



ERA-NET Cofund Electric Mobility Europe (EMEurope)

D6.4 - Best practice catalogue for policy makers No. 1

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Glossary

BEV	Battery Electric Vehicle
EVSE	Electric Vehicle Supply Equipment
FCEV	Fuel Cell Electric Vehicle
ICEV	Internal Combustion Engine Vehicle
OECD	Organisation for Economic Cooperation and Development
PEV	Plug-in Electric Vehicle
PHEV	Plug-in Hybrid Electric Vehicle
REEV	Range Extended Electric Vehicle
R&D	Research and Development
Rex	Range Extender
SME	Small Medium Enterprise
TCO	Total Cost of Ownership
TEN-T	Trans-European Transport Networks
ULEV	Ultra-Low Emission Vehicle
VAT	Value Added Tax
ZEV	Zero Emission Vehicle

1. Introduction

Electric Mobility Europe (EMEurope) has the ambition to scale up and advance the implementation and deployment of electric mobility in Europe's urban areas using a two-track approach comprising a transnational call for funding research and innovation projects and policy cooperation activities. The policy cooperation component aims at the achievement of a stronger alignment of strategy and policy among relevant stakeholders. The activities of the policy cooperation component intend to support the development of electric mobility with the following three main tasks:

- Strengthening the knowledge base and establishing closer contacts between policy-makers;
- Improving and tuning frame conditions for electric mobility;
- Establishing closer contacts with policy-makers and stakeholders improving the dialogue.

There are many networks working to achieve this goal, but their approach is rather fragmented and therefore unlikely to trigger broad changes. Therefore one of the goals of EMEurope is to promote the exchange on policy decisions and actions in the involved countries and regions. Furthermore, wherever it is deemed to be beneficial also stakeholders from different networks inside and outside of the Europe consortium should be involved.

2. Concept

The purpose of this document is to support policy makers as a guidance catalogue. It sums up information collected in deliverable D6.1 "State of the art survey No. 1 – national, regional and EU measures to establish and support electric mobility"¹, the results of a state of the art survey of regional, national and EU measures carried out in August-September 2018 and various literature. A list of all countries and regions participating in this survey and an overview of its outcomes is given in table 1.

The measures described here are the same featured in several studies and used for the state of the art survey mentioned above. For each of the seven measures listed below, in addition to a short description also experiences collected during their implementation in several countries, a check-list for countries/regions intending to implement the measure and an overview of the EMEurope partners including the description of the measures implemented or planned and links for further research are part of this document.

¹ A second survey on the state of the art of regional, national and EU measures will be carried out in 2020 and delivered as D6.2 "State of the art survey No. 2 – national, regional and EU measures to establish and support electric mobility".



The state of the art survey was prepared considering the following types of measures:

- purchase subsidies,
- tax benefits (registration, ownership, company),
- VAT benefits,
- other financial benefits,
- incentives (local, other types)
- incentives (infrastructure) and,
- research and funding programmes/schemes.

The content of this document should support policy makers and stakeholders in their decisions. However, the policy measures described here are by no means recommendations by the EMEurope partners or the European Commission.

Table 1: Overview of the outcomes of State of the art survey No. 1 – National, Regional and EU measures to establish and support electric mobility

country/region	purchase subsidies	tax benefits	VAT benefits	other financial benefits	incentives (local, other types)	incentive (infrastructure)	research and funding programs
Austria	✓	✓	✓	✓	✓	✓	✓
Belarus	planned	planned	✓	✓	✓	✗	✓
Denmark	✗	✓	✗	✗	planned	planned	✓
Finland	✓	✓	✗	✓	–	✓	✓
France	✓	✓	✓	✓	✓	–	✓
Germany	✓	✓	✗	✓	✓	✓	✓
Hungary	✓	✓	✗	✗	✓	✓	✓
Israel	not participating in the survey						
Italy	✓	at regional level	–	✗	–	planned	✓
Italy - Piedmont	✓	✓	✗	✗	–	planned	✓
Poland	not participating in the survey						
The Netherlands	✗	✓	✗	✗	✓	✓	✓
Spain	✓	–	–	–	–	–	✓
Spain - Catalonia	✓	✓	✗	✗	✓	✓	✓
Sweden	✓	✓	✗	✗	✓	✓	✓
Turkey	✓	✓	✗	–	✗	✗	✓

✓ = available

✗ = not available

– = not yet reported

3. Some considerations on policy measures

Electric vehicles (EVs) are increasingly becoming more competitive compared to internal combustion engine vehicles (ICEV), mainly due to the combination of incentives and technological developments, which decreases the EV prices and also assures a better economic value for the (future) users. It can be argued that Norway's broad and stable long-term strategy makes it the global leader in EV adoption. Nearly 40% of newly sold cars in Norway in 2017 are electric, the highest proportion worldwide, followed by 11.7% in Iceland, and 6.3% in Sweden.² These countries have in common a combination of initiatives to promote the adoption of electric mobility.

A range of policy instruments related to the promotion of EVs has been adopted in major global markets. The People's Republic of China ("China"), Europe, Japan, United States and recently India have spurred EV consumer demands through a combination of instruments including public procurement and investment plans, subsidies and other financial incentives addressing both EV purchase prices and refuelling/charging infrastructure, fuel-economy standards and other measures, in particular including zero-emission vehicle (ZEV) mandates.³

According to Energeia's⁴ research, non-financial incentives like free parking and access to bus lanes were proven to be helpful, but secondary to price as a motivation for new buyers considering going electric. Taking this research into consideration the Australian Renewable Energy Agency (ARENA) getting the right combination of policy incentives, model availability and charging infrastructure is key to launching Australia's EV industry off the starting grid.⁵ In many countries the incentives for EVs are foreseen to decrease with time, since their need is expected to decrease in the near future with the envisaged market uptake.

The most common governmental incentives used are financial incentives, such as purchase incentives, tax benefits and VAT benefits for eco-friendly automobiles, furthermore incentives for building or broadening the charging infrastructure. Other types of benefits which are not necessarily directly classified as financial have also been implemented, such as free-parking or free-charging in certain areas of cities, fee exemptions for bridge uses, etc.

The successful implementation of an incentive in one country/region does not yet imply that it will yield the same results somewhere else, but chances are improved if the experience is shared. Countries and regions or cities could reap these benefits by copying from one another, still with some legal and cultural adaptation, trying to learn and improve their set of measures based on collected experience. New or improved ideas can also trigger changes not foreseen

² <https://www.iea.org/gevo2018>

³ Global EV Outlook 2018, page 95

⁴ Energeia is an Australian organization advising on research to organizations focused on energy technology and electricity industry research

⁵ <https://arena.gov.au/blog/electric-vehicles-take-charge-prices-drop-ranges-grow/>

originally. The purpose of this document is to support policy makers with information collected not only from literature, but in particular from the EMEurope partners directly involved in the planning and/or implementation of such initiatives.

4. Implemented or planned policy measures

Purchase subsidies

Description

Currently, purchase prices for plug-in hybrid and battery electric vehicles are still considerably higher in most European countries than for internal combustion engine vehicles. Higher purchase prices together with the lack of a broad charging infrastructure pose a barrier for the purchase of electric vehicles in many countries. Policies to support the transition to low and zero emission mobility need to facilitate the ramp-up and dissemination of alternatives to ICEV vehicles, such as battery electric vehicles (BEVs) and plug-in hybrid vehicles (PHEVs), by leveraging the volumes available in the passenger car market.⁶ In order to overcome the price barrier and support the market uptake for electric vehicles, several governments and local authorities make use of financial and non-financial incentives for users. Purchase subsidies have been implemented in several countries to make the prices of electric vehicles comparable to conventional vehicles in the same user category. In most cases, a buyer is offered a lump prime by the government directly or in partnership with the automobile industry if he chooses an electric or plug-in electric model instead of a conventional fuel vehicle. In some countries or regions, the subsidies are not fixed but a percentage of the car price. Furthermore, approaches such as competitive procurement for fleets in public service are useful, though they usually represent a fairly limited volume of vehicles. Purchase subsidies for public transport (e.g. electric buses) are in place in a few countries and they also show a positive effect on the image and further leverage of the technologies⁷.

Experiences

Not only several countries and regions in Europe make use of purchase subsidies to stimulate the electric vehicles market, but also countries outside Europe with very significant automobile markets like China and USA provide them. The experiences related to the use of such policy instruments are very dependent on the model used for the subsidy and the country/region implementing it. Some studies argue that benefits from this kind of measure are not enough

⁶ IEA, Ministerial, Clean Energy and EVI. Global EV Outlook 2018. France: International Energy Agency, 2018

⁷ ERA-NET Cofund Electric Mobility Europe (EMEurope), State of the art survey no. 1 – national, regional and EU measures to establish and support electric mobility, 2018

substantiated, like the use of subsidies in Norway⁸. In this case, it is argued that despite widespread presence, very little analysis has examined the cost of the subsidies relative to the value of the consequent environmental and social benefits.

Some countries participating in the EMEurope state-of-the-art survey reported that purchase subsidies are clear and easy to manage and help early adopters to buy electric vehicles. Despite of a generally positive evaluation by the countries implementing the measure, it is argued that the contribution to the rollout of electric vehicles is still low and more has to be done. On the other hand, when applied to public transport the results showed impact in decreasing CO₂ emissions in several Italian regions.

Check list – target group

This check list intends to give authorities a short overview of the main features related to the implementation of the described measures considering specific user groups.

Target group – private use

- EV prices should become comparable to ICEV prices
- consideration of Total Cost of Ownership (TCO) could be helpful
- vehicle categories could be fixed in order to avoid risk of using tax money for already strong privileged shares of the population
- use of lump subsidy for all vehicles or a fixed percentage of vehicle price
- possibility of distinguishing subsidies depending on technology (PHEV, FCEV or BEV), range or emissions
- might be combined with other benefits, e.g. tax incentives

Target group – commercial use / fleets

- EV prices should become comparable to ICEV prices
- possibility of using different ranges of subsidies depending on number of purchased vehicles
- use of lump subsidy for all vehicles or a fixed percentage of vehicle price
- might be combined with other benefits, e.g. tax incentives
- leasing could be considered as many organisations make use of it

