

Incentive programs for promoting electric vehicles by country

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Background of study

Automotive industry supply chain research requires electric vehicle sales market data in sustainability perspective

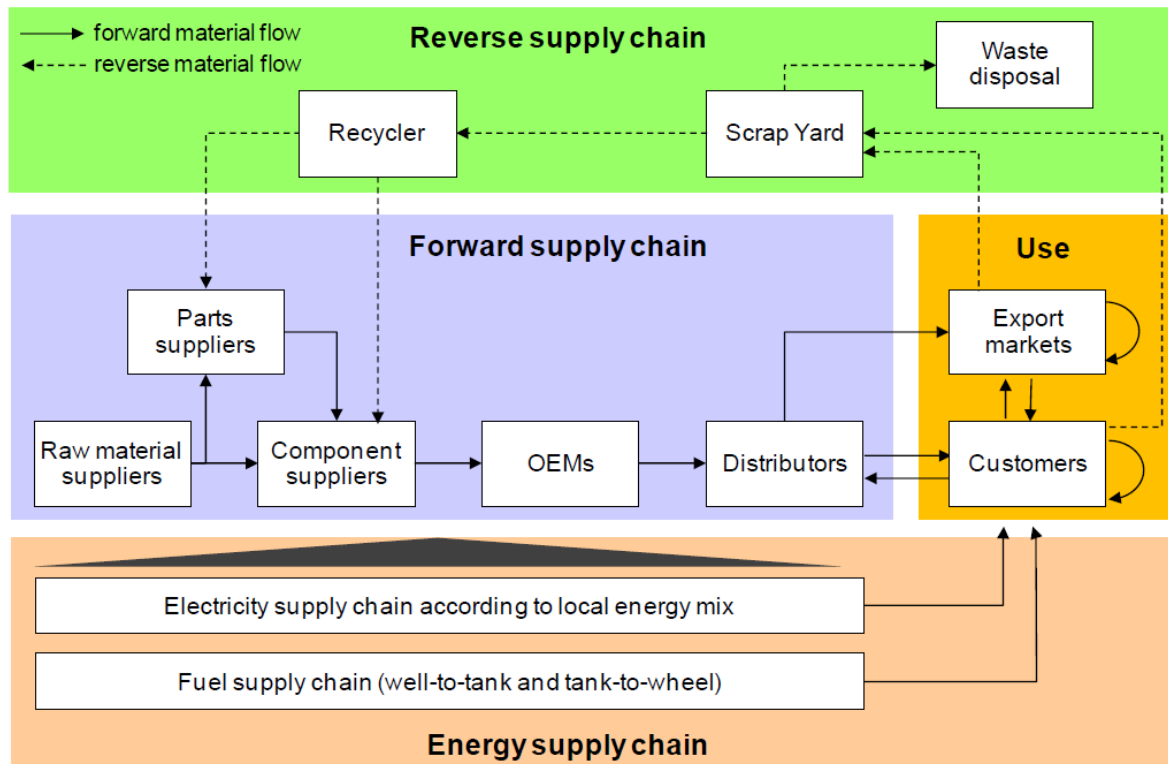


Figure 1. Structure of the automotive industry supply chain. (Günther et al., 2015)

Literature review

Four types of incentive programs are eligible depending on policy support mechanisms by country

Country	Purchase Rebate	Registration Tax Benefit	Ownership Tax Benefit	Non-Financial	Country	Purchase Rebate	Registration Tax Benefit	Ownership Tax Benefit	Non-Financial
Austria	O	O	O	O	Korea	O	O		O
Belgium	O	O	O		Latvia		O	O	
China	O	O	O	O	Lithuania		O		
Croatia		O			Luxembourg	O		O	
Czech		O	O	O	Netherlands		O	O	
Denmark	O	O			Norway		O	O	O
Estonia					Poland				
Finland		O	O		Portugal	O	O	O	O
France	O	O	O		Slovakia				
Germany	O		O		Slovenia	O	O	O	
Greece		O	O		Spain	O	O	O	O
Hungary		O	O		Sweden	O		O	
Iceland		O	O	O	Switzerland			O	
Ireland	O	O	O	O	USA	O	O	O	O
Italy	O		O	O	UK	O	O	O	O
Japan	O	O	O	O					

