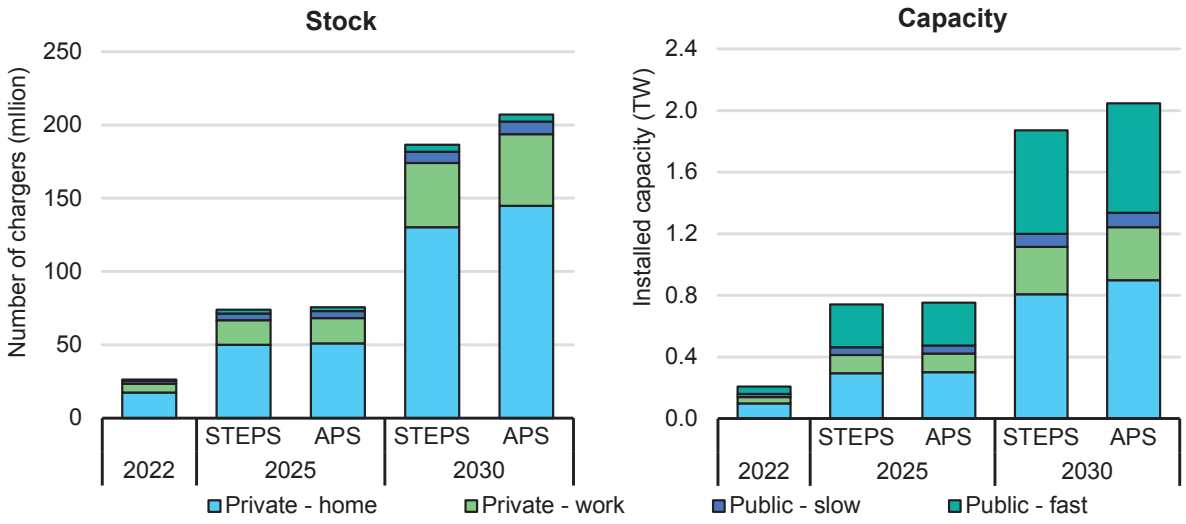


Notes: 2/3W = two/three-wheeler; LDV = light-duty vehicle; STEPS = Stated Policies Scenario; APS = Announced Pledges Scenario; NZE = Net Zero Emissions by 2050 Scenario.

This graph shows the projected EV market share in percentages in 2030 according to the various future scenarios and the type of electric vehicle. Source: https://www.iea.org/data-and-statistics/data-product/global-ev-outlook-2023

These models also refer to the deployment of the charging infrastructure, which is supposed to grow in parallel with the increase in the number of EVs and government policy. The scenarios of the two models, STEPS and APS, predict about 200 million charging stations by 2030, most of which will be private.