Target group – public transport

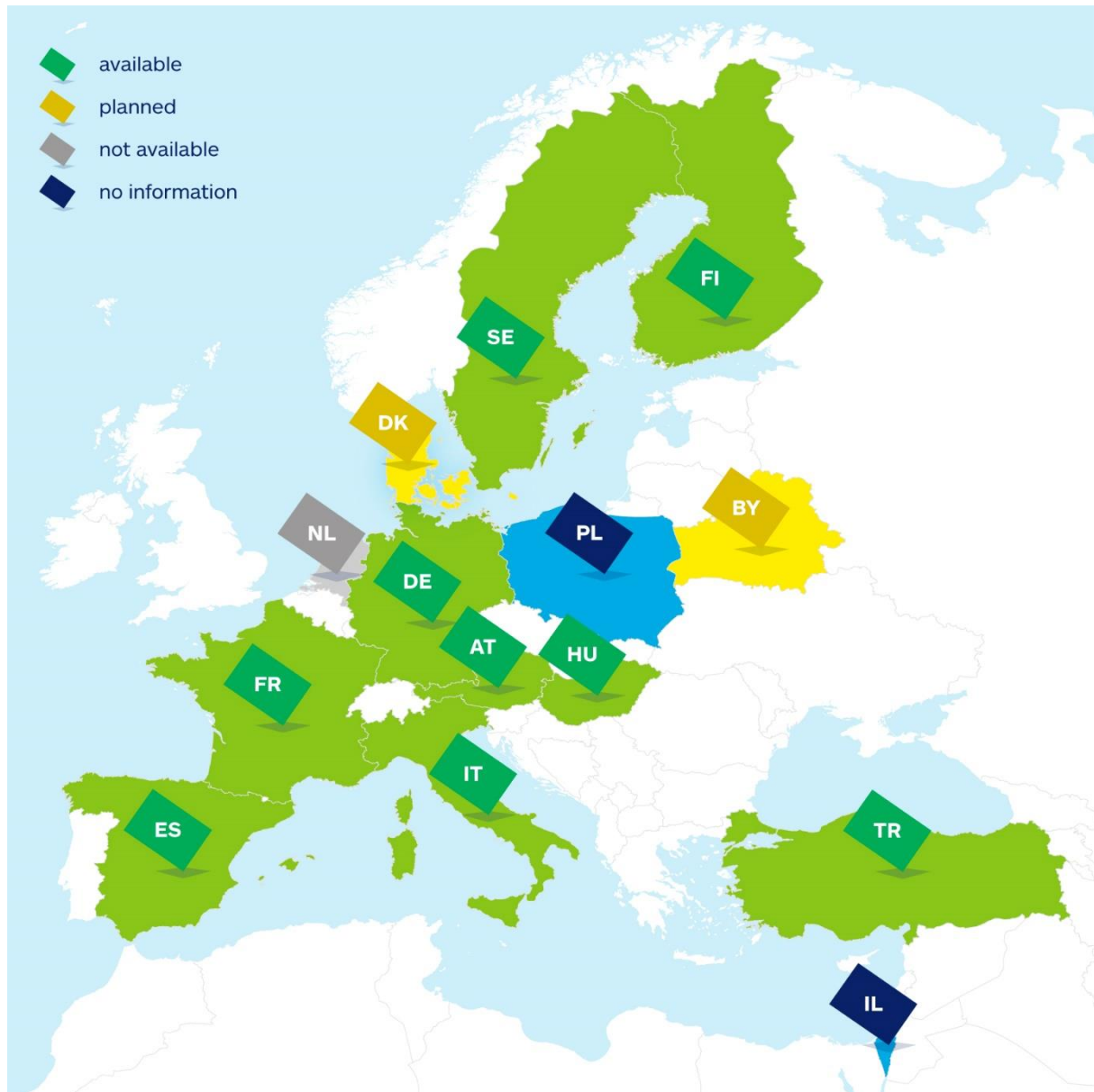
- e-buses prices should become comparable to diesel buses, maintenance could be included

⁸ Olson, Erik L. The financial and environmental costs and benefits for Norwegian electric car subsidies: Are they good public policy? *International Journal of Technology Policy and Management* . 2015, Vol. 3

- possibility of using different ranges of subsidies depending on number of purchased vehicles
- use of lump subsidy for all vehicles or a fixed percentage of vehicle price
- additional support for cities' decisions and also during the preparation of public procurement process

EMEurope countries and regions making use of purchase subsidies

From twelve countries and two regions responding to the EMEurope “state of the art survey No. 1 – National, Regional and EU measures to establish and support electric mobility” nine countries and two regions reported to make use of purchase subsidies and two countries reported about plans to use it as mean of support for electric mobility at the time of the survey. One of the countries planning to make use of this incentive at the time of the survey, Denmark, finally decided against it.



Austria

Different purchase subsidies for private, business and municipalities purchases and also for different technology types (BEV, FCEV, PHEV, REEV, Rex). Additionally, purchase subsidies for electric motorbikes, bikes, buses and commercial vehicles.

www.bmvit.gv.at/verkehr/elektromobilitaet/downloads/emoboffensive.pdf (German language)

Belarus

Subsidies totalling around 6,200 EUR are planned for the purchase of electric vehicles. The programme has not yet been implemented and details are not available.

president.gov.by/ru/official_documents_ru/view/ukaz-273-ot-10-ijulja-2018-g-19124/
(Belarusian language)

Denmark

At the time of the survey purchase subsidies of ca. 6,700 EUR for electrical cars have been proposed, as shown in the figure above. However, in a later stage the proposed subsidies have been rejected.

Finland

Purchase subsidies only for full electric cars with total car price of up to 50,000 EUR (including VAT and car tax).

www.trafi.fi/muutosvoima/tayssahkoauto/sahkoauton_hankintatuki (Finish language)

France

Purchase subsidies for private cars or vans emitting up to 20 g CO₂/km in the amount of 6,000 EUR (up to a limit of 27% of the acquisition cost). These vehicles need to be 100% electrically propelled, if necessary, with a range extender. Subsidies are also available for 2 or 3-wheel vehicles and electric quadricycles.

www.ecologique-solidaire.gouv.fr/bonus-malus-ecologique-definitions-et-baremes-2018
(French language)

Germany

Purchase subsidies amount to 4,000 EUR for all electric vehicles (powered by battery or fuel cell) and 3,000 EUR for externally chargeable hybrid vehicles. The total funding amount has been set at 1.2 billion EUR and is shared between the Federal Government and the automotive industry.

www.bafa.de/DE/Energie/Energieeffizienz/Elektromobilitaet/elektromobilitaet_node.html
(German language)

Hungary

Private persons, individual entrepreneurs, companies, local authorities, public bodies, law firms, civil society organisations, etc. residing or established in Hungary may claim a maximum of 1.5 million HUF non-refundable grant per acquired electric vehicle (the grant may amount to a maximum of 21% of the gross price for sales).

e-mobi.hu/hu/elektromos-gepiarmu-vasarlas-tamogatas (Hungarian language)

Italy and Piedmont Region

Subsidies for the purchase of full electric buses fleets (co-funding up to 70% of the bus cost). Many Italian Regions provide tax subsidies addressed to final consumers in order to support and establish electric mobility. The Piedmont Region is currently evaluating the possibility to provide a purchase subsidies system.

www.regione.piemonte.it/governo/bollettino/abbonati/2014/15/attach/dgr_07351_930_02042_014.pdf (Italian language)

Spain

Purchase subsidies for electric vehicles (BEV, REEV, PHEV) of any category, electric quadricycles, electric motorcycles and fuel cell vehicles. The programme targets individuals and freelancers, companies and public and private entities, except for the exceptions provided in the third base of the regulatory bases of the program.

www.idae.es/ayudas-y-financiacion/para-movilidad-y-vehiculos/plan-moalt-vehiculos (Spanish language)

Catalonia Region

Subsidies for the purchase of low emission vehicles for taxi and commercial use and service vehicles operating in special atmospheric protection areas with the aim of improving the air quality of municipalities with high density of traffic. Purchase subsidies for electric vehicles, electric bicycles and motorbikes for residents and municipal fleets.

web.gencat.cat/ca/tramits/tramits-temes/Subvencio-per-al-foment-de-ladquisicio-de-vehicles-electrics-i-de-baixes-emissions-taxis-us-comercial-altres-serveis?category=75c7c314-a82c-11e3-a972-000c29052e2c (Spanish language)

Sweden

Maximum subsidy of 6,000 EUR grant to battery electric vehicles and fuel cell cars and vans. Subsidies for the purchase of electric buses with rebate up to 20% of the purchase price and 100% of the price difference between the bus and the nearest comparable diesel bus. Purchase subsidies up to 25% of the purchase price, maximum 1,000 EUR for e-bikes, e-motorcycles, e-mopeds. Electric outboard motors for boats are also included in the support.

www.government.se/4a61ac/globalassets/regeringen/dokument/miljo--och-energidepartementet/pdf/memorandum---largest-ever-investment-in-building-a-green-society.pdf (English language)

Turkey

15% price advantage for domestically produced high and medium-high technology goods, of which list is declared by the Ministry of Science and Technology. Electric powered cars and buses are eligible for this category.

www.enerji.gov.tr/en-US/Mainpage (English language)

Tax benefits (registration, ownership, company)

Description

Tax benefits are provided by national governments and local authorities similarly to purchase subsidies in order to stimulate the market uptake of electric vehicle sales by reducing or closing the gap between more expensive electric vehicles and conventionally fuelled vehicles. This frequent financial incentive can be offered as a one-time tax reduction on vehicle acquisition, such as VAT or registration tax, or as an annual vehicle ownership tax reduction, such as road tax or income tax for privately used company cars. Since VAT exemption for electric vehicles is a special form of tax benefit, it is dealt with separately in the following chapter. In most cases, electric vehicles are exempt from vehicle acquisition taxes whereas annual vehicle ownership taxes are commonly reduced in dependence on CO₂ emissions of the vehicle.

Contrary to other financial support tax benefits can be set up in a budget-neutral way, which is a significant advantage. For eco-friendly vehicles, the state can offer tax reliefs, which can be refinanced through corresponding tax increases for heavy polluters. As opposed to privately used company cars, however, company cars are currently anyway under-taxed in most OECD countries (taxable benefit)⁹. Hence, fostering electric and eco-friendly vehicles would necessarily mean raising tax levels for conventional (ICEV) vehicles, which may cause acceptance problems for the previous profiteers.

Experiences

There is extensive experience with stimulating the market uptake of electric vehicle sales by one-time tax reduction on vehicle acquisition, as 21 EU member states have implemented the CO₂-based motor vehicle tax in some or other form¹⁰. Reduced company car taxation is also a proven measure in terms of market uptake (example: 90% of newly registered BEVs were commercially registered in the Netherlands in 2017). First of all, employees can gain experience with electric vehicles without taking any financial risk. Second of all, the conversion of company fleets accelerates the development of a secondary car market. Several countries and regions in Europe make use of tax benefits to stimulate the electric vehicles market. The countries participating in the survey reported that tax reduction depending on the CO₂ emissions of a vehicle is easy to implement as the tax calculation is applied to all vehicle purchases (Finland). However no strong impact or immediate response on vehicle sales have been detected after the introduction of purchase tax and annual vehicle tax reduction. An effect smaller than expected is reported as to the implementation of exemption from income tax for

⁹ www.oecd.org, September 2014

¹⁰ Pushing the deployment of electric vehicles options for policy makers (austriatech)

privately used company cars (Austria). Positive side effects, such as a resulting motivation for companies to install charging infrastructure or an anticipated quick availability of second hand vehicles, are however reported to counterbalance policies that promote public transport and a more transport-efficient society.

Check list – target group

This check list intends to give authorities a short overview of the main features related to the implementation of the described measures considering specific user groups.

