

# Electric cars in the corporate market: From BiK advantage to disadvantage

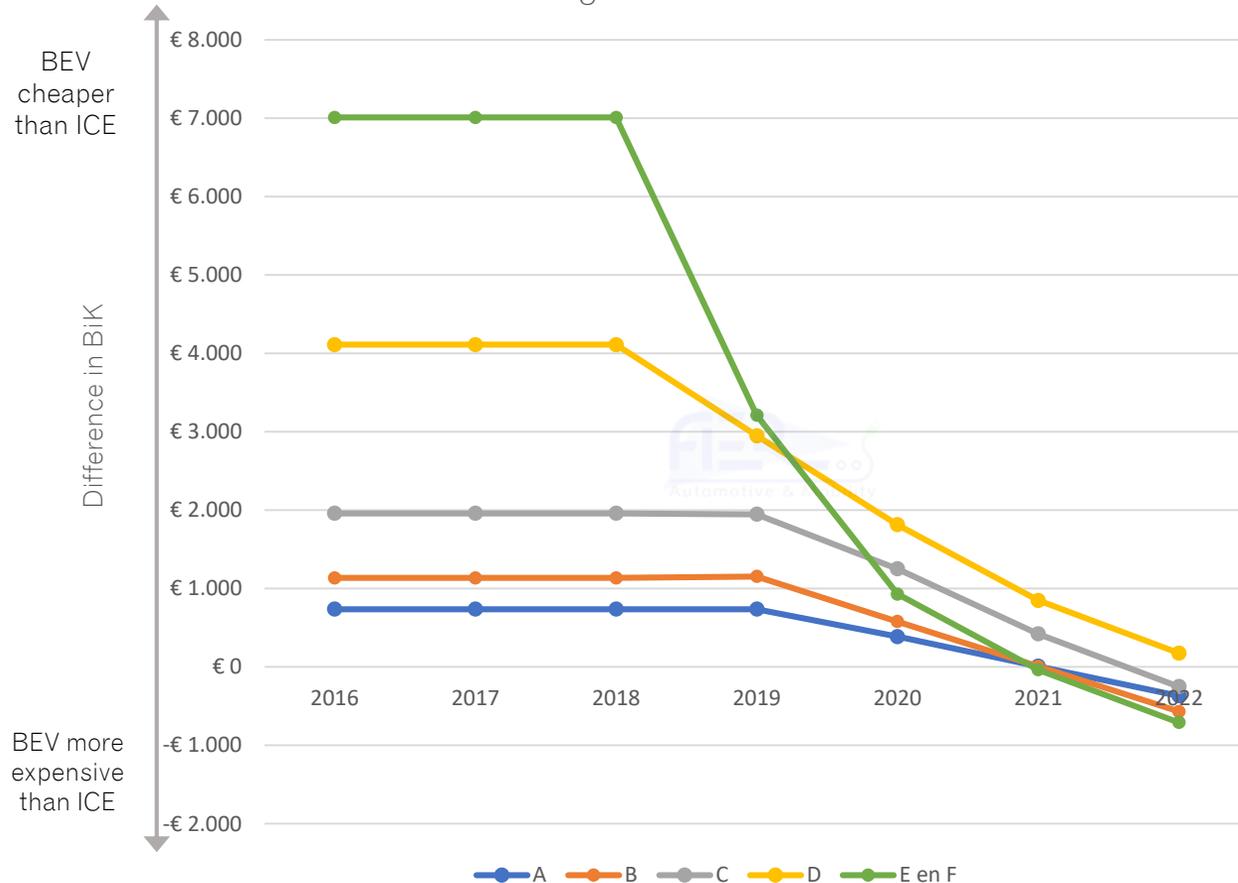
The changes proposed by the Dutch government analysed and put in international perspective.

*Driving future mobility*

October 2019

# Executive summary

Difference net BiK between ICE and BEV  
in all car segments in the Netherlands\*



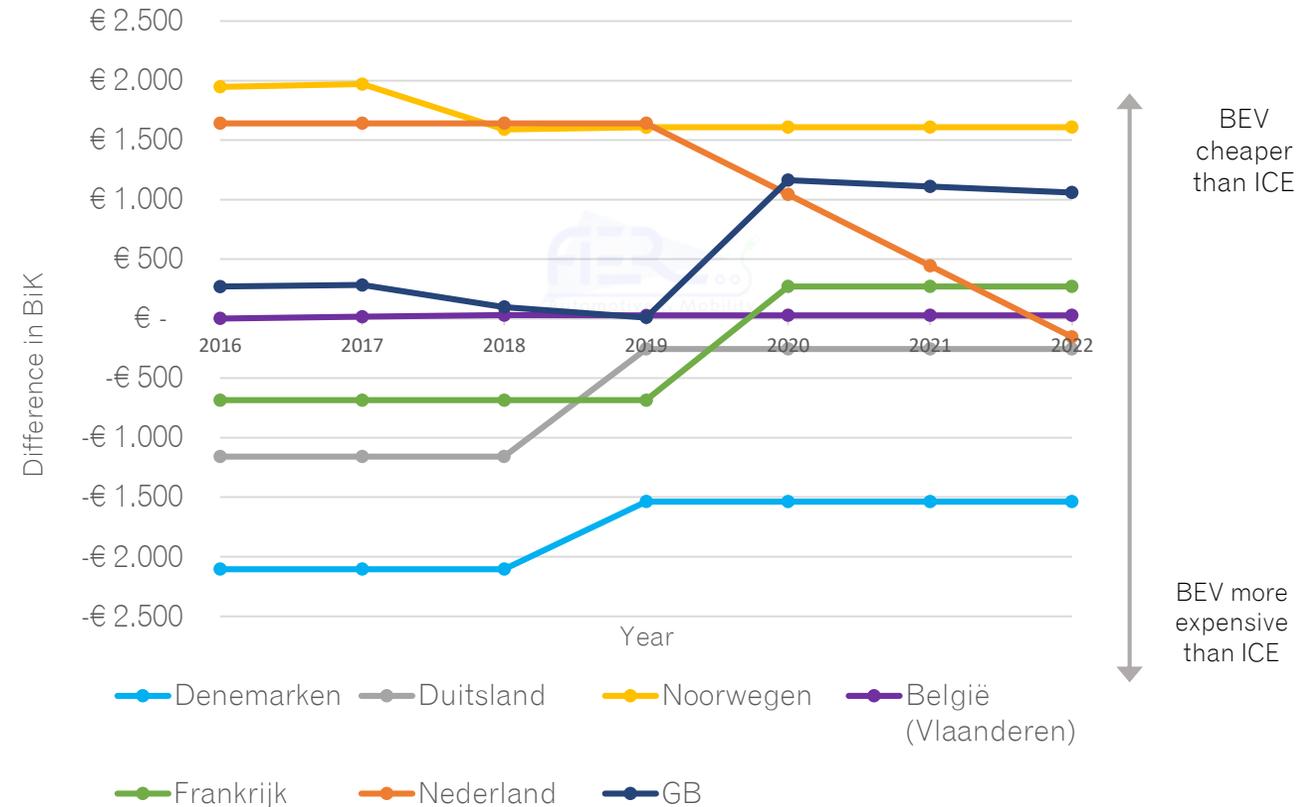
\* See appendix 1 for examples car segments. Basis for the BiK of an ICE comes from all petrol reference models available from 2016 t/m 2022. The basis for BEVs for 2016-2019 comes from the BEVs that are currently available and for 2020-2022 from the BEVs that are available now and in the future. Also see page 22: Methods.

- The past has proven that the impact of the BiK on the choice of vehicle between a Battery Electric Vehicle (BEV) or an Internal Combustion Engine vehicle (ICE) is enormous: A clearly communicated increase of the BiK percentage on the one hand leads to end of year sales impulses and on the other hand, in case of a strong increase, to a significant and lasting decline of sales in the following years;
- The usability of the BEV is increasing, but there is still a gap with petrol cars because longer trips with BEVs are still time consuming and difficult and the choice of models is still very limited;
- It is not the BiK percentage that is decisive, but the difference in BiK relative to ICE cars. In addition to the relative percentage (4% versus 22%), the difference in list price is also decisive. BEVs are on average €15,000 to €30,000 more expensive than an ICE equivalent;
- Based on the expected available selection, pricing and constraints of BEVs, there is a strong risk that the cost benefit for the corporate user will become insufficient and the demand for company BEVs will stop growing and likely even strongly decline;
- From the graph that has been added to this slide it is obvious that in all segments as of 2021 the cost advantage has disappeared when choosing a BEV as a corporate user. As soon as the cost advantage declines too much, it will be a realistic scenario when the corporate demand declines and corporate users will opt for an ICE again.

# Executive summary

- The relative BIK benefit for BEV as opposed to an ICE has led to a substantial market share for BEVs in the corporate market only in the Netherlands and Norway. In the other countries from the research, the BIK benefit has so far not been sufficient to lead to substantial market share for BEVs.;
- The policy of other countries is mostly focused on increasing the relative BIK benefits for BEVs while the Netherlands is decreasing these relative benefits quickly (as can be seen in the graph);
- When the Netherlands becomes a less important market for BEVs in the coming years, manufacturers will shift their focus to other countries. Because of this the availability of BEVs can be influenced in a negative way even more. This does not only have an influence on the sales of new BEVs in the coming years, but also on the second-hand market in the Netherlands for BEVs in the years following.

Difference average net BiK between ICE and BEV in different countries\*



\* Ceteris paribus. Also see page 22: Methods.

The majority of the new EVs being sold in the Netherlands is going to the corporate users. An important incentive for the corporate market to purchase EVs is the beneficial BiK policy that applies to all EVs.

It is possible to use the company vehicle for private purposes. When the vehicle is used privately for more than 500 km a year, the BiK policy applies. A percentage of the list price of the vehicle gets added to the yearly income. That percentage gets determined by the CO2 emissions of the vehicle and in which year the vehicle has been registered. Over this BiK, income tax has to be paid. The beneficial BiK policy for BEVs will be reduced in the coming years. From 4% in 2019, to 22% in 2026. On top of that, since 1-1-2019,

the reduced BiK only applies up to a list price of €50.000, for any amount above that number the standard 22% will be applied. This maximum will be reduced to €45.000 in 2020 and to €40.000 in 2021. Non-BEV's will remain to have a constant BiK of 22%.

	2019	2020	2021	2022	2023	2024	2025	2026
BEV BiK	4%	8%	12%	16%	16%	16%	17%	22%
Max. of list price	€ 50.000	€ 45.000	€ 40.000	€ 40.000	€ 40.000	€ 40.000	€ 40.000	n.a.

As part of the EU-project ProEME, FIER has done research on the development of the Dutch BiK policy, and also compared this to the developments in a few other European countries. In the report that is in front of you right now, we will elaborate on these developments and make them comprehensible. This research specifically has been executed in cooperation with the University of Twente (NL).

Since 2014, FIER has been studying the effectiveness of financial and non-financial incentives for electric driving. Even before that we executed numerous (EU) studies, often in cooperation with partners. Moreover, we have done extensive research on other incentives like tax reduction or –exemption, purchase tax reduction or – exemption, purchase grants and other tax benefits. Also the recurring incentives like road tax reduction or – exemption. Based on this we also have insight into the residual values and with that the depreciation of ICEs and BEVs. The beforementioned has been combined with the knowledge of the local financial system (and the appliance of the incentives) and with that we were able to make an extensive TCO comparison. Only with this method the real effect of an incentive can be determined. The TCO and BiK calculations are not fully comprehensive. There are also other non financial factors playing a roll in the development of sales figures of BEVs.

This research focuses on the effects of the BiK policy.

When questions arise about this report, TCO calculations or other regulations, please contact FIER (contact details can be found on the last page).

# BEV policy for the corporate market: Overview

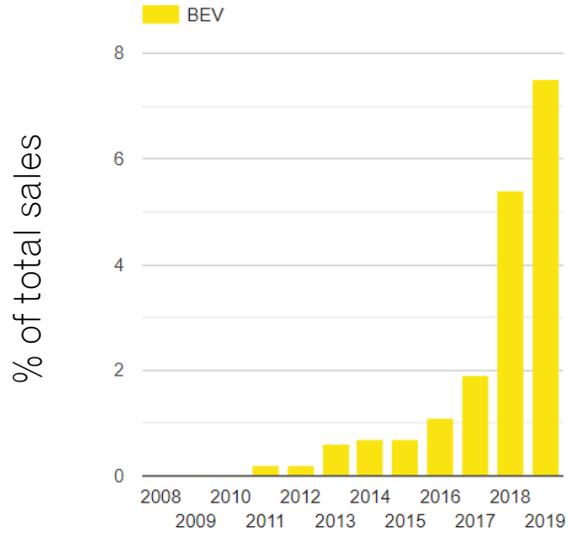
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# BiK policy: Which factors play a part?

