Nordic EV Outlook 2018

IEA

Electric Vehicles Initiative (EVI)

- Government-to-government forum comprising 13 countries

- Currently co-chaired by Canada, China and the United States*, and coordinated by the IEA
- Released several analytical publications (Global EV Outlook, Nordic EV Outlook, City casebook)

- Instrumental to mobilize action and commitments (Paris Declaration on Electro-Mobility and Climate Change at COP21, Government Fleet Declaration at COP22)

➢ New project in preparation with the **Global Environment Facility** and **UNEP** for support to EV policy-making

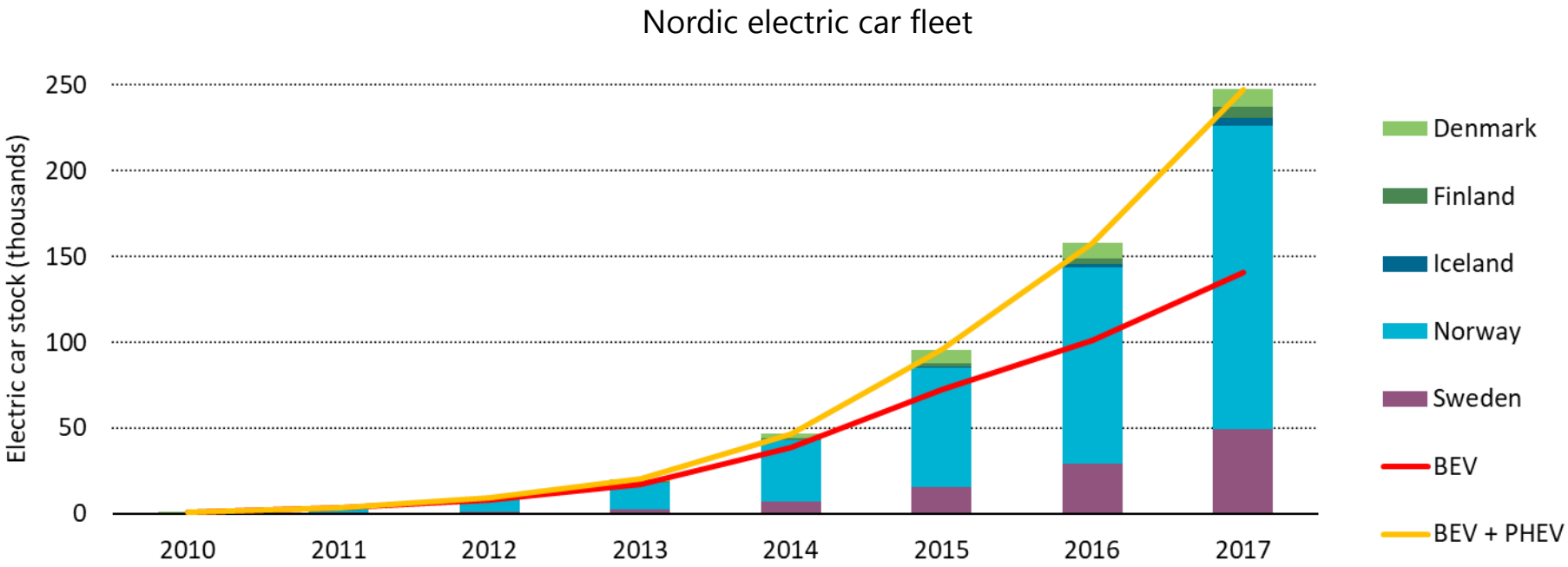
➢ **Launched the EV30@30 Campaign in June 2017,** aiming to achieve a 30% market share for EVs by 2030

➢ Building of the **Pilot City Programme** network of cities (launch at CEM9, Copenhagen, 24 May)

EV30@30 supporters:

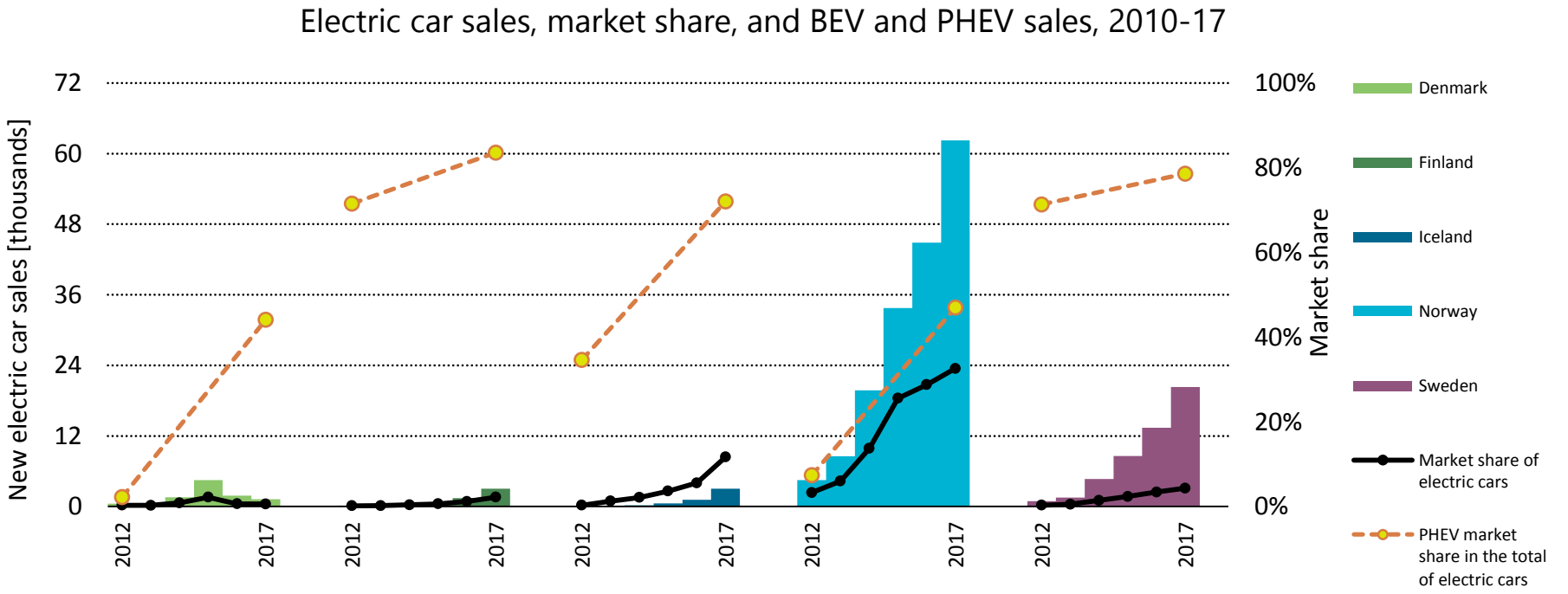
*U.S. co-leadership under review

Electric mobility is breaking records, but policy support remains critical



The Nordic electric car fleet reached almost 250 000 units in circulation last year.
More than 70% of the electric cars circulating in the Nordic region are located in Norway.