Table 1. Policy support mechanisms for EVs in 2015 by country. (Kim et al., 2017)

Literature review

Eco-friendly cars were started selling in a wide range of the consumer market only recently in 2010, and market volume is still low

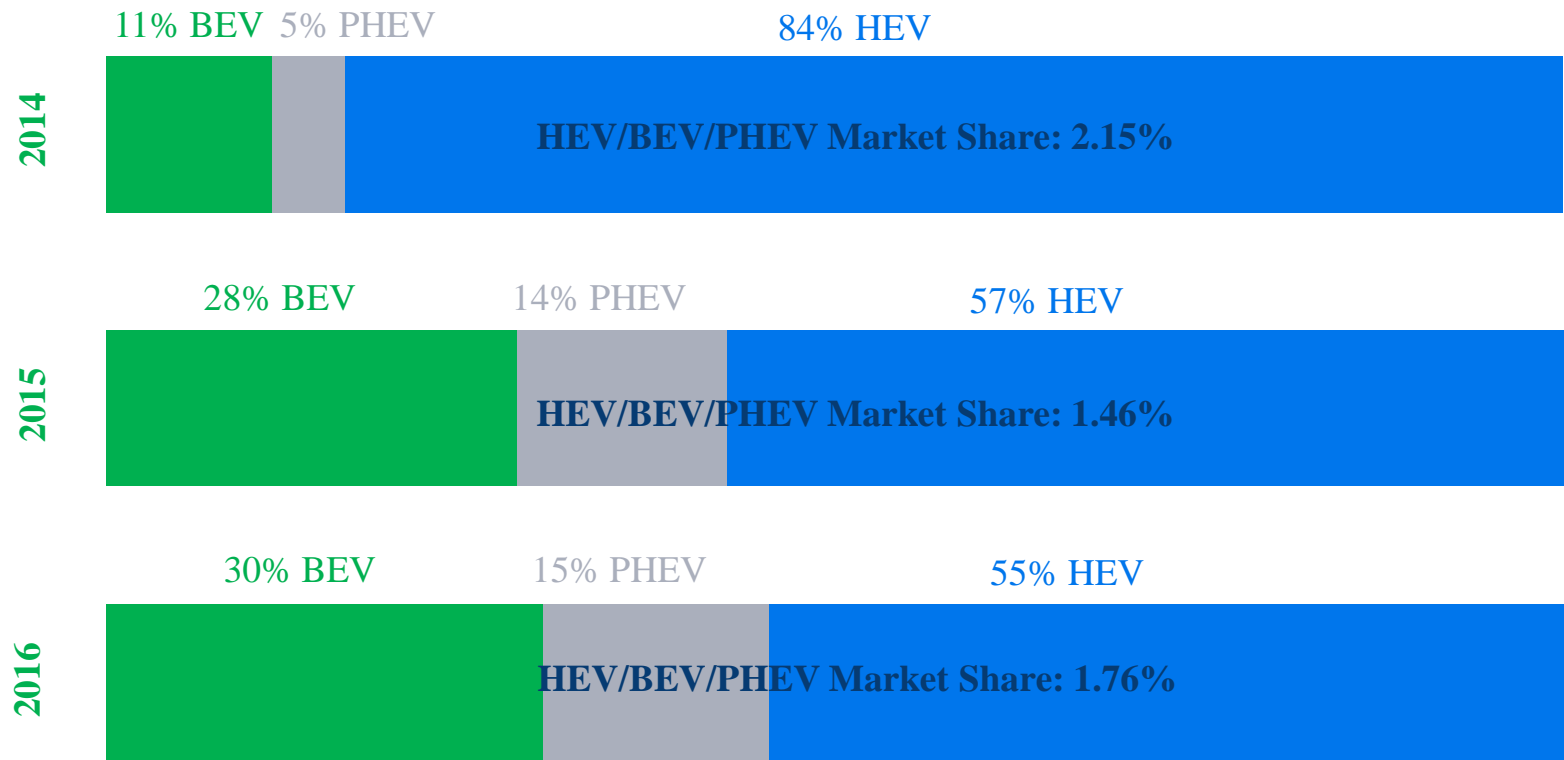


Figure 2. Global BEV, PHEV, HEV sales (IHS Markit)

Incentive programs by country

Austria

Category	Description
Purchase Rebate	<p>End-customers:</p> <ul style="list-style-type: none"> - €4,000 per BEV (€2,500 from the federal gov.; €1,500 additional from the industry) - €1,500 per PHEV (€750 by the federal gov.; €750 additional from the industry) - 2 conditions: Retail price not over €50,000 including VAT & min. electrical range of 40 km (for PHEVs) <p>Businesses (without conditions):</p> <ul style="list-style-type: none"> - €3,000 per BEV (€1,500 from the federal gov.; €1,500 additional from the industry) - €1,500 per PHEV (€750 by the federal gov.; €750 additional from the industry) <p>Company BEVs are exempt from VAT</p> <ul style="list-style-type: none"> - The in-kind benefits for the private usage of company cars is taxed with 0% for BEVs but PHEVs remained at 18% and tax for cars with over 130 g/km rose to 24% (the threshold goes down 3 g/km every year until 2020).
Registration Tax Benefit	<p>Funding for other vehicle categories, buses, LDV and HDV for business (up to €60,000)</p> <p>Registration tax free for all cars with below 90g/km</p>
Ownership Tax Benefit	<p>100% of tax exemption (except VAT) for all BEVs from federal taxes</p> <p>Annual tax: PHEV are revised only for the ICE part because of engine power based tax calculation system.</p>
Others	Free Parking

Incentive programs by country

Belgium

Category	Description