BEV share of sales in the Netherlands  
(2008-01 t/m 2019-07) (source: eafo.eu)



Sales figures of BEVs are determined by different factors which have influence on buying behaviour

## General factors with buying behaviour



## Financial policy



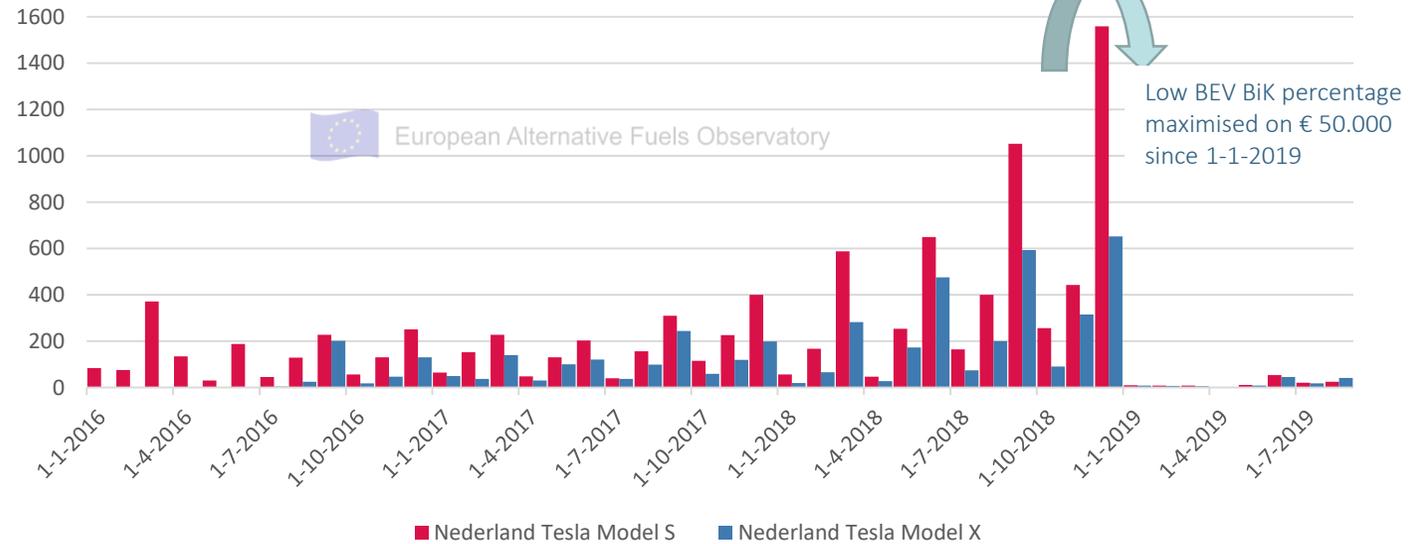
Vehicle choice corporate market in NL: Choice is up to the driver as long as it does not become more expensive for the employer (TCO) and is based on the lease or mobility budget & list of makes and models.

Result: employees choose based on 1) BiK and 2) convenience.

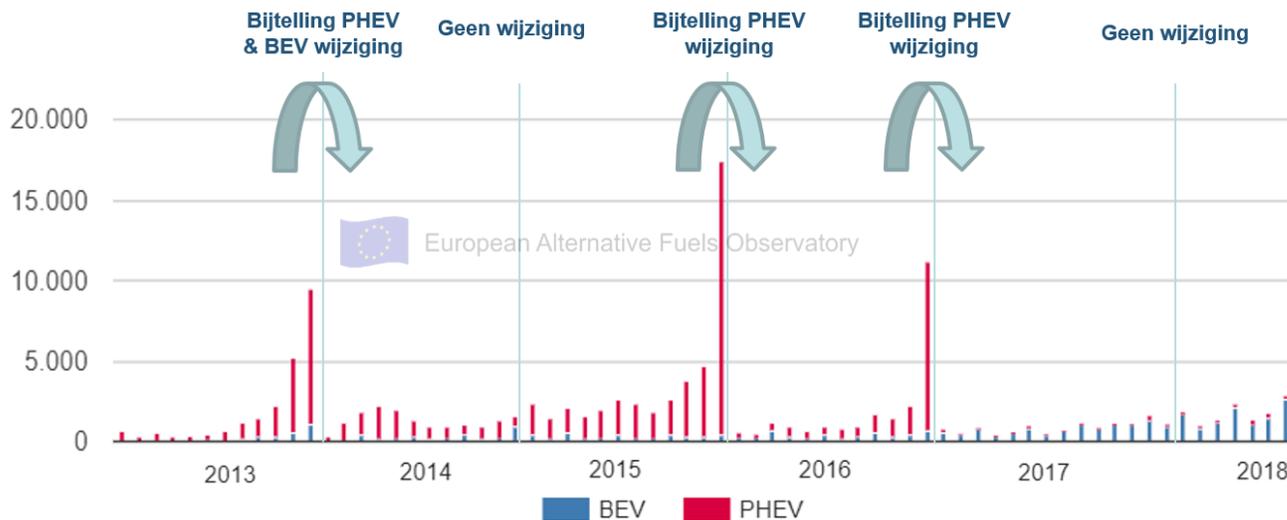
# EV policy: BiK BEV & PHEV

- Since 2019 the more beneficial BEV BiK percentage of 4% has been maximized at €50.000. The BiK that applies on the amount over the list price of €50.000 has been 22% since the beginning of 2019. 22% is also the regular BiK percentage for non BEVs;
- The graph alongside shows the sales figures of the Tesla Model S and Tesla Model X, both these models have a list price of over €50.000. There is an obvious peak of sales at the end of 2018 and a very limited amount of sales in 2019.

Sales figures Tesla Model S & X in the Netherlands (2013 – 2019)



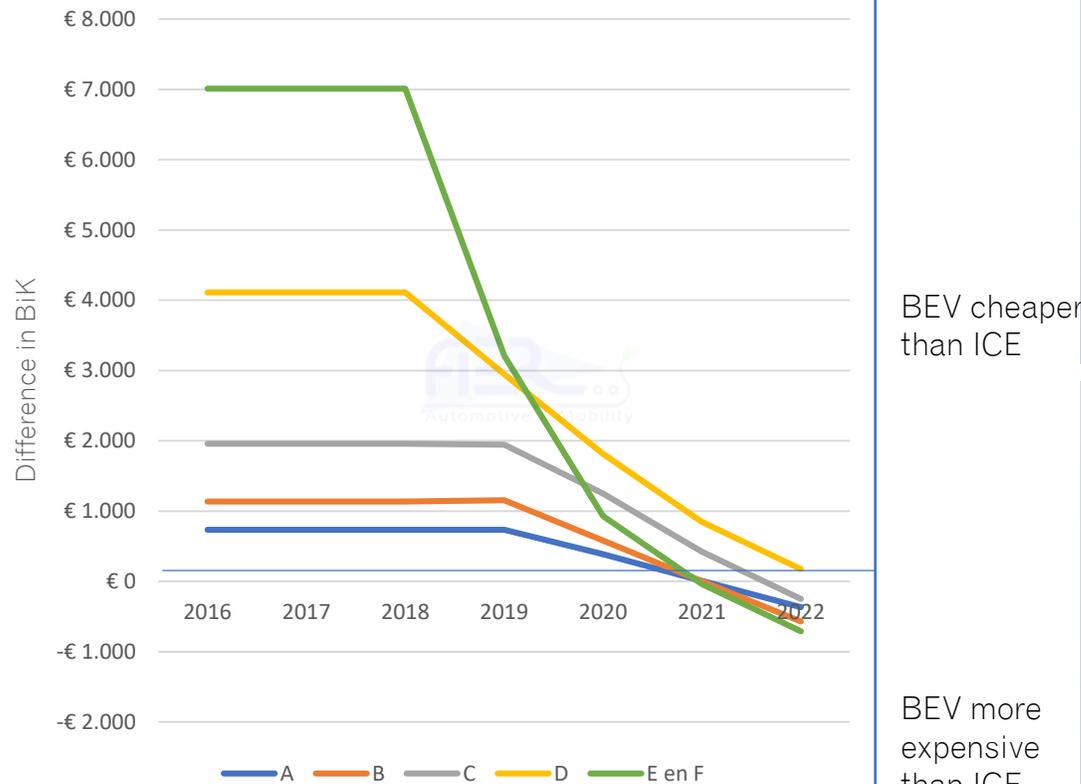
Overview monthly PHEV and BEV sales in the Netherlands (2013 – 2018)



- Also the impact of changing the BiK on the choice of PHEVs turned out to be immense (as can be seen in the example alongside).
- A clearly communicated increase of BiK on the one hand leads to significant sales boosts at the end of the year and on the other hand (in case the BiK percentage falls back to under the minimum necessary threshold to be stimulating) to strong and consistent reduction of sales.

# BiK in the Netherlands: Conclusions

Difference net BiK between ICE and BEV in all segments in the Netherlands\*



\*Also see page 22: Methods.

The net BiK difference between BEV and ICE equivalents has been calculated per year in different segments and has been displayed in this graph. However, we conclude the following regarding these segments based on the BiK policies:

- The proposed changes lead to a 50% decrease of the BEV benefit as opposed to a petrol powered version in 2020 and for all important segments the benefit nearly dissolves in 2021, in 2022 they will even lead to a disadvantage.
- Based on the expected actual available selection, prices and restrictions of BEVs, there is a significant risk that the cost benefit for the driver will become insufficient and that the demand for corporate BEVs will not grow or possibly even shrink. Also in the smaller A-segment the proposed changes of the BiK will lead to these effects.

Effect of the BiK change in the E-Segment and higher:

- Already in 2019 the strongly declining net BiK difference can be seen in the more expensive E and F segment. The effect on the sales figures of the Tesla Model S and X can be seen on the previous page. Despite the fact that there is still a significant BiK advantage, the sales of those models are next to nothing;
- Based on the expected pricing of the announced models, a downward price change is not expected until at least 2022. However, an increase in range and the possibility of faster DC charging is expected. Nevertheless, with a maximum practical range of 450 km and a maximum average DC charging speed of 160 kW, the BEV can, on a practical level, not (yet) compete with a petrol version in the corporate market.

On the basis of the earlier proven effects of changes in BiK percentages, we assume that there will be a relapse in the demand for BEVs by corporate users in 2021, possibly already in 2020. For BEVs in the higher price class (e.g. Tesla Model X and Tesla Model S ) the relapse has already started this year (2019). It is to be expected that this effect will continue onto the very important B, C, and D segment and also onto the smaller A segment.

# BEV policy: Convenience

Currently and in the short-term future:

The convenience of BEVs increases, but there is still a gap with petrol cars: Longer trips with BEVs will be time consuming and cumbersome, the selection of models is still very limited etc.

In the long-term:

The range will increase, the charging will become faster, there will appear more (fast)charging stations and the selection of models increases. Moreover, the purchase prices are expected to decrease.

The convenience is determined by:

Range

Charging speed

Ease of charging

Size of the car

Comfort

Safety

Number of seats

Towing hook

Etc.

# BiK and convenience corporate users



Employers, employees and private individuals will only choose a BEV when there is a significant cost benefit, regarding the purchase price, the TCO as well as the BiK.

As soon as the BiK falls below the threshold, it is realistic to presume that the corporate demand will decrease and that the corporate drivers will opt for an ICE again (See: the development of PHEV demand and the Tesla Model S & X)

For now and expected until 2025 a substantial benefit will be necessary to motivate buyers and drivers to choose for BEVs.

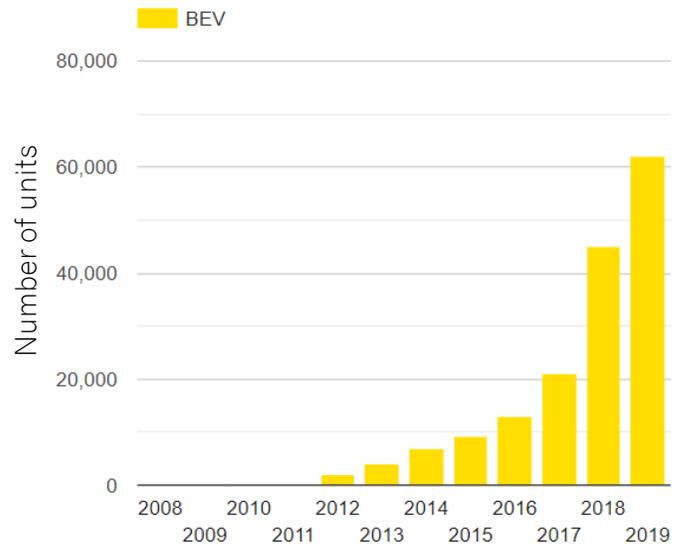
The BiK percentage is not the determining factor, but the difference in absolute BiK compared to ICE cars. In addition to the relative percentage (4% vs. 22%) the difference in list price is also a determining factor. BEV's are € 15.000 to € 30.000 more expensive.

The average age of a car in the Netherlands is about 18 years when it gets scrapped (source: CBS). This number is increasing, so it is likely that new cars that are being bought now and in the coming years will be on the Dutch roads even longer.

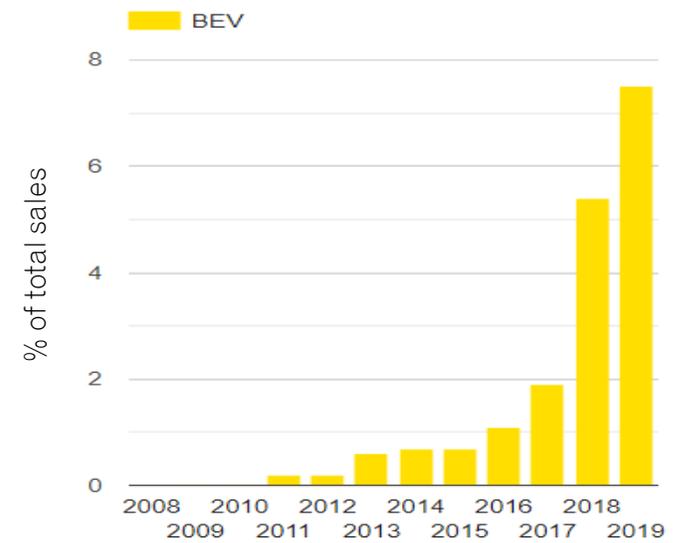
In conclusion: the amount of BiK for BEVs and the difference in BiK compared to ICE cars will be decisive for the sales of BEVs the coming years, but also for the cars in the Dutch car fleet and with that the CO2 emissions until after 2040.

