



# **Major Automotive Global Trends**

**December 2022**

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**Table of Contents:**

<b>1. Global.....</b>	<b>3</b>
<b>2. USA.....</b>	<b>6</b>
<b>3. China.....</b>	<b>9</b>
<b>4. South Korea.....</b>	<b>12</b>
<b>5. Europe.....</b>	<b>14</b>
<b>6. Japan.....</b>	<b>18</b>
<b>7. Israel.....</b>	<b>19</b>



## 1. Global

### **Lithium prices dropped slightly but were still close to record levels in December.**

Lithium carbonate prices for car batteries registered in December showed a 10% decrease compared with the record price from November but were still higher than 73K\$ per ton. According to a study carried out in December by S&P Global's research department, prices are expected to keep dropping to a certain extent during 2023 due to increased production. Still, they are not supposed to be below the 40K\$ threshold at least until 2026.

Meanwhile, a study published at the beginning of December that the energy division at Bloomberg made revealed that during 2022, the trend of the price drop in Lithium batteries kWh reversed. For the first time in a decade, the price went up. Prices have reached 151\$ for kWh on average in 2022, an increase of 10\$ to the average price in 2021. The meaning of these figures for a typical battery with 60 kW capacity, is an increase of 600\$ in the price for the battery manufacturer. These figures are based on an average weighing different EV segments, including trucks, buses, LCVs, and passenger cars.

The price increase is caused not only by the leap in the price of Lithium, which is only a part of the overall cost, but also by prices of cases, Nickel, Cobalt, and additional components. The study estimates that prices will stabilize at around 152\$ per kWh in 2023.

It should be noted that this reversal in the trend breaks all of last decade's projections to a sharp decline in battery prices, down to 100\$ per kWh, which will even the costs between manufacturing an EV and an ICE vehicle. In many countries, tax incentives for EVs that are supposed to end by 2025, were determined according to this assumption. The study predicts that Lithium battery prices will start dropping again by 2024.



**New environmental studies: an increase in EVs; however, while these electric cars are becoming larger and stronger, their environmental advantages are eroded.**

Two studies were published in December that questioned the environmental benefits of shifting to electric driving. The two studies, one by the European Trade Union Institute (ETUI) and the other by the American Environmental Protection Agency (EPA), discuss the "Upward drift" phenomenon in the European and North American auto market and its impact on the environment.

By "Upward drift" the researchers refer to a swift shift from small, economical cars to large and powerful models, a shift that drastically reduces the environmental benefits of EVs. According to the European study, between 2001 and 2015, the average European car added 10% to its weight and 26% to its engine power, which resulted in an increase of 21% in average CO<sub>2</sub> emissions and offset entirely the emission reduction target of the auto industry, which at that time was 20%.

This trend continues today as European auto manufacturers gradually abandon the small and economical cars with narrower profit margins for larger models, mostly SUVs. Granted, even though EVs don't have direct CO<sub>2</sub> emissions, they are responsible for secondary emissions from power plants, and the bigger, stronger, and less energetically efficient the vehicle is, so is its indirect contribution to increased pollution. The researchers also warn that this trend by European companies leaves a vacant arena for Chinese manufacturers that specialize in producing small and cheap vehicles. The researchers recommend abolishing the conventional standards of checking CO<sub>2</sub> emissions as an indicator for pollution and taxation and using instead standards that derive from the energetic efficiency of the vehicle. Such standards are also relevant to EVs; they distinguish between different kinds of EVs and promote using small and efficient cars.



At the same time, the EPA published its "2022 Automotive Trends Report" according to which the sweeping transition to SUVs and pick-ups in the American market results in an average fuel consumption higher than the targets for fuel consumption reduction set already in 2021. The report claims that: "The bottom line is that the average fuel consumption of American fleets has not improved... auto manufacturers cancel all the progress in fuel consumption improvement due to the shift to manufacturing and selling larger vehicles". According to the report, all US car manufacturers missed fuel consumption reduction targets.