Purchase Rebate	4,000€ only in Flanders
Registration Tax Benefit	Tax exemption for BEVs and PHEVs in Flanders.
Ownership Tax Benefit	End-customers: BEVs pay the lowest rate of tax under the annual circulation tax across the country (74 € instead of 1,900 €) Businesses: BEVs for company use are eligible for 120% write off from corporate income of expenses for ZEVs
Others	Free Parking

Incentive programs by country

China

Category	Description
Purchase Rebate	<p>End-customers:</p> <ul style="list-style-type: none"> - Maximum subsidy of CNY 44,000 for NEVs with driving range of 250kms and above by federal government and 50% more from local government - More subsidy available in NEV pilot cities like Beijing, Shanghai and Shenzhen for both of end-customers and businesses <p>Beijing: between CNY 63,000 and 108,000</p> <p>Shanghai: CNY 30,000 for PHEVs, CNY 40,000 for BEVs</p> <p>Shenzhen: CNY 300,000 - CNY500,000 for pure electric buses, CNY35,000 - CNY60,000 for pure electric passenger vehicles, CNY500,000 for fuel-cell commercial vehicles, and CNY200,000 for fuel-cell passenger vehicles.</p> <p>Tianjin: CNY 33,250 for PHEVs, CNY 57,000 for BEVs</p>
Registration Tax Benefit	<ul style="list-style-type: none"> - Vehicle registration fee reduction by 50% for NEVs - Consumption tax reduction based on electric driving range for NEVs from 2013 - License plates (typically costing \$ 12,000) are free in some NEV pilot cities
Others	<p>NEVs are exempted from traffic restrictions</p> <p>NEVs are allowed in HOV lanes irrespective of the number of passengers on board</p>

Incentive programs by country

Croatia

Category	Description
Registration Tax Benefit	Tax exemption for BEVs and reduction for PHEVs based on amount of CO2 emission