Target group – private use

- EV prices should become comparable to ICEV prices
- vehicle categories could be fixed in order to avoid risk of using tax money for already privileged shares of the population
- possibility of distinguishing tax exemption / reduction depending on technology (PHEV, FCEV or BEV), range or emissions
- to avoid significant tax deficits or to set up the incentive in a budget-neutral way, raising tax levels for conventional (ICEV) vehicles would be necessary
- might be combined with other benefits, e.g. purchase subsidies

Target group – commercial use / fleets

- EV prices should become comparable to ICEV prices
- possibility of distinguishing tax exemption / reduction depending on technology (PHEV, FCEV or BEV), range or emissions
- significant effect on newly registered cars evoked by tax exemption / reduction may lead to accelerated growth of used car market and thus to a depreciation of EVs
- might be combined with other benefits, e.g. purchase subsidies

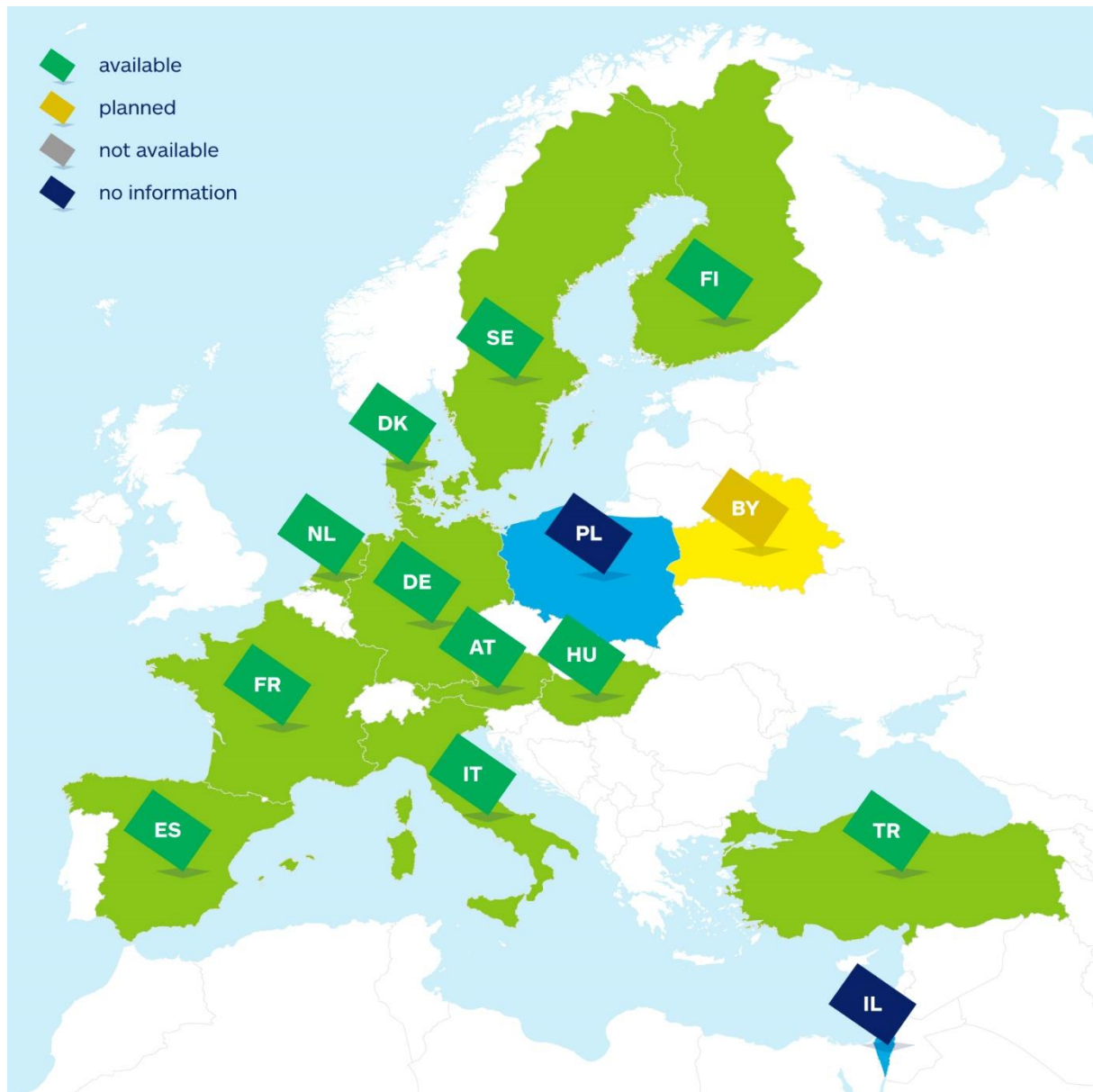
Target group – public transport

- e-buses prices should become comparable to diesel buses, maintenance could be included
- possibility of using different ranges of subsidies depending on number of purchased vehicles
- additional support for cities decisions and also during the preparation of public procurement process

EMEurope countries and regions making use of tax benefits

Twelve countries and two regions out of twelve countries and two regions responding to the EMEurope “state of the art survey No. 1 – National, Regional and EU measures to establish

and support electric mobility” provide tax benefits while one country plans to use it as means of support for electric mobility and another country has no tax benefits reported.



Austria

A series of tax exemptions/reductions is in place for electric vehicles (BEV and FCEV) in Austria: no insurance tax since May/2015; no car registration tax since January/1995; pre-tax reduction since January/2016; no income tax for company cars when used for private purposes since January/2016. Besides the value added tax (VAT) electric vehicles are completely tax-exempt since 2016.

www.bmvit.gv.at/verkehr/elektromobilitaet/downloads/factsheet.pdf (German language)

Belarus

Tax subsidies exemptions or reductions have been proposed, as e.g. the exemption of utilization fees or the reduction of transport fee by 50% for electric vehicles, as well as for the insurance of civil liability for electric vehicle owners.

www.government.by/ru/solutions/2823 (Belarusian language)

Denmark

Electric vehicles with value below ca. 53,600 EUR are exempt from taxes in 2019 and 2020. Furthermore the Danish government intends to maintain lower registration tax for electric vehicles in comparison to vehicles running on petroleum derived fuels.

www.regeringen.dk/nyheder/miljoe-og-klimaudspil (Danish language)

Finland

Purchase tax and annual tax are dependent on CO₂ emissions of a vehicle.

www.trafi.fi/oleedellakavija/tayssahkoauto/sahkoauton_hankintatuki (Finish language)

France

A bonus system aims to reward, through long-term financial assistance for purchase or rental (2 years and more), purchasers of new cars or vans emitting from 0 to 20 g CO₂/km. In 2019, the premium for the scrapping of an old vehicle is doubled for the 20% of the most modest households and for the assets that do not pay taxes and travel many kilometres every day to get to work (60 km), with a superprime amount of 4,000 EUR for a new or used thermal vehicle and 5,000 EUR for a new rechargeable electric or hybrid vehicle.

www.ecologique-solidaire.gouv.fr/bonus-malus-ecologique-prime-conversion-et-bonus-velo
(French language)

Germany

The Act on the Provision of Fiscal Incentives to Electric Mobility which entered into force on 17 November 2016 includes the following changes concerning tax benefits for electric vehicles: 1) electric vehicles with CO₂ emissions below 50 g/km which were or will be registered for the first time in the period from 18 May 2011 to 31 December 2020 are exempt from motor vehicle tax for ten years; and 2) workplace charging of electric vehicles is tax-free. Additionally, since 2013 compensation for disadvantages was made available by reducing the costs of the battery system at the time of first registration of the motor vehicle as follows: for motor vehicles acquired before 31 December 2013, by 500 EUR per kilowatt-hour of battery capacity, this amount is reduced by 50 EUR per kilowatt-hour of battery capacity per year for vehicles acquired in the following years; the reduction per vehicle is not more than 10,000 EUR; this maximum amount will be reduced by 500 euros per year for motor vehicles acquired in the following years until it ceases completely in 2023.

Starting in 2019, drivers of electric and plug-in hybrids company cars only have to pay a lump sum tax rate of 0.5 percent of the gross list price on their private journeys. However, it only applies if the car has a range of at least 40 kilometres in the all-electric mode or emits a maximum of 50 g CO₂/km.

www.bundesfinanzministerium.de/Content/DE/Downloads/Gesetze/2016-11-16-G-stl-Foerderung-Elektromobilitaet.pdf;jsessionid=A572D80354216E2AE6F60E0CDCDE9063?_blob=publicationFile&v=4 (German language), and

www.gesetze-im-internet.de/estg/_6.html (German language)

Hungary

Since January 2016 several tax exemptions are in place for electric vehicles (BEV, PHEV, Rex): 1) exemption from car registration tax, 2) exemption from motor vehicle tax; 3) exemption from duty on onerous transfer of property and 4) exemption from company car tax.

www.kormany.hu/en/ministry-for-national-economy (Hungarian language)

Italy and Piedmont Region

In Italy tax benefits were implemented only at regional level. The Piedmont region established a tax exemption addressed to owners of full electric vehicles and converted vehicles with a maximum power of 100 kW (April 2016) and hybrid vehicles (November 2017) with a maximum power of 100 kW.

www.regione.piemonte.it/tributi/esenzioni.htm (Italian language)

The Netherlands

Zero emission cars are exempt from paying registration tax. Plug-in hybrid cars get a discount on registration tax compared to conventional cars. Zero emission cars are also exempt from paying road tax. Plug-in hybrid cars < 51 g CO₂/km pay half tariff (until 2020). Income tax has to be paid on the private use of a company car. This is implemented by imposing a surcharge of 4 or 22% of the catalogue value on the taxable income. For zero emission cars this percentage is 4%. For all other cars, including plug-in hybrid cars, it is 22%. The Netherlands has a system of facilitating investments in clean technology, by making these investments partially deductible from corporate and income taxes and zero emission and plug-in hybrid cars < 31 g CO₂/km (and not with a diesel engine) are on the list of deductible investments, as are the accompanying charging points.

www.rvo.nl/subsidies-regelingen/rijksbijdrage-laadinfrastructuur-voor-elektrische-autos (Dutch language)

Spain and Catalonia Region

Spain offers no tax benefits on federal level. The Catalonia region offers discount on road tax and depending on the municipality the discount can reach 75% on the yearly road tax.

www.ajuntament.barcelona.cat/hisenda/es/ivtm-impuesto-sobre-veh%C3%ADculos-de-tracci%C3%B3n-mec%C3%A1nica (Spanish language)

Sweden

BEVs and most PHEVs are exempted from the annual vehicle tax in the first three years after purchase since July 2018. Prior to the bonus/malus system the tax exemption was 5 years for green cars in general. Company cars may reduce the value of fringe benefits.

www.regeringen.se/artiklar/2017/09/bonus-malus-och-branslebytet (Swedish language)

Turkey

The annual motor vehicle tax for electric vehicles is 25% of an ICEV vehicle duty with comparable engine power. Initial purchase of vehicles is subject to special consumption tax: 1) commercial vehicles with passenger carriage capacity (15% for ICEV and 10% for EV) and 2) passenger cars (45 to 160% for ICEV – increases with motor cylinder volume and 3 to 15% for EV – increases with motor power).

www.treasury.gov.tr (Turkish language)

VAT benefits

Description

More than 160 countries around the world use value-added taxation (VAT) and it is most commonly used in the European Union. The VAT in the European Union is a general, broadly based consumption tax assessed on the value added to goods and services. It applies more or less to all goods and services that are bought and sold for use or consumption in the European Union. Thus, goods which are sold for export or services which are sold to customers abroad are normally not subject to VAT¹¹. Conversely imports are taxed to keep the system fair for EU producers so that they can compete on equal terms on the European market with suppliers situated outside the Union. VAT can be applied to vehicles, fuels, electricity, vehicle parts, etc. A few countries use the exemption or reduction from VAT as means of promotion of electric mobility. The benefit can be directly related to the vehicle or to its specific use or needs, e.g. VAT deduction for electricity.

