The great hybrid hoax

How hybrid cars delay climate action and may increase pollution: the case for a Swedish ban on cars with internal combustion engines and its advertising

badvertising

NEW WEATHER SWEDEN

Advertising has us chasing cars and clothes,
working jobs we hate so we can buy shit we don't need.

Fight club

badvertising

© New Weather Institute Sverige 2021, in this report referred to as New Weather Sweden.
badvertising.se
newweather.se
info@newweather.se

Cover image: Jonathan Gallegos/Unsplash
The pictures on pages 17–25 are used with reference to the citation right to illustrate the content of the text.

Content

Summary 6
The world's first fossil-free welfare country? 8
The pandemic and the cars 10
The car and the planet 12
Lipstick on a pig 14
The great fraud 16
Misleading advertising 22
Conclusions and demands 24
Hybrids and other cars 26
Table, plug-in hybrids ICCT 27
Notes 28

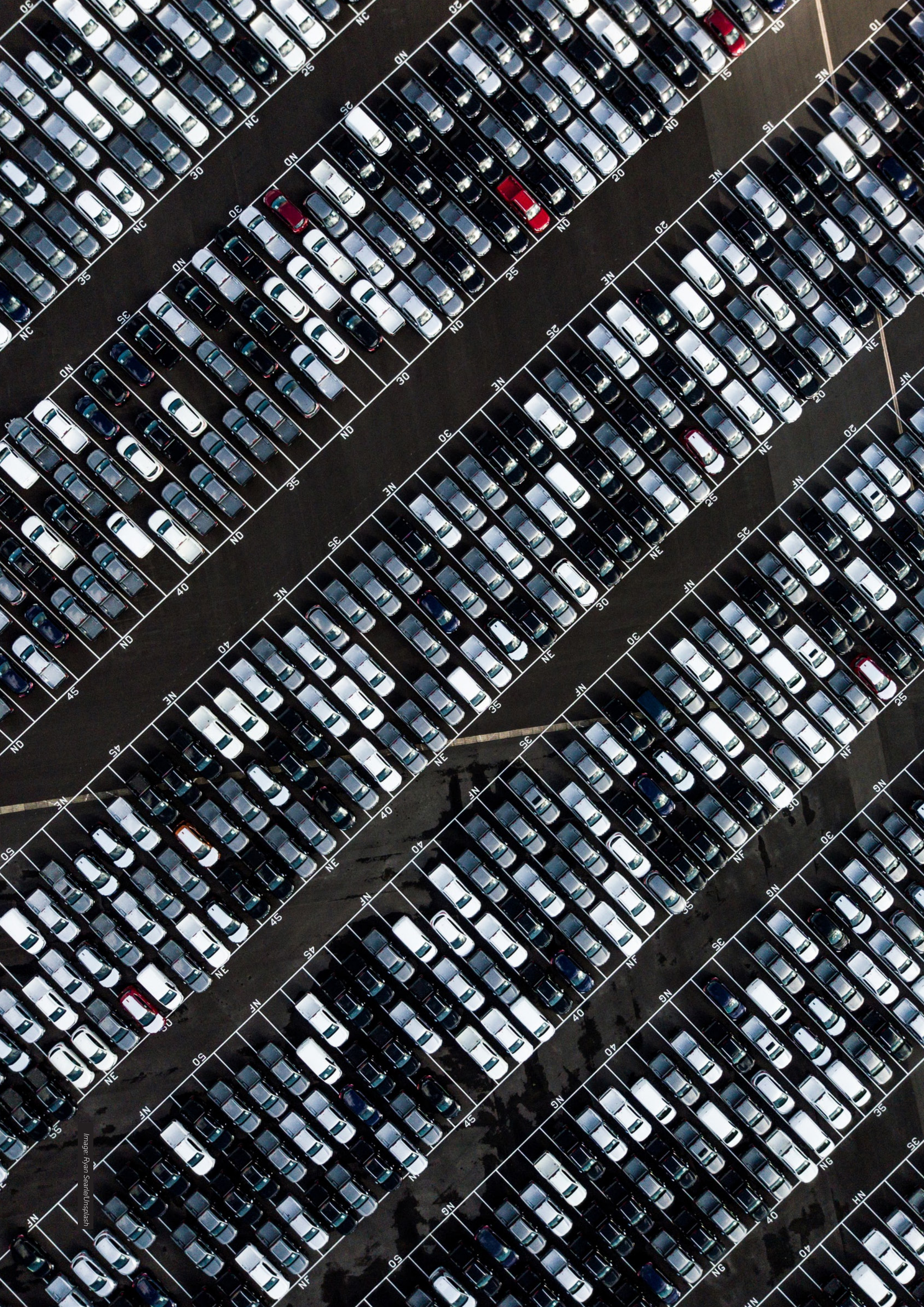


Image: Ryan Searle/Unsplash

Summary

In many countries, bans or other rules are now being introduced to stop the sale of new cars with internal combustion engines. It is a clear and reasonable measure to reduce greenhouse gas emissions and improve air quality in cities in the long run.

A ban is also being investigated in Sweden, but the government has requested that the investigator propose exemptions for so-called plug-in hybrids - cars powered by gasoline or diesel but with electric support engines. It is a logical but unfortunate consequence of Sweden's strategy to try to do two contradictory things at the same time: to reduce the emissions of greenhouse gases from cars and to support the Swedish car industry.

Such an exemption risks further delaying the already slow climate efforts in the transport sector and locking Sweden into the fossil dependence the government says it wants to take the country out of.

New Weather believes that Sweden urgently needs to introduce instruments that reduce the amount of transports and make them more efficient. A ban on internal combustion engines – including plug-in hybrids - is a part of this. But it is not enough. Priority must now be given to swift and effective measures that reduce the sales of new cars with internal combustion engines.

This also applies to plug-in hybrids, which are now intensively marketed as alternatives to electric cars. Sales have absolutely exploded in the past years, at least partly at the expense of cars without tail-pipe emissions. Five years ago, as many plug-in hybrids as electric cars were sold; in 2020, more than twice as many were sold.

What appears to be a conscious greenwash strategy now blurs the boundary between fossil cars and electric cars. We are led to believe that a plug-in hybrid is a kind of electric car and that all rechargeable cars are electric cars.

The hybrids are marketed with texts and images that depict them as electrically powered. In their statistics and communication, car industries group them with real electric cars under the concept rechargeable, the auto industry's most common buzzword.

In 2020, the Swedish government paid out at least £840 million in bonuses for plug-in hybrids which, according to independent studies, emit more greenhouse gases than the EU average for new cars.

The confusion has gone so far that the term *"electric car"* is now used for all kinds of hybrids and real electric cars in both advertising and news reporting. The auto industry and many politicians describe them as part of the solution instead of part of the problem. Two thirds of the rapid electrification that many are talking about is actually plug-in hybrids.

An important reason for this development is shortcomings in the methodology used to calculate emissions from plug-in hybrids, WLTP. It provides unrealistically low figures used by manufacturers and authorities. Plug-in hybrids are often reported to have 70–80 percent lower emissions than the same cars without charging technology.

However, independent studies show that actual emissions are much higher than indicated. According to these, a Volvo V60, for example, emits 122 grams of carbon dioxide per kilometre, not 41 grams as stated by WLTP, the EU standard for determining levels of CO2 emissions and fuel consumption of cars.

When plug-in hybrids are equated with real electric cars in terms of environmental performance, it is easy to choose the hybrid, which is significantly cheaper and has a longer range. This slows down the development and delays the transition of the transport sector to more efficient zero-emission cars.

Politicians have been quick to embrace these fake electric cars, costing the state large sums of money. The low emissions figures given for plug-in hybrids according to WLTP entitle them to large climate bonuses.

In 2020, the Swedish government paid out at least SEK 1 billion (approximately £840 million) in bonuses to plug-in hybrids which, according to independent studies, emit more greenhouse gases than the EU average for new cars. If real emission figures had been used, only a few plug-in hybrids would obtain subsidies under the Swedish bonus-malus scheme; most would instead give the owners increased taxes.

The problem is compounded by the auto industry's often cynical and irresponsible marketing of plug-in hybrids. Part of it is potentially illegal since it misleads the consumer into believing that plug-in hybrids are comparable to electric cars.