**Forecast: chip crisis weakening, but will still result in a production loss of millions of units in 2023**

The computer chip crisis has almost vanished from the headlines but is still very much felt in the auto industry and will continue to be felt in 2023, reports the British Financial Times at the end of December. The newspaper quotes senior sources in the chip industry saying that despite an improvement in production capacity quarter to quarter, and an increase in deliveries, the shortage will continue to be felt throughout the year 2023.

AutoForecast research company analysts also estimate that the auto industry will experience production loss of close to 3M vehicles due to chip shortage. There is a great improvement compared to 2022, in which a production loss of close to 4.5M vehicles was registered (almost 11M in 2021), but there is still a substantial gap between demand and supply. The British paper also quotes the chairman of semiconductors giant INFINEON, saying this month that he expects "Quite a prolonged shortage".

In a convention held in China at the beginning of December, the vice president of the Tier-1 supplier Bosch said, "We are working hard to solve the problem, but the overall situation hasn't fully improved yet; supply is still scarce, and our forecast for 2023 is not very optimistic". According to him, most of the chips in short supply are manufactured in cheaper production technologies of 40-100



Nano. The chip manufacturers are not investing in increasing their production due to low profitability and the estimates that the demand for them will decrease in the following years. They will not see a return on their investment.

## 2. USA

**The American administration postpones the decision to cancel tax benefits for EVs with batteries that use minerals from "foreign sources".**

The US will not publish the new "battery criteria" which will determine the conditions for receiving future EV subsidies. This is one of the most problematic articles in the Inflation Reduction Act (IRA) passed in congress last summer. The article states that vehicles manufactured in the US will be eligible for an additional government subsidy of 3,750\$ if at least 40% of the mineral content from which their battery is made comes from the US or from countries the US has free-trade agreements with. The practical meaning is that even if EVs are manufactured in the US according to all the requirements and their batteries are also manufactured in the US, but with Lithium and other minerals that come from China, for example, may lose their eligibility for subsidies.

This is one of the articles that Korean auto manufacturers, considered the largest batteries suppliers to the American auto industry, oppose the most. The Koreans currently purchase over 70% of the raw materials used to produce batteries from China.

The American administration understands that immediate activation of this article could damage the possibility of manufacturing batteries in the US in the future. Additionally, it can affect bonafide American manufacturers that use Korean batteries containing minerals that originated in China.



## **Forecasts: The American auto market shrunk in December but will return to growth in 2023**

The American auto market is expected to present substantial growth in 2023, estimated at the beginning of December by Mary Teresa Barra, chairwoman of GM. She estimates that in 2023, 15M passenger cars and LCVs will be sold in the US, an increase of 9.5% compared with the projected 2022 figures. Barra says, "We see strong consumer demand for our vehicles". Yet, Barra added that GM is re-examining its expenditure, and no one can anticipate which way the economy will go. Before that, she estimated that the US economy would grow by 1.2% only in 2023. In an automotive media convention in Detroit where Barra participated, the chairman of Goldman Sachs also said that the forecast and planning for 2023 are very problematic. "We are in the midst of a very uncertain era. Currencies and economic conditions are changing rapidly, undoubtedly affecting the economy and slowing it down. We must be prepared for a volatile near future, and I suspect we will experience an economic slowdown". Meanwhile, JD Power and LMC Automotive research firms estimate that new car deliveries in the US in December will show a negative trend due to high car prices, reduced discounts, and soaring finance costs, forcing many customers to cut expenses.

According to analysts, the average monthly payment for car financing in the US rose 718\$, 47\$ more than last December. They assess that deliveries to private clients will reach 1.04M units in December, a decrease of 2.8% compared with last year. These estimates were published relatively early because of the end-of-year recess and the severe snowstorm that hit the US in the last week of December and caused paralysis of sales in many countries.

The research division of American car trade giant COX Automotive estimates in its yearly forecast that 2023 "Will be difficult and challenging" for the American auto market. The company estimate that the demand for cars will be



negatively affected by the slow recovery of the American economy and that a situation in which a large-scale recession will result in a substantial job loss is "The worst-case scenario for the American auto industry".