New electric car registrations almost 90 000 units in 2017

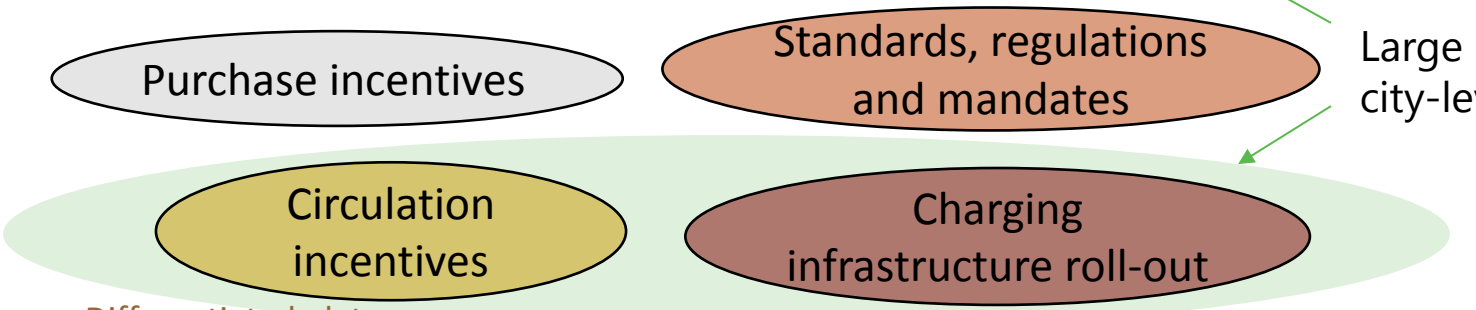


2017 new electric car sales and market share increased in all Nordic countries but in Denmark. BEVs prevail in Norway and Denmark, while Finland, Iceland and Sweden buy more PHEVs.

EV support policies

- CO_2-based, technology-based differentiated taxation and rebates
- Feebates
- VAT exemptions
- …

- Fuel economy standards
- Zero emission vehicle (ZEV) mandates
- Fuel taxes
- Public fleets, taxi fleets initiatives
- …



- Differentiated plates
- Access to bus lanes
- Free/dedicated parking
- Circulation/congestion charge exemption
- …

- Direct public investment
- Public-private partnerships
- Charger standards harmonization
- Fast and slow charging network planning
- …

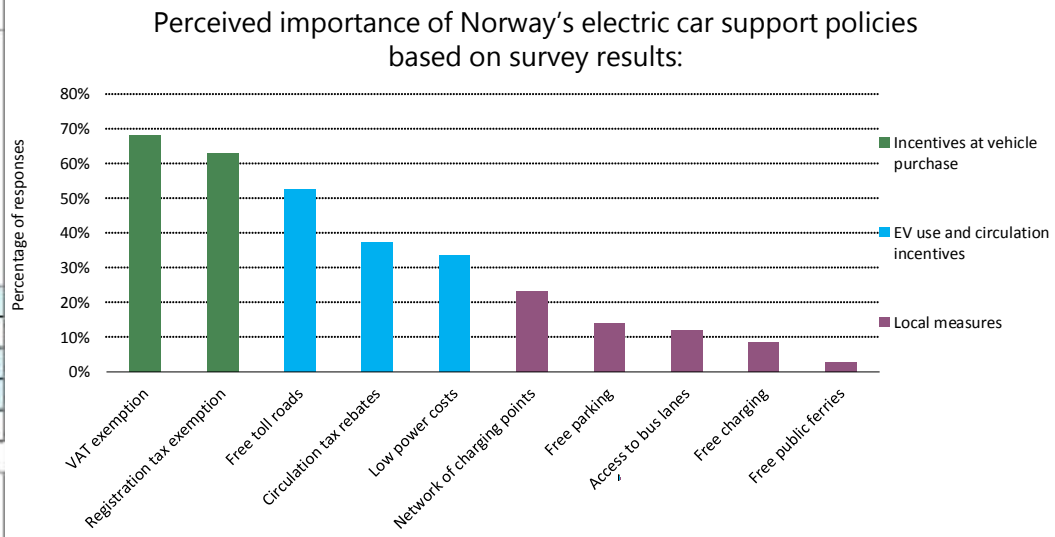
Close monitoring of the effect of EV support policies are paramount to avoid adverse effects.

Which polices were prioritized in the Nordic region?

	EV purchase incentives				EV use and circulation incentives				Waivers on access restrictions	
	Registration tax/sale rebates	Registration tax (excl. VAT) exemption	VAT exemption	Tax credits	Circulation tax rebates	Circulation tax exemption	Waivers on fees (e.g. tolls, parking, ferries)	Tax credits (company cars)	Access to bus lanes	Free/dedicated parking
Denmark	National	National			National		Local			Local
Finland	National				National					
Iceland		National	National			National				Local
Norway	National	National	National		National		National		Local	Local
Sweden	National			National	National		Local	National		

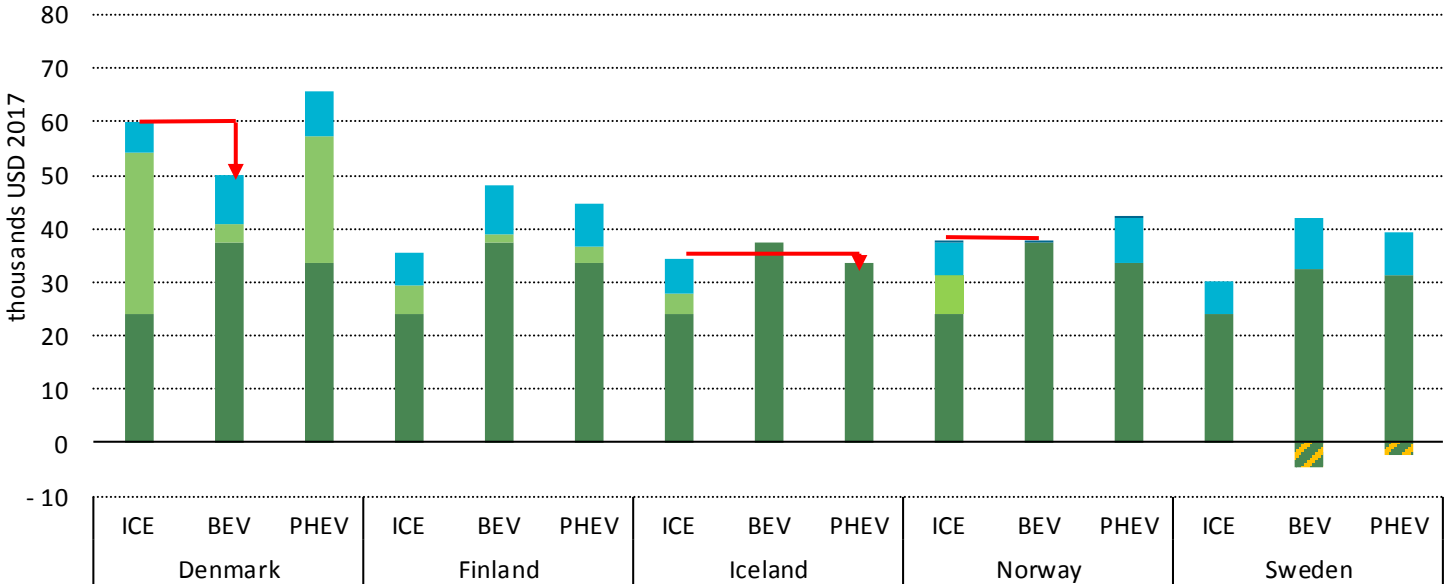
Legend: No policy; Local Policy; National Policy

Overview of support policies for electric cars in the Nordic region, 2017



Exemptions on registration taxes are perceived by EV owners as a priority, and frequently available in Nordic countries. Local measures complement policy instruments adopted nationwide.