Sweden urgently needs to introduce a cut-off date for the sale of cars with internal combustion engines. This would give long-term signals to the entire industry. Priority must, however, be given to immediate measures to curb the sale of cars with internal combustion engines now

- **The most urgent thing to do is to reform the bonus-malus system so that cars that are wholly or partly powered by petrol or diesel – including plug-in hybrids – are excluded. At the EU level, the WLTP system needs to be revised to make it relevant, as well as the emission standards system for new cars.**
- **Legislation and regulations must be amended to stop the advertising for products that destroy the earth's climate, including plug-in hybrids and other cars with internal combustion engines. In the meantime, the media need to take responsibility for what they convey in their advertisements and features.**
- **The car industry must immediately stop marketing plug-in hybrids as climate-friendly and electric. The industry and public authorities need to distinguish clearly between electric cars and cars with internal combustion engines, in both their statistics and their communication.**

Image: Ashim D Silva/Unsplash

The world's first fossil-free welfare country?

In order to reduce CO2 emissions and improve air quality in cities, several countries in Europe have decided to ban or phase out cars with internal combustion engines.[1] In addition, a large number of cities have announced local measures to limit traffic with such cars and Denmark has taken initiatives to phase out fossil cars throughout the EU.

The decision that has attracted the most attention internationally is that the UK will prohibit the sales of new cars powered by petrol or diesel alone from 2030 and to also ban plug-in hybrids from 2035.

Norway is however a few steps ahead. In 2010, more electric cars were sold in Sweden than in Norway[2], but the Norwegian government has systematically introduced instruments that favour electric cars and increased the charging possibilities. Between 2016 and 2020, the share of electric cars in car sales increased from 16 to 54 percent[3]. All new cars sold after 2025 must be zero-emission. Norway is also aiming not to increase car traffic in cities.

Last year, more than every second new car in Norway was electric and the goal is for all new cars to be completely electrically powered in five years. The car manufacturer Volkswagen is aiming for 90 percent of its sales to consist of electric cars next year, and will in 2023 not sell any cars at all with internal combustion engines. The company's decisions are based entirely on political decisions.

The distance between Oslo and Stockholm is 420 kilometres by straight distance, but the cities are light years apart when it comes to transportation policy. In Sweden, there is no target for electric cars and no ban on cars powered by internal combustion engines.

In the January Agreement [that formed the basis for the current minority government], the coalition parties the Social Democrats and the Green Party and their supporting parties, the Centre Party and the Liberals, agreed that it should not be *'allowed to sell any new petrol and diesel cars from 2030'* and that such legislation should be adopted by 2022 at the latest. A governmental commission of inquiry was set up in 2019 to outline how a ban might be constructed.

The question, of course, is what *'petrol and diesel cars'* really means. A hint is given in the government mandate for the commission.[4] According to this, the commission should *"propose how vehicles powered by clean fuels or blended fuels with a high percentage of renewables or that are plug-in hybrids can be exempted from a ban."*

Biofuels and plug-in hybrids are distractions that delay the transition.

Such an exemption would mean the continued sale of cars dependent on fossil fuels and emitting CO2. There is also much evidence that they emit almost as much as the fossil cars that the government wants to ban.

For years it has been the ambition of the government to turn Sweden into *"the first fossil-free welfare country"*. However, the governments responsiveness to the wishes of the automotive industry is moving Sweden to the bottom of the class. While other countries ban and phase out plug-in hybrids, the Swedish government is handing out bonuses to buyers.

New Weather calls on the government to adopt a Swedish ban with a cut-off date in the near future. This ban needs to include all cars powered completely or in part by internal combustion engines. But priority must be given to effective measures to reduce the sales of cars with internal combustion engines, including plug-in hybrids, immediately.

Image: Jonathan Petersson/Unsplash

The pandemic and the cars

By the time the corona virus began to spread over the world in early 2020, global car manufacturing had stagnated. In Europe, where 25 percent of the world's cars are produced, the mood of the automaking giants and their subcontractors was gloomy.

At the beginning of 2019, the European Automobile Manufacturers Association (ACEA) predicted a cautious 1 percent increase in sales during the year. But the forecast revised downwards in June, to a decrease of the same magnitude.[5] At the end of the year, production was found to have fallen by as much as 5 percent.[6]

There are a number of possible reasons for this development. New players and innovative solutions in passenger transport, such as ride-sharing, e-hailing and micro-mobility are identified as one important reason. Increased environmental awareness is considered to be another, as well as a new, more hesitant, attitude to mobility among young people.[7]

Yet this was a light breeze compared to what happened during the pandemic year of 2020. The world economy reeled and people experienced great economic uncertainty. Many postponed decisions on purchases of capital goods and car sales fell by a further 24 per cent.[8]

Car manufacturers have huge capital reserves to use in bad times. In Europe, the auto industry accounted for around 7 percent of GDP in 2018, employed 2.6 million people and had a turnover of €1,194 billion. But the almost 25 percent decrease hit hard. Especially in times of other major challenges.

However, industry analysts believe that this is a temporary slowdown that will be compensated as vaccines against covid-19 are distributed and lock-downs lifted. The industry believes in a recovery in 2021 and 2022 with a 10 percent annual increase in sales.[9]

The consumers' need – or desire – for a new car remains. When the financial turmoil calms down, customers will come back. Studies show that half of those who refrained from buying a car during the pandemic will make it a priority in 2021. In a few years or so, the sales figures will be back at the same levels as before the pandemic. Or higher.

In the wake of the pandemic, car advertising is expected to increase sharply.[12]

The start of 2021 suggests that the forecasts are correct. Car sales increased sharply between January and April.[10] At least parts of the industry now see the pandemic as an opportunity to reverse the negative development that characterised the industry in the years before covid-19.

They believe that the desire to avoid public transport can motivate many young people and first-time buyers to buy a car. Previously, these have mainly used non-car means of transport because they are simpler, more flexible and better for the environment. Car manufacturers now see an opportunity to attract young people as customers, not least by highlighting their electric models to appear relevant and responsible.[11]

In order for the pandemic to become the turning point for climate action that it has the potential to be, we need policies that facilitate the return of public transport with renewed vigour and harness the opportunities for reduced travel. And a policy that clearly steers away from inefficient fossil cars with no future.