# International comparison: The Netherlands

## BEV uptake



Development car fleet BEV (source: eafo.eu)



Market share BEV in sales (source: eafo.eu)

## BEV policy regarding the corporate market:

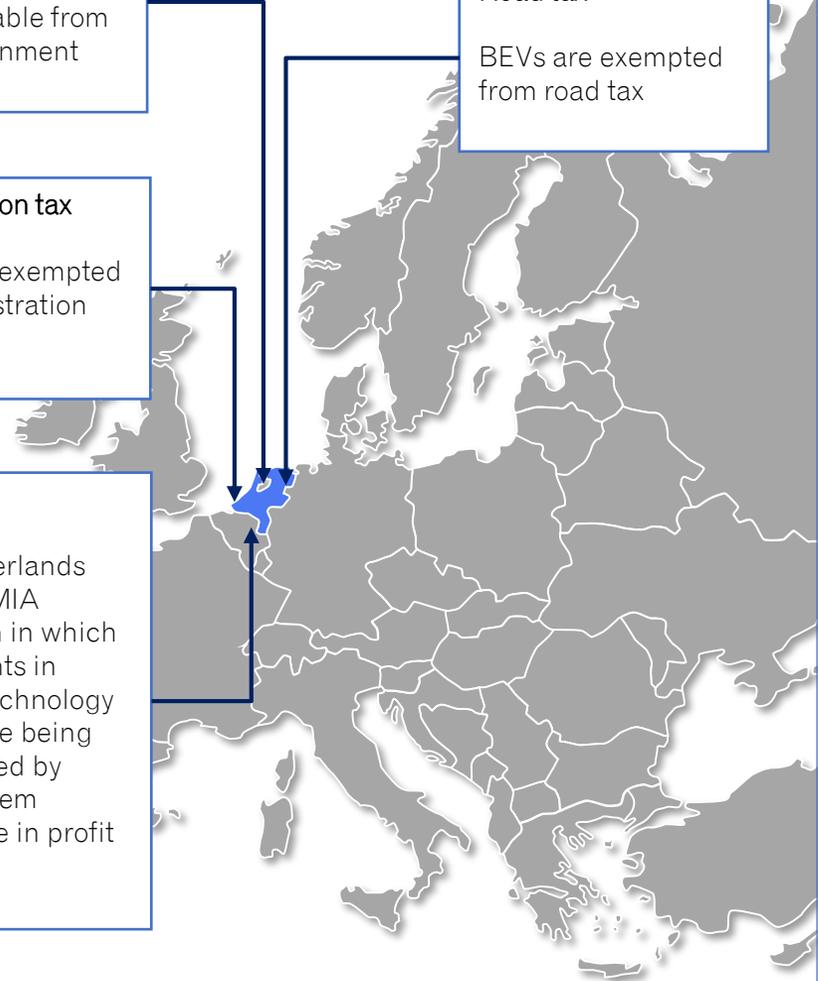


**Purchase grant (corporate)**  
Not available from the government

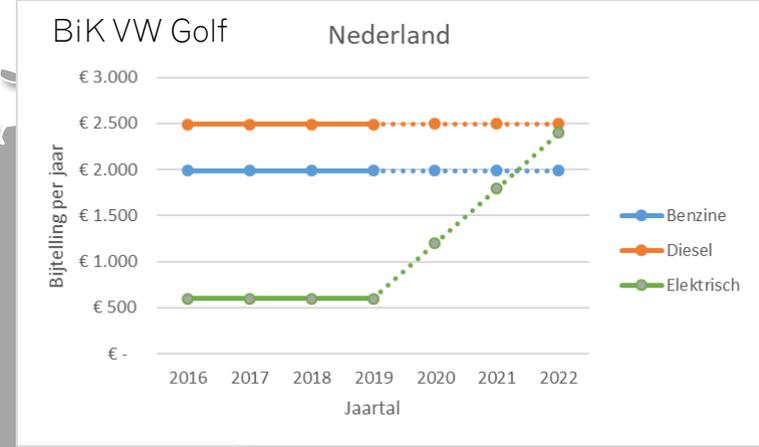
**Registration tax**  
BEVs are exempted from registration tax

**Profit tax**  
The Netherlands have the MIA regulation in which investments in cleaner technology (BEV's) are being encouraged by making them deductible in profit tax.

**Road tax**  
BEVs are exempted from road tax



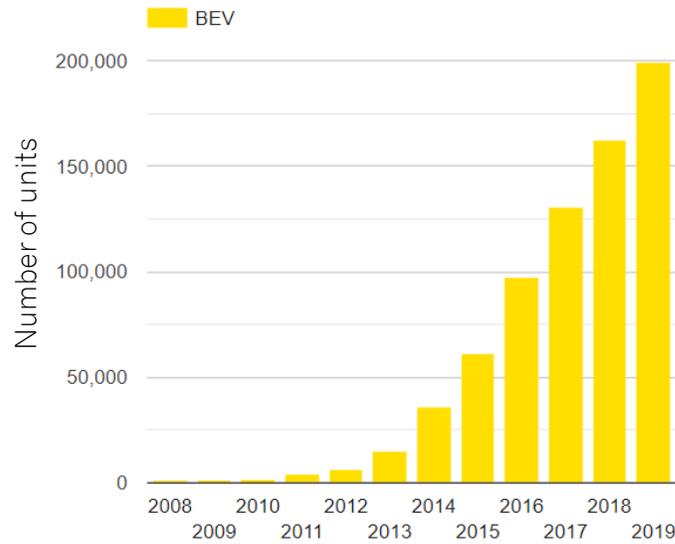
## BiK



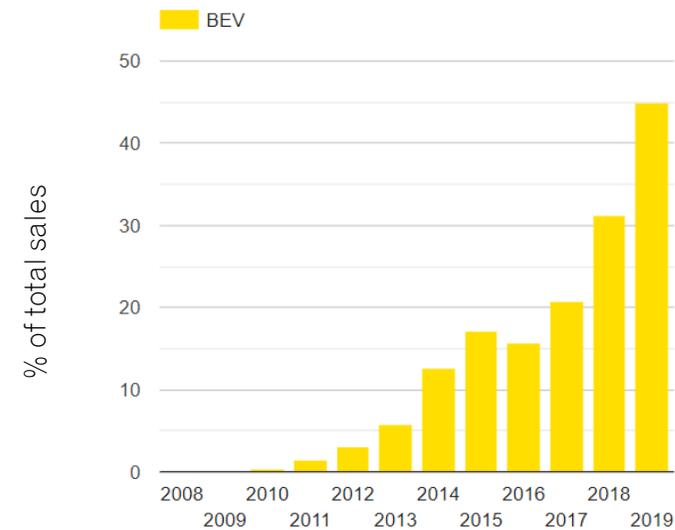
**BiK:**  
BiK in the Netherlands is based on CO2. As of 2016 BEVs have a BiK of 4% based on the list price and other vehicles 22%. The Netherlands have announced to increase the BiK percentage for BEVs as of 2020 step-by-step.  
  
Setting a maximum of the low BiK percentage to a certain value of a vehicle and the application of 22% BiK above this value has led to a significant decrease in demand for expensive BEVs.

# International comparison: Norway

## BEV uptake

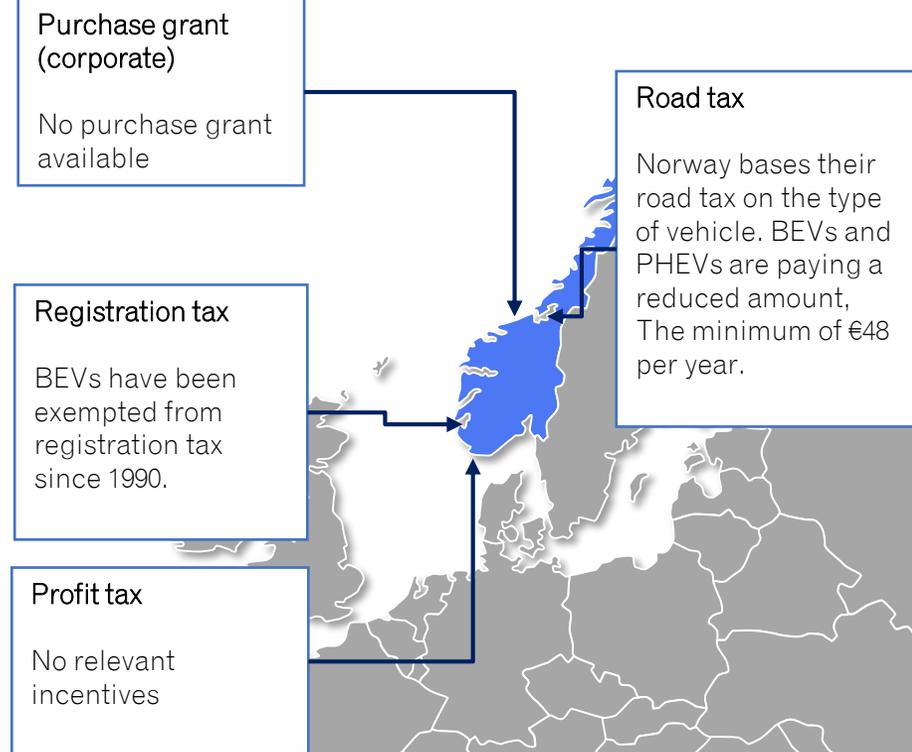


Development car fleet BEV (source: eafu.eu)



Market share BEV in sales (source: eafu.eu)

## BEV policy regarding the corporate market:

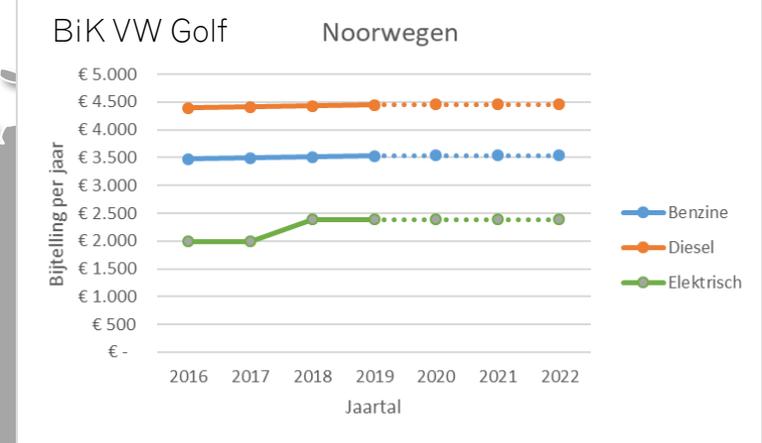
**Purchase grant (corporate)**  
No purchase grant available

**Registration tax**  
BEVs have been exempted from registration tax since 1990.

**Profit tax**  
No relevant incentives

**Road tax**  
Norway bases their road tax on the type of vehicle. BEVs and PHEVs are paying a reduced amount, The minimum of €48 per year.

## BiK



## BIK

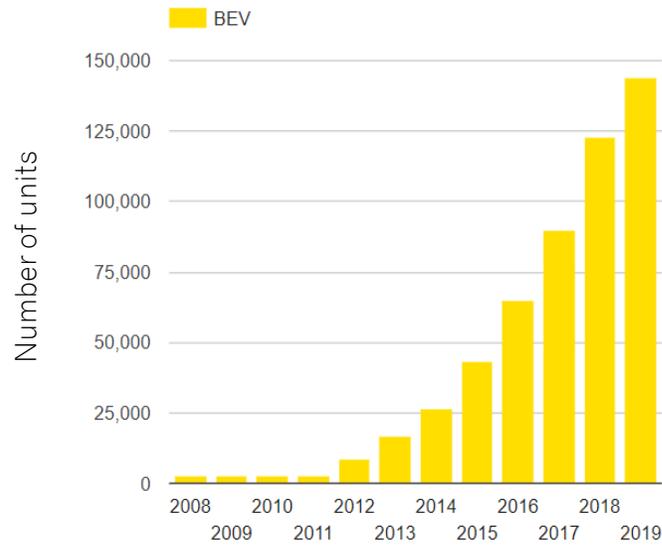
The BIK is based on:

- Gross list price
- Type of drivetrain
- Income (tax bracket)

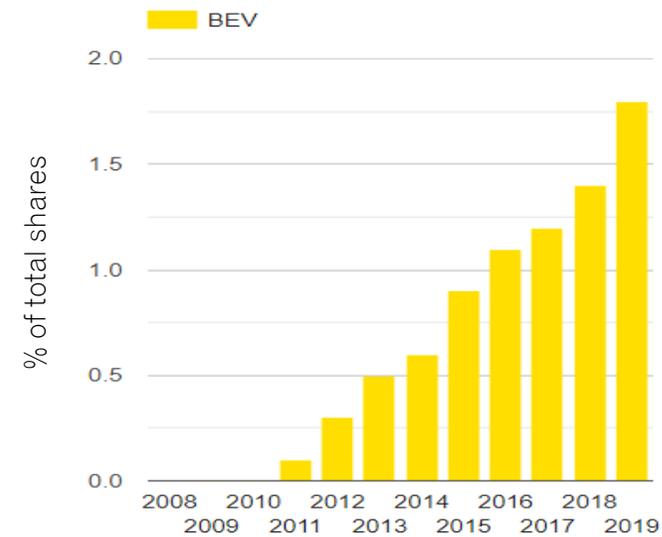
Only 50% of the gross list price is used for BEVs, for ICE cars this is 100%.