Czech

Category	Description
Registration Tax Benefit	No purchase tax for BEVs, PHEVs and HEVs
Ownership Tax Benefit	Road tax exemption for ZEVs, HEVs and alternative fuel vehicles on business purpose

Incentive programs by country

Denmark

Category	Description
Purchase Rebate	Up to DKK 15,000
Registration Tax Benefit	Tax reduction only for BEVs with less DKK 79,000 (BEV 40% vs. ICE 150%, and no purchase tax for FCEVs)
Ownership Tax Benefit	Businesses: Companies that supply EV charging on a commercial basis can receive an electricity tax rebate that amount to about DKK 1 per kWh.
Others	<ul style="list-style-type: none">- Payment benefits for parking lots up to DKK 5,000 per year- Dedicated parking lots for BEVs and PHEVs- Fleet owners purchasing energy efficient vehicles receive funding from the utility companies ranging from DKK 2,000-4,000 per vehicle.

Incentive programs by country

Estonia

Category	Description
Purchase Rebate	<ul style="list-style-type: none">- Estonia has allocated € 9 million in grants towards BEVs From 2011 to 2014 (ended 7 August 2014)- Currently no incentives available

Finland

Category	Description
Registration Tax Benefit	Tax reduction (5% for BEVs)

Incentive programs by country

France

Category	Description
Purchase Rebate	BEVs and PHEVs emitting below 20 g/km benefit from a premium of € 6,000 PHEVs emitting between 21 and 60 g/km benefit from a premium of € 1,000. Scrappage of a 11-year or more diesel car: Extra € 4,000 for BEVs and extra € 2,500 for PHEVs
Registration Tax Benefit	Road tax exemption for BEVs or reduction for PHEVs
Ownership Tax Benefit	End-customers: Exemption for cars with less 50g/km and reduction up to € 2/g for cars emitting between 50 to 100g/km Business: BEVs are exempt from the company car tax. HEVs emitting less than 110 g/km are exempt during the first two years after registration

Incentive programs by country

Germany

Category	Description
Purchase Rebate	<ul style="list-style-type: none">- Up to €4,000 for BEVs and €3,000 for PHEVs from May 2016- Rewards are available only for cars with a list price of a maximum of €60,000 for base model- Promotion lasts for annual accumulated sales of 400 thousand cars- Total funding of € 1.2 billion by federal government and automakers with half and half.- Promotion ends in 2020.
Ownership Tax Benefit	<p>End-customer: Tax exemption for 10 years for cars registered until Dec. 31 2015 and for 5 years from Jan. 1, 2016 to Dec. 31 , 2020</p> <p>Business: Tax deductions on company cars</p>
Others	<p>BEV benefits :</p> <ul style="list-style-type: none">- Free Parking- Reserved Parking spots- Bus lane use

Incentive programs by country

Greece

Category	Description
Registration Tax Benefit	BEVs and HEVs are exempt from the tax since 2011
Ownership Tax Benefit	No annual circulation tax for BEVs and HEVs since 2011
Others	Electric and hybrid vehicles are exempt the luxury tax and the luxury living tax.

Hungary

Category	Description
Registration Tax Benefit	Exemption for BEVs
Ownership Tax Benefit	BEVs for both of end-customer and business are exempt from the annual circulation tax.
Others	Free parking during charging Driving allowance even during smog alert in low and zero emission zones

Incentive programs by country

Iceland

Category	Description
Registration Tax Benefit	No purchase tax and VAT exemption for BEVs
Ownership Tax Benefit	No annual tax for BEVs
Others	Free parking up to 2 hours Incentives on installing charging stations

Incentive programs by country

Ireland

Category	Description
Purchase Rebate	Incentives up to €5,000 for both of BEVs and PHEVs. The vehicles should have been purchased before 2015 end and the grant is accessed via dealer.
Registration Tax Benefit	BEVs are eligible for relief up to €5,000 and PHEVs are up to €2,500
Ownership Tax Benefit	<ul style="list-style-type: none">- Tax reduction in the scheme of CO2 based tax- Companies are eligible to write off 100% of the purchase value of qualifying alternative fuel vehicles
Others	<ul style="list-style-type: none">- Free for on-street parking while charging- Provision for distinct marking of on-street parking space for PEVs- Free charging at public recharging points