However, there are also hopes for a "soft landing" of the American economy. The company estimates that inventory levels that were very low in the past two years will continue to grow due to improvement in production capacity and chip availability, and also due to a decrease in demand, but will not return to pre-COVID levels during 2023.

The slowing down in demand for new cars may also affect the market for second-hand cars in the US, which is supposed to weaken. The company also expects higher than-normal depreciation for used cars. COX estimates that new passenger car deliveries will add up to 14.1M units in 2023, a slight increase of 3% compared with 2022. Of these, the number of new EVs will cross the historical 1M cars per year threshold for the first time, among other reasons, due to a substantial increase in supply and government incentives for fleet EV purchasing.

According to the research, in 2023, the main problem facing American consumers will be prices – both the car themselves and financing contracts. The company estimates that the increase in interest rates will result in a new record for cash car purchases.

**California government allocates billions of dollars for establishing a network of charging stations.**

Local government in California considered the leading pro-environment state in terms of policy, approved the allocation of 2.9B\$ to expand the network of EV charging stations across the country. Most of the budget, 1.7B\$, will be





allocated for establishing charging stations for medium and heavy electric commercial vehicles. This budget is set until 2026.

An additional 900M\$ will be allocated for charging stations for passenger cars and LCVs. 90M\$ will go to building Hydrogen filling stations for fuel-cell powered vehicles. According to the plan, 90,000 new charging points will be built, double the existing number of charging points. California aims to reach 250,000 charging points in the country by 2025. This step is part of California's new green policy that allocated 10B\$ to public transportation last January.

### **3. China**

**The Chinese government is "pushing" the local auto industry to increase car exports but facing substantial logistic difficulties.**

The Chinese government keeps pushing the local auto industry to expand its export to the world, including Europe. As a result, China encounters logistic bottlenecks, especially with the sea freight of cars from China to Europe and America.

According to the Chinese ministry of commerce, November broke the record for car export with 370,000 units in a single month, an increase of 70.5% compared with last November. The export to the west is led by "New Energy" cars, mostly EVs and PHEVs. The unprecedented export volumes create heavy pressure on the traditional RORO ship lines, causing transport capacity shortages and driving a steep price incline. In an article published this December in the international shipping press, it was said that new orders for RORO transportations in the lines leading to Eastern Europe and the Middle East were halted by major shipping firms such as Wellenius, Hoegh, and NYK, at least until Q2 2023, due to over tonnage. Car export lines to and from the US are filling up quickly. One of the largest companies in the business claimed that



by the end of Q3 2022, the utilization of its car-transporting fleet, which includes very old ships, reached an unprecedented 91%. As a result, the typical price for hauling a car by sea from China to the Middle East and Europe rose from 800\$ a year ago to close to 2,000\$ by the end of 2022.

This problem is weighing on the Chinese auto industry itself as well, and in December, the Chinese government announced that it is actively operating to accelerate the transportation of vehicles from China to Europe by different means, including enhancing car deliveries via the direct railway between northern China and Europe through Asia. Also, thousands of cars were sent during December to different destinations in Europe in container ships, in addition to thousands that were sent in general freight ships that use special rails for the uploading, fastening, and downloading the cars. These methods were developed by the Chinese governmental shipping company COSCO. Several Chinese auto manufacturers announced that they intend to order new RORO ships from Chinese shipyards to accommodate the Chinese auto industry and foreign clients. However, it will take at least two years to fully operate these ships.

**Chinese auto manufacturers increase marketing efforts as subsidies for EVs in China end this January. However, the COVID outbreak may be an obstacle.**

During December, all EV manufacturers in China increased their marketing efforts in the face of the cancelation of government subsidies for "New Energy" cars at the beginning of 2023. Chinese subsidies are already much lower than in the past and were decreased by 10-30% between 2020 to 2022, to 1,836\$ only for EVs and 690\$ for PHEVs with a range of more than 100 Km. These subsidies also have a psychological effect. Chinese analysts forecast that their cancelation will intensify the trend of rising EV prices due to the rise in battery prices.