Light-duty vehicle charger installations by number and capacity, 2022-2030

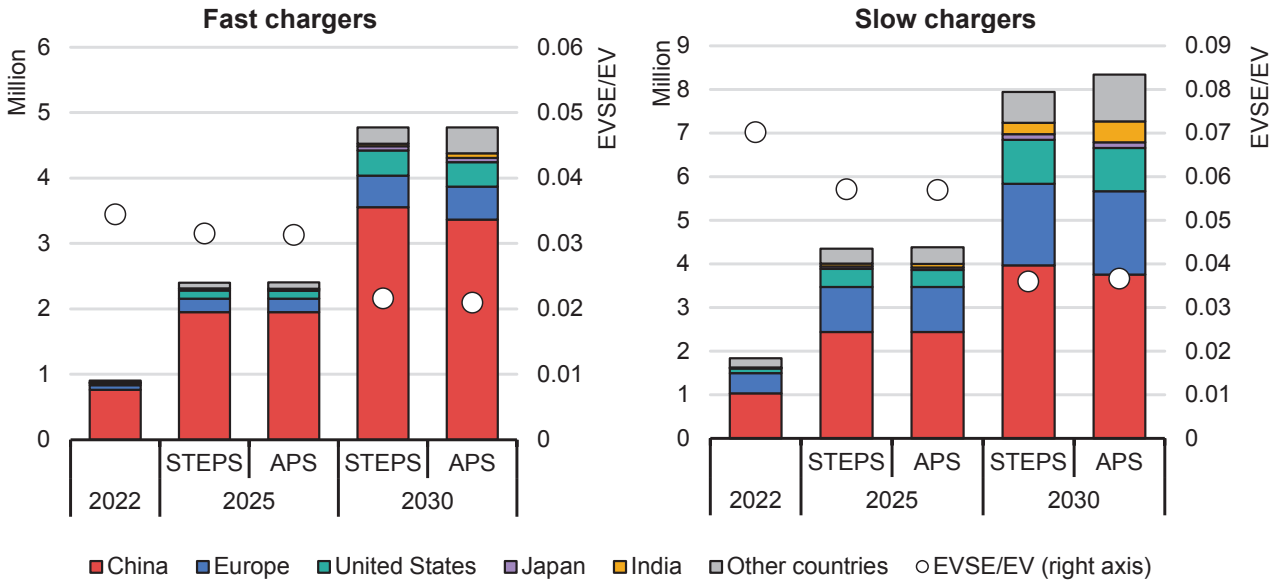


Notes: STEPS = Stated Policies Scenario; APS = Announced Pledges Scenario; LDV = light-duty vehicle. Regional projected electric vehicle supply equipment (EVSE) stock data can be interactively explored via the Global EV Data Explorer.

These graphs show the aggregate amount and capacity of charging stations according to the various future scenarios in 2022, 2025, and 2030. Source: https://www.iea.org/data-and-statistics/data-product/global-ev-outlook-2023

Looking at the expected installation of charging stations by region according to the STEPS and APS scenarios, we can see the continued Chinese dominance in both the installation of slow stations and the installation of fast stations; the differences between the different scenarios are insignificant.

Number of public light-duty vehicle chargers installed by region, 2022-2030



Notes: STEPS = Stated Policies Scenario; APS = Announced Pledges Scenario; EVSE = electric vehicle supply equipment. Regional projected EVSE stock data can be interactively explored via the Global EV Data Explorer.

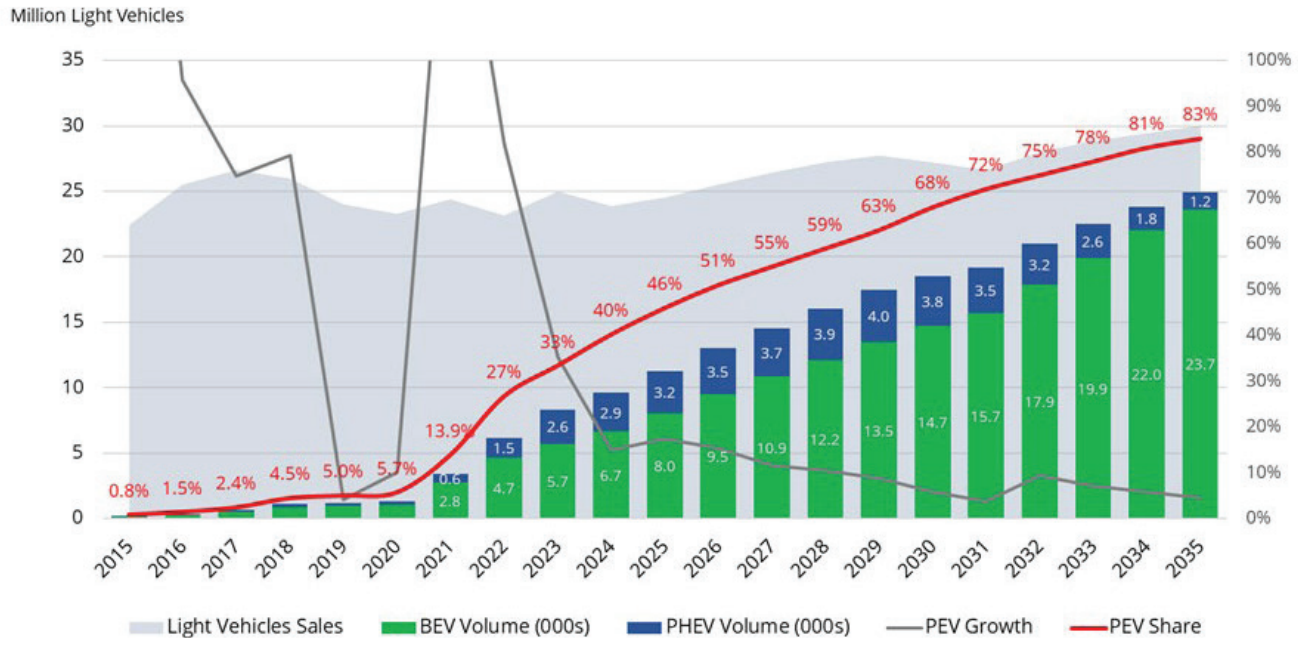
These graphs show the number of charging stations in different regions and according to the different types of future scenarios in 2022, 2025, and 2030 in millions of units divided into slow and normal stations. Source: https://www.iea.org/data-and-statistics/data-product/global-ev-outlook-2023