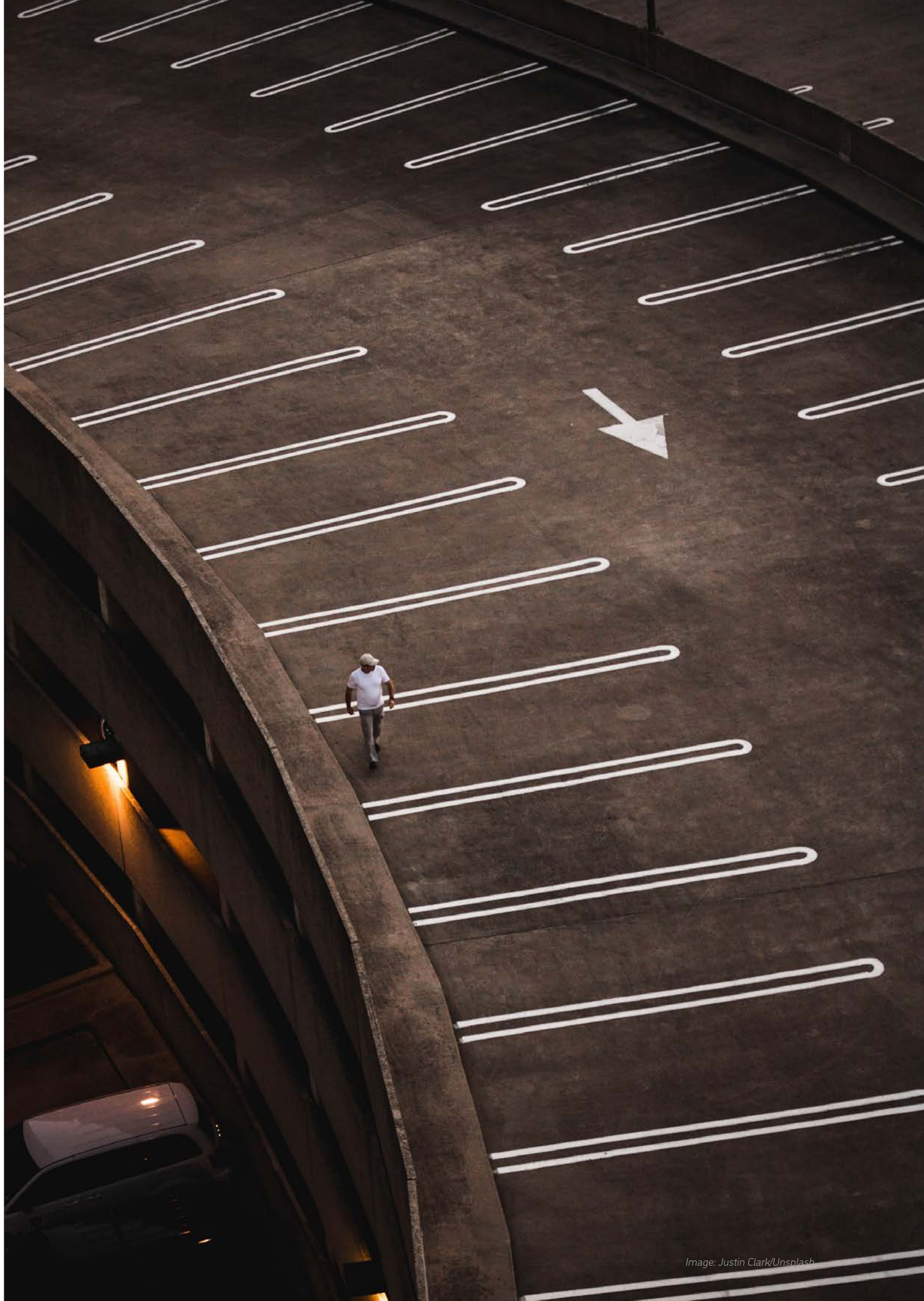


Image: Justin Clark/Unsplash

The car and the planet

No one knows how many cars there are in the world, but the number is usually estimated to be about a billion. This means one car for every eight people, old and young. In Sweden, we have more: more than one car per two adult inhabitants. And the number continues to increase.

Many people are dependent on cars for their everyday life and in particular to get to work. Our society is built on their existence. But cars are also part of what threatens our society: the climate threat.

In Sweden, transport accounts for about one third of CO2 emissions and private cars for one fifth. In addition, road traffic contributes to other emissions that are hazardous to the environment and health. Emissions need to be reduced quickly, sooner rather than later.

The importance of transportation for climate efforts is underlined by the fact that the Swedish parliament has set a specific climate target for it. Emissions are to be reduced by 70 per cent by 2030.[13] Achieving the target is a challenge, and with the policies adopted by parliament and the government, things are going far too slowly.

According to the Swedish Environmental Protection Agency and the Climate Policy Council, emissions need to decrease by 8 percent annually, but the decrease in 2018–2019 was barely 2 percent per year.[14]

Many researchers believe that the most important thing is to reduce the amount of motorised traffic. At the same time, cars need to become more efficient and have zero emissions at the exhaust pipe. But the Swedish strategy has for decades focused on changing the fuel. In order to step up the climate work, the government and parliament are mainly counting on a sharp increase in the use of biofuels.[15] This is to be done by forcing oil companies to blend more fuel from renewable raw materials into petrol and diesel.

Image: Denys Nevozhai/Unsplash

The strategy is doomed to fail. For example, the Climate Policy Council believes that this is a risky path to take. Sweden needs to broaden its efforts and put more emphasis on reducing the amount of motorised traffic, more efficient vehicles and a faster transition to electricity.[16]

One of the problems with a strong focus on only changing fuel is that it overlooks the most important changes: reducing energy consumption by reducing transportation and making vehicles more efficient.

Another is that no one can say where such huge quantities of biofuel will come from. If they are to be produced in Sweden, forestry logging needs to increase dramatically, with up to a doubled production and potentially major impacts on biodiversity.[17]

If the fuel is to be imported instead, as it is today, the question arises as to how it has actually been produced and whether it is reasonable and ethical for the Swedish transition to take place at the expense of other countries. Already today, Swedish drivers use 20–25 percent of the world's production of synthetic diesel, HVO.[18] The fact that HVO also contains a high proportion of palm oil products makes matters even worse. A substantial increase in imports is not justifiable.

Still another problem is that switching fuels will not help the climate here and now. Biofuels emit more carbon dioxide per unit of energy than petrol and diesel, and even if the gas will be absorbed by nature within a few decades, it affects the climate while it is in the atmosphere.

Every gram of CO2 in the atmosphere matters, regardless of where it comes from. Only a very small fraction of forest biomass can make a positive contribution in the short term without affecting the climate or threatening biodiversity.[19]

Moreover, according to many scientists and environmental organisations, the Swedish targets are far from sufficient to achieve the ambition of the overall climate goals of the Paris Agreement - to limit global warming to 1.5 degrees. Professor Johan Rockström and the Swedish Society for Nature Conservation say, for example, that emissions need to be zero by 2030 or no later than 2035.[20]

It is an almost utopian objective. Ninety percent of the cars sold today have an internal combustion engine and many of them will still be in use in 2035. We are locking ourselves into a carbon emissions economy.

This highlights both the magnitude of the task before us and the fact that what we decide today must be based on what we want reality to look like in fifteen years. It also shows how wide the gap is between the parliament's objectives and what is required according to science.

It is becoming increasingly clear, even to many biofuel advocates, that switching fuels is not the solution many believed it to be just a few years ago. Reduced transportation, more efficient vehicles and a very rapid transition to zero-emission cars are what is needed. Norway has shown that the electrification can proceed quickly.

In order to reach the climate objectives, transportation must be reduced and cars made more efficient. And basically all new cars need to have zero emissions at the tailpipe.

In order to reach the climate objectives, transportation must be reduced and cars made more efficient. And basically all new cars need to be completely emission-free.

Lipstick on a pig

Advertising cars that destroy the earth's climate should be banned, but even today some kinds of car advertising are potentially illegal. Right in front of our eyes, one of the most flagrant examples of greenwashing of our time is taking place: the *"rechargeable car"*.

The automotive industry was remarkably late in adapting to the major change that is taking place when both the EU and the public want a rapid phase-out of petrol and diesel cars. Instead of prioritising the development and production of electric cars, they seem to have chosen to improve petrol and diesel engines, lobby against legislation and manipulate test results.

None of the major car manufacturers except Tesla made a timely investment in the development of electric cars and batteries. A transition from producing fossil cars to electric cars requires investing tens of billions of pounds and takes time. Electric cars also cost approximately £10,000 more to manufacture than corresponding petrol or diesel cars.[21]

The severity of the situation has become apparent to the industry far too slowly. It started with the EU regulatory framework and targets for greenhouse gas emissions from new passenger cars.

In 2015, new cars were allowed to emit an average of 130 grams per kilometre, which corresponds to a fuel consumption of approximately 0.55 litres of gasoline per 10 kilometres. From 2021 onwards, the level will be reduced to 95 grams and by 2025 and 2030 emissions will be reduced by 15 and 37.5 grams respectively compared to 2021. Manufacturers who fail to comply with these conditions will be heavily fined.

The reduction in emissions achieved through the electric car boom last year has been completely offset by increased emissions from more SUVs.[26]

The internal combustion engine has undergone major technological changes and has become increasingly efficient, but does not stand a chance to achieve the objectives, especially since cars have become bigger and heavier.

The manufacturers' solution was a makeover. They put lipstick on the old pig and called it the ***"rechargable car"***, a plug-in hybrid.

The petrol and diesel cars were supplied with small electric auxiliary engines and batteries so that they were able to drive a short distance on electricity. Which caused a slight emission reduction. On the basis of unrealistic assumptions in the model used to calculate plug-in hybrid emissions manufacturers could then claim that the cars complied with EU requirements. And not only that, as shown in the next section, the cars are also financially supported by the government.

This fossil half-measure is now pouring out on the market, at least partly at the expense of electric cars. Many people who buy a plug-in hybrid think they have bought a kind of electric car, or at least a car with very low emissions.

The manufacturers reinforce this by portraying the sales of plug-in hybrids as a revolution. They argue that the car fleet is undergoing rapid electrification and that the proportion of new cars that are rechargeable is increasing at a record rate.