As a result, a certain slowing down in the market growth rate is expected in China for 2023. However, some manufacturers announced that they will absorb the subsidy cancelation and not raise prices for customers that order until the end of December 2022. Other local manufacturers, such as Tesla, for example, did more than that and offered Chinese customers who order cars before the end of the year hundreds of dollars in discounts. This is already the third discount round for Tesla, accumulating thousands of dollars in the past few months.

On the other hand, some of the EV manufacturers have already announced in December that they intend to raise prices across the board by a few hundred and up to 2,000\$ for each model due to the steep increase in battery prices. USB investment bank analysts estimated that even though most manufacturers will struggle to maintain the growth rate of 2022, the relative share of EVs will continue to grow during 2023 up to 37% of all car sales.

It should be noted that 2023 forecasts, published at the beginning of December, did not take into account the severe COVID outbreak resulting from the government's ending of curfews and lifting mobility restrictions in China. The outbreak already damaged the production pace in the Chinese auto industry due to tens of thousands of workers falling ill. It is still unclear how this outbreak will affect the entire year.

#### **4. South Korea**

**The Korean government continues to battle the American administration's decision to deny tax benefits from EVs not made in the USA.**

At the beginning of December, a group of South Korean government officials and auto manufacturers wrote a letter of protest in which they called on the American administration to give tax benefits to "Commercial" EVs sold in the US. The letter represents another attempt to preserve some of the 7,500\$ tax benefits EVs made in Korea lost due to the American Inflation Reduction Act.



This attempt targets the 4,000\$ tax benefit reserved for commercial EVs that is still valid for all EVs, including those manufactured outside the US. The Korean lobby group approached the American ministry of finance in a request to "Adopt a broad interpretation" of the term "Clean commercial vehicles" and include passenger cars sold to rental and leasing companies and shared-mobility service providers. The lobby asks the American ministry of finance to grant the benefit to those renewing an existing leasing contract when purchasing an EV and not to impose budget restrictions on the scope of tax benefits for "Commercial" EVs until 2025.

This request is facing opposition from American auto manufacturers that have much to gain from canceling tax benefits for non-American companies. For instance, Tesla, one of the biggest winners from the IRA, declared that the benefits for commercial EVs should "Apply exclusively to commercial end-users, while the consumer tax benefits should apply exclusively to private consumers". The chairwoman of GM was also quoted saying, "Sticking to the original intent of the IRA is essential".

### **South Korean car sales plunge due to chip and component shortage**

Car sales in the South Korean market in 2022 will be among the lowest in the past nine years, according to figures published by the South Korean auto manufacturers association at the end of December. The main reasons are the prolonged chip shortage and disruptions in the industry's supply chain.

According to the figures, local passenger car sales will reach 1.39M units, a drop of 2.5% compared with last year and the lowest amount since 2013, a year in which auto manufacturers suffered from the struggling South Korean economy. December deliveries are estimated to be the lowest since the economic crisis of 2008.



The association states that in the passing year, most manufacturers suffered from ongoing supply disruptions that caused production shutdowns, some lasting over a week. Some of the problems were caused by disruptions in the supply of key components from the Chinese auto industry due to long curfews. Contrary to the general trend, deliveries of "Green" cars strengthened and reached 294,000 units in the passing year, an increase of 40.1% compared with last year. EV sales in Korea in 2022 are expected to reach 125,000 units.

**The South Korean government is reducing EVs' benefits and changing the eligibility criteria.**

The South Korean government is revising its EV subsidy system starting in 2023. Among other things, the government intends to substantially lower the subsidy given to auto manufacturers that don't have direct service centers in Korea. Commentators hint that this article is directed at Tesla, which usually doesn't own a service center network. According to these commentators, this is, in a way, an "Act of retaliation", or at least a "Threat in disguise" towards the US that intends to cancel subsidies from EVs that are not manufactured in the US, starting this year. At the end of December, the South Korean ministry of the environment said that there is a comprehensive revision in the subsidies for EVs, but not all steps have been finalized yet. In addition, it was stated that next year's subsidy would not exceed 5,750\$ per vehicle as part of the policy to lower the subsidy each year.