Experiences

Battery electric vehicles are still more expensive to produce than fossil-fuel cars, resulting in a higher value added tax (VAT) in absolute terms and thus increasing the price of an electric vehicle. In Norway, an exemption from VAT (25%) was introduced in 2001 in order to increase BEV competitiveness¹². After 2003 there were multiple BEV setbacks as car manufacturers stopped producing BEVs due to poor sales, changing priorities, and a planned ban on Cadmium in batteries in the EU. Currently, in Norway, BEVs are still exempted from paying the value added tax of 25% on the purchase and since 2015 also on leasing rate¹³. On a survey with Norwegian EV owners in 2017 the exemption from VAT was the most selected option on the importance of EV incentives¹⁴.

In England vehicles are subject to the standard rate of VAT (20%) regardless of their CO₂ emissions. Motorists are able to receive a grant towards the cost of a qualifying ultra-low emission vehicles (ULEV), through the Plug-in Car Grant and the Plug-in Van Grant. This is a payment against the full purchase price of the basic vehicle including number plates, vehicle

¹¹ European Commission, taxation and Customs Union, https://ec.europa.eu/taxation_customs/business/vat/what-is-vat_en, consultation on January 2019

¹² E. Figenbaum, T. Assum, M. Kolbenstvedt, Electromobility in Norway: Experiences and Opportunities, Research in Transport Economics, 50 (2015) 29-38.

¹³ K. Steinbacher, M. Goes, K. Jörling, Incentives for electric vehicles in Norway – Fact Sheet, Ecofys and Adelphi, 3 July 2018.

¹⁴ P. haugneland, E. Lorentzen, C. bu, E. haug, put a price on carbon to fund EV incentives – Norwegian EV policy success, SVE30 Symposium, 9-11 October 2017.

excise duty, and VAT, but excluding any optional extras, delivery charges and first registration fee. The grant payment is applied on the customer invoice below the VAT line. Electricity that is used to recharge an electric vehicle at home therefore attracts the reduced rate of VAT (5%). Electric vehicles that are recharged at work will attract 20% VAT on the electricity used¹⁵.

Check list – target group

This check list intends to give authorities an overview of the main features related to the implementation of the described measures considering specific user groups.

Target group – private and commercial use / fleets

- EV prices should become comparable to ICEV prices
- possibility of distinguishing tax exemption / reduction depending on technology (PHEV, FCEV or BEV), range or emissions
- to avoid significant tax deficits or to set up the incentive in a budget-neutral way, raising tax levels for conventional (ICEV) vehicles or application of VAT to electricity could be a solution
- might and should be combined with other benefits, e.g. purchase subsidies
- might be applied for leasing instead or additionally to purchase subsidies (*commercial use / fleets*)

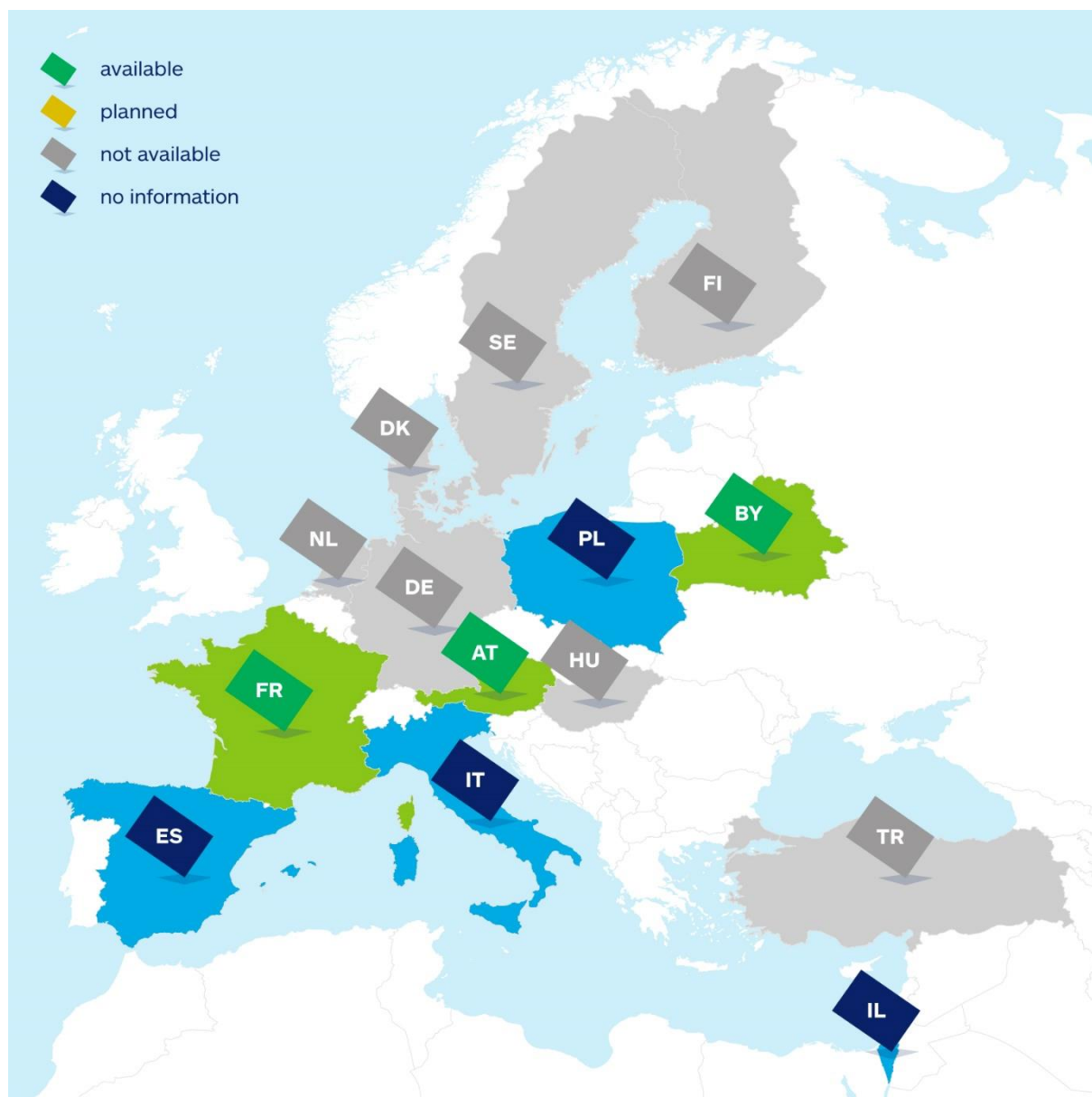
Target group – public transport

- e-buses prices should become comparable to diesel buses
- application of VAT reduction/exemption to electricity could be a good incentive for transport companies deploying e-mobility

EMEurope countries and regions making use of VAT benefits

Three countries out of twelve countries and two regions responding to the EMEurope “state of the art survey No. 1 – National, Regional and EU measures to establish and support electric mobility” make use of VAT benefits as means of support for electric mobility.

¹⁵ Tax benefits for ultra-low emission vehicles, Office for Low Emission Vehicles, Version 6.1, 14 May 2018.



Austria

Since January 2016 Input tax reduction for electric vehicles, but only for companies.

Belarus

Devices for charging batteries (hereinafter referred to as charging stations) imported by legal entities or individual entrepreneurs into the territory of the Republic of Belarus are exempted from value added tax collected by customs authorities (when importing from the territory of the state members of the Eurasian Economic Union). The VAT benefits will expire in 31/12/2020.

president.gov.by/ru/official_documents_ru/view/ukaz-273-ot-10-ijulja-2018-g-19124/

(Belarusian language)

France

VAT benefits are part of the supporting purchase measures for low carbon vehicles. Since January 2017 for private cars or vans emitting up to 20 g CO₂/km, bonus amount of 6,000 EUR (up to a limit of 27% of the acquisition cost). This corresponds to 100% electric vehicles equipped, if necessary, with a range extender.

www.ecologique-solidaire.gouv.fr/bonus-malus-ecologique-definitions-et-baremes-2018

(French language)

Other (financial) benefits

Description

Diverse financial benefits for the use of electric vehicles have been planned and implemented by several governments around the globe. Some of these benefits are widespread, e.g. purchase subsidies, tax benefits, etc., as previously mentioned in this chapter, and some benefits are very particular for a country, region or city. These particular financial benefits are usually not capable of reducing or closing the gap between more expensive electric vehicles and conventionally fuelled vehicles. However when offered additionally, they sustain the impact of an incentive bundle stimulating the market uptake of electric vehicle sales.

Authorities offer privileges to give plug-in electric vehicles advantages over conventional vehicles. Most often, electric vehicles benefit from incentives such as free parking in busy areas or car parks, duty exemptions when using regional toll roads and in some places have free access on ferries and bridges. Usually a special registration number for electric vehicles is necessary in order to exploit the privileges. The special registration serves as an indicator allowing authorities to provide and supervise those incentives.

Another financial benefit for electric vehicles private owners is the possibility of charging their vehicles in their employer premises for free without declaring this as a monetary benefit in their income tax. In some countries, employers who grant this advantage can deduct the benefit from their payroll tax (e.g. Germany).

Experiences

Despite the efforts (adaptation of legislative texts, special registration numbers) often necessary to offer these additional financial benefits and despite the rather incremental reduction of the price difference between EVs and ICEVs, the implementation of these incentives can be very effective. For example, free parking in urban areas where parking space is limited is very attractive. Next to free toll-roads usage, free public parking is among the most important local incentives for Norwegian EV owners¹⁶. However, experience in Norway shows that free parking has just little influence on the total number of EVs unless parking spaces are converted to EV parking on a larger scale¹⁷. Furthermore, free public EV parking is very cost-

¹⁶ T. Assum, M. Kolbenstvedt, E. Figenbaum, The future of electromobility in Norway – some stakeholder perspectives, TOI Report 1385/2014.

¹⁷ E. Figenbaum, M. Kolbenstvedt, Summary: Electromobility in Norway - experiences and opportunities with electric vehicles, TOI Report 1276/2013.

intensive. In the case of Norway this incentive results in EUR 10 million less parking fee income per 25,000 EVs and leads to government revenue losses¹⁸.

In Austria the outcome of the financial benefit from not taxing electricity if charging is for free at the company could be increased by offering the benefit not only for company cars but also for private cars and by providing an incentive for employers to build up charging infrastructure as it is done in Germany.

Check list – target group

This check list intends to give authorities a short overview of the main features related to the implementation of the described measures considering specific user groups.