Comparing purchase price of mid-segment BEV, PHEV and ICE

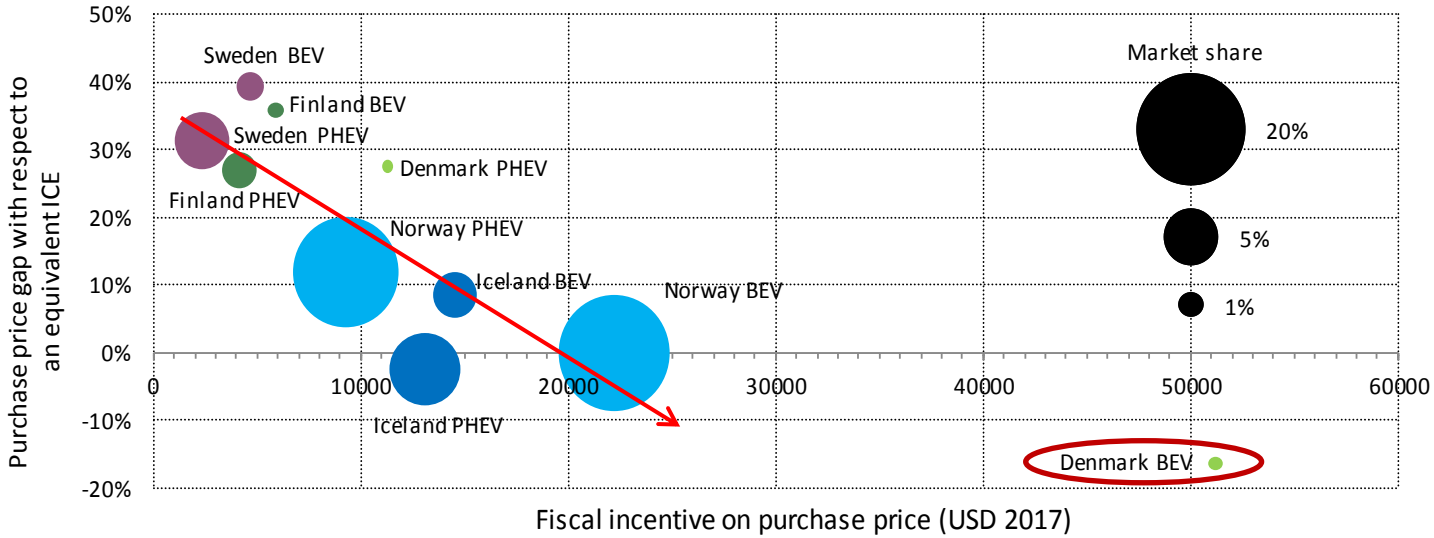


Source: Inside EVs

Denmark (BEV), Iceland (PHEV) and Norway (BEV) close the price gap with comparable ICE models.

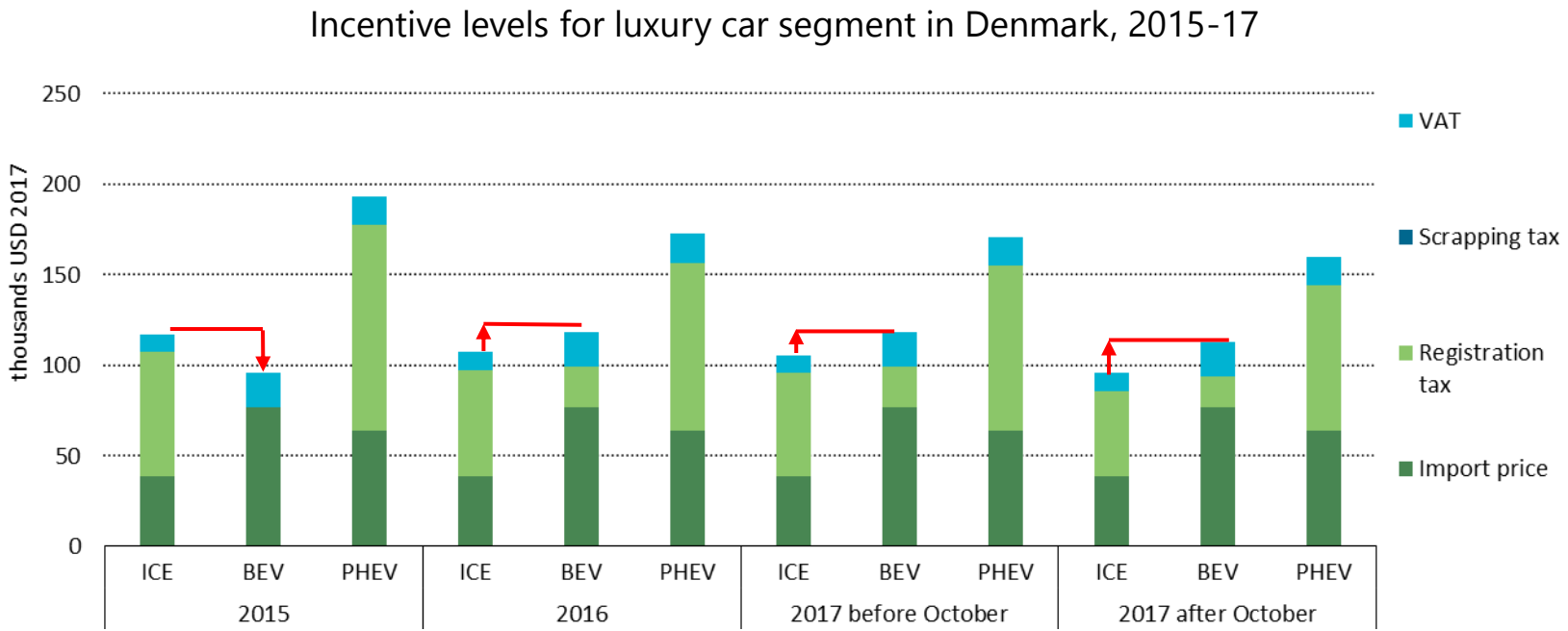
Linking purchase price incentives, price gap and market share

Effect of fiscal incentives on the ICE/EV price gap:



