The future is electric!

The Oslo Solution

City of Oslo, Sture Portvik
12. June 2018
Making EVs the right choice – It is all about the environment!

With 61% of global emissions in Oslo coming from the transport sector, the only way to reduce emissions in our cities is to boost a green shift in transportation. In 2008, the City Parliament in Oslo adopted “a ten-point plan” to reduce CO2 emissions, to which the large scale introduction of EVs plays a big part.
Oslo – The EV Capital and European Green Capital 2019

Goal:
• 2020 - 50% cut in CO2 emissions
• 2030 – 95% cut in CO2 emissions
Making EVs the right choice - incentives on purchase

• High taxes on fossil fuel cars
• 25% Value Added Tax (VAT)
• «One-time registration fee» calculated on the basis of:
  - the weight of the vehicle
  - the emissions (CO2 and NOX)
  - the engine size (ccm) or effect (hp)

• Electric vehicles have NO TAXES OR FEES
  Saves at least 10 000 EUROS

<table>
<thead>
<tr>
<th>Volkswagen golf</th>
<th>Volkswagen e-Golf</th>
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</thead>
<tbody>
<tr>
<td>Import price: 20 077 Euro</td>
<td>Import price: 32 741 Euro</td>
</tr>
<tr>
<td>CO₂ tax: 3 919</td>
<td>CO₂ tax: 0</td>
</tr>
<tr>
<td>Nox tax: 238</td>
<td>Nox tax: 0</td>
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<tr>
<td>Weight tax: 1 715</td>
<td>Weight tax: 0</td>
</tr>
<tr>
<td>Scrapping fee: 249</td>
<td>Scrapping fee: 249</td>
</tr>
<tr>
<td>25% VAT: 5 019</td>
<td>VAT: 0</td>
</tr>
<tr>
<td>Retail price: 31 236 Euro</td>
<td>Retail price: 32 990 Euro</td>
</tr>
</tbody>
</table>

Source: OFV
AN EXTREme electric example: Tesla Model S vs Chevrolet Camaro

Tesla S Model
Price in Norway: 70 000 EUR
Price in Sweden: 80 000 EUR

Chevrolet Camaro
Price in Norway: 172 000 EUR
Price in Sweden: 50 500 EUR
Making EV the right choice - Incentives on use

- **Free access on toll roads** (1997)
  In Oslo € 3.5 – 8, National roads and tunnels up to € 25.

- **Free parking** (1999)
  € 4 – 6 per hour

- **Free normal charging** (2008)
  € 3– 9 per session

- **Access to use bus and taxi lanes** (2003)
  Saves 30 min -1 hour per day

- **Free transport on ferries** (2009)
  € 12 – 24 each way

- **Free use of tunnels** (2009)
  € 12 – 24 each way
Making EVs the right choice - Charging infrastructure

To **kick-start** the adoption of EVs, the City of Oslo has contributed to the proliferation of an adequate charging infrastructure. Today, Oslo is Norway’s, and probably the World’s, largest owner of charging infrastructure.

**Seeing is believing.** Easily available charging infrastructure made the driving an EV attractive and convenient, but also helped to raise public awareness and increase understanding about EVs.
Making EV the right choice

Making EVs the right choice: **three** critical success factors:

- **cheap to buy** (no purchasing tax, no VAT)
- **Cheap to use** (free parking, free electricity, free passing in tool gates)
- **Convenient** to use (easy access to charging)

You also need **the right product** to succeed
Fast charging network – The World’s largest
Norwegian EV Policy - Did it work? Over 200 000 EVs in Norway!

Source: OFV and NPRA
elbil.no
EV sales are boosting - 50% in Oslo!

The share of EVs and Plug-in hybrids has increased to **50% in 2017**. So far in 2018 share of EVs is 53.5%.

Not rocket science. **Green taxes are actually working**, but you have to make it affordable for people to take green choices!
Sky is the limit or trouble in Paradise?