## **5. Europe**

**Facing pressure from the battery and car manufacturers, the EU postponed the decision to classify Lithium as a "Harmful substance".**

Lithium shortage continues to disrupt the global auto industry and, along the way, creates "Environmental disruptions". In the past few months, the EU commission discussed the possibility of classifying Lithium as a "Harmful



substance", following clinical research that showed that it has a negative effect when pregnant women are exposed to it in a certain dosage.

It should be noted that classifying a substance as "Harmful" in Europe has far-reaching side effects, resulting from the need to mark it as such, handle it, recycle it, etc. These elements drive the price up significantly. Today, Lithium is used in various areas, especially for electric batteries and EVs.

The scientific committee of the EU recommended the commission approve the "Harmful" classification. The committee was supposed to publish its decision on December 14<sup>th</sup>, but at the last minute, it was postponed for the second time until "The beginning of 2023". The postponement is probably due to pressure from the lobby of the auto manufacturers and the battery industry, which is currently in a delicate position given the high demand for Lithium and soaring prices. The lobby maintained that if Lithium is classified as harmful in the EU, contrary to the rest of the world, it would mean abolishing huge battery production projects in Europe and moving them to other countries such as the US and China. Additionally, it will drive out investors from companies active in this area and severely damage the EU's declared attempts to decrease its energetic dependence on exterior elements by 2025.

### **Europeans keep pressuring the US government to soften the IRA to allow tax benefits for EVs made outside the US.**

Similarly to the South Korean auto industry, the European one is also continuing to actively oppose the American decision to revoke subsidies from EVs manufactured outside of the US as part of the IRA that passed in congress last summer.

In the middle of December, the EU's trade commissioner met with the American-European trade and technology council to protest and pressure the Americans to exclude the Europeans from the discriminatory regulation. In an



interview with the German press, the commissioner said: "The American decision undermines the progress of the trans-Atlantic trade forum, established a year ago". The forum was formed last year as an American initiative to decrease Europe's growing dependence on trade with China. The commissioner hinted that canceling the tax benefits may affect the motivation of the Europeans to continue and advance the forum. "We feel that in our negotiations with the Americans, we are moving one step ahead and two steps back... We must reach concrete results on this issue this year". That is because the competitiveness of the European auto manufacturers may be harmed by the IRA already at the beginning of 2023.

The finance ministers of France and Germany also started talks with the relevant US departments to grant "Green" cars made in Europe an exemption from the subsidy cancelation. At the same time, the French minister of finance said that Europe should also adopt legislation that discriminates against European-made cars for the better. **Given all this pressure, it seems that the Americans are starting to back down from the rigid position they have presented so far.** A memorandum published by the American secretary of state said: "We are aware of the concerns raised by the EU and emphasize our commitment to deal with them constructively". The white house spokesperson also said that the environmental law would be discussed as part of the overall trade talks between the US and the EU.

The clearest sign of the fact that the Americans are willing to reconsider was published at the end of December by senior officials in the Biden administration who said that: "The administration is willing to discuss some of the points relating to the EV tax benefits program as part of the IRA, raised by the US allies in Asia and Europe". According to the administration's emerging plan, some of the EVs manufactured outside of the US, for example, leased cars, will continue to be eligible for the tax benefits given to "Commercial" EVs, which is lower than the benefit given to passenger cars but still substantial. As



expected, Europe and Korea responded positively to these notions. However, senior representatives of the Democratic Party in the US criticized the withdrawal and said, "It is designed to serve the interests of commercial companies, looking for legal loopholes".

### **France: government prolongs tax benefits for company EVs by two years**

In December, the French ministry of finance extended the regulations granting tax benefits to company EVs. These regulations, similar to the "Value of use" tax for cars provided from the workplace in Israel, were supposed to expire at the end of December but were extended by two years until December 2024. The regulations giving tax benefits to company EVs in France took effect in January 2020 and included a 50% discount in tax for a company EV up to 1,800 Euros a year. At the same time, a full exemption from tax on charging EVs at the workplace was also extended until the end of 2024. A 5% discount on road tolls is another benefit declared in France. The discount, coordinated between the toll-road operators and the French government, will, in effect, compensate for the planned price increase for French road tolls planned for February 2023. Meanwhile, the French government has not cut off EV subsidies, which are due to expire at the end of 2023, which means that EV and PHEV buyers will continue to enjoy a subsidy of 5,000 Euros per car.