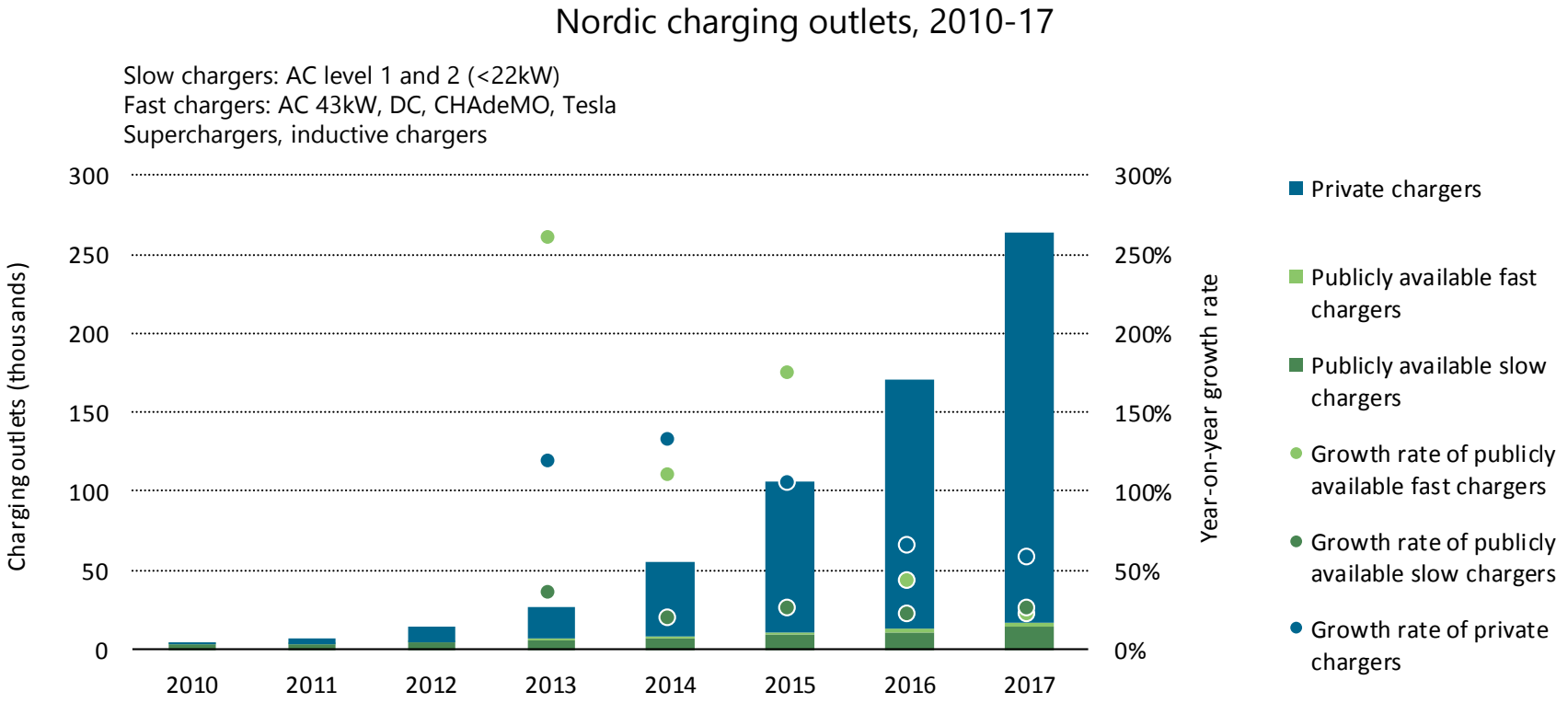
The market share of electric cars in Nordic countries tends to be higher when incentives are larger and when the price gap between electric cars and equivalent ICE models is smaller, with the exception of Denmark.

Lack of continuity in Denmark's EV acquisition incentives



Despite having the largest purchase incentives of the Nordic region, Denmark had the lowest market shares in the Nordic region. This is largely attributable to the changes in vehicle registration taxes in Denmark, both for ICE and electric cars.

Nordic EVSE deployment

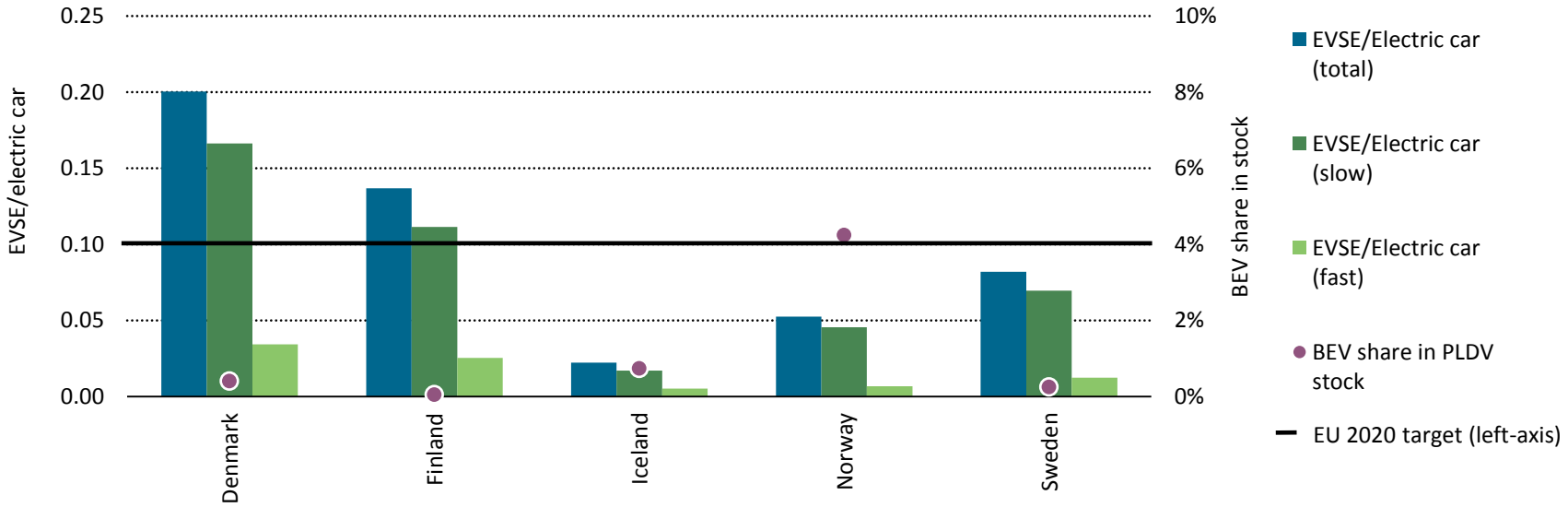


EVSE deployment increased across all types of chargers in 2017. Publicly available slow and fast chargers grew less than the electric vehicle stock. Publicly available slow chargers outpaced for the first time the growth of fast chargers.