Incentive programs by country

Italy

Category	Description
Purchase Rebate	Cars emitting from 0 to 50g/km: €5,000 in 2013 / €4,000 in 2014 / €3,000 in 2015 Cars emitting from 50 to 95g/km: €1,200 in 2013 / €1,000 in 2014 / €800 in 2015
Ownership Tax Benefit	Annual tax exemption for BEVs for 5 years after registration. After that, BEVs benefit from a 75% reduction of the tax rate revised to ICEs
Others	Credit for charging infrastructure in non-residential buildings over 500 square meters

Incentive programs by country

Japan

Category	Description
Purchase Rebate	<p>Until April 2012:</p> <p>BEVs and PHEVs: JPY 660,000-1,000,000 (Based on the price differences with an equivalent gasoline car) and subsidies from some local government are available additionally</p> <p>Until April 2015:</p> <p>BEVs and PHEVs: JPY 450,000-1,000,000 (based on the price differences with an equivalent gasoline car, together with “Eco-car subsidy” is not allowed) and subsidies from some local government are also available additionally</p> <p>Since April 2015:</p> <p>Up to JPY 3 million offered for BEVs and FCEVs</p> <p>“Eco car subsidy”:</p> <p>Cars in compliance with 2015 fuel efficiency standards or +25% compared with 2010 fuel efficiency standards, (or HEV, EV, PHEV, Clean diesel, FCV, Natural gas), subsidy from government, JPY 100,000, or JPY 70,000 for Midget car (“Kei car”)</p>
Registration Tax Benefit	BEVs and PHEVs: 100% acquisition tax & tonnage tax reduction, and 50% vehicle tax reduction.
Ownership Tax Benefit	BEVs are eligible for up to 50% tax exemption on automobile tax
Others	Various incentives are available depending on local authorities

Incentive programs by country

Korea

Category	Description
Purchase Rebate	KRW 27.5 million for FCEVs, KRW 12 million for BEVs and KRW 1 million for HEVs until 2016 KRW 14 million for BEVs and additional subsidy of local governments up to KRW 3~12 million since 2017
Registration Tax Benefit	Individual consumption tax exemption up to KRW 2 million Education tax exemption up to KRW 0.6 million (until 31 of Dec. 2019) Acquisition tax exemption up to KRW 2 million (until 31 of Dec. 2018)
Others	Free parking Parking garage certificate exemption Basic charging fee exemption

Incentive programs by country

Latvia

Category	Description
Registration Tax Benefit	Tax exemption for BEVs
Ownership Tax Benefit	Tax exemption for BEVs Lowest amount (EUR10) for the company car tax
Others	Free parking in Liepaja Eligible for bus lane

Lithuania

Category	Description
Registration Tax Benefit	Tax reduction in the scheme of CO2 based tax
Others	Reduction of parking fees Eligible for bus lane in Vilnius

Incentive programs by country

Luxembourg

Category	Description
Purchase Rebate	<p>from 2009 until 2012:</p> <p>≤ 90 g/km CO₂: incentive €1,500</p> <p>≤ 100 g/km CO₂: incentive €750</p> <p>Tax return of €5,000 for BEV and FCEV at annual tax declaration from 2013</p> <p>(The purchaser must have concluded an agreement to buy electricity from renewable energy sources in order to obtain the premium)</p>
Ownership Tax Benefit	<p>End-customer:</p> <p>Electric vehicles pay the minimum rate (€30) of the annual circulation tax</p> <p>Business:</p> <p>Low emission vehicles are eligible for tax deductions on corporate income</p>

