

A photograph of two reindeer with large antlers standing on a paved road in a forested area. The reindeer are facing each other, and their antlers are touching. The road is a two-lane road with dashed white lines. The background shows a dense forest of tall, thin trees under a cloudy sky. A yellow banner is overlaid on the right side of the image.

# The rise of electric vehicles in the Nordics

18 September 2019



Building a better  
working world



# The Nordic region accounts for roughly 8 % of the total number of EVs around the world – can it be explained by the Nordic culture?



*Greta Thunberg initiated the school strike for the climate in August 2018*



Eco-friendly



Process (consensus)  
oriented



Low hierarchy



Relatively high  
gender-equality



Individualistic
















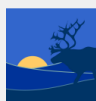

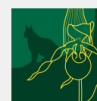
Low  
predictability

# Governmental investments have been the common denominator when looking at the starting point of the Nordic EV journey...



Source: LT.se

In 2008, the first EV charging points were installed in Stockholm, Sweden. Today, Sweden has 8 670 public charging points

 Begränsad klimatpåverkan	 Frisk luft	 Bara naturlig försurning	 Giftfri miljö
 Skyddande ozonskikt	 Säker strålmiljö	 Ingen övergödning	 Levande sjöar och vattendrag
 Grundvatten av god kvalitet	 Hav i balans samt levande kust och skärgård	 Myllrande våtmarker	 Levande skogar
 Ett rikt odlingslandskap	 Storslagen fjällmiljö	 God bebyggd miljö	 Ett rikt växt- och djurliv

Source: [sverigesmiljomal.se](http://sverigesmiljomal.se)

Today, Sweden has ambitious environmental targets, containing 16 environmental quality goals describing the desired state of the Swedish environment that the environmental work should lead to

The Norwegian government has gradually introduced incentives since early 1990s to speed up the EV transition. Today, Norway's environmental targets includes 26 targets with 6 priority areas



The Danish EV promotions began in 2008 (however some parts were phased out 2015)

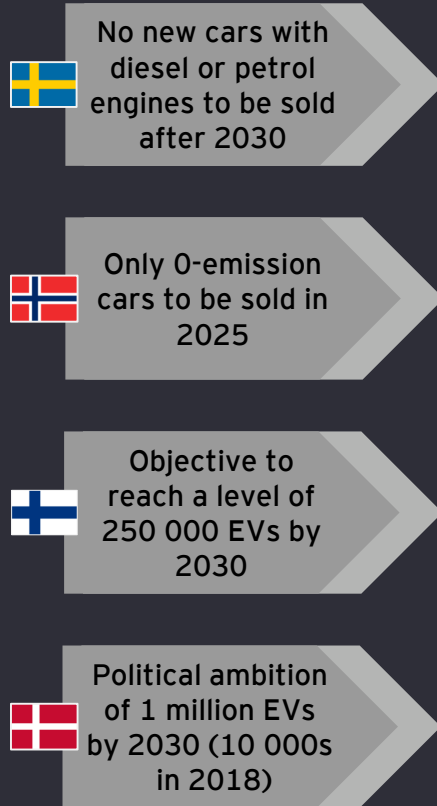


Governmental investments in EV discounts 2016 proved that EVs are finally making their way into Finland