4.2 Future Forecast: China

The forecast for the future of the EV market in China foresees a continued increase in the number of EVs, with a market share of 68% in 2030. The demand for PHEV vehicles will decrease, while the number of pure electric vehicles (BEVs) will increase and reach approximately 14.7 million units by 2030.

China BEV and PHEV demand

EV VOLUMES



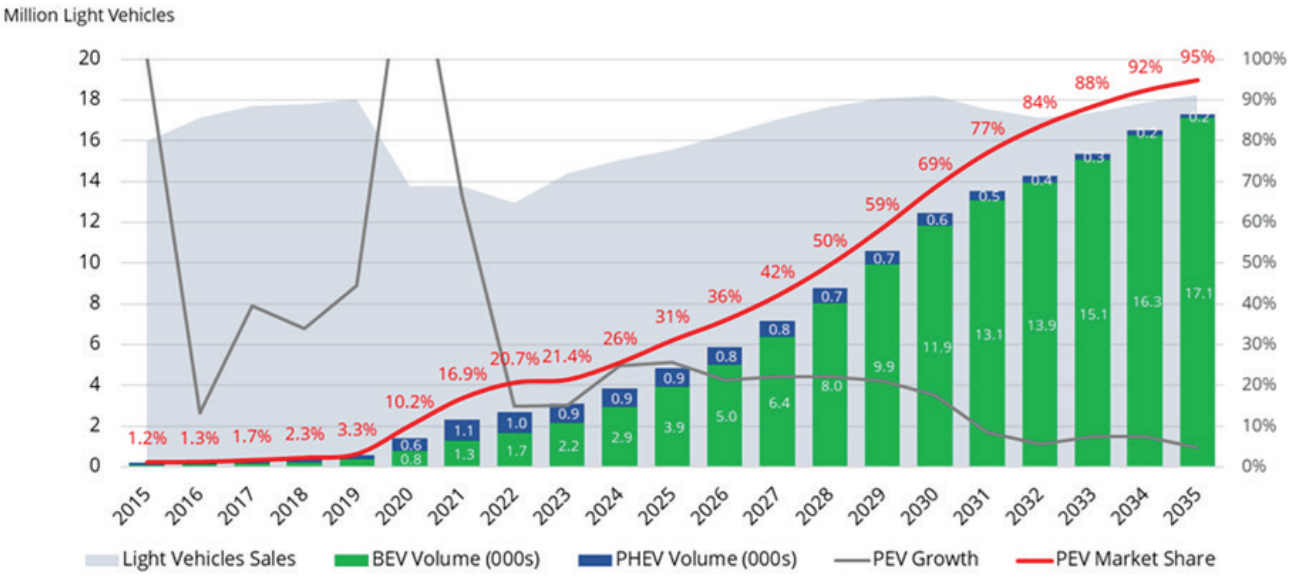
This graph shows the forecast for growth in demand for light EVs in China in millions of units until 2035. Source: https://ev-volumes.com/news/ev/evs-forecast-to-account-for-two-thirds-of-global -light-vehicle-sales-in-2035/