Electric cars per charger

Nordic charging outlet ratios, 2010-17

Slow chargers: AC level 1 and 2 (<22kW)
Fast chargers: AC 43kW, DC, CHAdeMO, Tesla
Superchargers, inductive chargers



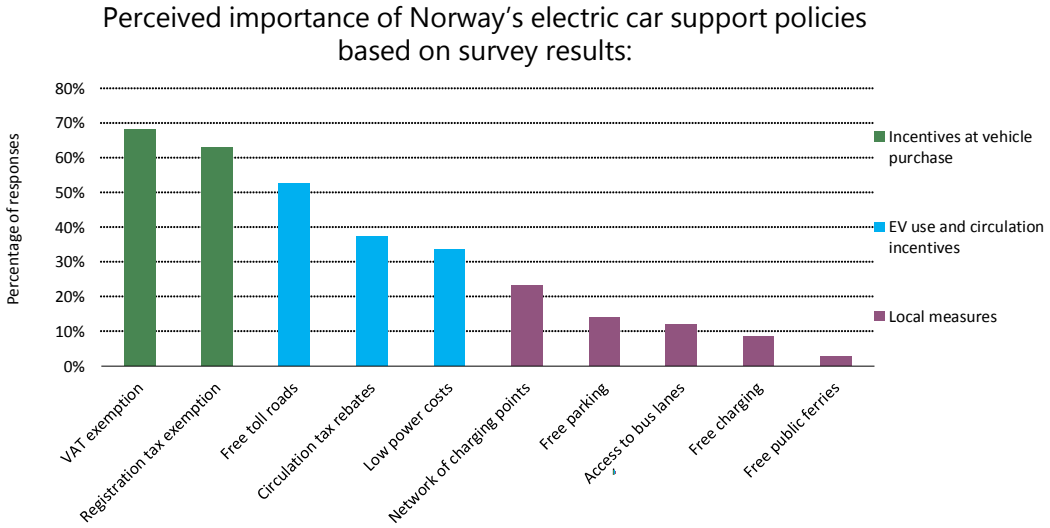
Ratios of publicly accessible EVSE outlets per electric car vary significantly: Norway and Iceland, the countries with the most advanced electric car markets, show the lowest ratios.

Which polices were prioritized in the Nordic region?

	Policy type	Denmark	Finland	Iceland	Norway	Sweden
Regulations	Deployment target					
	Building regulations					
Direct Investment	Publicly accessible chargers					
	Private chargers					
	Research & development					
Fiscal advantages	Publicly accessible chargers					
	Private chargers					

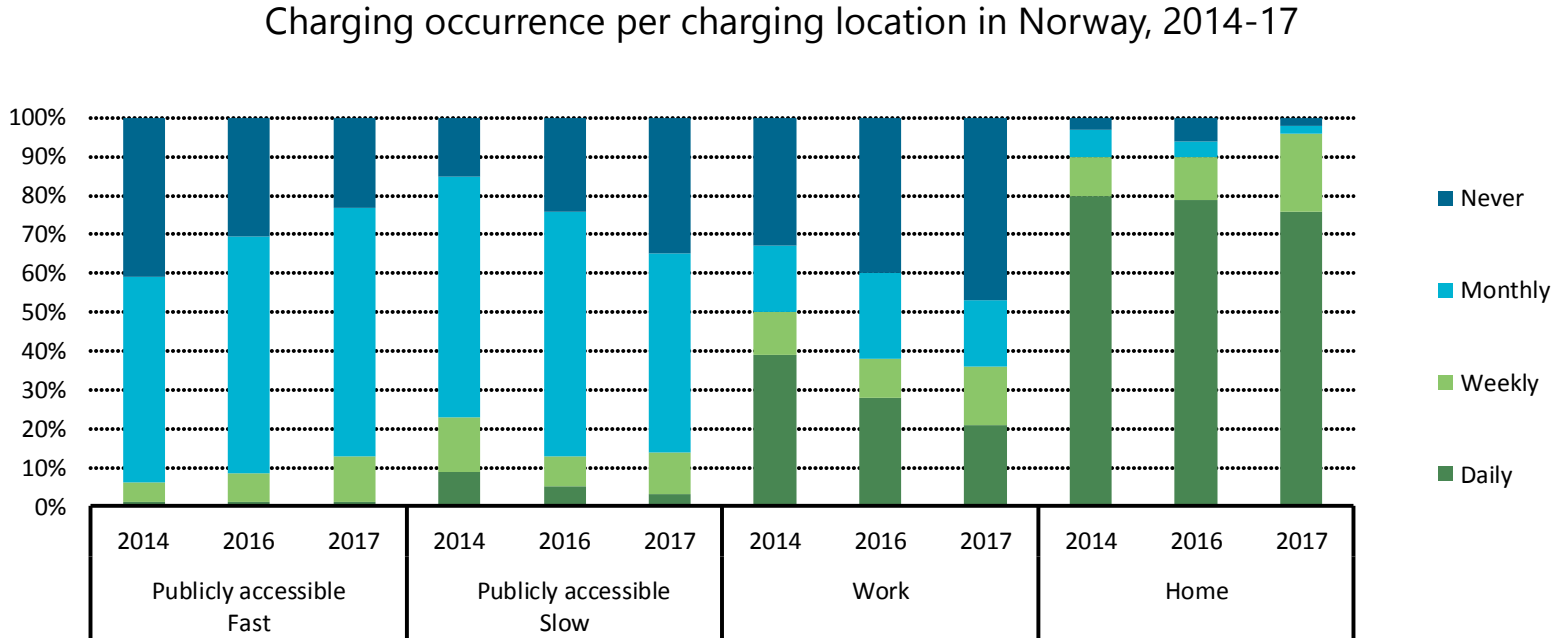
Legend:	
	No policy
	Local policy
	Nationwide policy

Overview of support policies for charging infrastructure in the Nordic region, 2017



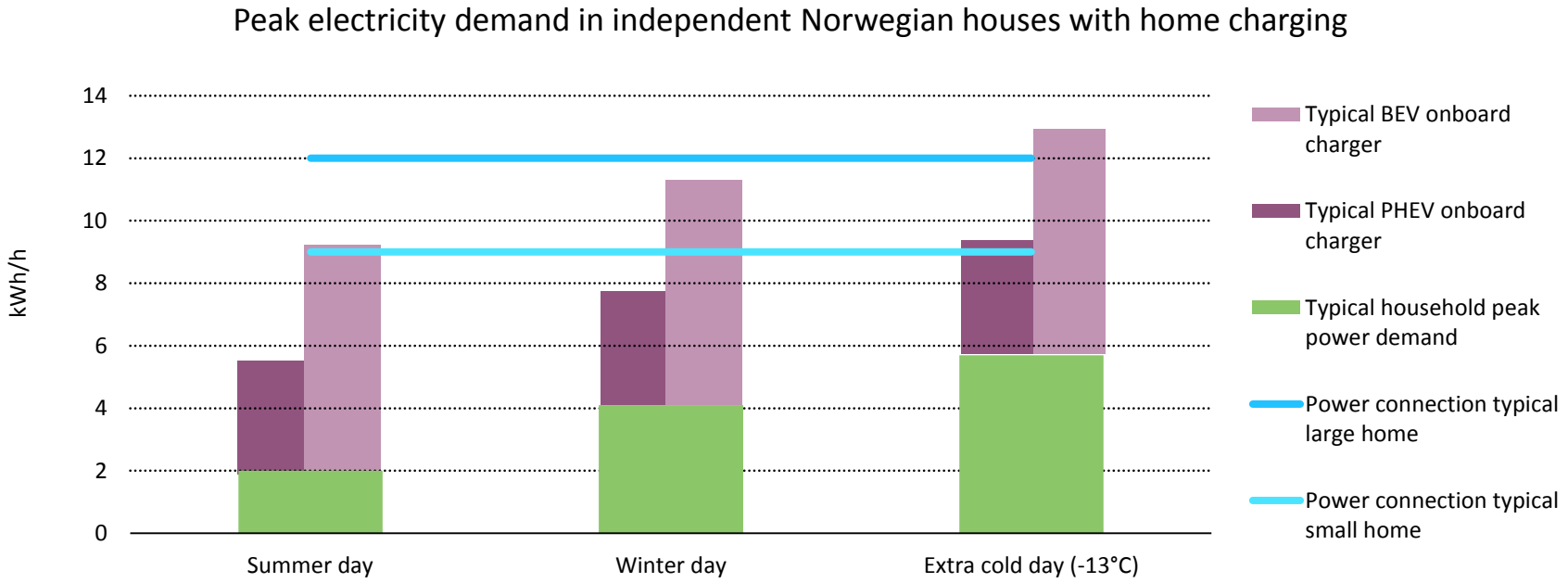
Support for public charging infrastructure is widespread in the Nordic countries, while policies for private charging (building regulations and subsidies) are not.

