Success Stories | Norway | Transport

ELECTRIC VEHICLES: FROM NICHE TO MASS-MARKET

KEY TAKE-AWAYS

In 2020, **electric vehicles** (EVs) represented **54 percent of new car sales** in Norway, a milestone in decarbonising the car fleet.[1]

Norway's success is based on government **incentive schemes targeting vehicles, fuels and road use** as well as **heavy public investments on charging stations.**

Charging stations were first developed at the **local level** in the city of Oslo, followed by **national programmes,** eventually leading to a **reliable network** of charging points **nation-wide.**

The **availability of charging stations, tax rebates** on electric cars to **close the price gap** with combustion engine cars and **behavioral incentives** have made today's **EVs mass market.**

1 Norwegian Electric Vehicles Association, 2020

OVERVIEW

With its 2007 "White paper on Climate Policy", the Norwegian government set a **pathway to reduce emissions from the transport sector** and introduced **CO_2 emission reduction targets.**

The government also invested in **charging stations** to ensure EVs develop not only in **large cities,** but also in **towns and rural areas. Oslo** played a **lead role** in boosting demand for EVs by creating a **publicly funded programme to build public charging stations** in 2008.[2]

The share of new EVs in the new car sales market went from **3 percent in 2012 to 54 percent in 2020** as charging facilities were deployed and tax and behavioural incentives were put in place to encourage the uptake of EVs.[3]

Co-benefits:

→ Improved air quality
→ Additional jobs from the expansion of the EV infrastructure
→ Reduced noise pollution caused by road traffic

2 Bernard & Hall, 2021

3 Kristensen et al., 2018

AIMS & TARGETS

The EV initiatives are part of Norway's **comprehensive climate action plan** to reduce emissions by 50 percent by 2030 relative to 1990 levels.[4] In 2019, emissions from the transport sector represented 29 percent of emissions.[5]

The 2007 "White paper on Climate Policy" introduced a new **CO_2 emission reduction target** for new passenger vehicles at a maximum 120 g/km starting in 2012.[6]

4 Ministry of Climate and Environment, 2021
5 Simonet, 2019

6 Kristensen et al., 2018

Norway's National **Transport Plan 2018–2029** has the following targets:

- → By **2025,** all **new cars, city busses** and **light vans** must be **zero-emission vehicles.** Norway is on track to meet its targets for new passenger vehicles.
- → By **2030,** new **heavy vans,** 75 percent of new **long-distance busses** and 50 percent of new **lorries** must be **zero-emission vehicles.**[7]

7 Kristensen et al., 2018

Background

Electric vehicles in Norway were first developed as a response to the steep energy prices caused by the 1970's oil crisis.

In the 1990's, the Norwegian government launched the Norway EV Initiative, which was originally designed to increase demand for locally manufactured EVs. The initiative was so successful that local production was insufficient, causing more international carmakers to enter the market and eventually the local EVs industry to collapse.

POLICY INSTRUMENTS

Norway was a **first mover** in EV tax incentives, infrastructure, demonstration and testing.[8]

Tax & behavioral incentives

The **tax & behavioral incentives** will be revised by the government at the end of 2021[9].

- → Since 1990, EVs have been **exempt from purchase/import taxes.** These taxes are high in Norway, so the exemption made the **cost of an EV nearly the same as a combustion engine vehicle.**[10]
- → In 1996, the annual **license fee** was **reduced for EVs**[11]
- → In 2001, EVs received a 25 percent VAT exemption on purchase.[12]
- → Starting in 1996, EV owners were **exempt** from the **annual road tax.**[13]
- → EVs pay **half price** for ferries and toll roads (since 2018).[14] Previously, EVs were **exempt** from all **charges on toll roads and ferries** (1997–2017).[15]
- → EVs have had **free municipal parking** since 1999. Local government can end or limit the measure.[16]
- → EVs have had **access to bus lanes since 2005,** leading to an explosion in demand. Local government can end or limit the measure.[17]
- → EVs received a 40 percent **reduction in car company tax** (2000–2018).[18]
- → EVs receive an exemption of 25 percent of the **VAT on leasing** (since 2015).[19]
- → Tax reductions per car amount to around 11,000 EUR for EVs.[20]

Government support, from research to development and commercialisation:

The **government agency ENOVA** is tasked with **accelerating technologies to reduce emissions** – from transport and **research** (Research Council of Norway) to **commercialization** (Innovation Norway [21]), including support for the **deployment of EV charging stations.**[22] The government began to invest in national charging infrastructure in the 2000s.[23]