4.3 Future Forecast: Europe

According to the forecast of EV-volumes website, EVs in Europe in 2030 will reach 11.9 million units, and their market share will reach 69%. The forecast for 2035 is even higher than in China or the US and predicts a market share of 95% with 17.1 million electric vehicles this year.

Europe BEV and PHEV demand

EV VOLUMES



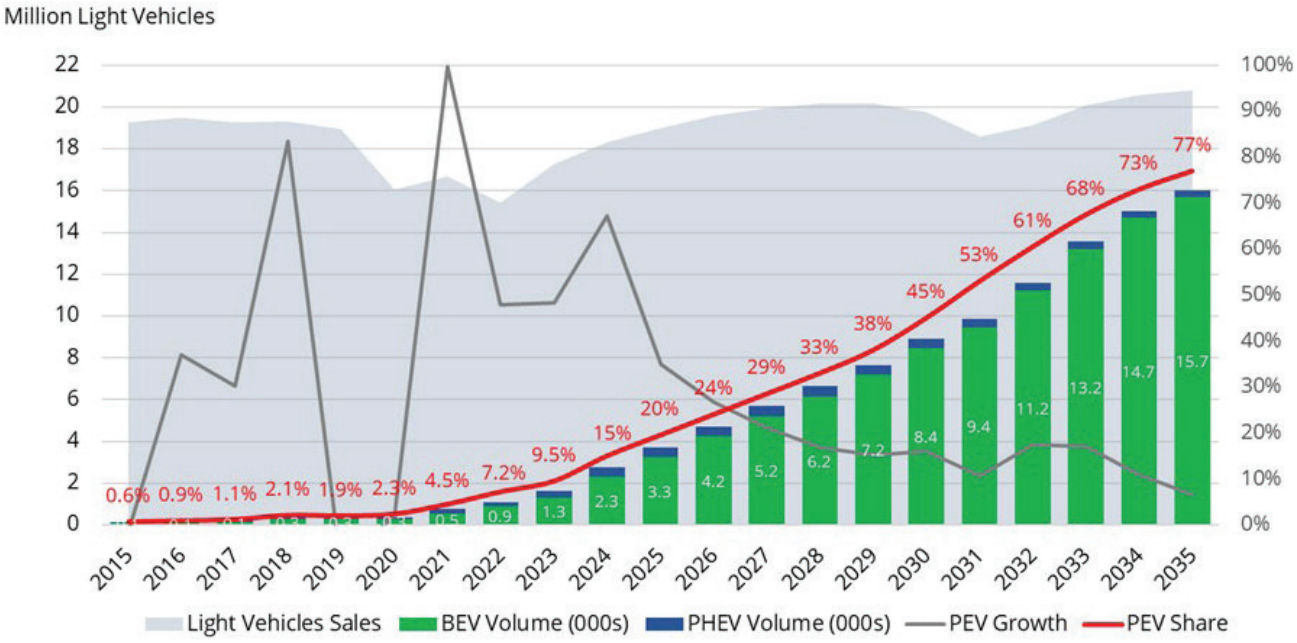
This graph shows the forecast for growth in demand for light EVs in Europe in millions of units until 2035. Source: https://ev-volumes.com/news/ev/evs-forecast-to-account-for-two-thirds-of-global -light-vehicle-sales-in-2035/

4.4 Future Forecast: USA

The demand for EVs in the US is expected to continue to grow, and the market share of EV and PHEV vehicles should reach 45% by 2030. The number of EVs in 2030 will reach 8.4 million units.