No place like home...



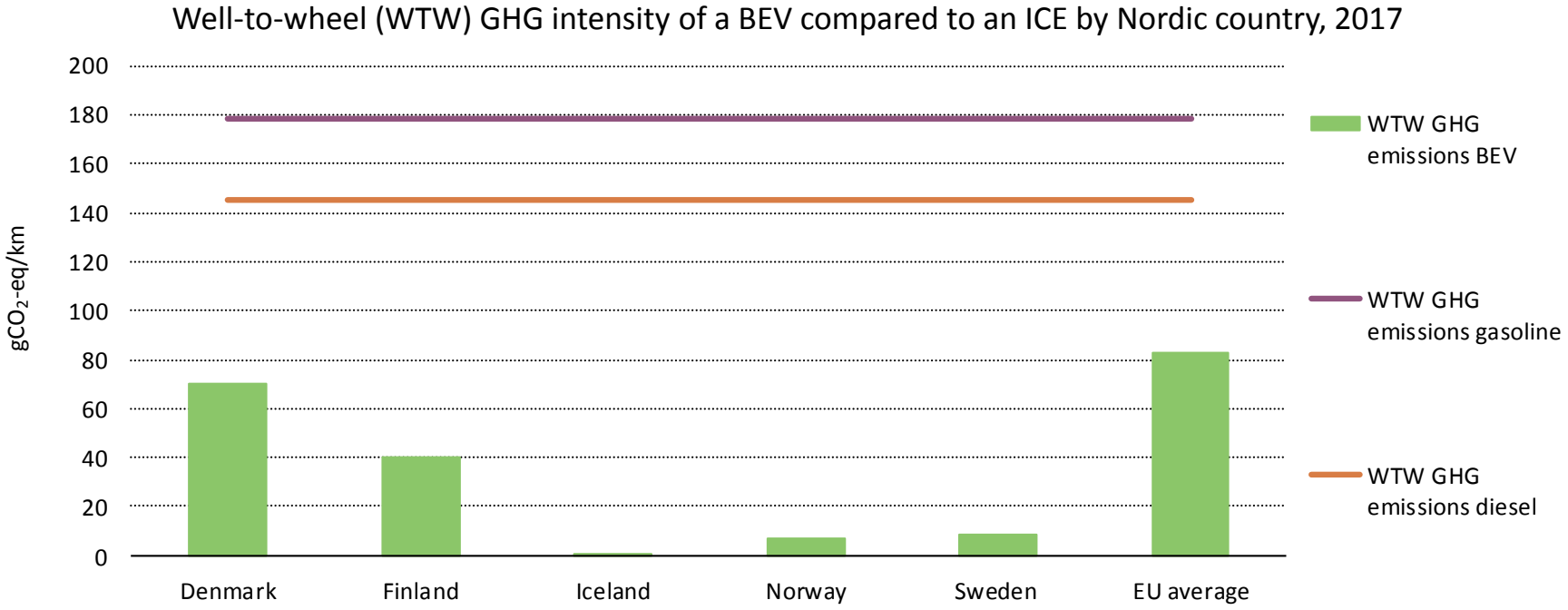
Home is the most used charging location.
Publicly accessible charging mostly applies to specific circumstances.

Are electric cars impacting the power grid?



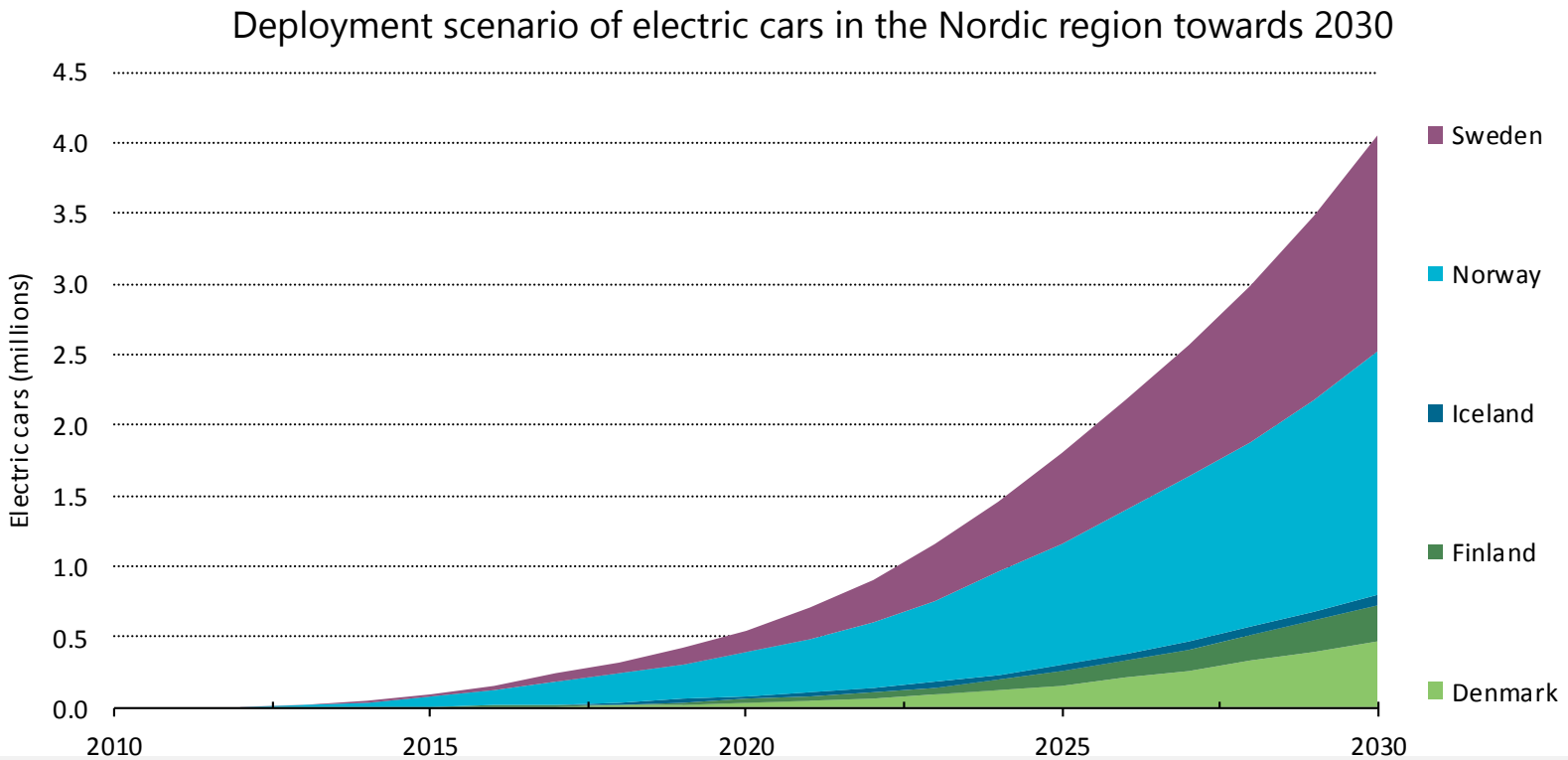
Home chargers can add significant loads to the household power demand. Unless properly managed (e.g. delayed charging), electricity demand due to electric car charging could exceed the maximum power in the distribution grid.