"Compared to last year, the number of rechargeable cars has increased by 116 per cent so far this year", the car industry association BIL Sweden for example wrote in a press release on 1 December 2020 and continued:

"This is again a record for a single month and a significantly higher proportion than November last year, when rechargeable cars accounted for 14 percent. Sweden is a leader when it comes to rechargeable cars. During the first nine months of this year, Sweden was number one in the EU and third in Europe, after Norway and Iceland, in the proportion of the total new car registrations that were rechargeable cars."

Rechargeable has become the automotive industry's most common buzzword. In this single press release, it was mentioned seventeen times.

The word says nothing about the cars' fuel, technology or carbon dioxide emissions – only that they can be charged. By using the term for both plug-in hybrids and electric cars, the distinction between fossil and electric cars is being blurred. We are led to believe that a plug-in hybrid is some kind of electric car.

Model names are invented that associate to electricity, in advertisements the cars are shown parked at a charging box with a cord in the front and headlines such as *"Organic Mobility"*, *"Luxury and Electricity"* or *"Electrifying everyday life"*.

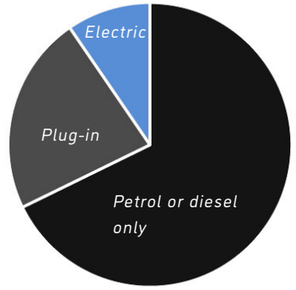
Everything suggests that it is a conscious strategy. That BIL Sweden uses the word rechargeable seventeen times in the same press release is no coincidence. Nor that Volvo, which recently presented its first electric car, has bundled it together with all its seven plug-in hybrids under the joint name Recharge.

Let us return to BIL Sweden's press release. Of the nearly 100,000 rechargeable cars included in the statistics commented on, only 21,334 were electric cars.[22] The rest were plug-in hybrids, or *'fake electric'* as the organization Transport & Environment calls them.[23]

The boundary between hybrids and electric cars has now become so diffuse that both the news media and advertising talk about electric cars when hybrids are intended.[24] An advertisement for Fortum even calls hybrids, i.e., hybrids that cannot be charged from an external source, electric cars (see page 18).

In the wake of this conceptual shift the electrification of cars is described as a success story. The car industry, authorities, politicians and the media pay tribute to the rapid electrification and talk about an electric car boom. To be sure, sales of electric cars are accelerating fast. But not fast enough. Fossil plug-in hybrids make up most of the rechargeable cars that BIL Sweden highlights as a success.[25]

Two-thirds of the fast electrification is fake electric – a fraud.



Barely 10 percent of new car sales in 2020 were electric cars. Plug-in hybrids accounted for 23 percent while 65 percent were cars powered entirely by petrol or diesel. Sales in early 2021 were characterised by a volatile market due to the changes that occurred in the bonus-malus system (page 20).

Table 1: New car sales in Sweden 2015–2020 and share of plug-in hybrids and electric cars, per cent. 2021 January–April only.

	Total	Plug-in	Electric
2015	344 968	0,1	0,1
2016	372 287	0,2	0,1
2017	379 292	4	1,1
2018	353 692	6,1	1,9
2019	356 013	7,1	4,4
2020	292 024	22,7	9,6
2021	112 743	28	8,8

Source: BIL Sweden

The great fraud

The fact that the car industry wants to blur the distinction between plug-in hybrids and electric cars would perhaps not be that bad if the hybrids were as low-emission as the manufacturers claim. According to their own data, emissions are reduced by up to 80 percent compared to similar cars without charging technology.

On short journeys at a low speed – and if the car is fully charged – it is mainly the electric motor that is used. However, for longer drives, or when the car is charged less often, the internal combustion engine is mainly used. Since the battery and the electric motor make the car heavier, it draws more petrol or diesel than a similar car without electrical technology.

Two-thirds of the rapid electrification is fake electric – a fraud.

This means that the plug-in hybrid's emissions to a large extent depend on how it is used. If the car is always charged and only driven smoothly on short distances, –30 or 50 kilometres – it can work almost like an electric car and produces low CO2 emissions. However, if it is mostly used on longer distances, driven aggressively or has not been properly charged, the internal combustion engine takes over. Then the plug-in hybrid is just an unusually heavy petrol or diesel car.

The methodology used to calculate the cars' CO2-emissions - World Harmonised Light Vehicle Test Procedure (WLTP) - assumes that plug-in hybrids are mainly powered by electricity and that the internal combustion engine is only used occasionally. This gives low emission figures used in statistics and in the car manufacturers' advertisements.

Most people, not least those who own a plug-in hybrid and notice that it consumes significantly more fuel than was advertised, realise that the emissions figures are not correct. We are used to optimistic calculations from the automotive industry. The question is just how much they exaggerate and how high the actual emissions are.

Two studies from the autumn of 2020 might give us the answer, or at least an order of magnitude. Both have measured and analysed the emissions during actual driving and show that the basic assumption in WLTP is incorrect. In reality, plug-in hybrids are mainly fuelled by petrol or the diesel engine, not the electric engine. This changes the entire calculation.

The independent and renowned institute International Council on Clean Transportation (ICCT) has collected data on real driving behaviour with plug-in hybrids in Europe, the USA and China.[27] The analysis shows that the electric motor was only used for a small part of the mileage and that the car was mainly powered by gasoline or diesel.

Privately owned plug-in hybrids in Germany, the Netherlands and Norway used the internal combustion engine for an average of 63 percent of the distance, while WLTP assumes that it is only used for less than 31 percent. For company cars, the difference was even greater: 80 percent was powered by the petrol or diesel engine. According to ICCT, the difference between private and company-owned cars is due to the fact that drivers of company cars charge their cars more seldom.

All in all, under real driving conditions, the cars emitted two to four times more than in the WLTP figures.

A similar analysis[28] was carried out by the Brussels-based organisation Transport & Environment (T&E), which also carried out its own measurements. The study showed that cars emitted up to 230 percent more than the WLTP indicates and in some cases four to five times more.

This difference between calculated and actual emissions resembles of Dieselgate scandal, when it was discovered that Volkswagen and other car manufacturers deliberately designed cars so that they would show low nitrogen emissions during the tests. But in reality, they were much higher than the tests showed. Perhaps the unreasonable assumptions underlying the WLTP mean that we are now facing a Hybridgate.

Figures from the ICCT study show, for example, that Sweden's most popular plug-in hybrid, Volvo V60, emits almost three times more carbon dioxide than Volvo states. This is also more than the reported emissions from a standard gasoline-powered Toyota Corolla – without charging technology.

Unfortunately, there has been no real-life studies of plug-in hybrid emissions in Sweden. However, the ICCT considers that the figures for Sweden should be similar to those for Norway, Germany and the Netherlands.

Overall, under real driving conditions the cars emitted two to four times more than in the WLTP figures.

The table on page 20 shows the official emissions and emissions that according to ICCT are actually caused by the investigated plug-in hybrids in these countries.[29] The ranking shows how popular cars are in Sweden and to the right it is stated how many of these cars were sold in the country of each model in the year 2020 and how much climate bonus the cars received.

This is deeply problematic in several ways.

• **It delays the transition to zero emissions.** All studies show that a large part of the general public have a positive view on electric cars and are considering buying one when they change cars next. Plug-in hybrids are marketed and perceived as environmentally friendly and comparable to electric cars.

Through the aggressive marketing of plug-in hybrids as an alternative to electric cars, buyers are deceived. Many who today buy a plug-in hybrid are strongly committed to the climate issue and had perhaps chosen an electric car if the actual emissions of the plug-in hybrids had been reported. The manufacturers are exploiting the demand for clean cars and delay the transition. The sales success for plug-in hybrids are at least partially detrimental to the sales of electric cars.

• **It risks eroding confidence in the car industry's environmental work, yet again**. If the data from ICCT and T&E are confirmed, there is a great risk that there will be a strong public backlash, with both carmakers and politicians accused of

A traditional fosil Toyota Corolla without charging technology emits 101–112 grams of CO2 per kilometre, significantly less than a Volvo V60 plug-in hybrid. Image: Toyota.se

The confusion between electric cars and hybrids in advertising has gone so far that even hybrids are now called electric cars. While the headline claims that **"48 old electric cars are fully at work"** *in this hydro power station, the copy reveals that this refers to batteries from used hybrid cars. Advertisement in Dagens Nyheter, 22 April 2021.*

breaking promises. It has been barely ten years since Dieselgate, when car manufacturers were caught deliberately manipulating emissions data, and twenty years since the debate on the climate fraud of ethanol cars raised backlash. Is it time for yet another scandal?