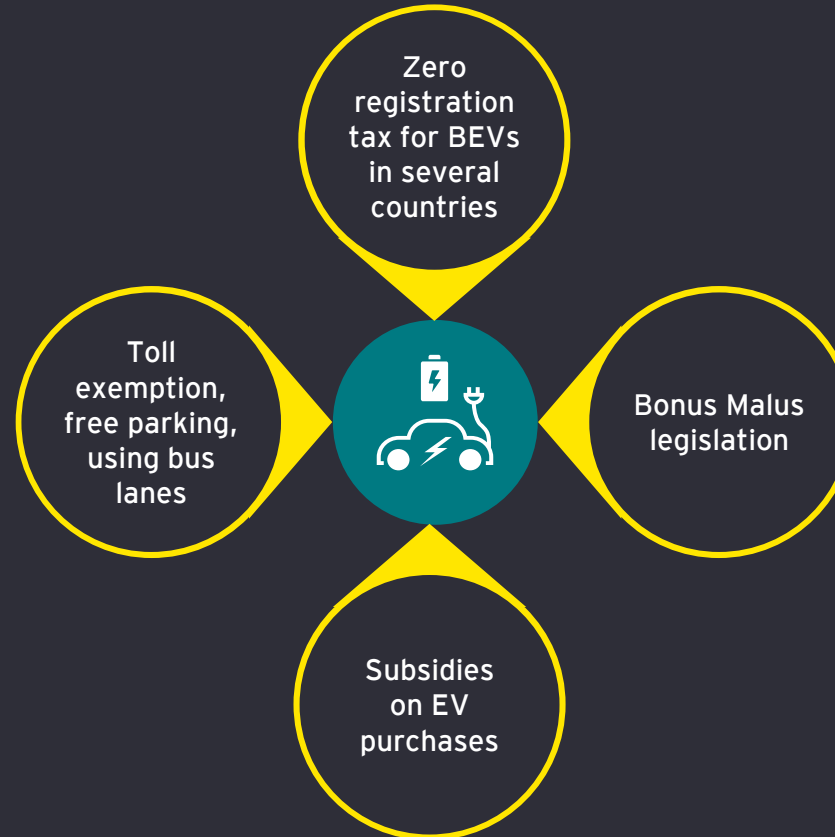


# ... And ambitious policies and governmental initiatives have evolved and proliferated the Nordic EV fleet over the last two decades