EVs benefit the environment and are essential to CO_2 emissions reduction



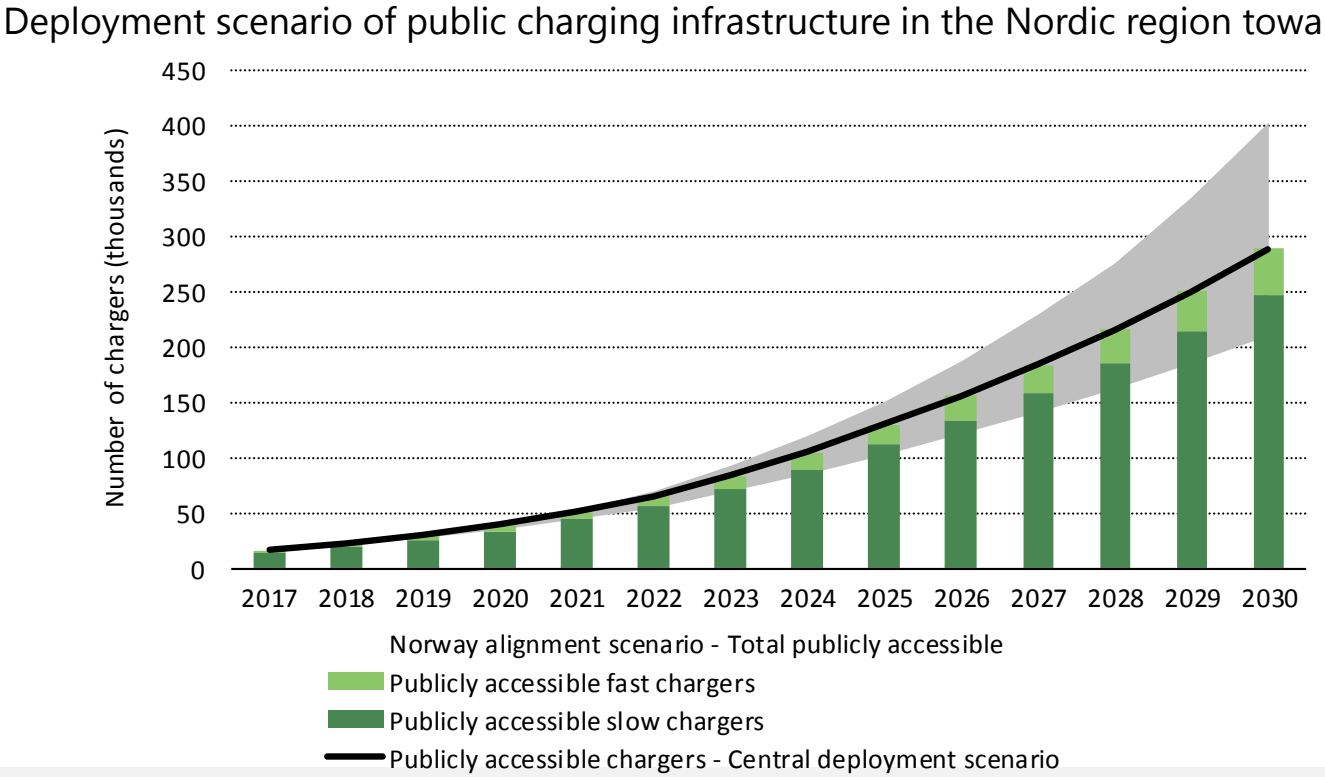
EVs use significantly less energy per km than ICE cars. The Nordic grid is especially well suited to ensure that EV also deliver very significant CO_2 emission reductions.

Nordic electric car stock could reach 4 million by 2030



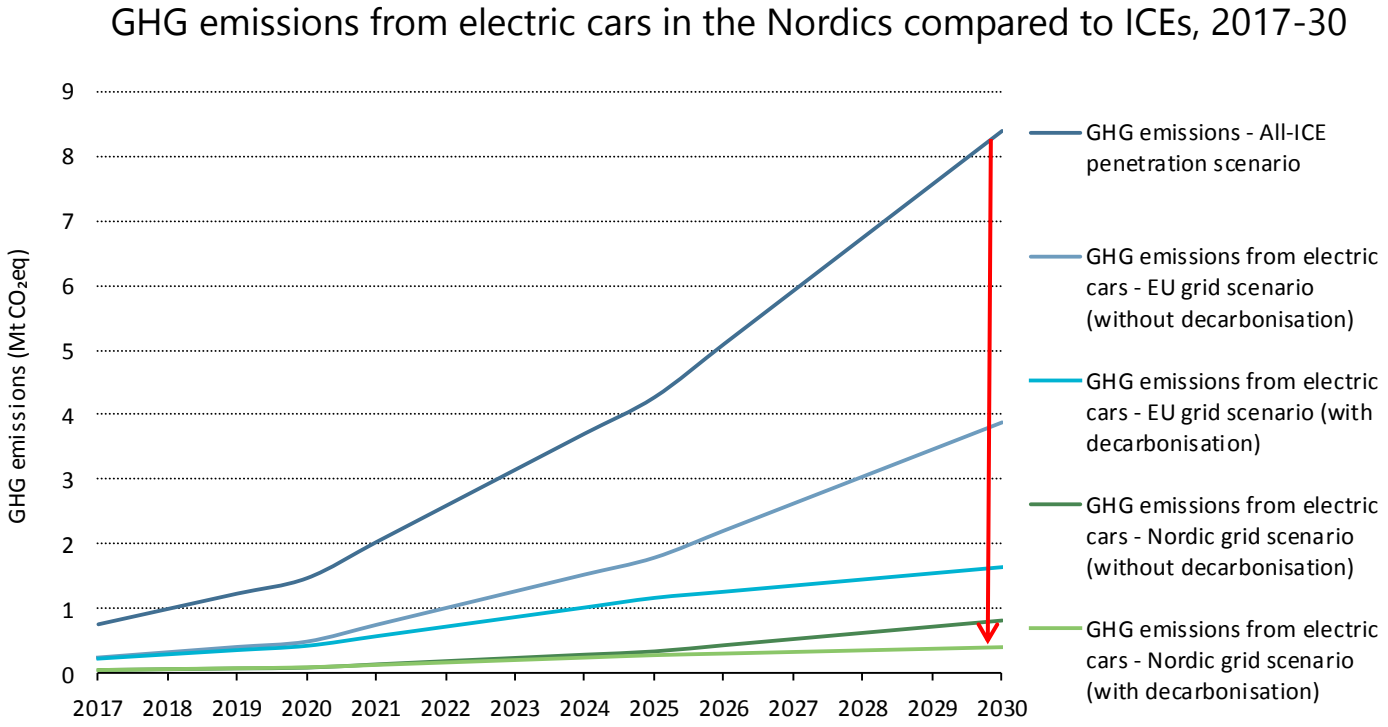
Current market size, announced policies and climate ambitions in the five Nordic countries suggest that the EV stock could reach 4 million units by 2030.