• This creates errors in the statistics. The authorities produce statistics on the climate impact of cars and they are used by politicians and officials in Sweden, the EU and the UN. But the calculations are based on WLTP data – not the actual emissions. This means that emissions are greater than we think they are.

We can expect that the 35,818 cars in the table on page 20 will be driven 15,000 kilometres each in 2021, or a total of 540 million kilometres. Instead of emitting 23,800 tonnes of CO2, real emissions can be three times as high, 77,200 tonnes.

• This steers public procurement in the wrong direction. A strong tool in the climate effort is to make demands on the procurement by municipalities, regions and authorities. The criteria of the bonus-malus-system determine what is called green cars and thus govern what is being procured. Believing they're buying a climate-friendly car, those in charge of the procurement of vehicles can then decide to buy large SUVs such as the Mitsubishi Outlander, with real emissions of 127 grams per kilometre.

• It is a fossil subsidy. The government and taxpayers pay substantial amounts of aid for the purchase of plug-in hybrids because they report low emissions. Considering how big the real emissions seem to be, it's not just a waste, – it runs counter to policy objectives and constitutes a state subsidy for large and heavy petrol and diesel cars.

The government support scheme to encourage people to buy cars with low climate impact is called bonus–malus. It is designed so that the buyer of a low-emission car receives a financial contribution (bonus), while the buyer of a higher-emission car pays a higher tax (malus).

The levels of both bonus and malus have changed since the system was introduced in 2018, but in 2020 and early 2021, the buyer of a car with absolutely no carbon dioxide emissions from the tail-pipe received the maximum bonus, SEK 60,000 (approximately £5,000).

With rising emissions, the bonus was reduced to zero when emissions exceeded 70 grams of carbon dioxide per kilometre. Cars that emit more than 90 grams per kilometre were instead hit by a higher tax, which then increases the more the car emits. Corporate cars also receive a similar bonus, but according to a different calculation model.

Since plug-in hybrids have low emissions according to WLTP, most models are eligible for bonuses. For example, those who bought a Volvo V60 in 2020 received SEK 30,726 in support from the state. If the ICCT calculations are correct, the buyer should instead pay 2,574 per year in increased tax.

In 2020, the state paid out SEK 213 million in support of the purchase of 6,941 Volvo V60, a car that, according to ICCT analyses, emits significantly more carbon dioxide than the EU average for new cars.

Even a Volvo XC90, which weighs three tonnes, has three hundred horsepower and, according to the ICCT, emits 218 grams of CO2 per kilometre, qualified for a SEK 14,304 bonus. The state paid out SEK 17 million in support to well-off (and probably well-meaning) citizens for purchasing *"the car that takes care of you"*.

In 2020, the state paid out SEK 213 million in support of the purchase of 6,941 Volvo V60, a car that emits significantly more carbon dioxide than the EU average of new cars.

This system is, to put it mildly, ineffective. In total, the state paid out SEK 1.1 billion (approximately £92 million) in bonuses to the cars in Table 2.[30]

In fact, none of the ten models included in the ICCT survey would have been eligible for bonuses if the organization's figures for actual emissions were used (table 2). Most would instead be hit by a malus, a higher tax. The compilation lacks all the plug-in hybrids not covered by the ICCT survey. When these are added, the state subsidy on fossil cars is potentially well over SEK 1 billion for 2020.

On April 1, 2021, the rules in the bonus-malus system were amended to reward electric cars higher than plug-in hybrids.[31] Among other things, the limit for receiving bonuses was lowered to 60 grams of carbon dioxide per kilometre. At the same time, the bonus levels were adjusted.

The changes mean that the bonuses for plug-in hybrids will be approximately SEK 10.000 lower per car, but the Volvo XC90 is the only model in the table that is no longer receiving a bonus.[32] The government's assessment is that the change will have a limited effect in total. ""

The bonus-malus system is an important tool for converting the vehicle fleet to zero-emission cars, but the support for plug-in hybrids is a flaw that needs to be immediately removed. This has turned the system into one of Sweden's largest and most unnecessary fossil subsidies.

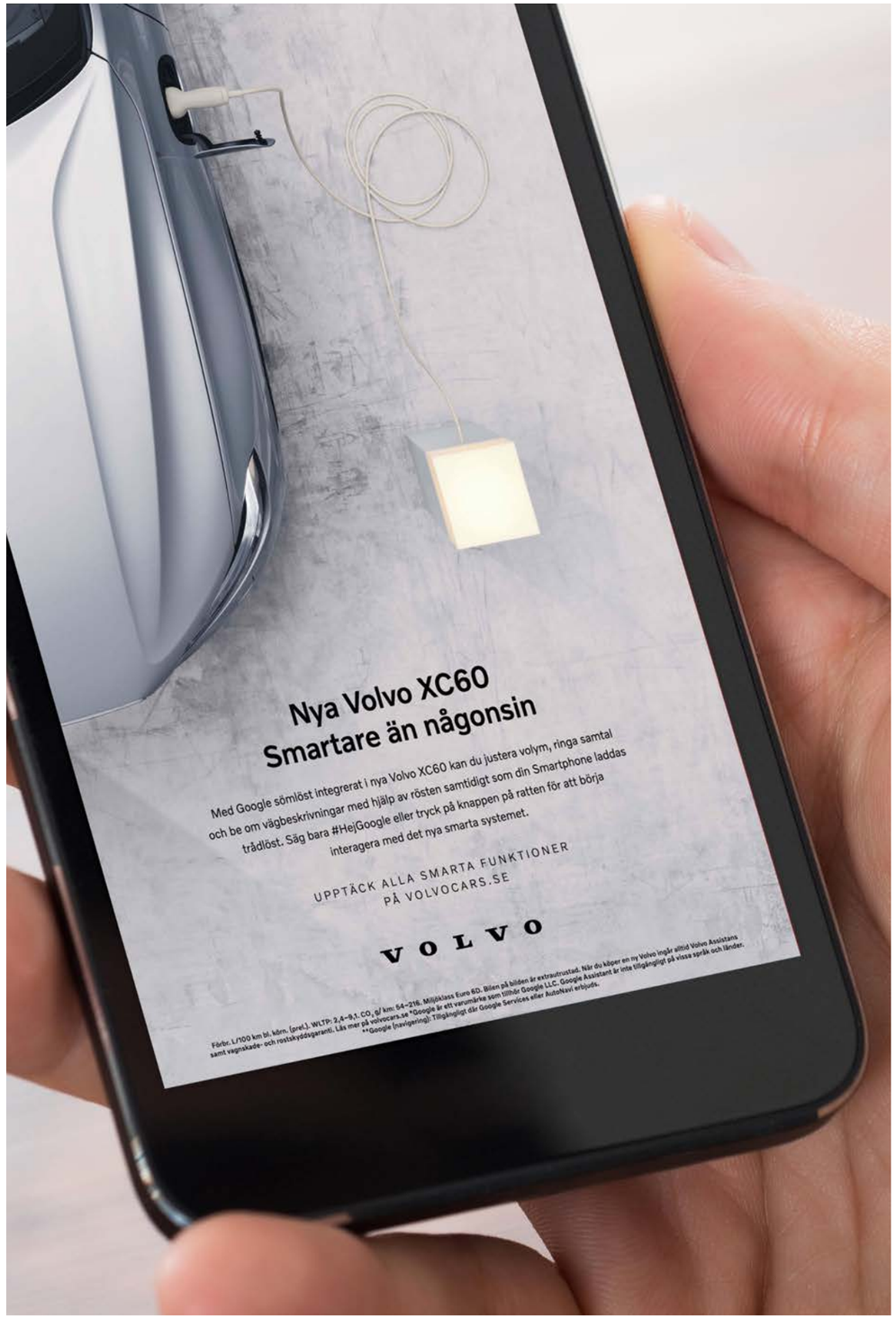
"The new Volvo XC60 – Smarter than ever" *Page 21*

Focus on charging box and cord. The Volvo XC60 Recharge is an SUV with charging technology that allows it to run some 40–50 kilometres on electricity if it is fully charged at the start, the rest of the journey it is powered by gasoline. According to ICCT analyses, it emits on average 149 grams of CO2 per kilometre in real-world driving, well above the average for new cars in the EU, 95 grams. In 2020, the buyer received a bonus cheque for SEK 20.730 from the state. Advertisement in Dagens Nyheter, March 2021

Table 2. Official and actual emissions of CO2 per kilometre for the ten most common Swedish plug-in hybrids included in the ICCT review. The rank shows the model's position on the Swedish sales list of plug-in hybrids in 2020. To the far right is the number of cars sold in Sweden in the same year and the bonus paid by the state per car (SEK).