# International comparison: France

## BEV uptake

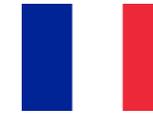
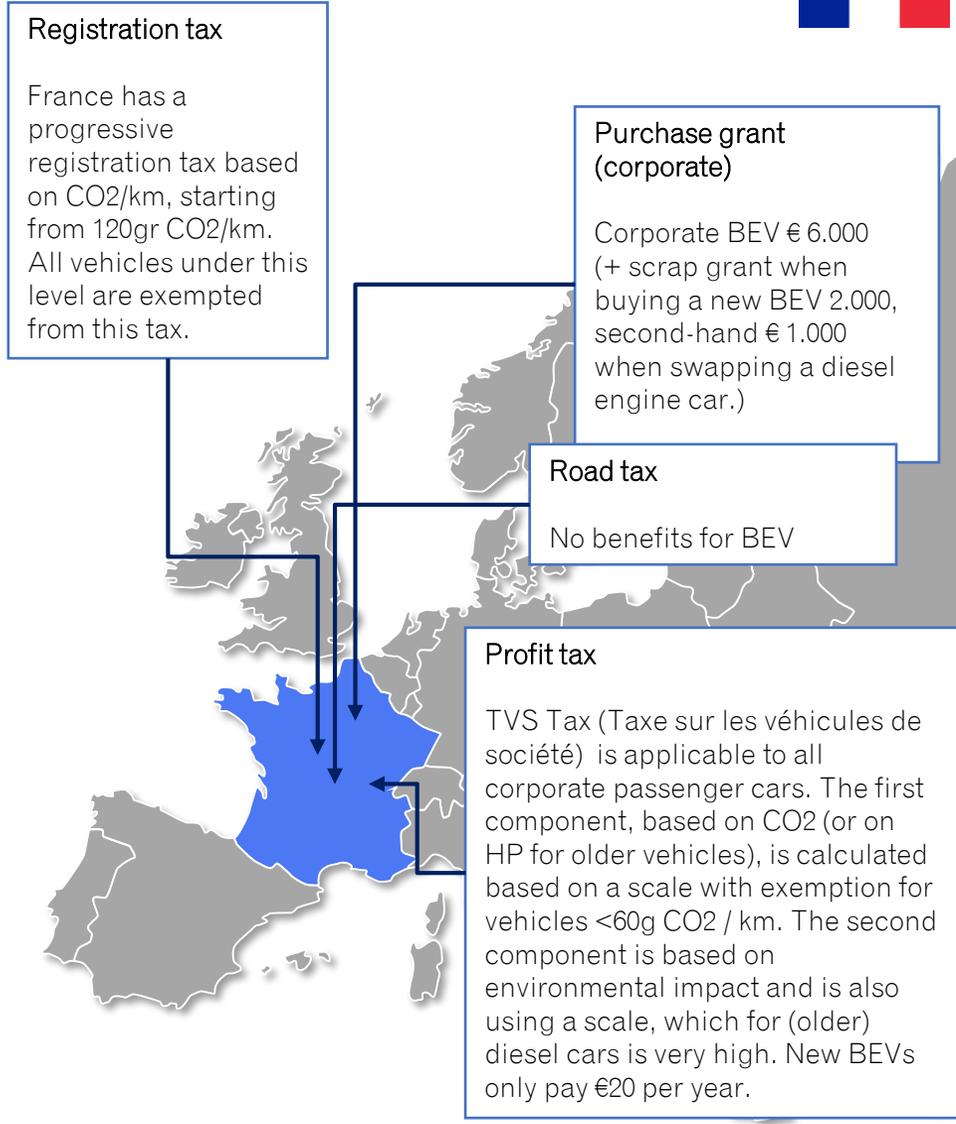


Development car fleet BEV (source: eafu.eu)



Market share BEV in sales (source: eafu.eu)

## BEV policy regarding the corporate market:

### Registration tax

France has a progressive registration tax based on CO2/km, starting from 120gr CO2/km. All vehicles under this level are exempted from this tax.

### Purchase grant (corporate)

Corporate BEV € 6.000 (+ scrap grant when buying a new BEV 2.000, second-hand € 1.000 when swapping a diesel engine car.)

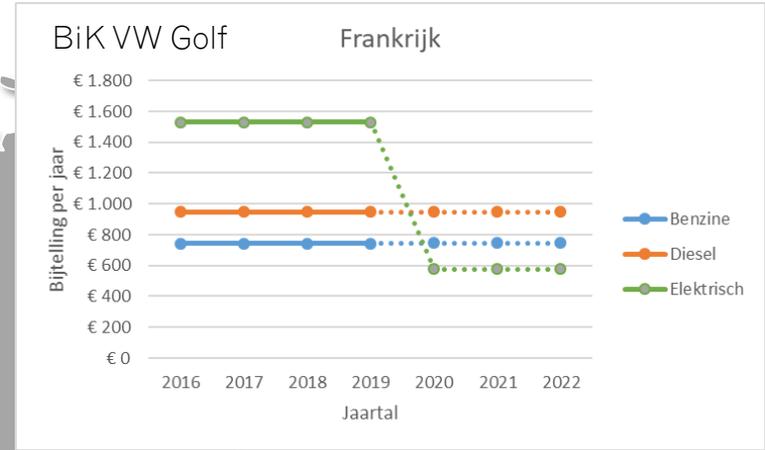
### Road tax

No benefits for BEV

### Profit tax

TVS Tax (Taxe sur les véhicules de société) is applicable to all corporate passenger cars. The first component, based on CO2 (or on HP for older vehicles), is calculated based on a scale with exemption for vehicles <60g CO2 / km. The second component is based on environmental impact and is also using a scale, which for (older) diesel cars is very high. New BEVs only pay €20 per year.

## BiK



### BiK:

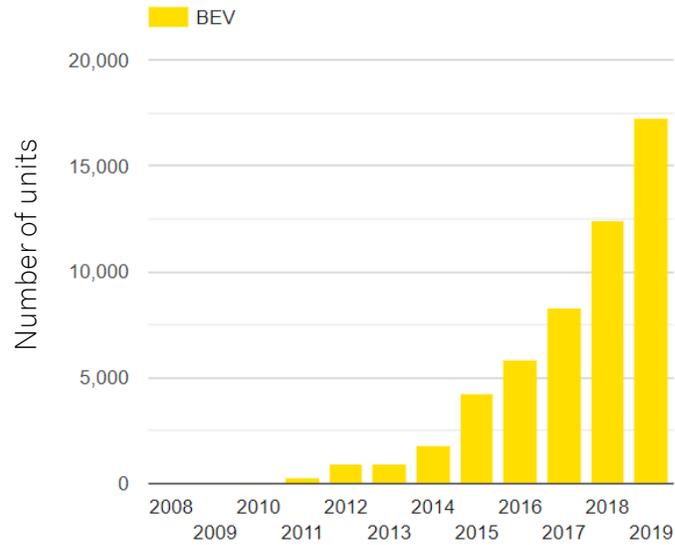
The amount of BiK in France is determined by:

- The list price incl. VAT and one time regional registration costs.
- Who pays the fuel; the employer or the employee.
- The age of the vehicle
- Type of drivetrain

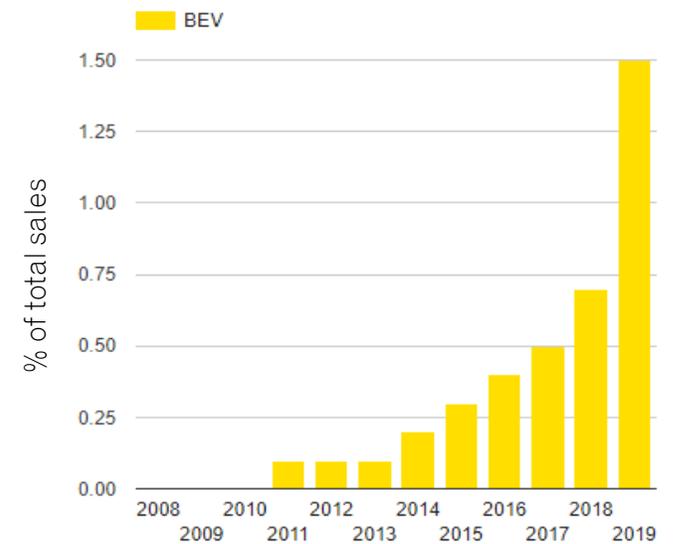
From 1-1-2020 until 31-12-2022 a 50% discount on the BiK with a maximum benefit of € 1.800 per year applies on all zero emission cars. Moreover, the costs for charging the car, consisting of electricity and a charging point (wall box) are not included in the BiK.

# International comparison: Belgium

## BEV uptake



Development car fleet BEV (source: eafo.eu)



Market share BEV in sales (source: eafo.eu)

## BEV policy regarding the corporate market:

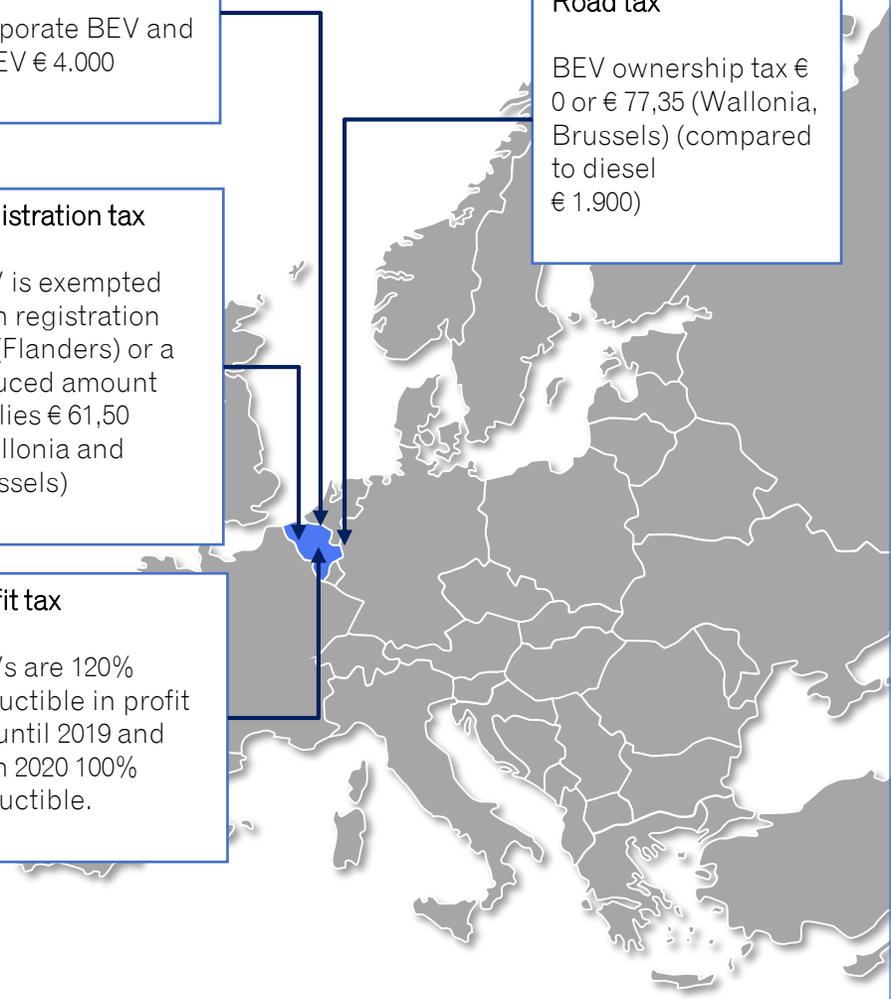


**Purchase grant (corporate)**  
Corporate BEV and PHEV € 4.000

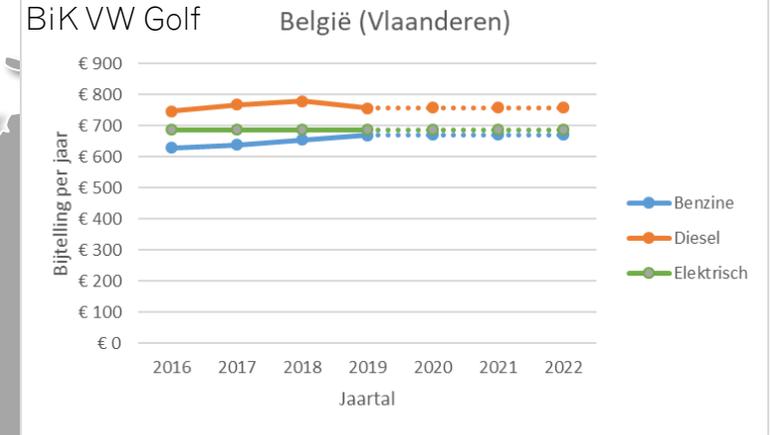
**Registration tax**  
BEV is exempted from registration tax (Flanders) or a reduced amount applies € 61,50 (Wallonia and Brussels)