### **European parliament advancing comprehensive environmental regulation for EV batteries, "from birth to recycling".**

At the beginning of December, the European Parliament and EU countries agreed on the principles for establishing a comprehensive and up-to-date environmental regulatory system for batteries in general and EV batteries in particular, following suggestions presented to the EU at the end of 2020 aiming at mandatory monitoring and supervision for all types of batteries including EV batteries, throughout their lifecycle. Once these regulations take effect, battery manufacturers stricter environmental rules and greater transparency if they want to keep selling their products in Europe.





The agreement is still subject to formal approval of the European parliament and the EU commission. In the area of EV batteries, the manufacturers will have to formulate and publish CO<sub>2</sub> values resulting from the manufacturing process and meet quotas for recycling some of the materials the batteries are made of. Manufacturers will also have to properly tag the batteries and provide information regarding the scope of recycled materials used in the batteries.

From July 2024, all manufacturers will have to present a "CO<sub>2</sub> balance" regarding the manufacturing process, starting with raw materials extraction, through the manufacturing process, and ending with the recycling process. According to these numbers, maximum CO<sub>2</sub> values for batteries will be determined starting in July 2027.

The EU also formulated battery recycling targets: from 2027, battery manufacturers will have to recycle 90% of the Nickel and Cobalt used in the batteries, and from 2031 the target will go up to 95%. Additionally, they will have to recycle 50% of the Lithium, which will grow to 80% by 2031. These targets are supposed to provide EU countries with the basis for imposing environmental taxes on EVs, which will compensate for some of the expected income loss from the excise tax on fuel. The EU's decision gained positive reactions from environmental organizations in Europe. Still, the auto industry claims that the new demands will come at a price that will be passed on to EVs and consumers, resulting in further delay in the penetration of electric cars.

## **6. Japan**

**The Japanese government is seeking a solution to the shortage of critical minerals for the auto industry at the bottom of the sea.**

At the end of December, the Japanese government announced that starting in 2024, it intends to begin mining rare minerals from the bottom of the ocean. Mining will commence initially around the Japanese-controlled islands in the



Pacific Ocean, 1,900 Km southeast of Tokyo. An underwater survey in recent years with advanced equipment discovered an extensive layer of mud rich in vital minerals on the bottom of the ocean, six kilometers deep.

The mining will be done with remotely controlled advanced robotic equipment and is expected to be particularly complex due to the area's strong currents and typhoon storms. Despite high costs, this mining method has become lucrative in the past two years due to soaring mineral prices, especially for the car battery industry.

The Japanese parliament approved a budget of 44M\$ for a project intended for developing mud pumps that can pump precious mud from the deep. The Japanese government composed a list of 17 rare minerals. Today, Japan is entirely dependent on China for their supply; among them is Neodymium which is used for producing electric engines.

## 7. Israel

**The Israeli government will act to cancel the congestion tax in central Israel. The tax was supposed to take effect in March 2025, and the first tender for its deployment was already published.**

The new Israeli government will act for the cancelation of the congestion tax in central Israel that was supposed to take effect in 2025, as appears from article 83 of the new coalition agreement. The tax was included originally in the 10<sup>th</sup> chapter of the economic plan for the 2021-2022 budgets, and according to it, a collection mechanism from passenger cars entering the Dan conurbation area during rush hours was supposed to be determined. The plan was to divide the Dan conurbation area into three "Rings", each composing a separate price zone according to different day hours.

The original proposal determined that the maximum price per day per car would be 37.5 NIS, and the cost of entering each "Ring" would span between 5-10



NIS during rush hours and 2.5-5 NIS during hours with less congestion. The plan was supposed to result in 1B NIS in taxes for the treasury each year, reduce emissions in the greater Tel-Aviv area, and eventually allow a gradual decrease in car purchasing tax over time. In September, Ayalon Highway even published a preliminary tender for establishing the system. It is still unclear whether the project will be halted completely, administratively, and budgetary or postponed.