Northern America BEV & PHEV demand

EV VOLUMES



This graph shows the forecast for growth in demand for light EVs in North America in millions of units until 2035. Source: https://ev-volumes.com/news/ev/evs-forecast-to-account-for-two-thirds-of- global-light-vehicle-sales-in-2035/

4.5 Electric Vehicles in Israel: A Future Forecast

In September 2023, the Israeli Ministry of Energy and Infrastructure published a demand model for EVs in Israel. The model is based on four variables: vehicle energy consumption, Km traveled, penetration rate, and the total number of vehicles. The model of the Ministry of Energy outlines four scenarios: high (a high forecast in all four parameters), central (based on the government's goals), conservative (parallel to the central scenario except for a delay in the penetration rate and improved efficiency) and a low scenario (low forecast in all four parameters).

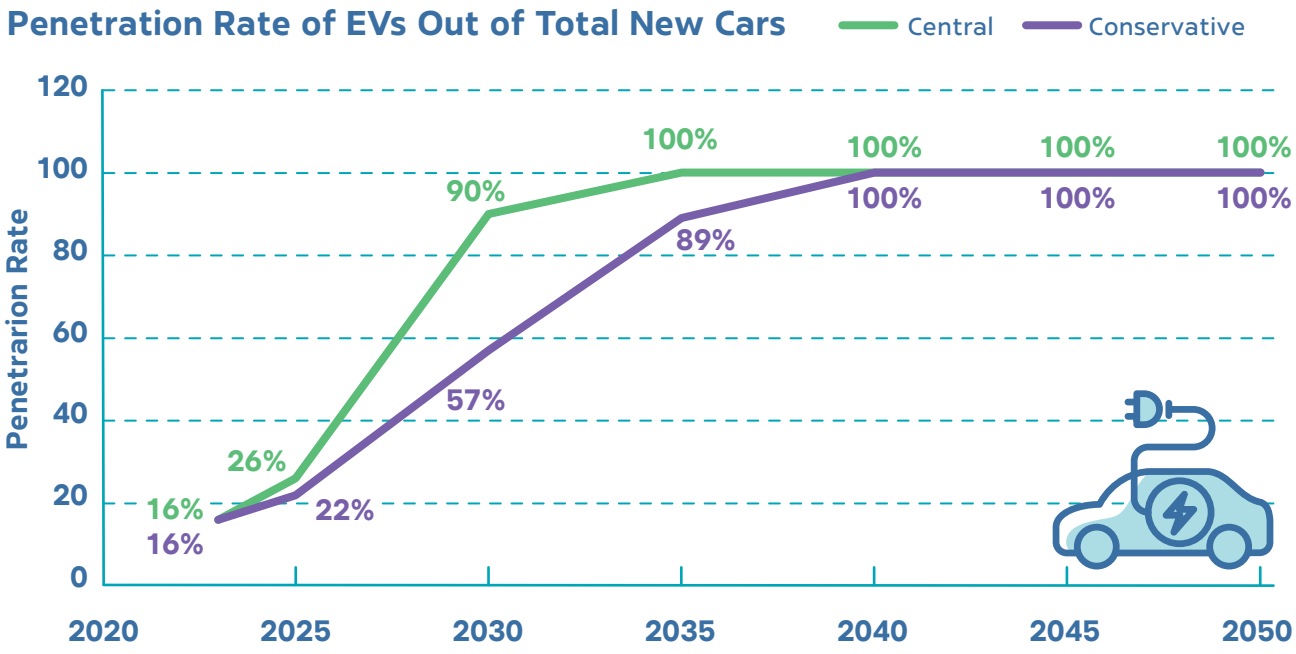
According to the model, the number of EVs in 2030 will reach between 0.95 and 1.31 million, and the penetration rate, depending on the scenario, will range between 57% and 90%.