**Profit tax**  
BEVs are 120% deductible in profit tax until 2019 and from 2020 100% deductible.

**Road tax**  
BEV ownership tax € 0 or € 77,35 (Wallonia, Brussels) (compared to diesel € 1.900)



## BiK



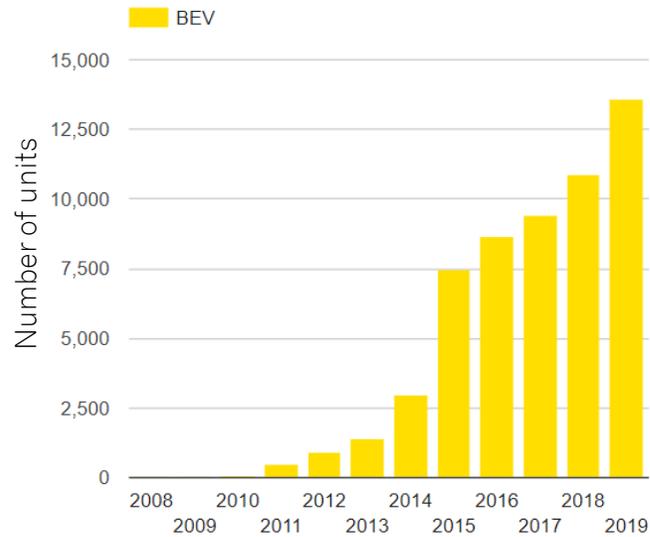
### BIK:

Based on:

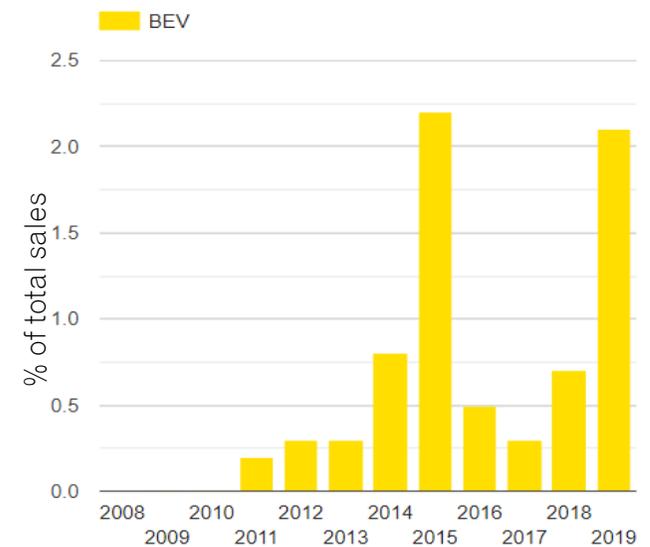
- List price incl. VAT and a one time registration tax
- Age of the vehicle
- How many days per year the employee has access to the vehicle.
- Type of drivetrain/fuel (Gram CO2 per kilometre (indexed yearly in December)
- Income (and which tax bracket applies)

# International comparison: Denmark

## BEV uptake



Development car fleet BEV (source: eafu.eu)



Market share BEV in sales (source: eafu.eu)

## BEV policy regarding the corporate market:



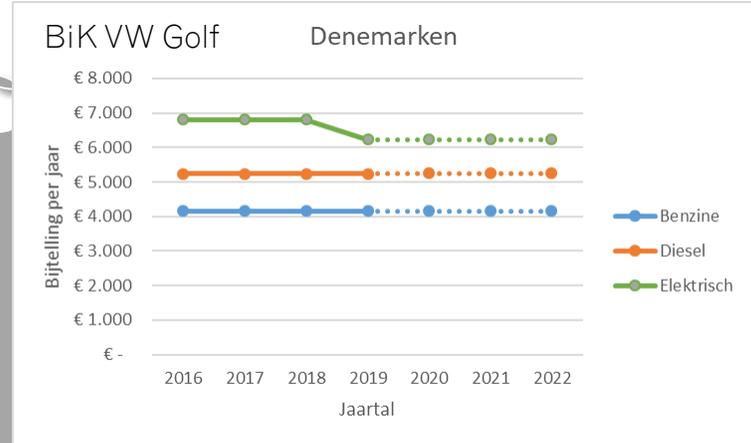
**Purchase grant (corporate)**  
Not available

**Registration tax**  
Until the end of 2015 BEVs were exempted from the significant registration taxes. A stepwise introduction of registration tax for BEVs as of 2016 completely stopped the uptake. In 2017 a reduction of this tax for BEVs took place, because of this popularity increased.

**Profit tax**  
No incentives

**Road tax**  
In Denmark the road tax is based on fuel consumption and weight of the vehicle. BEVs are paying the minimum.

## BiK

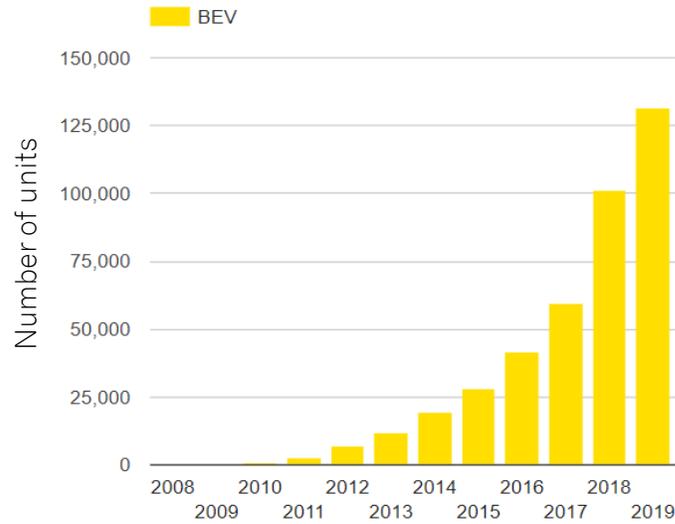


**BiK:**  
In Denmark BiK is determined by:

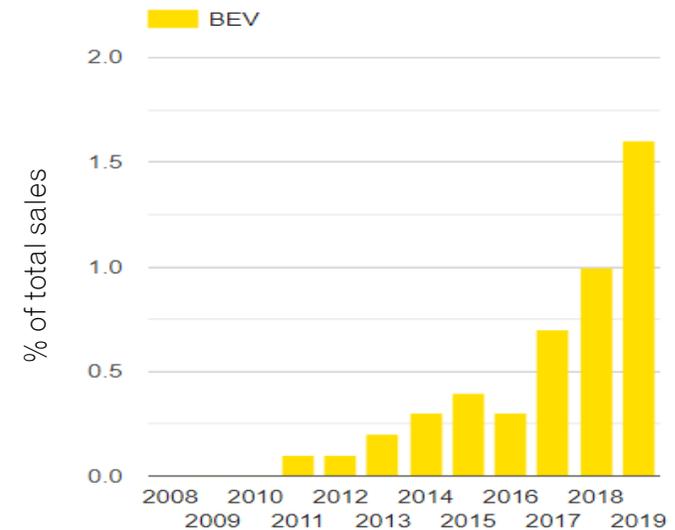
- List price incl. VAT and purchase tax (with a minimum amount)
- The BiK percentage has been divided in parts. Below a certain amount the BiK is 25%, above this amount it is 20% (degressive)
- The road tax is also part of the BiK calculation.
- Income (and which tax bracket applies)

# International comparison: Germany

## BEV uptake



Development car fleet BEV (source: eafo.eu)



Market share BEV in sales (source: eafo.eu)

## BEV policy regarding the corporate market:



### Road tax

BEVs are exempted from road tax during the first five years after the first registration date.

### Purchase grant (corporate)

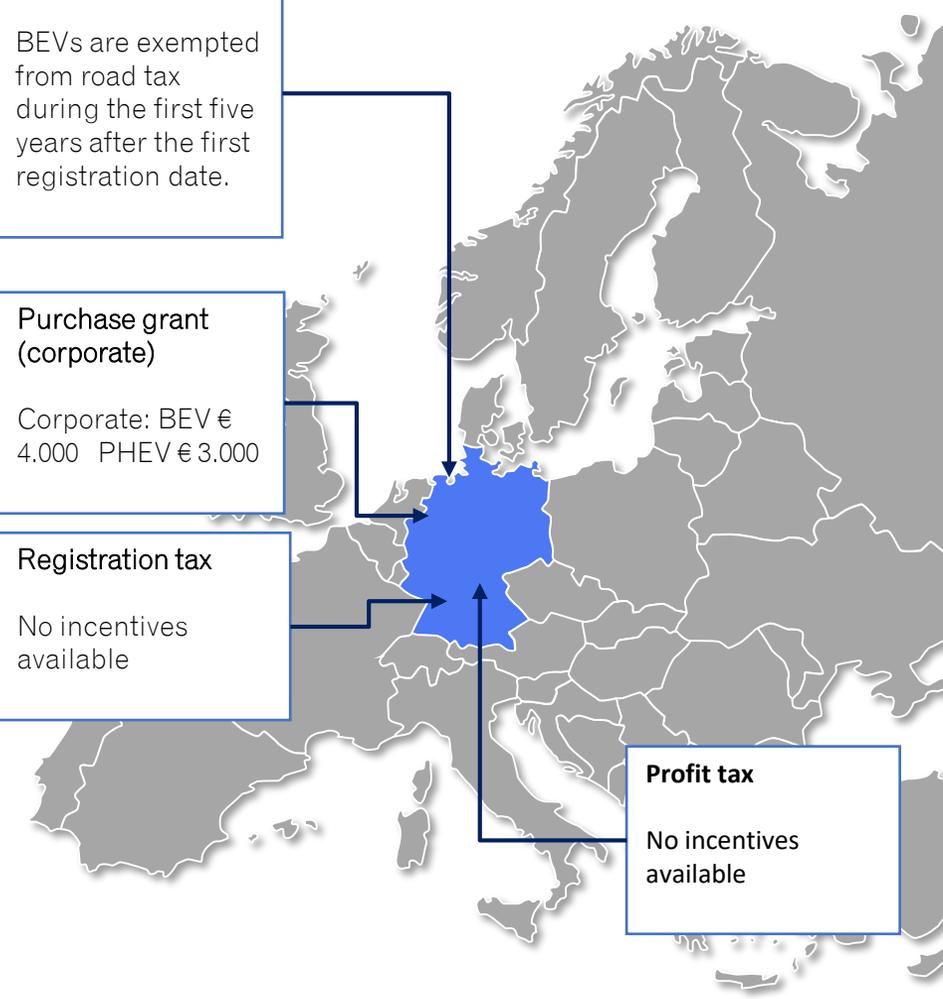
Corporate: BEV € 4.000 PHEV € 3.000

### Registration tax

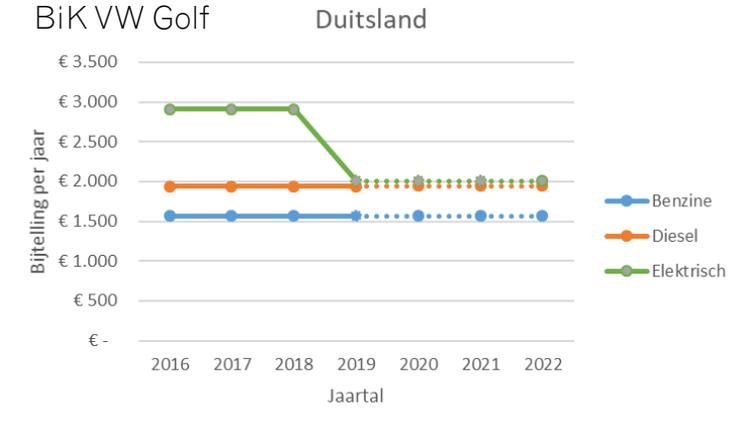
No incentives available

### Profit tax

No incentives available



## BiK



### BIK:

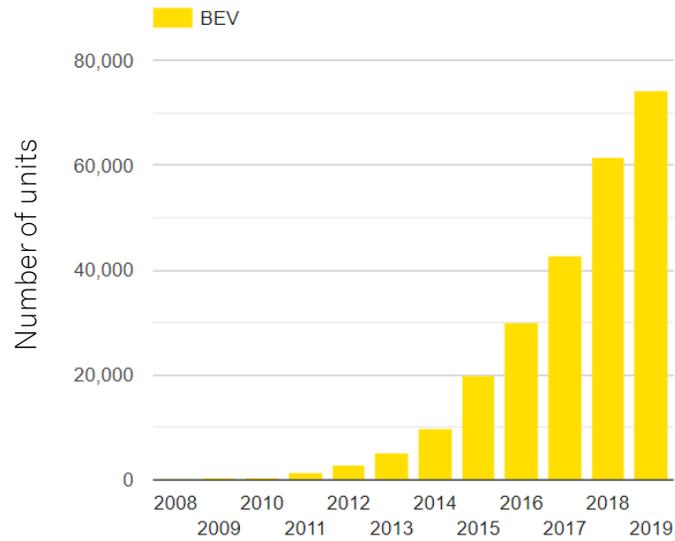
When a corporate car is being used privately, a tax has to be paid in Germany. This tax is calculated based on the following factors:

- Gross list price
- Type of drivetrain
- Kilometres of commute
- Income (and which tax bracket applies)

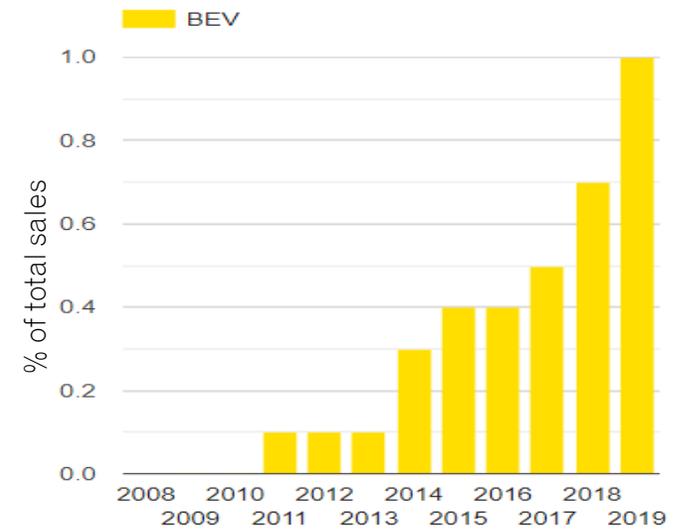
From 2019 the BIK rules for electric cars have been changed drastically (which means only half of the list price of the EV is considered), leading to a lower BIK.