8 Kristensen et al., 2018
9 Norwegian Electric Vehicle Association, n.d
10 Kristensen et al., 2018
11 Kristensen et al., 2018
12 Kristensen et al., 2018
13 Kristensen et al., 2018
14 Norwegian Electric Vehicle Association, n.d
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18 Norwegian Electric Vehicle Association, n.d.
19 Norwegian Electric Vehicle Association, n.d.
20 Kristensen et al., 2018
21 Kristensen et al., 2018
22 Kristensen et al., 2018
23 Kristensen et al., 2018

ACHIEVEMENTS & LESSONS LEARNED

Norway is on track to meet its 2025 target:

In 2020, the market share for battery electric vehicles in the new car sale market was 54.3 percent, up from 42 percent in 2019.[24]

Sustained development in EVs fleet and charging points:

- → More than 453,000 battery electric vehicles were on the road at the end of 2020.[25] EVs (battery electric vehicles & plug-in hybrid electric vehicles) represent over 17 percent of the entire Norwegian car fleet,[26] the majority of which are battery electric vehicles at 12 percent.[27]
- → In 2019, 10,337 public charging points (Alternating Current regular) and 3,426 charging points (Direct Current fast) were installed. Before 2010, there were only a few hundred public charging stations.[28] Over 2015–2017 2 fast and 2 semi-fast chargers were deployed every 50/km along a 8,000 km road network[29]. In 2019, the first fast charger coverage along all major roads was built.

Vehicle technology improvements:

- → International carmakers responded to high demand in Norway by increasing investments leading to better quality and performance within the EV industry. Improved **comfort, design** and **safety** of EVs was important for **consumer buy-in.**

Behavioral incentives

- → The number of EVs dramatically increased after EVs were allowed to use bus lanes, mostly near Oslo.[30]

Stable and clear policy framework, cooperation, communication:

- → The certainty of the established policies due to broad political consensus meant that despite several changes in governments, there was a **sustained commitment** to keeping Norway a front runner in EVs.
- → **EVs owners** have been **represented** by the Norwegian Electric Vehicle Association for over 25 years, establishing a direct line of **communication** to policymakers setting EV policy.[31]

24 Norwegian Electric Vehicles Association, 2020
25 European Alternative Fuels Observatory, 2019
26 Innovation Norway, 2021
27 Innovation Norway, 2021
28 Hall et al., 2020
29 Figenbaum, 2019
30 Kristensen et al., 2018
31 Norwegian Electric Vehicle Association, n.d.

GHG EMISSIONS REDUCTIONS & COSTS

Emission reductions:

Norway's average CO_2 emissions from new cars went from 177 g/km in 2006 to **71 g/km** in 2018.[32] The EU's average CO_2 emissions from new vehicles was 122.3 g CO_2/km in 2019.[33] The EU fleet-wide target for new vehicles is 95 g CO_2/km in 2021.[34]

Norway saw a **11.4 percent decline in emissions from the transport sector** (8.5 percent from road transport) between 2012 and 2018.[35]

The Norwegian government **estimates** that without incentives to boost EV demand, total emissions would have been 0.1 million tonnes higher in 2015,

32 Norwegian Ministry of Climate and Environment, 2020
33 European Environment Agency, 2021
34 European Environment Agency, 2021
35 Simonet, 2019

0.4 million tonnes higher in 2020 and 1.6 million tonnes higher in 2030.[36]

Costs:

Implicit price of carbon from tax and (small) subsidies differentiation in favour of EVs is, **per tonne of CO_2** for 2019, **€1,370 for cars** and **€640 and €200 for light and heavy-duty commercial vehicles,** respectively.[37]

Revenues from car-related taxes dropped in Norway after more consumers chose EVs, which are exempt from many taxes. Revenues dropped from 62 billion NOK in 2013 to 42 billion NOK in 2018, representing an average annual decline of 2.8 billion NOK in revenue from car-related taxes. (This figure does not include revenue loss from the VAT exemption and from road tolls and ferry tickets.)[38]

A regular 7kW AC charger in Oslo costs around 4,200 EUR in 2020.[39]

36 Norwegian Ministry of Climate and Environment, 2020
37 Fridstrøm, 2021
38 Norwegian Ministry of Climate and Environment, 2020
39 Bernard & Hall, 2021

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