Rank	Modell	CO2 official	CO2 ICCT	Number	Bonus
1	Volvo V60	43	122	6 941	30 726
2	Volvo XC60	54	149	6 624	20 730
3	VW Passat	41	106	5 870	38 580
5	Kia Niro	31	75	4 324	37 866
6	Kia Optima	36	83	3 632	35 724
7	Mitsubishi Outlander	44	127	2 821	27 156
9	VW Golf GTE	36	116	2 514	41 436
10	BMW 330E	47	140	2 309	34 296
15	Volvo XC90	50	218	1 194	14 304
21	Mercedes GLC	60	154	991	23 586
	Medium	44	143	3 582	31 348
	In total			35 818	1 122 839 232

Sources: BIL Sweden, ICCT, manufacturers and and the Swedish Transport Agency. A detailed table can be found on page 27



Misleading advertising

In Sweden and many other countries, the legislation has always given the advertising industry free rein. The Marketing Act is the general law governing how companies are allow to market themselves. The aim of the law is to *"promote the interests of consumers and industry in connection with the marketing of products and to discourage marketing that is unfair to consumers and traders"*.

The law can be said to delimit the state's ability to regulate advertising and sales measures that are deemed to be questionable. It contains three general clauses, two stating that marketing shall be consistent with good marketing practice and that information of particular importance shall be provided. The third concerns unfit products. In addition, there is a so-called prohibition catalogue with explicit prohibitions that actually are covered by the general clauses, but which are nevertheless considered to be in need of clarification.

The framework for what is considered good marketing practice is broad and is often open to interpretation. This is what the law says:

5 § Marketing shall be consistent with good marketing practice.

6 § Marketing that contravenes good marketing practice under Section 5 is to be regarded as unfair if it appreciably affects or probably affects the recipient's ability to make a well-founded transaction decision. Unfair marketing is prohibited under the provisions contained in the EU directives.[33] The Swedish Consumer Agency believes that *"[m]arketing is misleading if it contains incorrect claims or represents the product in a misleading way."*[34]

A reasonable interpretation of this is that advertising is inadmissible if it makes us perceive products in a certain way, while in reality they mean something else. For example, a '*vegan hamburger*' must not contain any meat, milk or eggs. Similarly, an electric car cannot be powered partly by petrol or diesel.

Yet plug-in hybrids are often marketed as electric, with texts that bring electricity to mind or pictures where they are parked with a cord in the front. This is greenwashing.

Volkswagen, which misled the whole world with its Dieselgate emissions figures, seems to be doing so consistently. Volvo, which has one of the world's most climate damaging models and only has one electric car model, now markets all its seven plug-in hybrids (and the electric car) jointly under the name Recharge.

New Weather Sweden believes that the design of a large part of the advertising published for plug-in hybrids is likely to negatively affect the recipient's ability to make a well-founded decision according to the Marketing Act.

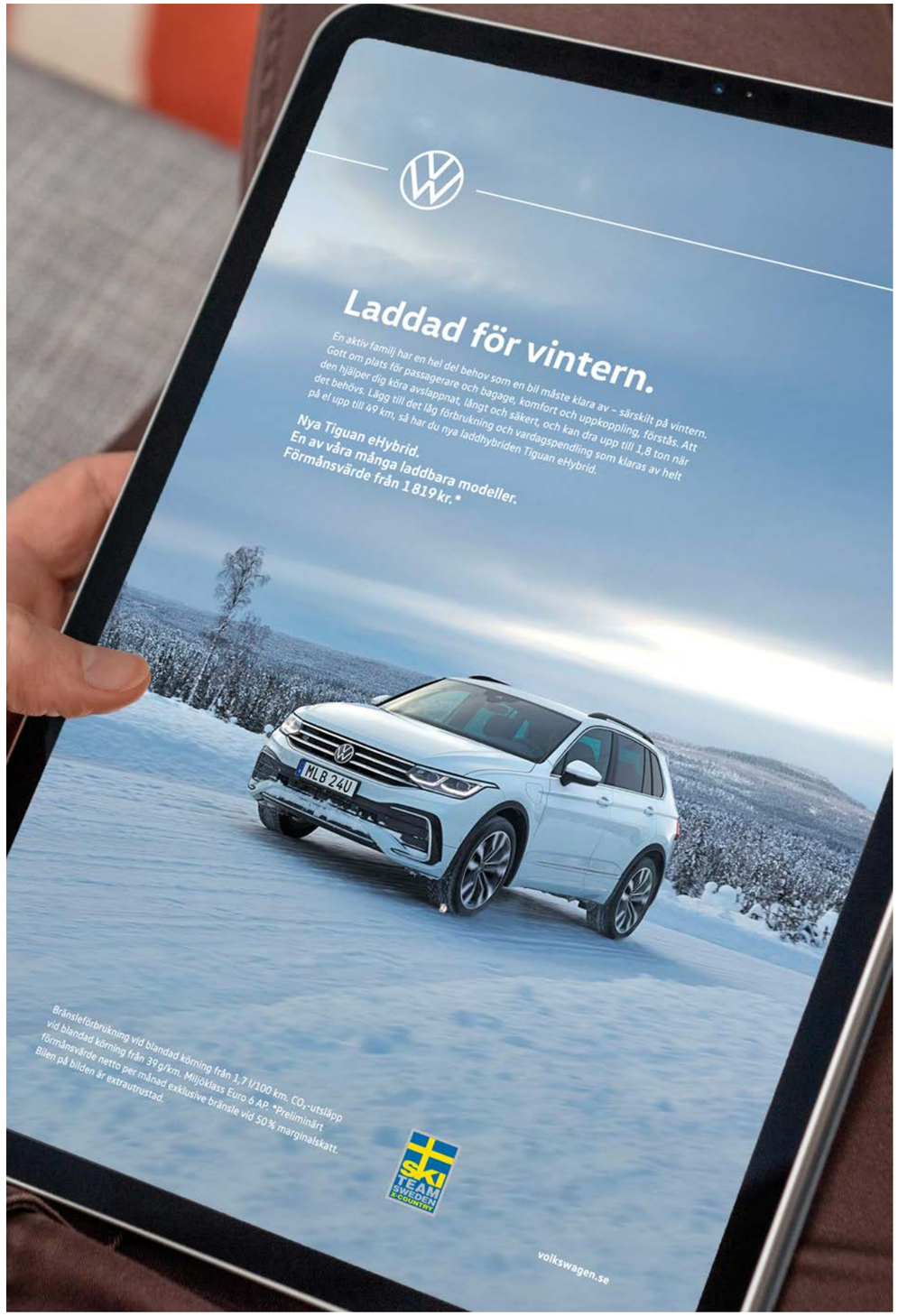
It presents the product in a misleading manner. The consumer is led to believe that plug-in hybrids are electric cars, despite the fact that they are climate villains that fuel the climate emergency. They're fake-electric.

This affects many buyers who probably think they are making a climate-smart choice, but it also affects society and other citizens by delaying the transformation of the transport sector. Ultimately, it also affects the automotive industry itself, since the companies do not move away from their fossil dependence and become competitive in an increasingly demanding market.

"Charged for winter"

Volkswagen is one of the world's largest manufacturers of cars with internal combustion engines, such as Tiguan eHybrid. They often market their hybrids in a way that can make the reader perceive them as electric. Ironically, Volkswagen is also a sponsor of the Swedish national skiing team. Advertisement in Dagens Nyheter, February 2021

Page 23



Conclusions and demands

The climate crisis is acute, here and now. We are on the point of exceeding the limit of 1.5 degrees Celsius and on the verge of losing the opportunity to slow down a rampant climate chaos. The time to act is now.