# International comparison: United Kingdom

## BEV uptake



Development car fleet BEV (source: eafo.eu)



Market share BEV in sales (source: eafo.eu)

## BEV policy regarding the corporate market:



## BiK

### Purchase grant (corporate)

BEV € 3.950  
Purchase grant

### Road tax

From April 2017 onwards, BEVs with a price below €45.000 do not pay road tax.

### Registration tax

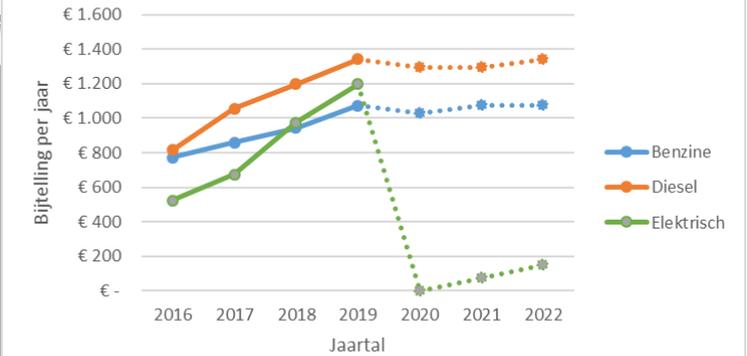
From April 2017 onwards there is an exemption from registration tax for emission free vehicles with a maximum price of €45.000

### Profit tax

A reduced price is paid for EVs

## BiK VW Golf

## UK



## BiK:

In the United Kingdom BiK is determined by:

- List price incl. VAT and purchase tax.
- The BiK percentage is determined by the amount of grams CO2 per KM and the type of fuel. For diesels this has been 3% higher since 2017 as standard, from 2018 onwards this has even been 4%.
- If the employer or the employee pays for fuel;
- Income (tax bracket)

EVs have seen a higher BiK each year since 2017, but is relatively low compared to ICE vehicles. As of next year this is going to change drastically, the BiK is going to be 0%.

The BiK percentage in the UK is not fixed from the moment of registration of a car for x years (like in NL), but changes every year. In the United Kingdom the numbers are not changed as of January 1, but as of April 6.

# Findings international research:

BEV sales grow everywhere, but in most countries the share of BEVs sold is relatively still very limited.

Higher taxes give the government more possibilities to control demand.

Policy that leads to a more beneficial TCO (owner) leads to better BEV sales.

There is a threshold above which the sales of BEV's increase progressively.

Big and visible (non financial) BEV incentives have a big impact (e.g. allow BEVs in bus lanes like in Oslo)

Consistency and long term stability of policy turn out to be important.

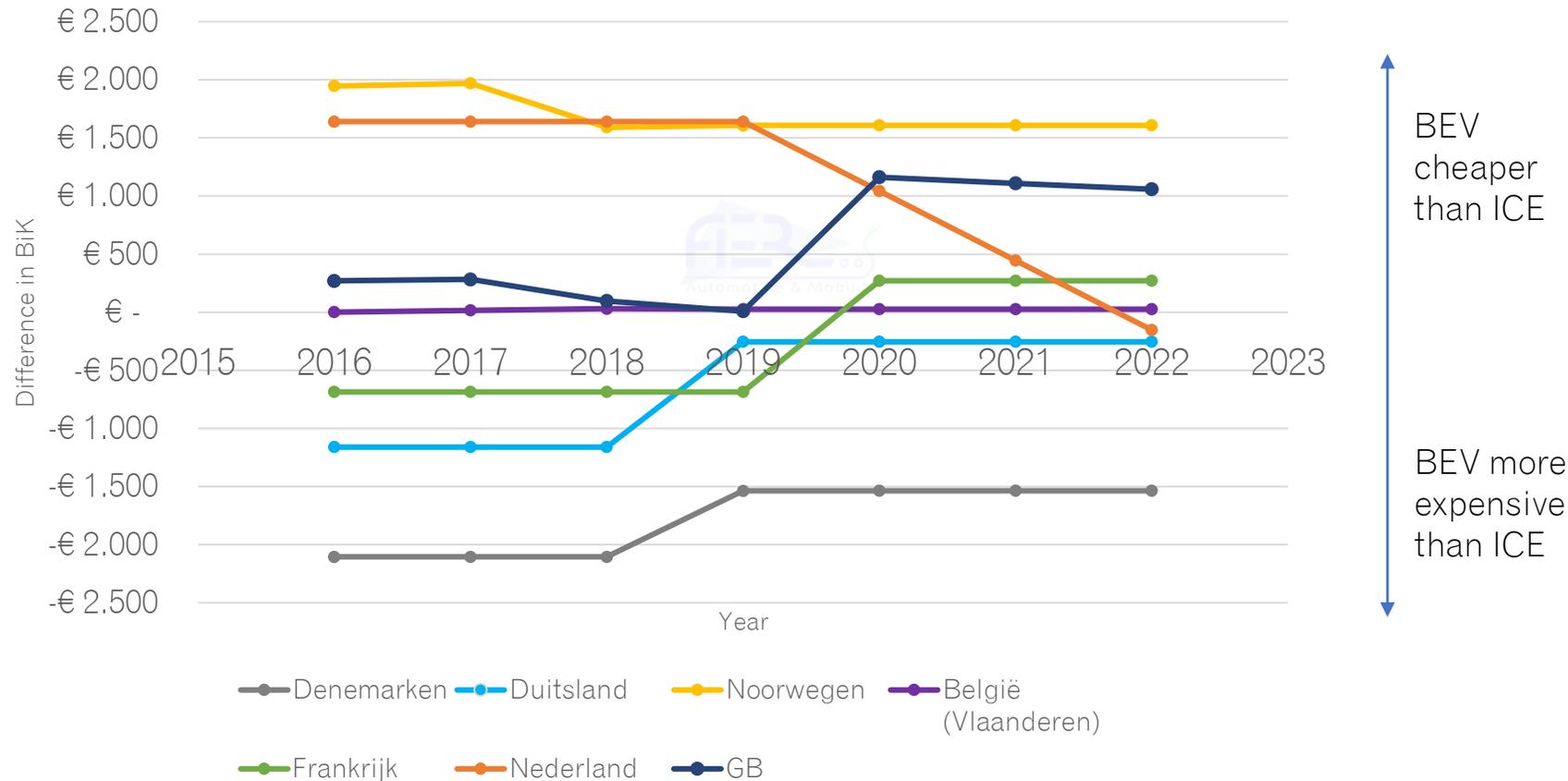
Understandability of policy is important

Impact of policy depends on the availability of BEVs



# International comparison: BiK difference

Difference average net BiK between ICE and BEV in different countries\*



- According to the prognosis of the announced BiK percentages, the BEVs will become more expensive for corporate users than a petrol or diesel powered car, based on BiK.
- The Netherlands and Norway have the most beneficial BiK rules, Norway has cut back slightly on these regulations as of 2018. In the Netherlands it will decrease strongly to where on average BEVs, when looking at BiK, as of 2021 will not be interesting anymore.
- The policy of other countries is mostly focused on increasing the relative BiK benefits for BEVs.
- Especially the big markets such as France and Germany are making the BiK rules for BEVs substantially more beneficial in the coming years.

\* Calculation has been made as an example for the effect of the BiK regulations. VW Golfs (petrol, diesel and BEV) are compared on the basis of average values in the specific country. Also see page 22: Methods.

# Availability BEVs

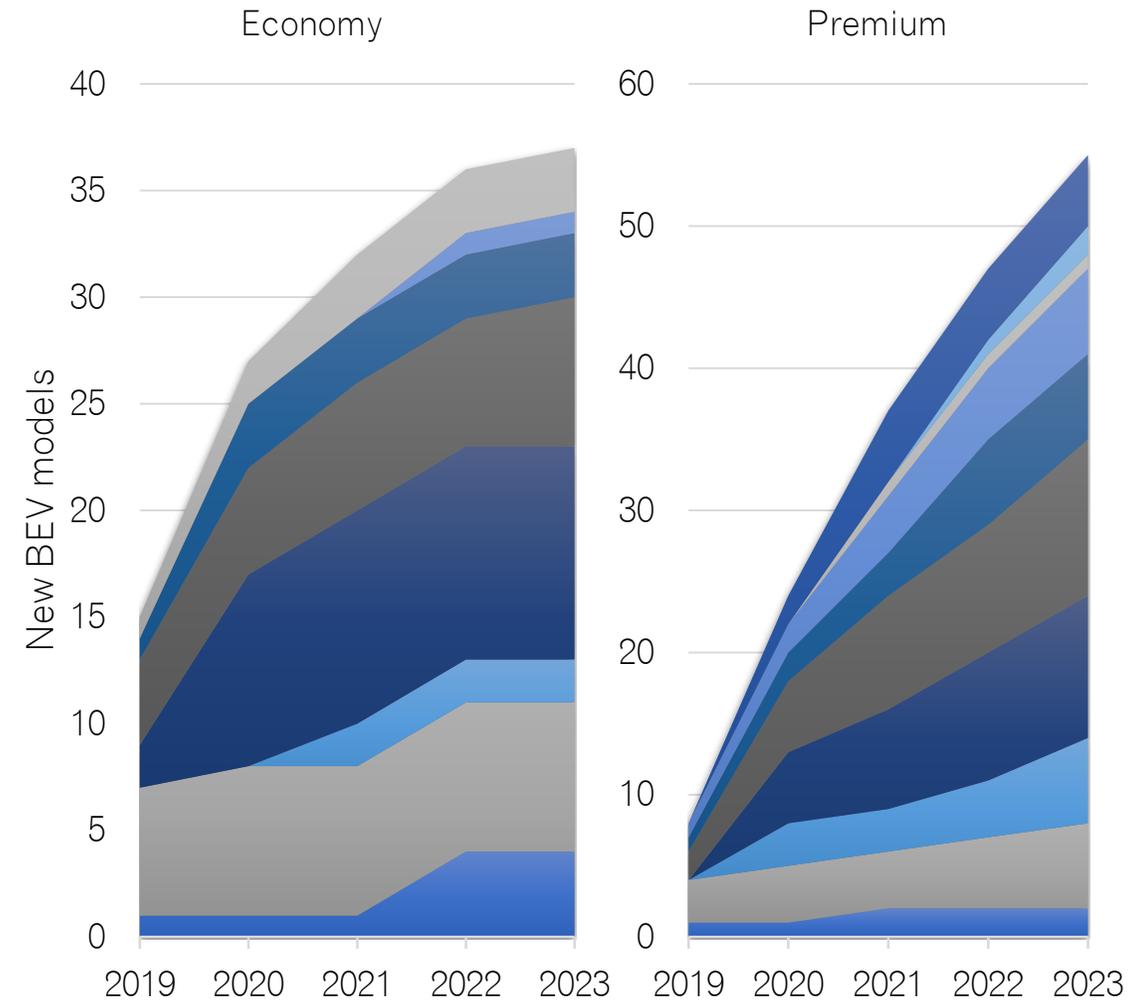
In theory the availability of BEVs should increase and the prices will decline:

- For the coming years a large number of new models have been announced.
- It is also expected that the price of BEVs will decrease and the range will increase.

However

- The availability of current vehicles is still very limited at the end of 2019 (including many long waiting lists for several models)
- Vehicles that have been announced arrive later than expected: VW ID3, Opel Corsa, Peugeot 208, Hyundai Ionic 2nd gen, all of them were expected in 2019, but have been delayed until 2020
- Prices remain on a high level (when models are upgraded, they do get more kWh, so a higher range);
- BEVs with a range of 400km still cost more than €40.000;
- Long delivery times are a very limiting factor. When a car is ordered in one year and gets delivered in the next year, a higher BiK percentage will apply.
- In case the Netherlands as a market for BEVs becomes less attractive in the coming years, because of the increasing BiK, manufacturers will shift their focus to other countries, which means the availability can be influenced negatively even more.