Publicly accessible EVSE deployment in the Nordic region



The number of publicly accessible charging outlets could range between 210 000 and 400 000 by 2030, with a central estimate at 290 000 units.

EVs set to deliver major CO_2 savings



4 million EVs could help save 8 $MtCO_2eq$ on that year across the five Nordic countries, which is equivalent to 29% of GHG emitted from passenger vehicles in the Nordics in 2017.

Conclusion

- Nordic electric car market is booming, although at various speeds per country.
- Policy support continues to be the main driver of strong electric car uptake. Closing the purchase price gap is key.
- Charging mostly takes place at home, although coverage of publicly accessible charging infrastructure expands options.
- Overall power demand can be managed, although local grids need close attention.
- Electric cars in the Nordic region allow for lower carbon mobility now and towards 2030.

Questions?

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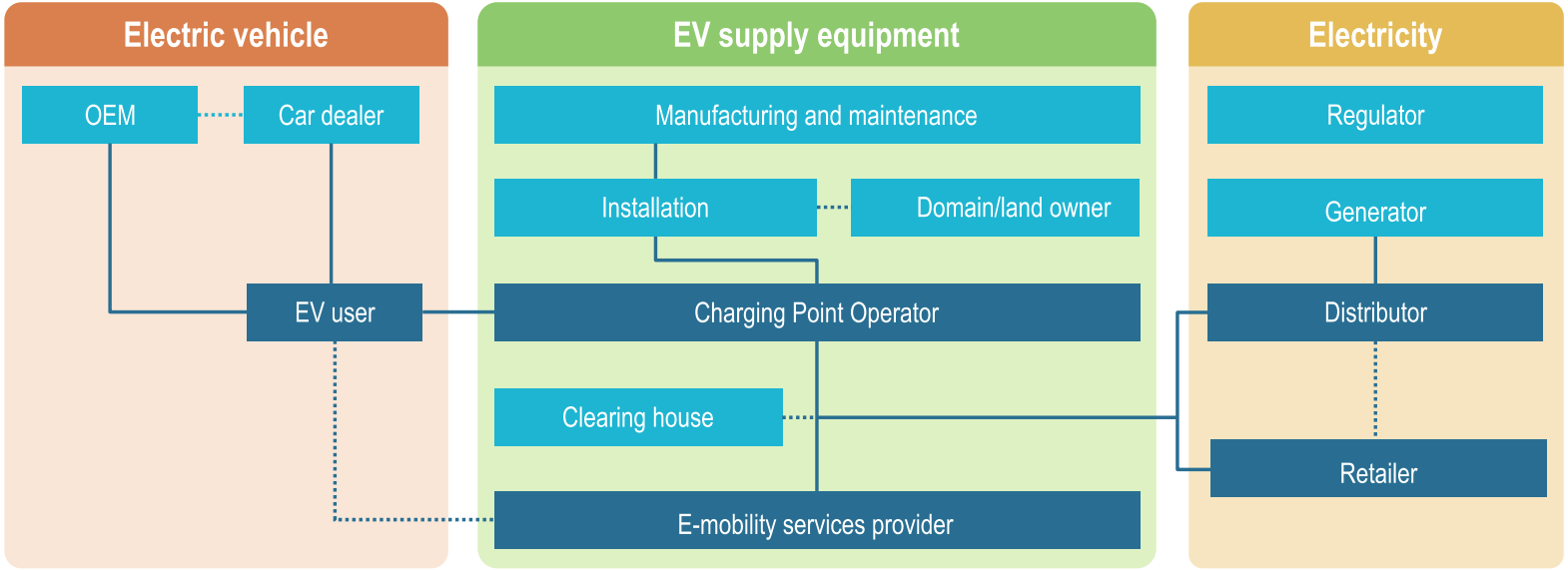
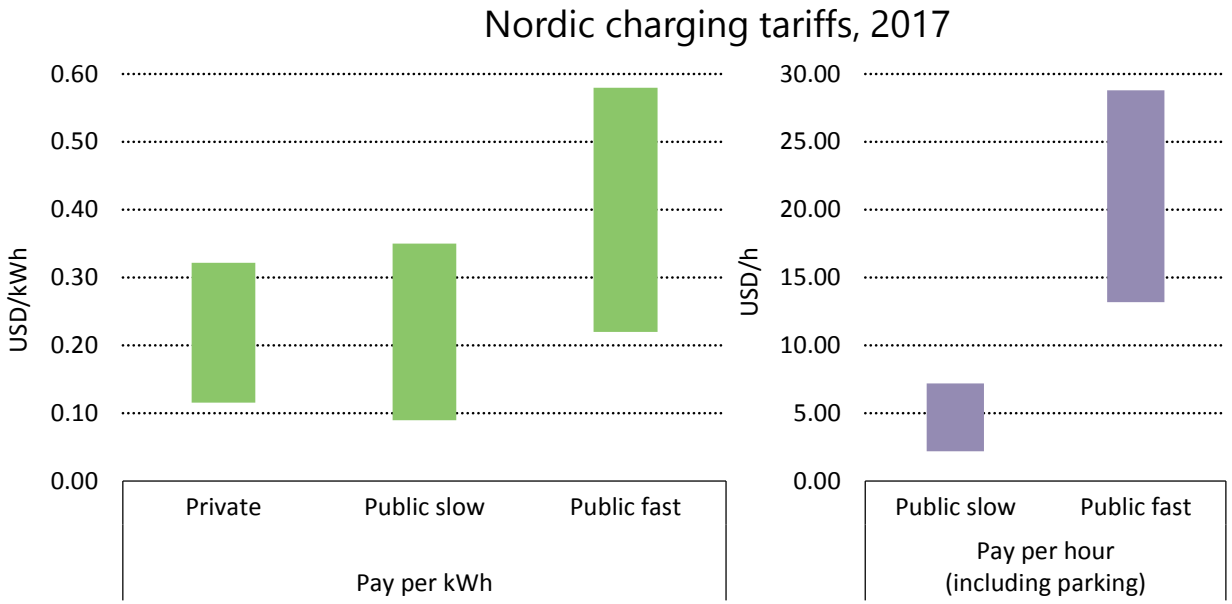
https://www.iea.org/publications/freepublications/publication/nordic-ev-outlook-2018.html

Back-up - Many ways to be involved in the EVSE market



The value chain of charging infrastructure stretches from car makers to the electricity grid and involves a large number of stakeholders.

Back-up - Price ranges for charging practices



The price of EVSE use varies significantly depending on the charger's characteristics, with higher prices applied to publicly available chargers, especially fast chargers.