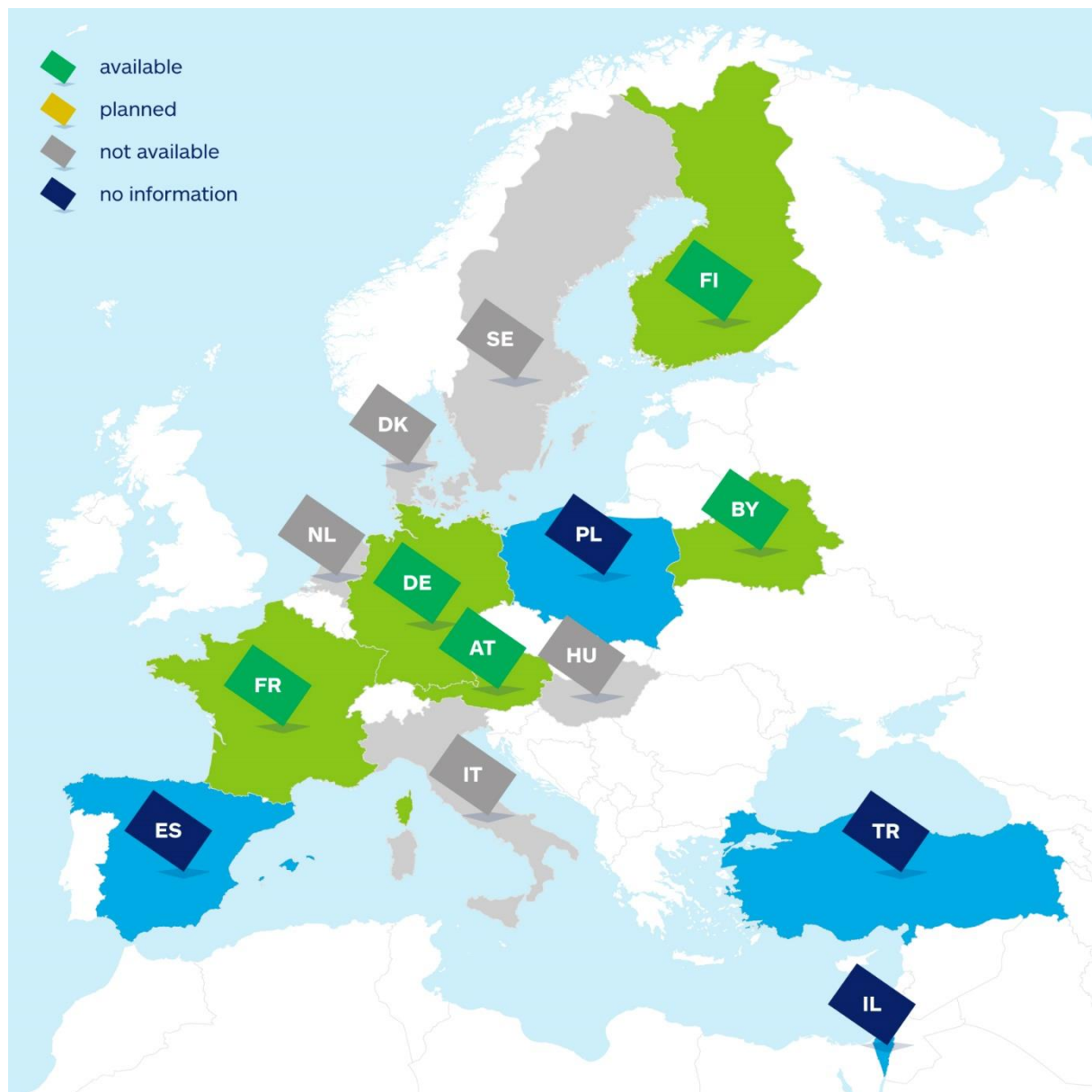
Target group – private and commercial use / fleets

- benefits applied to EVs should make them attractive when compared to ICEVs, even if there is no major reduction in the cost difference between EVs and ICEVs
- possibility of distinguishing benefits depending on technology (PHEV, FCEV or BEV), range or emissions
- benefits should be tailored to the culture and conditions of the country/region/city they will be applied to
- might and should be combined with other benefits, e.g. purchase subsidies

EMEurope countries and regions making use of financial benefits

Five countries out of twelve countries and two regions responding to the EMEurope “state of the art survey No. 1 – National, Regional and EU measures to establish and support electric mobility” provide financial benefits as means of support for electric mobility.

¹⁸ N. Fearnley, P. Pfaffenbichler, E. Figenbaum, R. Jellinek, E-vehicle policies and incentives – assessment and recommendations, TOI Report 1415/2015.



Austria

Since December 2016 no income tax for electricity if charging for free at the company. If the employee can recharge the employer's electric vehicle free of charge, i.e. if there are free charging stations at the place of delivery, there is no benefit in kind since in this case the usual final price at the place of delivery is zero. If, on the other hand, the employer reimburses the electricity costs for a worker's own / private electric vehicle, it is not a reimbursement of expenses and thus there is a taxable wage.

findok.bmf.gv.at/findok/resources/pdf/b766cc4f-1d55-4a6b-bb5f-a6c96c721117/72593.1.X.X.pdf (German language)

Belarus

In order to stimulate the electricity consumption by electric vehicles a special tariff for energy used by electric charging stationary stations intended for charging electric vehicles was introduced in May 2018. It amounts to ca. 0.002 EUR (excluding VAT) per 1 kWh, which is 48% below the general tariff for organizations operating in the service sector.

president.gov.by/ru/official_documents_ru/view/ukaz-273-ot-10-ijulja-2018-g-19124/
(Belarusian language)

Finland

Investment support for charging stations for real state during the year of 2018.

www.virta.global/news-fi/tuet-sahkoauton-latauspisteiden-toteuttamiseen (Finish language)

France

The purpose of the malus scheme is to direct purchases of new vehicles to vehicles that emit less carbon dioxide. This system has been in place since 2008. If the new vehicle purchased emits more than 119 gCO₂ / km, the purchaser has to pay a tax called malus. The cost of the registration certificate of the vehicle increases according to the rate of CO₂ emissions / km. The higher the model emits CO₂, the more the penalty increases. The penalty applies to vehicles registered for the first time in France from 1 January 2008.

www.ecologique-solidaire.gouv.fr/bonus-malus-ecologique-definitions-et-baremes-2018
(French language)

Germany

To achieve the climate targets of the German Federal Government, the Federal Ministry of Transport and Digital Infrastructure promotes, inter alia, battery-electric mobility through the *Förderrichtlinie Elektromobilität* of 15 June 2015. The priorities are the promotion of the procurement of electric vehicles as well as of the related charging infrastructure for local authority vehicle fleets and fleets with a high transport performance in local communities. In addition, financial assistance is provided for the development of electric mobility strategies at local authority level as well as for the implementation of research and development projects. Every year, around 30 million EUR are available for these purposes.

www.bmvi.de/SharedDocs/DE/Anlage/G/foerderrichtlinie-elektromobilitaet-2015-bmvi-anpassung-von-12-2017.pdf?__blob=publicationFile (German language)

Additional local and regional incentives

Description

In several countries, additional to or independent of incentives at country level, there are also local/regional incentives. The latter can be financial or use benefits, or even a combination of these types. As an example, a city might decide to reserve free parking places for electric vehicles in its city centre or incentivize public transport companies to buy electric vehicles by building charging infrastructure along the city. Many examples are in place and most commonly show the combination of measures adapted to a region/city need.

As an example Los Angeles, California/USA allows EVs to use carpooling lanes, which is a significant incentive in areas with high congestion¹⁹.

Beijing and Shanghai, China imposed a cap on new license plates every year, with the aim of controlling vehicle stock to mitigate traffic congestion. New license plates are given out by lottery in Beijing, by auction in Shanghai. Beijing set separate license plate lottery systems for BEVs and non-BEVs, with much higher odds for a license for BEVs. Shanghai offers a free license plate for electric vehicles, while combustion vehicles are subject to the auction²⁰.

Several countries make use of communication campaigns and demonstration events to reach the public and answer questions related to the use and maintenance of electric vehicles, e.g. in Catalonia region²¹ and USA²².

Experiences

Local incentives for electric mobility are not new, but as they started to be used at small scale at first, experiences resulting from their implementation are very different. They have the advantage of being tailored to a specific location/city according to its issues and culture and come usually in addition to national/regional incentives, which make them very attractive to the local users. On the other hand, when copied by another authority, it is hard to predict if the outcomes will be similar.

¹⁹ D. Auverlot, N. Meilhan, B. Mesqui, A. Pommeret, Overview of government policies to promote ultra-low emission vehicles", France Stratégie, May 2018.

²⁰ D. Hall, H. Cui, and N. Lutsey, Electric vehicle capitals: Accelerating the global transition to electric drive", ICCT, October 2018.

²¹ Memòria de l'Institut Català d'Energia 2017, Generalitat de Catalunya.

²² <https://forthmobility.org/showcase>

Some incentives work well at certain locations, but are less suitable to be implemented in others, or generate negative externalities, like the use of bus lanes by electric vehicles. Small cities usually do not have lanes dedicated to buses; in a bigger city like Oslo, the increasing number of electric vehicles in circulation started to cause congestion in bus lanes. Therefore it is wise to implement flexible measures which might be changed or undergo quick adaptation according to the development of the electric mobility roll-out development/approach.

Information campaigns and roadshows proved to be an effective way of demonstrating the advantage of electric vehicles compared to ICEVs. Even if the prices of the vehicles still present a barrier for many users when choosing which kind of automobile to buy, awareness is a very important instrument to increase the interest on electric mobility^{23, 24}.

Check list – target group

This check list intends to give authorities an overview of the main features related to the implementation of the described measures considering specific user groups.