Electric Vehicles Scenarios in Israel

scenario	Number of EVs (Millions)			Average Travel (Km/Year)			Electricity Consumption (Kwh/Km)			Total Electricity Consumption of EVs (TWh/Year)		
	2023	2030	2050	2023	2030	2050	2023	2030	2050	2023	2030	2050
High	0.07	1.31	6.6	19547	18502	17522	0.19	0.188	0.173	0.28	4.55	19.95
Central	0.07	1.29	6.0	19547	17033	15237	0.19	0.181	0.15	0.28	3.98	13.71
Conservative	0.07	0.95	5.9	19547	17033	15237	0.19	0.177	0.135	0.28	2.86	12.32
Low	0.07	0.95	5.4	19547	16326	14138	0.19	0.177	0.135	0.28	2.74	10.31

This table shows the projected number of electric vehicles, average travel, electricity consumption, and total electricity consumption of all EVs in 2023, 2030, and 2035 according to four future scenarios. Source: electric vehicle demand model. Ministry of Energy and Infrastructure, sustainable energy division. 12.9.2023

Model Results: Penetration Rate of EVs



* The figures for the High and Low scenarios are identical to those of the central scenario

This graph shows the proportion of EVs from the total number of new vehicles according to two scenarios (central and conservative) until the year 2050. Source: electric vehicle demand model. Ministry of Energy and Infrastructure, sustainable energy division. 12.9.2023

Today, the cost of driving an EV is estimated to be about a fifth of that of an ICE vehicle, and the penetration rate is increasing, but the high purchase cost of EVs may slow down sales growth. Electric vehicles are more expensive to manufacture, mainly due to the cost of the batteries, and the increase in the purchase tax also contributes to high prices.

In 2023, the purchase tax for an EV was doubled from 10% to 20%. At the beginning of 2024, the tax rose again to 35%. As of the writing of these lines, it appears that in the year 2025, the Ministry of Finance intends to implement the government's decision from January 2024 and will set the purchase tax on electric vehicles at 45%, with a benefit cap of 35,000 NIS.

The Israeli Finance Committee approved in mid-April 2024 the cancellation of the benefit in the annual license fee for EVs that will be comparable to that of ICE vehicles (depending on the age of the vehicle and its value group). The cancellation of the benefit will take effect in January 2025.

In addition, EVs affect the state's revenues not only in terms of the purchase tax but also because they do not consume fuel, and therefore, their owners do not pay the excise tax applicable to the fuel. Government Resolution 1263 states that as of January 2026, a travel tax of 0.15 NIS per kilometer will be imposed on EVs as a replacement for the excise tax. This decision has not yet undergone a legislative process. At the time of writing, final decisions have not yet been made on the matter, but as these steps are implemented, the attractiveness of purchasing an electric car will decrease.

5. Summary

The transition to electric propulsion is in full swing, with a constant increase in the number of electric models offered by car manufacturers and in the number of EVs sold worldwide yearly. There are significant differences in the penetration of EVs in different markets, depending on various factors such as the benefits and economic incentives provided by countries and governments, the purchasing power of customers, and the costs of purchasing and maintaining an EV compared to an ICE vehicle. Along with the factors that push the penetration of the electric vehicle, some factors delay its adoption, such as the driving range, the deployment of charging infrastructures, and the lack of critical materials for producing EV batteries.

The main motivation for the start of the transition to electric propulsion came from a sustainable concept and a desire to reduce the emission of pollutants from transportation. Switching to an electric vehicle has clear advantages in this aspect, but at the same time, it depends on close interactions with the state of the economy, regulation and taxation, consumer tastes, and technological developments.

While car manufacturers are looking for ways to reduce the cost of production of EVs and to extend their driving range, the big challenge facing countries and governments is how to continue to encourage the adoption of clean EVs and, at the same time, maintain the state's revenue from vehicle taxation. This dilemma, which is manifested all over the world and even more so in Israel, is the one that will largely determine the future of the electric vehicle.

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