Sweden needs a ban or other instruments banning the sale of new cars with internal combustion engines, at the latest by 2030. It is absolutely crucial that plug-in hybrids are subject to the same ban.

Everything suggests that plug-in hybrids emit much more carbon dioxide than the official figures indicate. This is a problem created by the method for calculating emissions used within the EU, WLTP, but it is exacerbated by the fact that the Swedish bonus-malus system gives them a climate bonus. This unfortunate combination is now being exploited by the automotive industry, which equates plug-in hybrids with electric cars.

A ban sends a clear signal to the industry and the public, but it is not enough. Priority must be given to rapidly introducing effective measures to reduce the sales of cars with internal combustion engines in the near future.

The support systems in place in the EU and Sweden urgently need to be reformed to exclude bonuses and other support for cars powered in whole or in part by internal combustion engines, including hybrids. It is senseless to subsidise cars powered by petrol or diesel.

At the EU level, the WLTP system needs to be reformed, as well as the emission requirements system for new cars, as it unduly favours plug-in hybrids.[35]

Pending a ban on the sale of cars with an internal combustion engine, politicians, the car industry and the media urgently need to introduce rules to stop advertising them.

Whilst these reforms are pending, there is also a need for a ban on advertising for all cars powered in whole or in part by internal combustion engines. At the regional and local level, politicians need to ban or restrict advertising for cars with internal combustion engines where they have control.

The marketing of many harmful products has long been banned or heavily regulated. This applies to tobacco, alcohol, weapons and pesticides, for example. We know what major damage is caused by fossil-powered cars and what risks they pose to society; it is time to stop advertising them.

The car industry has a great responsibility. As a first step, manufacturers and retailers must immediately stop marketing plug-in hybrids as electric vehicles. In many cases, the design of the advertisement is potentially contrary to the Marketing Act's requirement for good marketing practice since it obviously misleads the consumers about the environmental impacts.

Industry associations, primarily BIL Sweden, and government agencies must also clearly distinguish between plug-in hybrids and electric cars in all their communications and statistics.

At the same time, the industry itself needs to take the initiative to stop all advertising for cars powered in whole or in part by petrol or diesel. In concrete terms, this means a halt to advertising for all cars with an internal combustion engine.

Media of all kinds act as the car industry's megaphones and intermediaries of commercials that destroy the climate. Like the manufacturers, they make money destroying the planet's climate.

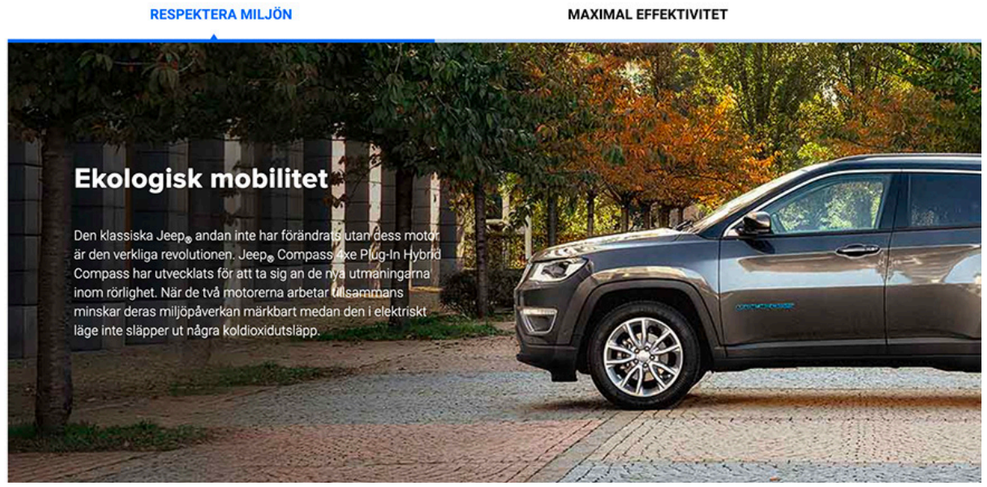
Swedish major news outlet Dagens Nyheter has for example adopted a new advertising policy stating that advertising for 'gasoline cars' should not take place in the premium space.[36] This is a great initiative, but we have not yet seen what it means in reality. According to the editorial staff, the rules must be developed through practice.

All media, such as the press, television, radio and - not least - social media, must distinguish between electric cars and hybrids and, on their own initiative, stop all advertising for cars with internal combustion engines. This is particularly important in the case of plug-in hybrids, which are often marketed with advertising that equates them with electric cars.

New Weather Sweden calls upon the following:

Sweden should introduce a deadline for the sale of cars with internal combustion engines as soon as possible. This would give long-term signals to the entire industry. Priority must, however, be given to immediate measures to curb the sale of cars with internal combustion engines now.

- **The most urgent thing to do is to reform the bonus-malus system so that cars that are wholly or partly powered by petrol or diesel – including plug-in hybrids – are excluded. At the EU level, the WLTP system needs to be revised to make it realistic, as does the emission standards system for new cars.**[37]
- **Legislation and regulations must be amended to stop advertising for products that destroy the earth's climate, including plug-in hybrids and other cars with internal combustion engines. In the meantime, the media need to take responsibility for what they convey in their advertisements and features and misleading advertising be stopped.**
- **The car industry must immediately stop marketing plug-in hybrids as climate-friendly and electric. The industry and public authorities need to distinguish clearly between electric cars and cars with internal combustion engines, in both statistics and communication.**



"Organic mobility"

Ad for Jeep Compass 4xe Plug-in Hybrid SUV. The ad was banned by the Swedish advertising ombudsman after being reported by New Weather. Image: Jeep.se

Hybrids and other cars

The car industry has become a minefield of different concepts used to describe car technology. Many relate to the word *hybrid*. Definitions about these different terms can be found below.

The internal combustion engine is an engine powered by fuels that are combusted and is sometimes called explosion engine. The technology has been dominant since the car's infancy. Gasoline or diesel are commonly used, but increasingly also liquid biofuels, which can be sourced from many different raw materials. During combustion, the fuel's carbon content is combined with oxygen and creates the greenhouse gas carbon dioxide. All hybrids have an internal combustion engine and most also have a minor electric motor of varying strength.

Mild hybrids – like all hybrids – have both an internal combustion engine and an electric motor. The electric motor is however so small that it is unable to power the car but mainly supplies single parts, such as the air conditioning. This results in a marginal reduction in fuel consumption and CO2 emissions compared to a car with an internal combustion engine only.

Electric hybrids, also called full hybrids, are petrol and diesel cars with electric motors that are slightly larger and can power the car more or less on their own for shorter distances. The battery is charged when driving with the internal combustion engine or when braking. The technology means that with normal driving, the cars consume slightly less fuel than ordinary petrol and diesel cars, but they can also be driven short distances on electricity alone.

Charging hybrids, or plug-in hybrids, have a slightly larger electric motor and larger battery than the electric hybrids, but the main difference is that they can be charged using an external electrical connector and cord. The distance travelled with electricity is often said to be forty to fifty kilometres, but in reality it is considerably shorter and plug-in hybrids are rarely powered only by electricity during normal driving. The internal combustion engine often engages even during 'electric operation', for example at higher speeds or when for other reasons more power is needed than the electric motor can handle.

According to figures calculated using the official model used (WLTP), plug-in hybrids emit on average much less carbon dioxide than a regular gasoline or diesel car, 70–80 percent reduction is a common figure. However, studies of real emissions show that the reduction is only in the order of magnitude of 15-55 percent. The level of emissions depends on how the car is being used, that is, how far it is driven and the driver's driving style, but also on how often it is charged. A discharged plug-in hybrid only functions as an unusually heavy petrol or diesel car.

Large plug-in hybrids have, according to the studies, real emissions of around 150 to 250 grams per kilometre, well above the EU average for new cars, 95 grams. It is often better for the climate to buy a smaller petrol car than a large plug-in hybrid. But even better is to buy an electric car – and best of all is not to buy a car at all.

Rechargeable cars are a concept used mainly by the car industry for all cars that can be recharged from the electricity grid – that is, plug-in hybrids and electric cars. In practice, the concept does not say much about the technology or emissions of cars, which can range from zero (electric cars) to several hundred grams per kilometre (plug-in hybrids).