## Goals



## Examples of incentives



## Market Effects<sup>1</sup>







No of EVs sold during 2018

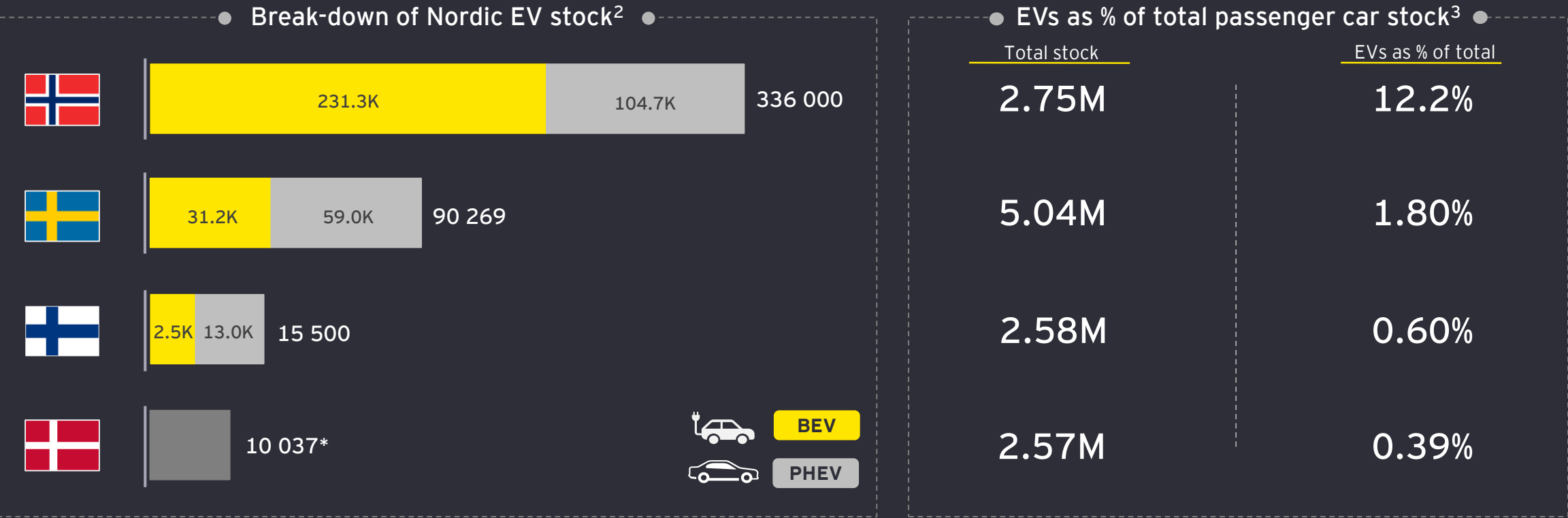
 72 647	 6 780
 49 347	 6 127



EVs as % of car sales during 2018

 50%	 5.6%
 14%	 3%

# Norway is leading the way in an expanding Nordic EV market for both BEVs and PHEVs



Future  
forecast for  
Nordic EV  
market

**Norway**  
By 2024, Norway is  
expected to sell **135 000  
EVs** on an annual basis


**Sweden**  
A dramatic increase in EV sales is  
expected in the next 5 years,  
totaling **125 000 by 2024**

**Finland**  
By 2030, Finland is  
estimated to have more  
than **250 000 EVs**

**Denmark**  
The Danish Prime Minister  
have announced a country  
**target of 1M EVs by 2030**

# The Nordic growth of electrical vehicles is expected to be supported by sufficient infrastructure of public charging points

No of public charging points in **Norway** (2019)<sup>4</sup>

Total charging points	11 543	
Fast charging points	3 143	



In Norway most charging points are located in and around larger cities and fast charging between cities/"Highways"

No of public charging points in **Sweden** (2019)<sup>5</sup>

Total charging points	8 670	
Fast charging points	1 062	



In Sweden, roughly 90% of all charging of electrically driven vehicles is performed at home or at work, where the car is parked for a longer period of time

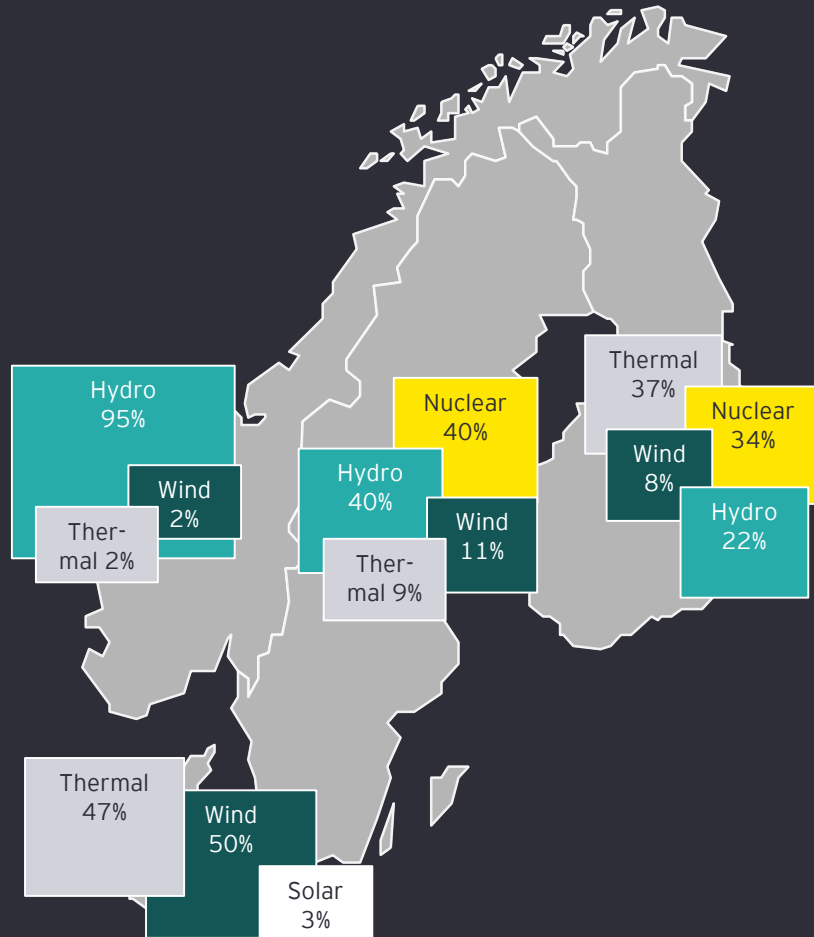
Future Nordic infrastructure for EV:s



To support the estimated fleet of **4 million EVs in the Nordics 2030**, approximately **290 000 public charging outlets** are expected to be in place by 2030

# The Nordic electricity generation is unique and pose an opportunity to attract new companies that are seeking for a “green image”