Target group – private and commercial use / fleets

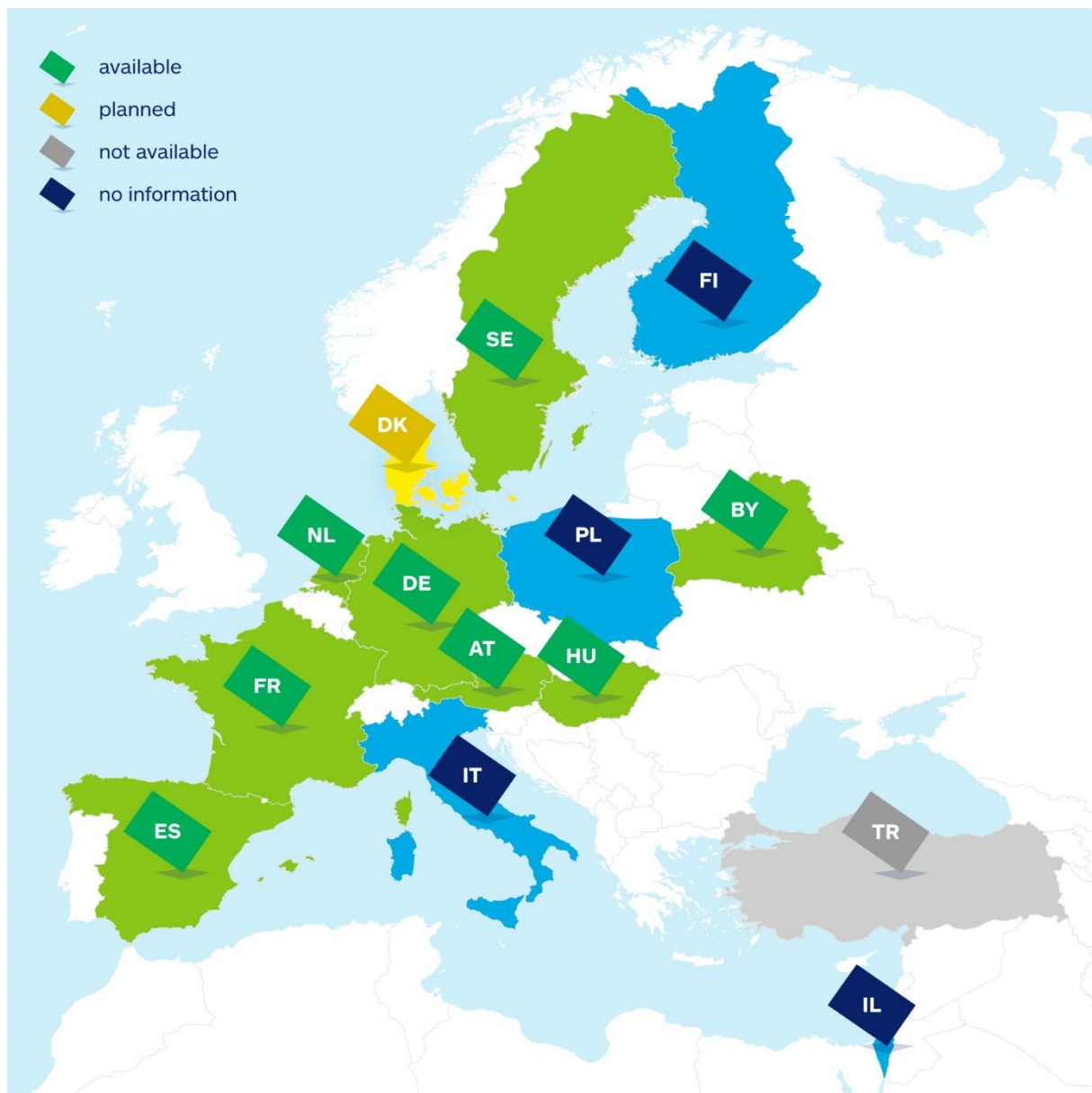
- vehicles users to get aware of the advantages of electric vehicles
- EV should get more advantages comparable to ICEV prices, if not directly related to the prices, then to the use of it, making its use more comfortable than ICEV
- incentive could be linked to vehicle category giving more incentive to vehicles with more use, like with longer ranges for example
- measures consequences should be followed very closely in order to avoid negative side-effects
- could be combined with other benefits, e.g. purchase subsidies or non-financial incentives

EMEurope countries and regions making use of additional local or regional incentives

Eight countries and one region out of twelve countries and two regions responding to the EMEurope “state of the art survey No. 1 – National, Regional and EU measures to establish and support electric mobility” provide local or regional incentives as means of support for electric mobility.

²³ P. Slowik and M. Nicholas, “Expanding access to electric mobility in the United States”, the International Council on Clean Transportation, December 2017.

²⁴ A. Ribeiro, A. Vieira, L. Silva, “Measure Evaluation Results, FUN 1.2 – Electric and hybrid vehicles”, CIVITAS, February 2013.



Austria

There are several incentives currently embedded in the E-Mobility Package 2017-2018, e.g.:

- 1) green licence plates for electric vehicles (zero emission) for the classes L, M, N (04/2017 for passenger cars and light duty vehicles and 08/2017 for heavy duty vehicles and buses);
- 2) auxiliary sign „parking, stopping and standing prohibited – except electric vehicles“ (01/2017);
- 3) permissible total weight extension from 3.5 tons to 4.25 ton (01/2017); and
- 4) Fleet Management of alternative fuel vehicles from the Federal Procurement Agency (10/2017)

www.bmvit.gv.at/verkehr/elektromobilitaet/downloads/factsheet.pdf (German language)

Belarus

In the parking lot of a shopping centre a station for charging electric vehicles was opened. Owners of electric vehicles can use it for free and around the clock - they just need to park near the terminal. Charging for free will be provided in other shopping centres as well.

There are several promotional events for electric mobility in Belarus, e.g.: 1) an auto rally on electric vehicles called Arctic rally was organized by the Norwegian ecological association BELLONA and the Association of Automobile, Unmanned and Connected Transport and Infrastructure of St. Petersburg. The purpose of the action was to draw the authorities' attention to the lack of a charging infrastructure; 2) two Belarusians drove on their Tesla from Minsk to Murmansk and returned.

Denmark

A commission has been established to make concrete recommendations on how to achieve the ambitious goal of no sale of petroleum fuelled cars after 2030. As part of this strategy a set of incentives for buying electric cars/vehicles is also introduced as part of the Climate Plan: better parking for low emission cars, low emission cars may drive in the designated bus lanes, better conditions for low emission and stricter regulation for diesel fuelled heavy vehicles in areas marked as 'environmental zones'.

France

Paris and the cities in the region have implemented several different measures – the availability of public street-side charging stations, subsidized parking lots, free parking on public streets, etc.

citymakers.io/electric-vehicle/ (English language)

Germany

The Electric Mobility Act ("Elektromobilitätsgesetz") enables local authorities to implement certain privileges for electric vehicles according to their particular challenges and needs. Privileges include free parking, use of special lanes (e.g. bus lanes), circulation in areas where ICEVs are not allowed, etc.

www.gesetze-im-internet.de/emog/EmoG.pdf (German language)

Hungary

Some cities provide free parking and free transit rights for protected areas for environmentally friendly vehicles with green number-plates.

<https://e-mobi.hu/en/miert-jo-magyarorszagon-elektromos-autot-hasznalni> (Hungarian language), and

<https://villanyautosok.hu/zold-rendszam/mely-varosokban-lehet-zold-rendszammal-ingyen-parkolni/> (Hungarian language)

The Netherlands

In the Netherlands there is a number of additional local programmes aiming to further increase the attractiveness of electric mobility. In Amsterdam free charging is offered in public parking spaces. The city of Rotterdam introduced in 2014 a scrappage program to remove old polluting vehicles to improve air quality in the city. Many other incentives and also related to charging infrastructure are available in several Dutch cities. With all incentives and tax breaks, plug-in electric cars have similar driving costs to conventional cars.

www.wikiwand.com/en/Government_incentives_for_plug-in_electric_vehicles#/Netherlands
(English language)

Spain and Catalonia Region

Several city councils (e.g. Madrid, Barcelona, Zaragoza, Valencia etc.) are reducing the annual circulation tax (ownership tax) for electric and fuel-efficient vehicles. Catalonia region offers a wide range of incentives: 1) “subsidy for the installation of EV charging points”; 2) free access to toll roads; 3) reduced rates on toll roads; 4) use of HOV lanes; 5) Environmental Quality Guarantee for Fleets of Vehicles; 6) reduced parking costs in regulated areas (Barcelona and other municipalities); 7) discount on the use of charging points in underground parking spaces (Barcelona and other municipalities); 8) discount on the use of public roadside charging points (Barcelona and other municipalities).

www.ecoviat.com/ca-es/inici.aspx (Spanish language)

Sweden

Since 2018 the Swedish municipalities have the mandate to introduce environmental zones. Governmental fleets are governed by certain procurement policies in Sweden, which force them to particularly consider climate factors when acquiring cars and vans or other mobility services. The public procurement policies in Sweden do also promote an increased use of renewable fuels, such as sustainable biofuels and electricity.

www.nordicenergy.org/publications/nordic-ev-outlook-2018 (English language)

Incentives for charging infrastructure

Description

At present there is no ideal orientation for the density of charging stations per kilometre or per number of electric vehicles in a certain country or region. Nonetheless charging infrastructure is as decisive for the roll out of electric mobility as the electric vehicles themselves and together with other incentives can make a meaningful difference for the adoption of electric vehicles around the world. Even if significant, unexplained variability in statistical analysis occur: Hall and Lutsey²⁵ report that the leading electric vehicle markets of Norway and the Netherlands have more than 10 times as many public charge points per capita as average markets, and leading markets such as California and China had 3 to 5 times the average.

Most of the countries promoting electric mobility make use of incentives for building up a broad charging infrastructure making electric vehicles more attractive and solving the still existing range anxiety issue. The incentives for changing infrastructure differ in their forms, target groups and sums. Some countries target several groups within the same framework and some countries have different funding schemes for the different target groups. Also cities and regions are increasingly investing in charging infrastructure for electric mobility.

Experiences

In their paper, Hall and Lutsey²⁶ state that both standard and DC fast charging infrastructure are statistically linked to electric vehicle uptake. Multifaceted and collaborative approaches have been most successful in promoting early charging infrastructure build-up. In leading markets, programs have involved many stakeholders through integration of driver feedback on charger deployment, implementation of smart charging systems, distribution of funding to local governments, creation of public private partnerships, and consultation with utilities to minimize grid impacts and limit costs.

Beside countries well-known for the broad charging infrastructure also countries and regions with recent plans to support its development show already positive results. In the Catalonia region within the framework of the PIRVEC Plan, during 2017 ICAEN has promoted several initiatives which resulted in a growth of the fast recharge network from 19 to 42 sites, and from

²⁵ D. Hall and N. Lutsey, Emerging best practices for electric vehicle charging infrastructure, ICCT, 2017.

²⁶ D. Hall and N. Lutsey, Emerging best practices for electric vehicle charging infrastructure, ICCT, 2017.

39 to 126 charging points throughout the territory, to which 8 more private sites should be added²⁷.

Check list – target group

This check list intends to give authorities an overview of the main features related to the implementation of the described measures considering specific user groups.

Target group – private users

- installation of charging points or EV Boxes at home offers several advantages for cities and regions where private garages are used
- grids and property regulations should be taken into consideration, including rental agreements
- facilitation of changes in tenancy agreements for changes in properties could represent an attractive incentive

Target group – commercial use / fleets

- installation of charging stations in parking places, office buildings, shopping malls and depots offer a considerable advantage for the use of electric vehicles for many users
- grids and property regulations should be taken into consideration, including rental agreements, since a large number of companies rent offices/buildings for their businesses
- facilitation of changes in tenancy agreements for changes in properties installations could represent a very attractive incentive
- tax reduction adaptable to the different types of organisations installing charging stations in their properties