Electric cars or zero-emission cars. Electric cars are powered by electric motors only and do not have an internal combustion engine, which means that they do not emit CO2 at all during driving. Zero emission vehicles also include other zero-emission vehicles, such as hydrogen cars, which may become common for heavy transports in the future.

		OFFICIAL (ICCT)			REAL (ICCT)			OFFICIAL (MANUFACTURER)	BONUS	
Model and country	Owner	Litre/10km	CO2/km	Medium	Litre/10km	CO2/km	Medium	CO2/km	2020	2021
VOLVO V60 D6 Hybrid, DE	Private	0.18	43.06		0.47	112.42				
VOLVO V60 D6 TE, DE	Company	0.18	43.06		0.49	117.21				
VOLVO V60 T8 TE, DE	Private	0.19	45.45		0.53	126.78				
VOLVO V60 (ospec), NL	Company	0.18	43.06		0.40	95.68				
VOLVO V60 (ospec), NO	Private	0.18	43.06		0.53	126.78				
VOLVO V60 TE, NL	Company	0.18	43.06	43.45	0.64	153.09	121.99	41	30,726	21,097
VW PASSAT GTE, DE	Private	0.17	40.66		0.41	98.07				
VW PASSAT GTE, DE	Company	0.17	40.66	40.66	0.48	113.62	105.85	30	38,580	27,510
VOLVO XC60 T8 TE, DE	Private	0.22	52.62		0.55	131.56				
VOLVO XC60 T8 TE, DE	Company	0.23	55.02	53.82	0.70	166.72	149.14	55	20,730	12,935
VOLVO XC90, T8 TE, DE	Private	0.21	50.23		0.70	166.72				
VOLVO XC90, T8 TE, DE	Company	0.21	50.23		1.04	248.77				
VOLVO XC90, T8 TE, NL	Company	0.21	50.23	50.23	1.00	239.20	218.23	64	14,304	0
KIA NIRO, DE	Private	0.13	31.10	31.10	0.32	75.35	75.30	31	37,866	26,927
BMW 330 E, DE	Private	0.19	46.40		0.51	121.99				
BMW 330 E, DE	Company	0.20	47.84	47.12	0.66	157.87	139.93	36	34,296	24,012
MITSUBISHI OUTLANDER, DE	Private	0.18	43.30		0.44	104.53				
MITSUBISHI OUTLANDER, NL	Company	0.19	44.25		0.75	179.88				
MITSUBISHI OUTLANDER, NO	Private	0.19	44.49	44.01	0.40	94.72	126.38	46	27,156	18,182
KIA OPTIMA, DE	Private	0.16	38.27		0.30	71.04				
KIA OPTIMA SPORTWAGON, DE	Private	0.14	33.49	35.88	0.40	95.44	83.24	34	35,724	25,178
VW GOLF GTE, DE	Private	0.16	37.08		0.39	93.53				
VW GOLF GTE, DE	Company	0.15	35.88		0.58	138.02				
VW GOLF GTE, NL	Company	0.15	35.88		0.69	163.85				
VW GOLF GTE, NO	Private	0.15	35.88	36.18	0.29	69.37	116.19	26	41,436	29,842
MERCEDES GLC, DE	Private	0.25	59.80		0.67	159.07				
MERCEDES GLC, DE	Company	0.25	59.80	59.80	0.62	148.06	153.57	51	23,586	15,267

Table 3. Figures from ICCT, manufacturers and the Swedish Transport Agency, 2021.

Notes

1 Denmark, France, Ireland, Iceland, Slovenia, Spain, Great Britain, Netherlands and Norway. International Council on Clean transportation, The end of the road? An overview of combustion engine car phase-out announcements across Europe

2 Forbes (2019) Electric cars: Why little Norway leads the world in EV usage. 2021-05-12 from https://www.forbes.com/sites/davidnikel/2019/06/18/electric-cars-why-little-norway-leads-the-world-in-ev-usage/

3 Norsk elbilforening, Personbilsalget. 2021-05-15 from https://elbil.no/elbilstatistikk/elbilsalg/

4 Swedish Government (2019). Commission directive, Dir. 2019:106

5 European automoblie manufacturers assosciation (ACEA). 2021-04-19 from https://www.acea.be/press-releases/article/auto-industry-revises-2019-car-sales-forecast-to-1

6 European automoblie manufacturers assosciation (ACEA). 2021-04-19 from https://www.acea.be/statistics/tag/category/passenger-cars-world

7 Zenith (2020). Business Intelligence, Automotive

8 European automobile manufacturers association (ACEA), 2021-01-19. Press release

9 Zenith (2020). Business Intelligence, Automotive

10 BIL Sweden. Database for new registered cars January–March 2021

11 Zenith (2020). Business Intelligence, Automotive

12 Go Auto News Premium. Car ad spending to rebound. 2021-04-24 from https://premium.goauto.com.au/car-ad-spending-to-rebound/

13 The objective concerns emissions from domestic transports except aviation compared to levels 2010.

14 Swedish Climate Policy Council Report 2021. Annual Report 2021, report nr 4, page 31

15 Swedish Government (2019). En samlad politik för klimatet, klimatpolitisk handlingsplan, prop 2019/20:65. Swedish Environmental Protection Agency (2019). Underlag till regeringens klimatpolitiska handlingsplan – kortversion. Rapport 6879.

16 Swedish Climate Policy Council Report 2021. Annual Report 2021, report nr 4

17 Swedish University of Agricultural Sciences (2020). Skogen räcker inte, hur ska vi prioritera? Future Forests 2020:4

18 Klimat 2030 (2020). HVO, RME, etanol och biogas i kommunala fordon. Swedish Government (2020), Promemoria. Reduktionsplikt för bensin och diesel – kontrollstation

19 European Commission (2021). The use of woody biomass for energy production in the EU. JRC science for policy report

20 Swedish Society for Nature Conservation (2020). Klimat, energi och transporter, policy. J. Rockström (2019). Svenska Dagbladet, Läget är akut, så här måste vi ställa om, 2021-04-25 from https://www.svd.se/laget-ar-akut--sa-har-maste-vi-stalla-om

21 McKinsey & Company (2020). The future of mobility is at our doorsteps, McKinsey Center for Future Mobility

22 BIL Sweden. Database for new registered cars 2020

23 Transport & Environment (2020). Mission (almost) accomplished, Carmakers race to meet the 2020/21 CO2 targets and the EU electric cars market

24 See Fortum's ad on page 18 and Swedish National Broadcating (Sveriges radio), Ny prognos: Enorm ökning av försäljningen av elbilar https://sverigesradio.se/artikel/7364556

25 BIL Sweden (2020). Definitiva nyregistreringar under 2020. Press release.

26 International Energy Agency, IEA, 2021. 2021-05-10 from https://www.iea.org/commentaries/carbon-emissions-fell-across-all-sectors-in-2020-except-for-one-suvs

27 ICCT (2020). Real world usage of plug-in hybrid electric vehicles – fuel consumption, electric driving and CO2-emissions

28 Transport & Environment (2020). Plug-in hybrids – Is Europe headed for a new Dieselgate?

29 The analysis by ICCT is based on data for actual driving and charging, compared to official WLTP figures. Since WLTP wasn't mandatory at the time, some of the official data are based on NEDC. The differences have been corrected as far as possible in the methodology.

30 In practice the bonus is paid with a delay of six months.

31 Swedish Government (2020). Förstärkt och förenklad miljöstyrning i bonus–malus-systemet Prop. 2020/21:68

32 Actual support from bonus-malus can be calculated at the website of the Swedish Transportation Agency https://www.transportstyrelsen.se/sv/vagtrafik/Fordon/bonus-malus/bonus/berakna-din-preliminara-bonus/

33 2005/29/EG, chapter 2, article 5

34 The Swedish Consumer Agency (Konsumentverket). 2021-04-18 from https://www.konsumentverket.se/for-foretag/marknadsforing/marknadsforingslagen/

35 Transport & Environment (2021). Cars CO2 review: Europe's chance to tackle fake electrics

36 Dagens Nyheter. DN skärper policyn mot fossilannonser. 2021-04-21 from https://www.dn.se/sverige/dn-skarper-policyn-mot-fossilannonser/

37 Transport & Environment (2021). Cars CO2 review: Europe's chance to tackle fake electrics