Electricity generation mix in the Nordics<sup>6</sup>

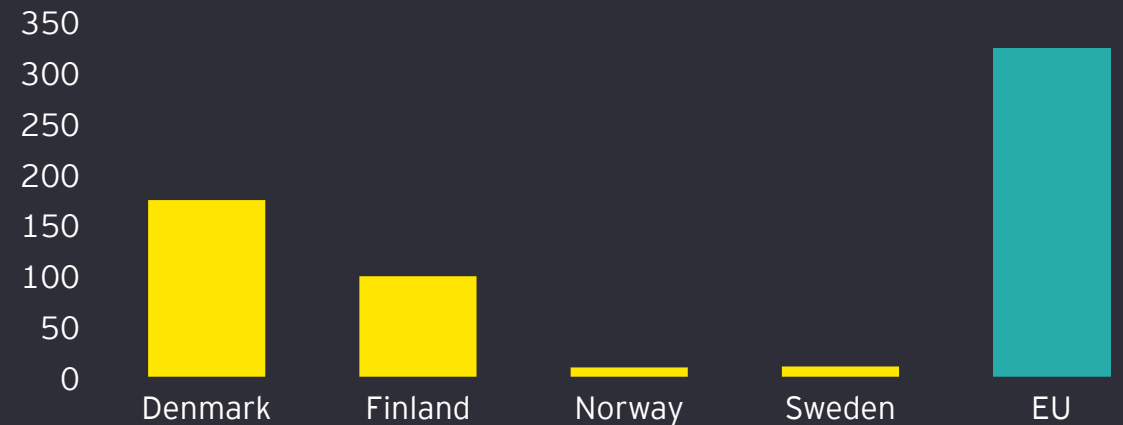


Emissions in gCO<sub>2</sub>/kWh produced in the Nordics compared to the EU average<sup>7</sup>

The CO<sub>2</sub> emission levels for BEVs in Norway and Sweden are **7 and 9 g/km** compared to 142 g/km for diesel

The average fuel cost for driving a BEV in the Nordics is **~3.6 USD/100km**

gCO<sub>2</sub>/kWh



# A broad range of actors from different industries have entered the market and are investing in the Nordic EV infrastructure and connected solutions

Traditionally, most investments have been done by established energy actors...



... lately, new actors have emerged and specialize in different parts of the EV supply chain...



... and established actors from other industries are starting to enter the EV charging landscape



McDonald's and Fortum Charge and Drive have entered a partnership to install charging points at McDonald's restaurant

1 730 000  
km charged in  
2019



In 2018, 75% of IKEAS stores and 50% of their Ingka Centers locations had electric vehicle charging points



# One important question is how to overcome barriers in the Nordic energy system when EVs are likely to rise extensively the coming years...

## Shortage of electricity production

- ▶ Increased demand for electricity puts a high pressure on the producers and therefore efficiency is crucial
- ▶ For example in Sweden where nuclear reactors Ringhals 1 & 2 will be closed after 2020

## Stress on local power distribution networks

- ▶ Uncontrolled power demand from EVs will add to pre-existing peak loads and lead to increased capacity issues
- ▶ Utilities will need massive investments to upgrade and expand aging infrastructure and at the same time devise strategies to shift EV charging to off peak timings



## ... However, the quick adoption of Sharing Economy platforms might help find solutions to challenges such as network shortages

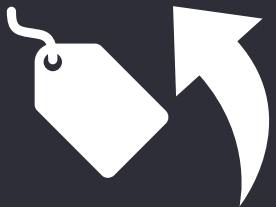
### • The Nordic consumers are highly aware of environmental issues •

EXAMPLES FROM SWEDEN<sup>8</sup>

**70 %** of the Swedes are willing to pay more for a product/ service if the company takes actions to reduce the climate impact