Incentive programs by country

Netherlands

Category	Description
Registration Tax Benefit	<p>Exemption for ZEVs</p> <p>For other cars the system is progressive, with 5 levels of CO2 emissions that pay different amounts of registration tax since 2016</p> <ul style="list-style-type: none"> - Level 1(1-79 g/km): €6 per gram - Level 2(80-106g/km): € 69 per gram <p>Another level 5 tax system was effective from 2012 2 half until 2015 and level 4 tax system including bonus level was effective from 2011 until 2012 1 half</p>
Ownership Tax Benefit	<p>CO2 based ownership tax:</p> <p>Exemption for BEVs and HEVs emitting < 110 g/km from 2 half of 2012 until 2013</p> <p>Exemption for BEVs and HEVs emitting ≤ 50 g/km until 2015</p> <p>No exemption from 2016 for all cars</p> <p>Road tax: Exemption for ZEVs and 50% of road tax for PHEVs emitting ≤ 50 g/km</p> <p>Business:</p> <p>Reduction of surcharge on income tax for the private use of company cars</p> <p>4-25% of the catalogue value on the taxable income:</p> <p>4% for ZEVs, 15% for most PHEVs ≤ 50 g/km, 21% for cars emitting from 51–106g/km</p>
Others	Various incentives are available depending on local authorities

Incentive programs by country

Norway

Category	Description
Purchase Rebate	<p>End-customer:</p> <p>Purchase tax exemption for ZEVs and reduced tax for PHEVs (up to €10,000)</p> <p>VAT exemption on purchase of ZEVs since 2001</p> <p>Import tax exemption or reduction available depending on CO2 emission since 2010</p>
Registration Tax Benefit	<p>End-customer: Annual tax of only NOK 405 instead of NOK 2,885</p> <p>Business: 50% reduction on company car tax since 2000</p>
Ownership Tax Benefit	<ul style="list-style-type: none"> - Urban toll exemption, Highway toll exemption, Free Parking, Bus lane use - Funding for charging stations in apartment buildings, shopping centers, parking garages etc.
Others	<p>The zero emissions incentives include: No purchase/import taxes (1990), Low annual road tax (1996)</p> <p>No charges on toll roads or ferries (1997 and 2009), Free municipal parking (1999)</p> <p>Exemption from 25% VAT on purchase (2001), Access to bus lanes (2005)</p> <p>50 % reduced company car tax (2000), Exemption from 25% VAT on leasing (2015)</p> <p>The incentive program will be revised and adjusted parallel with the market development in coming years.</p>

Incentive programs by country

Portugal

Category	Description
Purchase Rebate	€2,250 for BEVs and €1,125 for PHEVs until 2016 €1,125 for BEVs and €562.5 for PHEVs from 2017
Registration Tax Benefit	Tax exemption or reduction in the scheme of CO2 based tax
Ownership Tax Benefit	End-customer: Tax exemption or reduction in the scheme of CO2 based tax Business: VAT deductible for companies
Others	- Free parking in Lisbon - 1 year discount of electricity for charging

Incentive programs by country

Slovakia

Category	Description
Purchase Rebate	€5,000 for BEVs and €3,000 for PHEVs until 2017
Registration Tax Benefit	BEVs pay lowest registration tax of €33
Others	Parking discounts in some cities

Incentive programs by country

Slovenia

Category	Description
Purchase Rebate	End-customer and business: €7,500 for M1 segment BEV €4,500 for N1 and L7e segment BEV €4,500 for M1 and N1 segment PHEV including range extender HEVs €3,000 for L6e segment BEV
Registration Tax Benefit	Lowest rate of tax (0.5%) of motor vehicle revised to BEVs
Ownership Tax Benefit	Annual road tax exemption for BEVs