New BEV models on the Dutch market



# Conclusions

Convenience and (change of) BIK policy have a significant effect on BEV sales:

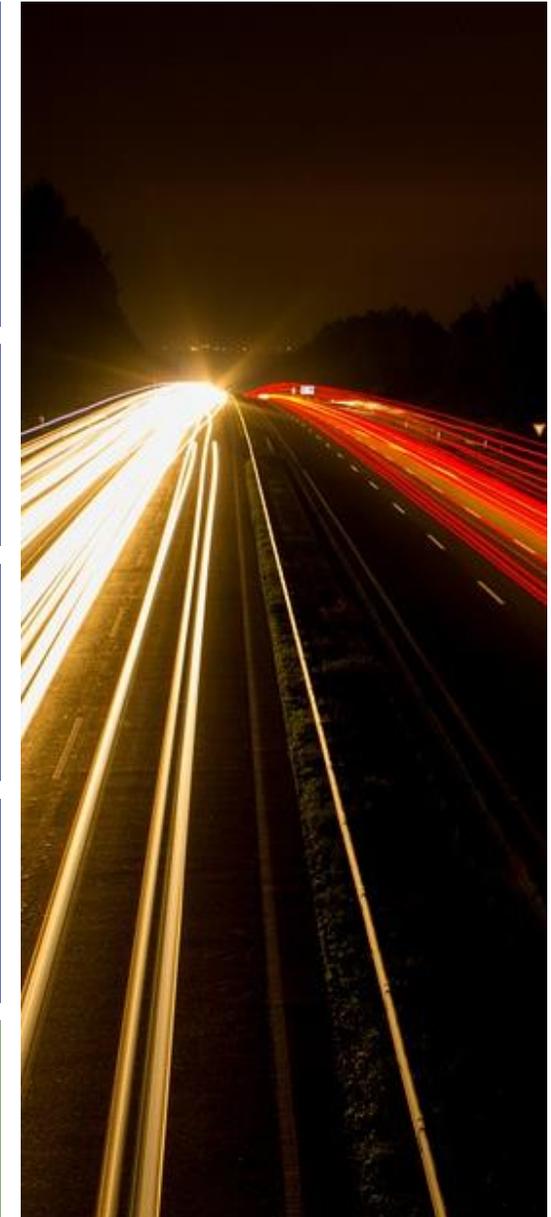
- The determining factor is not the BIK percentage, but the difference in absolute BIK compared to ICE cars. BEVs have a higher list price and there is not yet any sight on a strong reduction in price (like predicted).
- Moreover, there is still a big gap between the convenience of an ICE and a BEV, which does get smaller.

Employers and employees will only choose BEVs in case there is significant cost benefit regarding purchase price, TCO as well as BIK. As soon as the BIK benefit falls below the threshold, it would be realistic to presume that the corporate demand will fall and corporate drivers will choose for ICEs again.

The relative BIK benefit for BEV as opposed to an ICE has led to a substantial market share for BEVs in the corporate market only in the Netherlands and Norway. In the other countries in our comparison, the BIK benefit has not been sufficient to lead to substantial market share for BEVs.

The policy of other countries is mostly focused on increasing the relative BIK benefits for BEVs while the Netherlands is decreasing these relative benefits quickly. The position the Netherlands have reached as one of the most important markets for BEVs can dissolve quickly by changing the ratios compared to neighbouring countries.

Based on the expected actual available selection, the price and the limitations of BEVs, there is a significant risk that the cost benefit for the driver will be insufficient to make up for the downsides of a BEV which might possibly mean the demand for corporate BEVs will not grow and might even decrease.



# Definitions, methods and sources

## Definitions:

- ICE: Internal Combustion Engine vehicle (a car driven by fossil fuels);
- BEV: Battery Electric Vehicle (a car driven just by electricity that has been stored in a battery);
- TCO: Total Cost of Ownership;
- Net BiK: The net effect of the additional BiK: The income tax that has to be paid extra.

## Methods:

- International comparisons: the price of the chosen vehicle has been fixed based on the consumer price in 2019 in the specific country, for the cars that arrive on the market only after 2019 the expected prices in 2019 are used. The BiK has been calculated for every year based on the price of the chosen vehicle. In the international comparison of the average net BiK, a fixed price for a VW (e)Golf has been used for all years. This method has been chosen, because the pricing developments of both electric and conventional cars are very dependent on many external factors. For EVs as well as conventional cars prices can increase or decrease. The international comparison has therefore been made 'ceteris paribus' as much as possible, to be able to compare the effect of the BiK regulations internationally;
- BiK the Netherlands: To calculate the current and future BiK costs in the Netherlands, the actual and future selection of BEVs per segment has been accounted for. In this method an average price over 2016-2019 has been used and an average price over 2016-2022, because all vehicles are available in all years. For combustion engine cars an average price over 2016-2022 has been used, because all vehicles are available in all years. To calculate the net BiK in the Netherlands, an income tax percentage of 42% has been used.
- In order to have a sufficient amount of cars in every segment to make a good comparison, all SUV and cross-over models (like J-, L- and M-segment) have been merged with the comparable non-SUV models. The following categories have been used as stated by AutoRAI:  
<https://autorai.nl/duidelijkheid-over-autosegmenten/>;
- For the range of all vehicles (both electric and with a combustion engine), the official WLTP has been used.

## Sources:

- TCO data, policies and incentives: proEME (<https://www.pro-eme.eu/>)
- Data and graphs BEV numbers: EAFO ([www.eafo.eu](http://www.eafo.eu))
- Age passenger cars: CBS (<https://www.cbs.nl/nl-nl/nieuws/2016/20/personenauto-s-steeds-ouder>)
- Electric vehicles: models until 2022 EV Database ([www.ev-database.nl](http://www.ev-database.nl))

# Appendices

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## Appendix 1:

BiK in the Netherlands for different segments

## Appendix 2:

Available BEVs in the Netherlands now and in the future

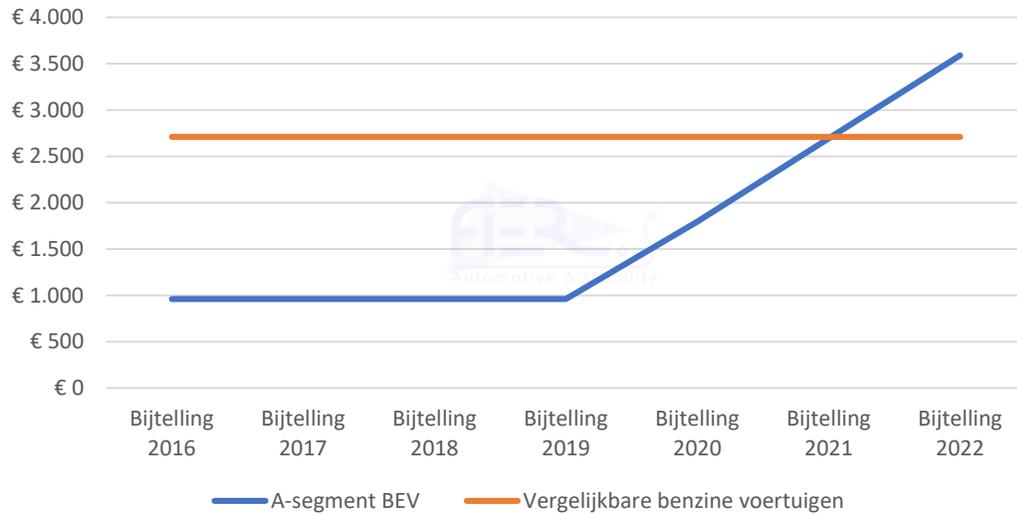
## Appendix 3:

About FIER Automotive & Mobility

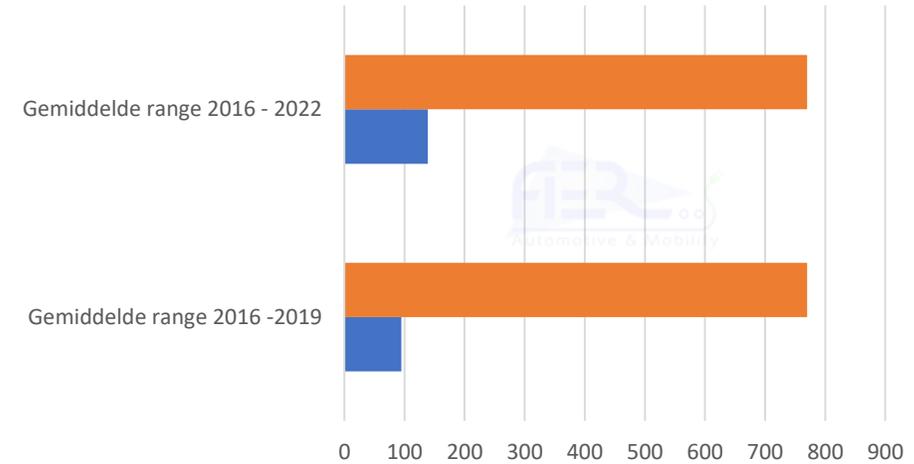
# Appendix 1: BiK in the Netherlands

## Findings relevant segments (A)

Gross BiK segment A †



Range electric vs. petrol segment A



Examples current BEVs



Smart Fortwo EV



VW e-UP

Examples future BEVs



e. Go Life



Skoda Citigo e.iV

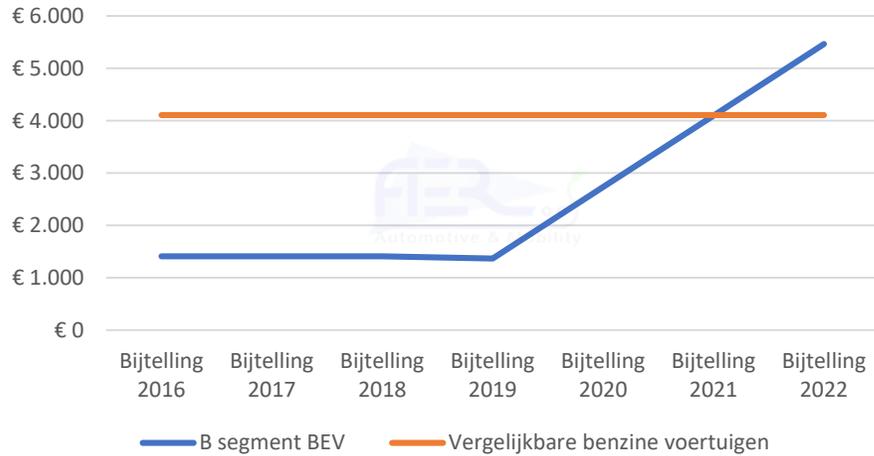
† Foundation for the BiK of petrol vehicles is based on all reference models available from 2016 until 2022.

Foundation for BEVs is from 2016 until 2019 based on the BEVs that are currently available and from 2020 based on both the currently available as well as those available from 2020.

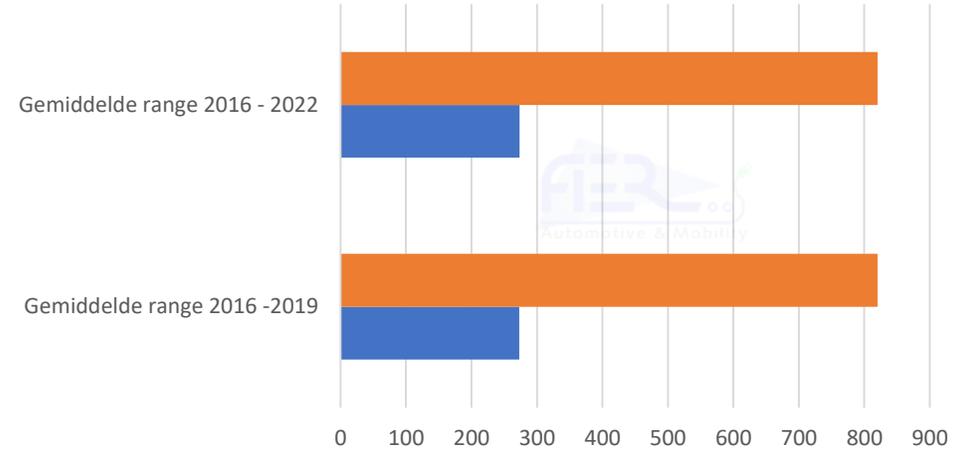
# Appendix 1: BiK in the Netherlands

## Findings relevant segments (B)

Gross BiK B-segment †



Range electric vs. petrol segment B



Examples current BEVs



Renault Zoe



Hyundai Kona EV

Examples future BEVs



MINI Electric



Peugeot e208

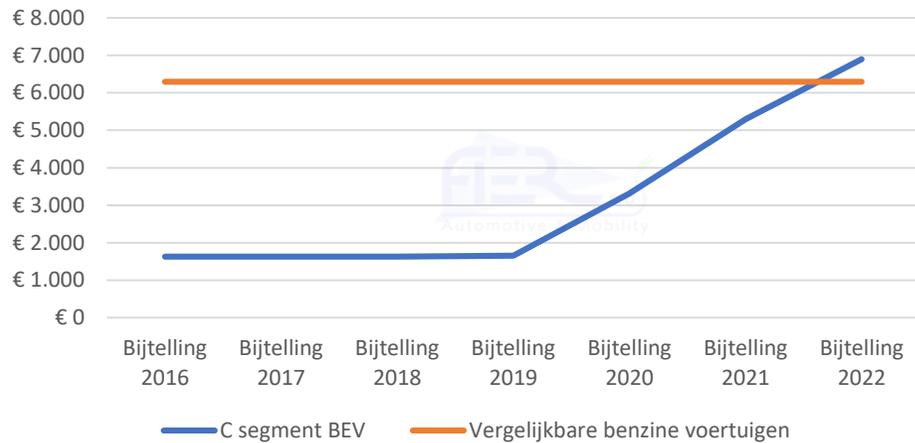
† Foundation for the BiK of petrol vehicles is based on all reference models available from 2016 until 2022.