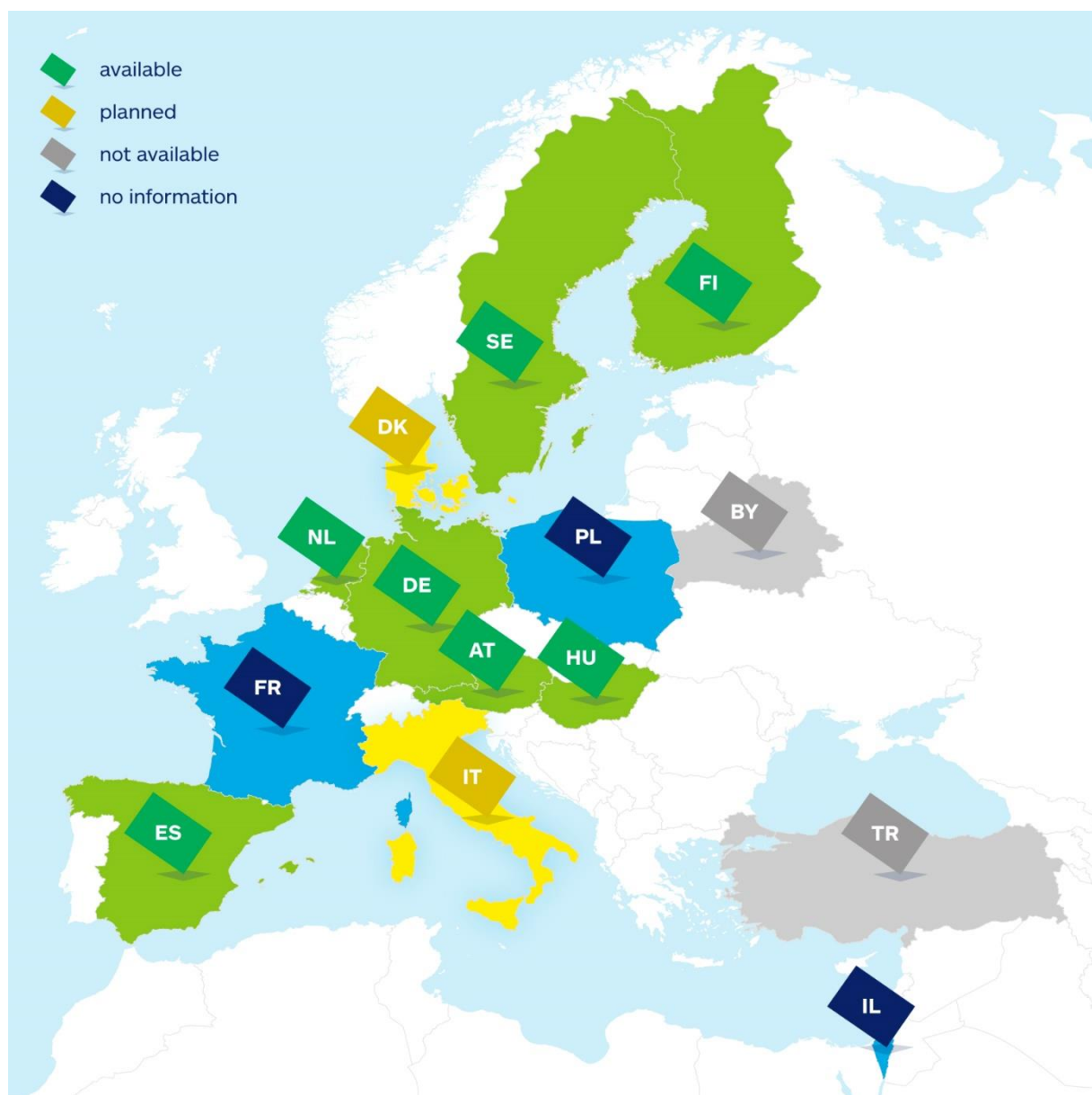
Target group – public transport

- city/region support for the planning and implementation of charging stations, meaning clarification of local regulations, grids limitations, etc.
- plan for integration of charging system in a region, also considering other transport modes structures

²⁷ icaen.gencat.cat/web/.content/10_ICAEN/17_publicacions_informes/02_memories_Activitat/arxius/memoria2017.pdf

EMEurope countries and regions making use of charging infrastructure incentives

Seven countries and one region out of twelve countries and two regions responding to the EMEurope “state of the art survey No. 1 – National, Regional and EU measures to establish and support electric mobility” reported that they provide local or regional incentives while two countries and one region reported about plans to use this kind of incentive as means of support for electric mobility, as shown in the figure below. Currently, one of the countries planning to implement the incentive, Belarus, have already approved measures for its implementation.



Austria

Up to 10,000 EUR funding for fast charging infrastructure.

www.bmvit.gv.at/verkehr/elektromobilitaet/downloads/emoboffensive.pdf (German language)

Belarus

At the time of the survey there was no available information on incentives for charging infrastructure in Belarus, as shown in the graphic above. A few months later the Council of Ministers approved a Decree for creation of a state-owned charging network for charging electric vehicles (Decree No. 731 of 10 October 2018). By 2030 it is envisaged the installation of 1,304 charging stations in Belarus, including 1,224 in populated areas and 80 on all major highways.

news.tut.by/economics/600755.html (Belarusian language), and

virtualbrest.by/news59670.php (Belarusian language)

Denmark

A commission has been established to make concrete recommendations on how to achieve the ambitious goal of no sale of petroleum fuelled cars after 2030. As part of this strategy a set of incentives for buying electric vehicles introduced as part of the Climate Plan includes better charging infrastructure for low emission vehicles. Furthermore, the Danish Government has allocated approx. 11 million EUR to advance fast charging infrastructure for electric and plug-in hybrid vehicles in the period 2020-2023

Finland

The state supports the development of electric vehicle charging infrastructure in Finland with three different grants: 1) support for public download points covers 30-35% of the cost of the investment, depending on the download speed of the charging points to be installed; 2) support to municipalities, businesses and communities during 2018 and 3) support targeted at communities that own residential buildings, such as housing companies. The grant covers 35% of the cost of the investment and is aimed at changes in the electrical system of the property required for the charging points of the electric car.

www.virta.global/news-fi/tuet-sahkoauton-latauspisteiden-toteuttamiseen (Finish language)

Germany

In 2016 the Federal Cabinet adopted a market incentive programme for electric mobility. The programme includes the provision of financial assistance to the deployment of electric vehicle charging infrastructure by means of the Charging Infrastructure Funding Guidelines. Within the scope of these funding guidelines, financial assistance has been provided since the beginning of 2017 to the deployment of publicly accessible charging infrastructure by means of pro rata funding of the investment costs.

The objective is to have deployed at least 15,000 charging stations by 2020. For this purpose, the Federal Government is providing 300 million euros over the period from 2017 to 2020. Assistance is provided to both private sector investors and local authorities.

www.bmvi.de/SharedDocs/DE/Anlage/G/foerderrichtlinie-ladeinfrastruktur-fuer-fahrzeuge-in-deutschland.pdf?__blob=publicationFile (German language)

Hungary

There are two programs in Hungary dedicated to the incentive of charging infrastructure: 1) a call for applications was published in August 2016 for the local governments with more than 15,000 inhabitants in order to encourage the deployment of publicly accessible charging infrastructure in Hungary. The total allocation of this program amounts to 4 million EUR; 2) grant for charging stations set up in the area of the most frequented tourist destinations, in the capital city, in the territory of provincial cities, along the TEN-T road network and for governmental bodies and central administrative bodies.

emobi.hu/sites/default/files/file/2018/08/21/jedlik_palyazati_felhivas_onkormanyzatok_resze_re_toltotelepites.pdf (Hungarian language)

Italy and Piedmont Region

A call for supporting the implementation of charging infrastructures (private, public, private with public access, in petrol stations) is planned to be published thanks to the budget made available by the Italian Ministry of Infrastructures and Transport according to the National Plan named PNIRE with a Budget of 72 million EUR.

www.mit.gov.it (Italian language)

The Netherlands

As part of the Green Deal on Publicly Accessible Charging Infrastructure, the national government has committed a total of 7.2 million EUR to contribute to the installation of public charging points by municipalities.

www.rvo.nl/ (Dutch language)

Spain and Catalonia Region

“Subsidy for the installation of EV charging points” (ICAEN – Catalonia Energy Agency): financial support aimed to charging stations for public administration and families; fast recharging public access stations for electric vehicles requested by public administrations; semi-fast recharging public access stations for electric vehicles requested by public administrations and installation of private recharging points.

www.icaen.gencat.cat/ca/detalls/article/Nou-article-00825 (Spanish language)

Sweden

Sweden has two different support systems that grant support to charging infrastructure. The first one is Klimatklivet (the Climate Leap) which is a general investment support scheme, not specifically to electric vehicle supply equipment (EVSE), but has so far granted over 14,000 charging points support. The majority is non-public charging points, but also fast-charging corridors have been deployed. In addition to Klimatklivet, a private home-charger support scheme was introduced in 2018. Private households are the main target group but one charging point could also be granted to a cooperative. For many Plug-in Electric Vehicle (PEV) owners in multi-family dwellings, it was difficult to reach the consensus need to apply through Klimatklivet. The availability of home-charging is perceived as crucial to substitute a conventional vehicle.

emobility.se (Swedish language)

Research and funding programmes/schemes

Description

In the past years a meaningful evolution has been achieved in all sorts of relevant fields concerning electric vehicles, with important developments in the driving range, use of lightweight materials, size and capacity of batteries, use of mixed technologies, and recycling and safety procedures. This was possible thanks to the investment in research and innovation projects by governmental and private organisations in many countries. Despite of the achievements and the amount of vehicles already developed, more has to be done for the improvement of vehicles in all categories, use of resources and further development of the necessary infrastructure.

As the market starts to grow, new challenges arise which have to be tackled through research and innovation. Not only further technological development is necessary, but also research and innovative solutions on how to better use and link already existing technologies and the needs of the users need to be in focus.

Experiences

Funding organisations accumulated a vast experience using different funding schemes tailored to different beneficiaries' needs and fields of research. This experience allows for a fast and effective adaptation of schemes to the different topics, stakeholders involved, amount of funding and beneficiaries. In the specific field of electric mobility related research, governmental organizations report on important developments only possible due to research funding, as the case of Finnish companies which could create and further develop new EV business, or the case of the construction of a giga-factory in Sweden for the production of lithium-ion batteries²⁸.

Check list

This check list intends to give authorities a short overview of the main features related to the implementation of the described measures considering specific user groups.

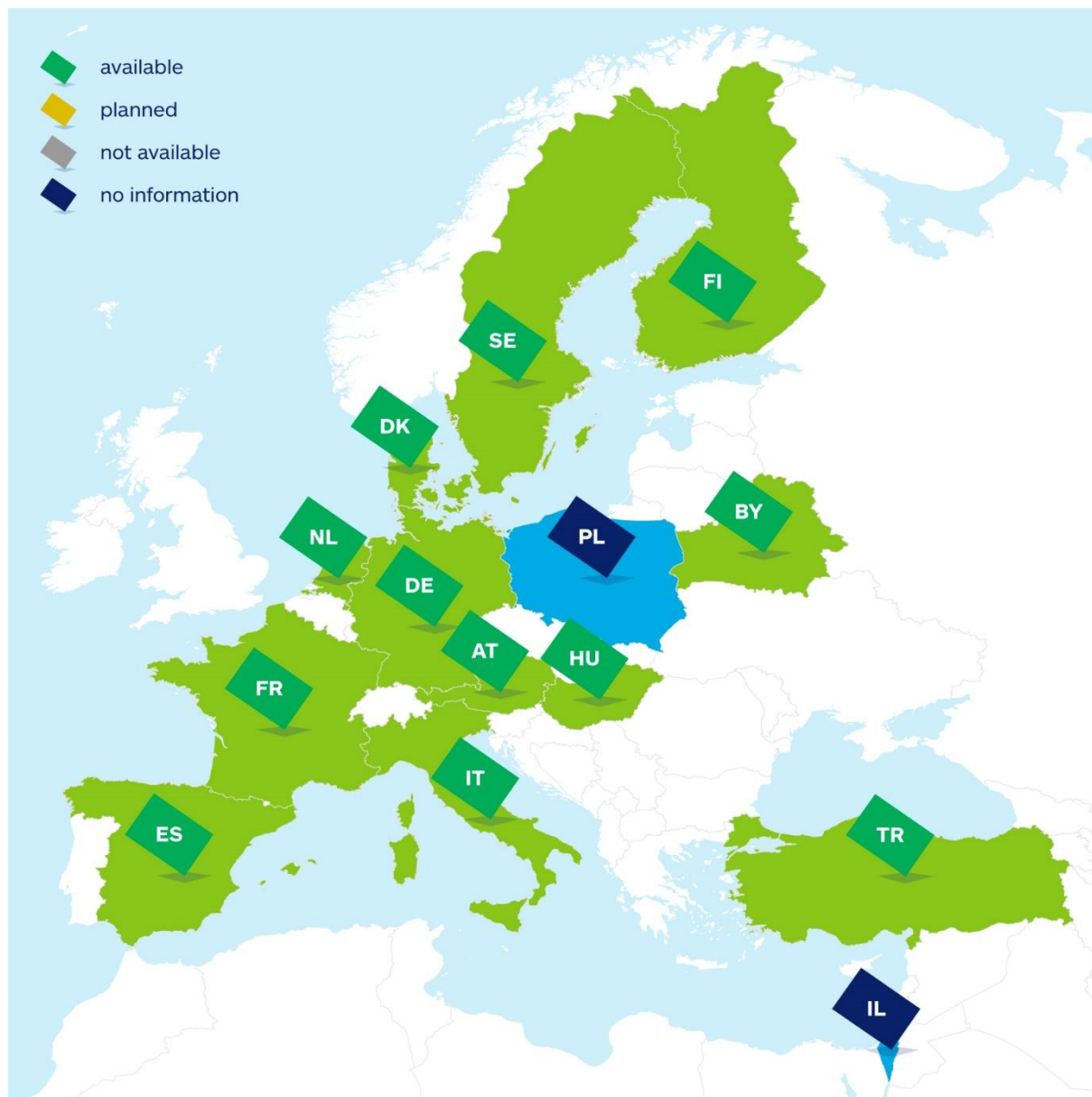
- EV should get more advantages comparable to ICEV in a time range, which should be well-defined by the programme