**80 %** of the Swedes are willing to wait 1-2 days more for their delivery if it is environmentally friendly



### • The high acceptance of new mobility solutions might lead to a quicker adoption of the Sharing Economy •

EXAMPLES FROM SWEDEN<sup>9</sup>

**80 %** of the Swedes can imagine themselves using a car pool (72 % among other Europeans)



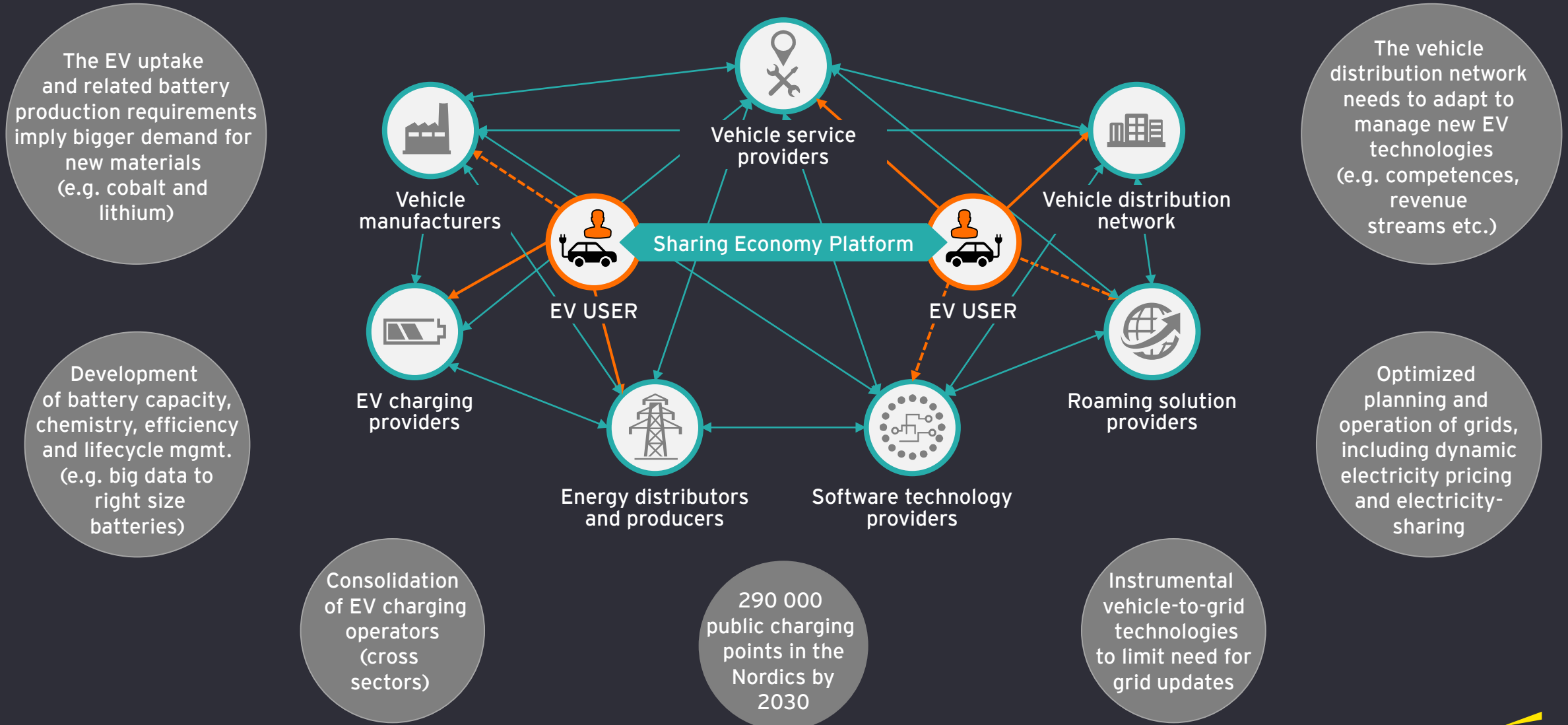
Voi, a Scandinavian micro mobility company founded in August 2018, already has **3M+ users** who has done **10M+ travels** (5 000 000+ KM)

**83 %** of the Swedes are willing to share their parking lots (65% among other Europeans)



Stockholm, Gothenburg, Malmö and Umeå are **test cities** in a new national sharing economy program with a budget of **12 MEUR over 4 years**

# The Nordic EV stock is expected to reach 4 million units by 2030, which will have a disruptive impact on the EV ecosystem...





... And in combination with new generations' preferences and behaviors, the transformation of the Nordic EV market will likely accelerate dramatically

## Millennials

On demand  
Flexible  
Experience

## Gen Z

Materially endowed  
Convenient  
Technologically advanced

Environmentally active  
Little need for possessions  
Networked



# Any questions?



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**Thank you!**

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