Incentive programs by country

Spain

Category	Description
Purchase Rebate	<ul style="list-style-type: none">- Until 2015: Light Vehicles: 25% of the price up to €6,000 Buses, vans and trucks, 25% of the price up to €5,000- From 2016: Light Vehicles: up to €5,500 Vans and trucks: up to €8,000 Buses: up to €20,000- Additional local subsidies available
Registration Tax Benefit	<ul style="list-style-type: none">Purchase tax exemptionLuxury tax exemption until 2017
Ownership Tax Benefit	<ul style="list-style-type: none">Road tax exemption or reduction depending on local policies
Others	<ul style="list-style-type: none">- Toll exemption on highways for BEVs- Free parking in some cities- HOV available for BEVs

Incentive programs by country

Sweden

Category	Description
Purchase Rebate	End-customer and business: SEK 40,000 for BEVs and SEK 20,000 for PHEV (Available the cars emitting less 50 g/km and maximum 35% of price difference between the car and a corresponding ICEs since 2012)
Ownership Tax Benefit	End-customer: A five-year exemption from annual circulation tax applies for BEVs and PHEVs with energy consumption more than 100km/37kWh Business: Reduced company car taxation on BEVs and PHEVs

Incentive programs by country

Switzerland

Category	Description
Registration Tax Benefit	Import tax exemption for BEVs
Ownership Tax Benefit	Tax reduction depending on local policies

Incentive programs by country

UK

Category	Description
Purchase Rebate	<p>BEVs and FCEVs:</p> <p>25% of vehicle price or £5,000 for BEVs and PHEVs with CO2 emissions ≤ 75 g/km since 2011</p> <p>£4,500 for M1 segment and £8,000 for N1 segment with at least 70 miles' electric range</p> <p>PHEVs:</p> <p>£ 2,500 for cars with less than 70 miles electric range and CO2 emissions between 50 g/km to 75 g/km (price cap of £ 60,000)</p>
Registration Tax Benefit	Tax exemption for ZEVs valued less than £40,000 and reduced tax for low emission vehicles since April 2017
Ownership Tax Benefit	<p>End-customer:</p> <p>Annual tax exemption for cars with ≤ 100 g/km CO2 since 2010</p> <p>Annual tax exemption for ZEVs valued £40,000 or less since April 2017</p> <p>Business:</p> <p>BEVs are exempt from the company car tax while all cars with CO2 emissions lower than 50g/km pay 5%</p>
Others	<p>London toll exemption</p> <p>Free parking in some cities</p>

Incentive programs by country

US

Category	Description
Purchase Rebate	<p>Clean Vehicle Rebate Project: BEVs and PHEVs rebates up to \$2,500 until 2015 in California</p> <p>BEVs and PHEVs rebates up to \$5,000 from March 2016 in California</p> <p>Alternative Fuel Vehicle and Alternative Fuel Rebates up to \$4,000 in Illinois</p> <p>80% coverage of incremental cost of a qualified PEV, up to USD8,260 in Colorado</p>
Registration Tax Benefit	<p>Tax credit of \$2,500 - \$7,500 for PEVs since 2010</p> <p>Conditions: traction battery with min. 4kWh capacity, external source of energy for recharging, gross vehicle weight rating of up to 14,000 pounds, and meets specific emission standards</p> <p>Credit begins to phase out after sales of vehicle model reach 200K</p> <p>Tax credit of up to \$4,000 for FCEVs until 2014</p> <p>Various local incentives:</p> <p>Alternative Fuel and Idle Reduction Equipment Tax Credit up to \$7,500 until 2015 in Colorado</p> <p>Alternative Fuel Vehicle Tax Credit up to \$2,500 and ZEVs Tax Credit up to \$5,000 in Georgia</p> <p>Fuel Cell Motor Vehicle Tax Deduction of \$2,000 in Iowa</p> <p>Alternative Fuel Vehicle Income Tax Credit of 40% of incremental or conversion cost in Kansas</p>
Ownership Tax Benefit	<p>Annual tax exemption in Arizona</p>
Others	<p>Permission to park without penalty in parking areas that are designated for carpool operators in Arizona</p> <p>Various incentives available depending on states' policies</p>

Thank you