²⁸ ERA-NET COFUND Electric Mobility Europe (EMEurope), State of the art survey no. 1 – national, regional and EU measures to establish and support electric mobility, 14 December 2018.

- a wide range of topics might be tackled, from technological developments to non-technological innovative solutions
- programme could be specifically tailored to different types of organisations and applications
- impacts should be measurable and measured
- a good overview of what has already been done in other (and previous) programmes and countries helps not to spend funding on research already done or on going somewhere else, unless it represents an advantage for the local community
- could be combined with other funding possibilities
- funding rates could be differentiated according to type of organisation involved
- whenever possible, stakeholders should be involved in the programme concept development and also in the projects granted

EMEurope countries and regions making use of research and funding programmes/schemes

All twelve countries and two regions responding to the EMEurope “state of the art survey No. 1 – National, Regional and EU measures to establish and support electric mobility” make use of research and funding programmes/schemes as means of support for electric mobility. Two other countries participating in the EMEurope initiative, but not participating in the policy cooperation activities, Poland and Israel, make use of research and funding programmes/schemes as well.



Austria

Several research funding programmes having focus on electric mobility have been in place since 2008. Currently three programmes support the further development of electric mobility in Austria: Zero Emission Mobility started in 2018, Mobility of the Future and Urban E-Mobility.

www.klimafonds.gv.at/ausschreibungen (German language), and

www.mobilitaetderzukunft.at (German and English language)

Belarus

There is not a single programme devoted to electric mobility in Belarus, but a number of State Research Programmes dealing with electric mobility topics.

www.government.by/ru/solutions/2823 (Belarus language)

Denmark

The Danish Energy Research and Development Program (ELFORSK) supports efficient electricity use in the final consumption through the development of innovative energy-efficient green solutions for the benefit of companies and private consumers. The focus is on energy efficiency, flexibility and substitution of fossil fuels in the final consumption. Various types of projects are supported including system, process and technology development and tools, methods and models.

www.elforsk.dk/om-elforsk (Danish language)

Finland

During the EVE programme (2011-2015) Tekes promoted Finnish companies to create and develop new EV business. Currently Business Finland supports electric mobility with two programmes: Smart Mobility and Campaign Batteries.

www.businessfinland.fi/en/for-finnish-customers/services/funding/in-brief (English language)

France

Several research programmes on innovation and transportation exist since the eighties in France. These programmes are managed by different ministries and have different focuses and goals, covering a long list of topics in the field of electric mobility.

www.ademe.fr/recherche-innovation (French language)

Germany

There is a number of research and innovation programmes for electric mobility in Germany. These programmes focus on different aspects of electric mobility and are managed by different ministries and agencies since many years. At the end of 2017 the German Federal Government presented the "Immediate Action Programme for Clean Air" with the objective of achieving a rapid and sustained improvement of the air quality in towns and cities exceeding the annual average threshold for nitrogen dioxide in the air. The programme has a budget of 1.5 billion EUR and comprises among others the electrification of urban commercial transport and digitalization of local authority transport systems.

www.bmvi.de/DE/Themen/Mobilitaet/Sofortprogramm-Saubere-Luft/Ueberblick-foederrichtlinien/ueberblick-foederrichtlinien.html (German language)

Hungary

There are not specific research and funding programmes in the field of electric mobility in Hungary, but research and innovation is supported through different programmes such as e.g. ERA-NET Cofund programme and TEN-T road network.

www.kormany.hu/en/ministry-for-innovation-and-technology (English language)

Italy and Piedmont Region

The National Program for Research 2015-2020 aims at guiding the industrial competitiveness and development of the country through the tools of knowledge. Applied and transnational research is organized into 12 areas of specialization identified taking into account the industrial weight of the associated production sectors, among them, Sustainable Mobility. Another funding programme was recently updated: National Infrastructural Plan for recharging vehicles powered by electricity. Additionally, there are funding opportunities in several regional programmes focused on supporting innovation in SMEs, as in the Piedmont Region.

www.gazzettaufficiale.it/do/atto/serie_generale and
www.researchitaly.it/tagPNR/Mobilita%CC%80%20sostenibile (Italian language)

The Netherlands

Various Research, Development and Innovation programmes and schemes related to the 'Dutch Top Sector' policy, in which electric mobility can be one of the subjects. Also a Subsidy scheme on Climate Technologies and Innovations in Transport (DKTI), in which subsidy can be granted to transport solutions with lower or zero CO₂ emissions. Electric mobility is one of the specific technologies supported.

www.rvo.nl/onderwerpen/innovatief-ondernemen/topsectoren (Dutch language)

Spain and Catalonia Region

Spain offers several types of different instruments targeted at Spanish companies for research and development activities, including the field of electric mobility. Catalonia includes electric vehicles technologies in its research and development programmes and does not have a specific programme for electric mobility.

www.cdti.es (Spanish language)

Sweden

The Swedish Energy Agency supports research and development of supply, conversion, distribution and use of energy. Assistance is also provided to development of new technologies. Between 2013 and Q1 2017, over 1.38 million EUR of public means were invested in electric mobility projects as R&D support.

www.energimyndigheten.se/en/innovations-r--d (Swedish language)

Turkey

The Scientific and Technological Research Council of Turkey (TÜBİTAK) has moved to mission-oriented approach in research and development funding with a more strategic approach by call based support programs for priority sectors and critical technologies. The automotive sector has been identified as one of the sectors in which Turkey has strong R&D and innovation capacity through the National Science, Technology and Innovation Strategy (UBTYS). Regarding the priorities of the automotive sector, electric vehicle have been ranked as the most significant areas to support. Therefore, TÜBİTAK has launched mission oriented calls dedicated to foster electric vehicle systems and technologies and funded national academy and industry stakeholders through research and innovation projects.

www.tubitak.gov.tr/en/funds/industry/national-support-programmes#funds_industry_ana_sayfa_akordiyon-block_1-0 (Turkish language)

5. Summary

As part of the activities of the EMEurope initiative, a guidance catalogue for policy makers has been planned to support electric mobility in Europe. The catalogue builds on a survey carried out in August/September 2018 involving the EMEurope partners in policy cooperation activities. The survey focussed on policy measures in support of electric mobility in the twelve countries and two regions. Additionally, a desktop research was carried out and several papers, news articles, white papers, websites from different platforms and governments were used for this catalogue as well. This document sums up information from the literature and the survey, especially the experiences the governmental organisations implementing the measures collected in the recent past.

Monetary and non-monetary incentives were shortly described in specific subchapters. Furthermore, a brief overview of experiences, a number of examples of EMEurope partner countries which has implemented or plans to implement such an incentive has been added to each of the subchapters. Some incentives are not broadly used, as the case of VAT reduction/exemptions, whereas other types like purchase subsidies have a much broader user. This does not necessarily mean that one type of incentive is inadequate. For the implementation of incentives on different levels, several resources have to be consulted and analyses have to be made. An incentive might be very appropriate in an initial phase of electric mobility transition but less effective, or even counter-productive in a later phase.

This document is not comprehensive regarding the types of measures, experiences and results. Furthermore, it provides only a generic overview of the broad scope of initiatives in place and what could be used as incentive for electric mobility in a country, region or city. The collected information displayed here was intended to facilitate policy makers dealing with the subject of electric mobility and looking for inspiration and further information on potential policy measures to support the uptake of electric mobility.

6. Selected literature sources

The sources listed here are exemplary for the several types of measures described in this document. Several other sources were used for the elaboration of this document and a number of additional sources were used for consultation.

1. **IEA, Ministerial, Clean Energy and EVI.** *Global EV Outlook 2018*. France : International Energy Agency, 2018.
2. **Karin Hauff, Stefan Pfahl and Rolf Degenkolb.** Taxation of Electric Vehicles in Europe: A Methodology for Comparison. *World Electric Vehicle Journal*. 2018, August.
3. **Erik Figenbaum, Terje Assum and Marika Kolbenstvedt.** Electromobility in Norway: Experiences and Opportunities. *Research in Transportation Economics*. 2015, Vol. 50, 29-38.
4. **Joram H. M. Langbroek, Joel P. Franklin and Yusak O. Susilo.** The effect of policy incentives on electric vehicle adoption. *Energy Policy*. 2016, Vol. 94, 94-103.
5. **Willett Kempton, Yannick Perez and Marc Petit.** Public Policy for Electric Vehicles and for Vehicle to GridPower. *Revue d'économie industrielle*. 2014, Vol. 148, 263-290.
6. **Zifei Yang, Peter Slowik, Nic Lutsey and Stephanie Searle.** Principles for Effective Electric Vehicle Incentive Design. s.l. : icct, 2016.
7. **Center, Alternative Fuels Data.** *Alternative Fuels Data Center*. [Online] US Department of Energy. <https://afdc.energy.gov/fuels/electricity.html>.
8. **Dale Hall, Hongyang Cui and Nic Lutsey.** Electric vehicle capitals: accelerating the global transition to electric drive. 2018.
9. **Dale Hall, and Luc Lutsey.** Emerging Best Practices for Electric Vehicle Charging Infrastructure. 2017.
10. **Erik L Olson.** The financial and environmental costs and benefits for Norwegian electric car subsidies: Are they good public policy? *International Journal of Technology Policy and Management*. 2015, Vol. 3.
11. **ACEA.** *ACEA Tax Guide 2018*. s.l. : European Automobile Manufacturers Association, 2018.

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