Foundation for BEVs is from 2016 until 2019 based on the BEVs that are currently available and from 2020 based on both the currently available as well as those available from 2020.

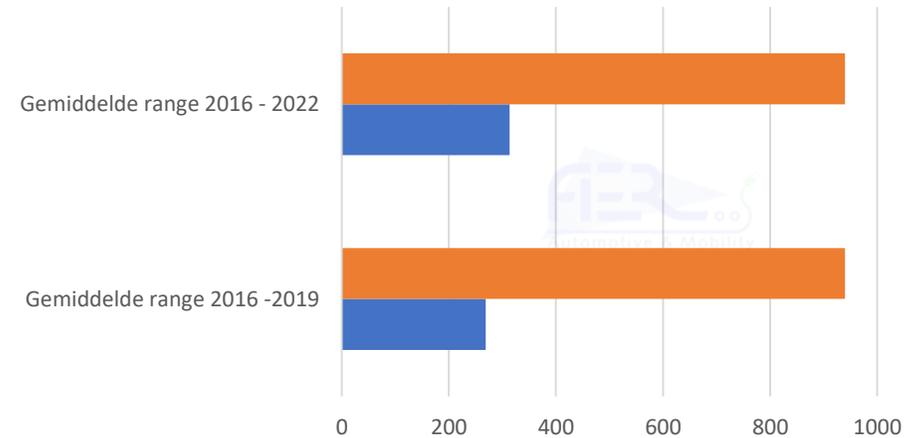
# Appendix 1: BiK in the Netherlands

## Findings relevant segments (C and C-SUV)

Gross BiK C segment †



Range electric vs. petrol segment C



Examples current BEVs



Nissan Leaf



Hyundai Ioniq EV

Examples future BEVs



VW ID3



Mercedes-Benz EQA

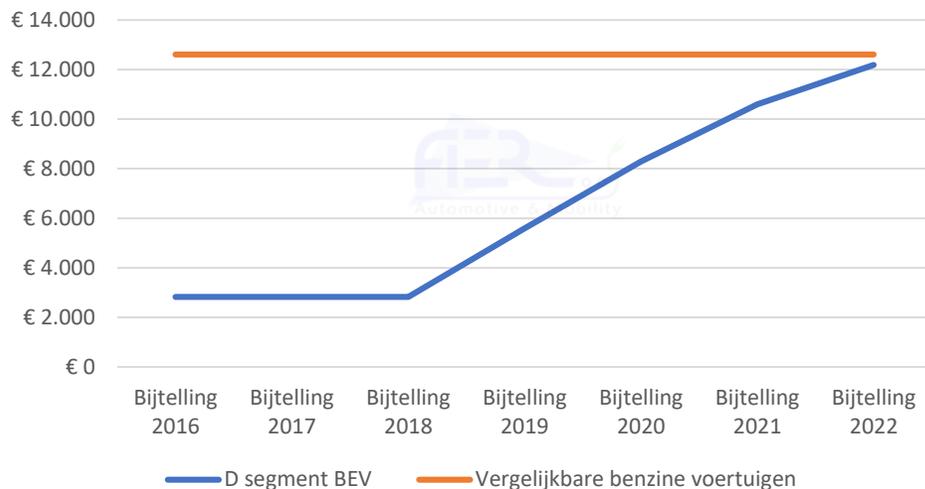
† Foundation for the BiK of petrol vehicles is based on all reference models available from 2016 until 2022.

Foundation for BEVs is from 2016 until 2019 based on the BEVs that are currently available and from 2020 based on both the currently available as well as those available from 2020.

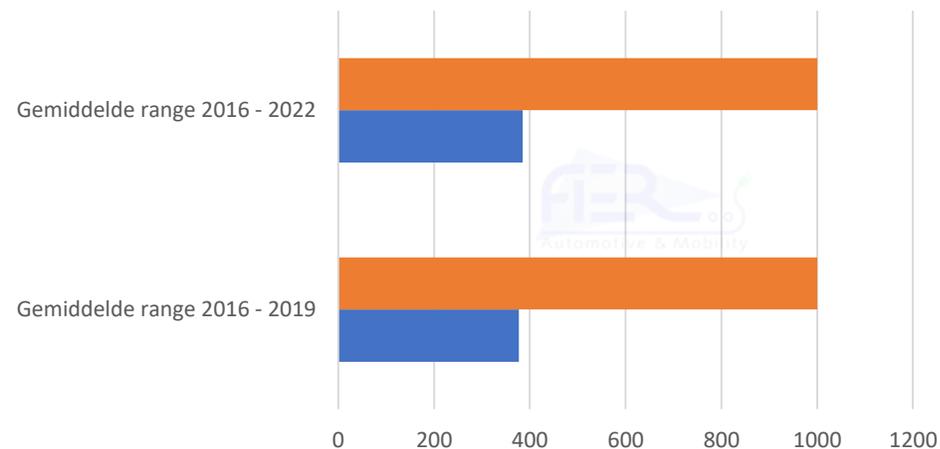
# Appendix 1: BiK in the Netherlands

## Findings relevant segments (D and D-SUV)

Gross BiK D segment †



Range electric vs. petrol segment D



Examples current BEVs



Tesla Model 3



Jaguar i-Pace



BMW iX3



Polestar 2

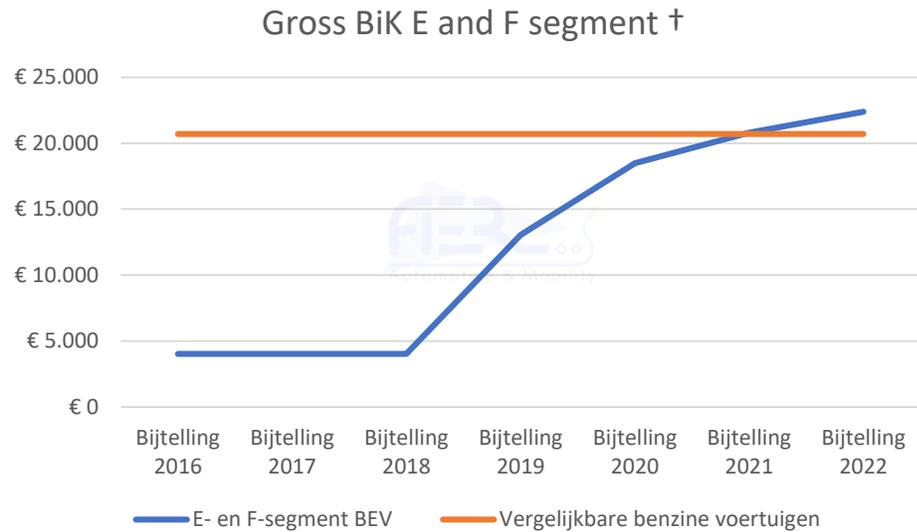
Examples future BEVs

† Foundation for the BiK of petrol vehicles is based on all reference models available from 2016 until 2022.

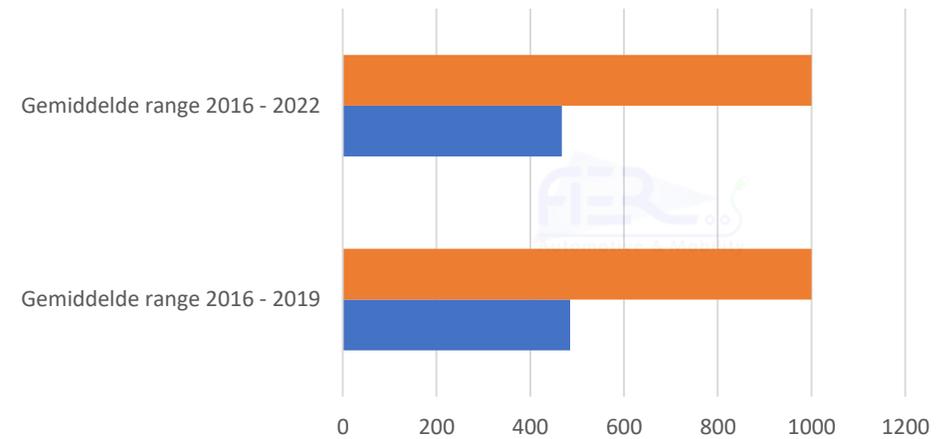
Foundation for BEVs is from 2016 until 2019 based on the BEVs that are currently available and from 2020 based on both the currently available as well as those available from 2020.

# Appendix 1: BiK in the Netherlands

## Findings remaining segments (E, E-SUV, F and F-SUV)



Range electric vs. petrol segment E and F



Examples current BEVs



Tesla Model S



Tesla Model X

Examples future BEVs



Audi E-Tron GT



Porsche Taycan

† Foundation for the BiK of petrol vehicles is based on all reference models available from 2016 until 2022.

Foundation for BEVs is from 2016 until 2019 based on the BEVs that are currently available and from 2020 based on both the currently available as well as those available from 2020.

# Appendix 2: Availability BEVs 2019 - 2022

Available BEVs	Available BEVs (From October 2019)	Announced BEVs (available in 2020)	Announced BEVs (available from 2021)
Audi e-Tron 55 Quattro	Audi e-Tron 50 Quattro	Audi Q4 e-Tron	Audi e-tron GT
BMW i3 120 Ah	Honda E	Audi e-Tron Sportback	Lucid Air
BMW i3s 120 Ah	Hyundai Ioniq Gen 2	BMW iX3	Tesla Model Y Long Range
Citroen C Zero	Hyundai Kona 39	DS Crossback E-Tense	Tesla Model Y Long Range Dual
Hyundai Kona 64	Hyundai Kona 64 Next	e Go Life	Tesla Model Y Performance
Jaguar i Pace	Kia e-Niro 39	Kia e-Soul 64	Tesla Model Y Standard Range
Kia e-Niro 64	MG ZS EV	LightYear One	Tesla Roadster
Mercedes-Benz EQC 400	Porsche Taycan Cross Turismo	Mercedes-Benz EQA	
Nissan Leaf 2	Renault Zoe Next	Mini electric	
Nissan Leaf E+		Opel Corsa-E	
Opel Ampera E		Peugeot e2008	
Peugeot Ion		Peugeot e208	
Renault Zoe R110		Polestar 02	
Renault Zoe R90		Seat el-Born	
Smart EQ Forfour		Seat Mii Electric	
Smart EQ Fortwo Cabrio		Skoda Citigo E	
Smart EQ Fortwo Coupe		Skoda Vision	
Tesla Model 3 Long Range Dual		Sono Sion	
Tesla Model 3 Performance		Tesla Model 3 Standard Range	
Tesla Model 3 Standard Range +		Volvo XC40	
Tesla Model S Long Range		VW e Up Next Gen	
Tesla Model S Performance		VW ID 3 Long range	
Tesla Model X Long Range		VW ID 3 Mid Range	
Tesla Model X Performance		VW ID 3 Standard range	
VW e Up			
VW e-Golf			



- Situation September 2019, choices are: 26 models (most of them with only 3 versions) and 9 this year still to come;
- In 2020 24 BEV-models will be released (officially available to order) and from 2021 7 models have been announced right now;
- To compare, number of petrol models: 5.000 (model and version).

# Appendix 3: FIER - New Mobility Business Development

## Smart e-mobility & International business development



In a rapidly urbanizing world, societies become more and more conscious about their energy consumption and its impact on the environment. As a result, people feel the need to travel as efficient as possible and without the air pollution emitted by the combustion engine we use nowadays. Having the ambition to facilitate this global transition, FIER Automotive accelerate the development of the technology and platforms needed to create and establish the mobility solutions of the future. We do this by the realisation of, for example, electric carsharing programs, we work together on the extension of smart charging and support Dutch companies to gain traction abroad by setting up and executing international trade delegations and programs like the Dutch-German PIB.

## Support industry, logistics, & distribution



Considering the entire lifecycle, electric cars are three times more efficient than cars with combustion engines. To enable people and goods to move as efficient as possible, vehicles like bikes, cars and trucks, will be electrified in the next two decades. With battery technology getting better by the day and large urban areas suffering from heavy air pollution, cities are about to make this transition. Our experts are demonstrating their skills in the transition to, for example, emission free logistics, not only by setting up European projects from an idea, but also by implementing projects with e-Trucks and ultrafast chargers.

## Support public authorities, (EU-) projects & consortia development (PPP)



Together with our European partners, universities and other organisations we develop various EU projects and syndicates, from which the results of our research and our implementations contribute to the transition to a cleaner, healthier and safer world of transport and mobility. An important part of this is that we, based on our accumulated expertise, give advice to urban/municipal and national authorities, and also to the European Commission.

## ***Contact details***

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-  [@FIERAutomotive](https://twitter.com/FIERAutomotive)
-  [FIER Automotive](https://www.linkedin.com/company/fier-automotive)

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