Major Challenges:

• **EV sales are boosting.** Hard to deploy chargers quick enough. From 1 (charger) - 4 (car), to 1 (charger)-10 (cars) in two years

• **61 % are living in apartments** or town houses in Oslo

• **Electrification for professional users** of EVs needs a boost
Top 10 European Countries in 2017

Source: EAFO.eu
Top 10 Global EV cities 2016

- **Oslo**: 27% new electric vehicle registrations, 5.3% electric vehicle share
- **Utrecht**: 15% new electric vehicle registrations
- **Shanghai**: 11% new electric vehicle registrations
- **Shenzhen**: 10% new electric vehicle registrations
- **Amsterdam**: 10% new electric vehicle registrations
- **San Jose**: 9.4% new electric vehicle registrations
- **San Francisco**: 3.7% new electric vehicle registrations
- **Copenhagen**: 3.7% new electric vehicle registrations
- **Beijing**: 3.7% new electric vehicle registrations
- **Stockholm**: 3.7% new electric vehicle registrations
- **Zürich**: 3.4% new electric vehicle registrations
- **Los Angeles**: 2.8% new electric vehicle registrations
- **Paris**: 1.8% new electric vehicle registrations
- **London**: 1.4% new electric vehicle registrations
Top selling battery electric (BEV) cars in 2017

- VW e-Golf
- BMW i3
- Tesla Model X
- Tesla Model S
- Nissan LEAF
- Renault ZOE
- Hyundai IONIQ
- Mercedes-Benz B-Klasse
- Opel Ampera-e
- VW e-Up
- Kia Soul

Source: elbil.no
The new Oslo solution

Never change a winning card, but always stay flexible

In order to catch up we also need to:

- Establishing **fast chargers** in cooperation with private actors in the corridors in and out of the City
- **Indoor parking garages** for EVs (Akershus, Vulkan). The World’s first dedicated P-houses for EVs only
- Build large **“Centre of excellence” for professional users** of EVs with flexible charging and pre-booking opportunities.
- New **green mobility houses** incl. tailor-made solutions for professional users of EVs and smart-grid
- **Fossil-free public transportation** (2020)
- **Making sure that everybody can charge at home** (61 % lives in apartments and town houses)
- More focus on **Mobility as a Service (MaaS)**
- **Autonomous Vehicles** and **public transportation on-demand**
New quick charging stations
Centre for professional use of EVs, and Parking garages for EVs
New green mobility houses
Important EU-project; SEEV4 City and FREVUE

Two important EU-project is leading the way as “first movers” for green freight distribution in Oslo; FREVUE and SEEV4 City
A launching customer
Other plans that will influence the growth of EVs

- National ban on all sales of diesel and gasoline cars (from 2025)
- Temporarily ban on use of diesel cars on the most polluting days (from 2017)
- Demand for green freight deliveries in public procurements (from 2018)
- Only zero emission Taxis licensed (from 2022)
- Congestion tax + 74% (non for EVs) (from 2017)
- Zero emissions zones (2019)
- New toll gates (from 22 gates to 73)
Coinciding plans that will influence the growth of EVs

- **Car free City Center** 2018 (Inside Ring 1)
- **Emission free City Center** 2024 (within Ring 3)
- **Residential parking** (within Ring 2)
**The Worlds first Mass Market for EV**

More than 98% of all electricity produced in Norway comes from **hydro**.

- Electricity in 2011:
  - Produced: 125 000 GWh
  - Consumed: 121 800 GWh

Even if ALL cars in Norway (2.6 mill.) was electric only 6% of the hydropower production in would be needed

An increase in the peak time demand of approx. 4% if all cars were electric.

However, 30% of all nett stations are old (more than 40 years), and should be updated (regardless of EVs)
A green shift in transport is needed!

- Everything is connected to everything, in addition to more EVs we need:
  - More public transportation
  - Greener public transportation. Fossil-free within 2020 (the official goal)
  - Increased focus on facilitation for pedestrians and cyclists
  - Focus on Autonomes Vehicle/Mobility as a Service
  - Increased focus on (green) car sharing
  - More freight handling by trains
  - Green freight distribution in the City
  - Electrification and greener heavy duty vehicles
  - EL-Taxis
  - Park and ride solutions, in combination with EVs
  - Increased use of ITS
  - Low emission zones
  - Residential park (free parking for EVs)
  - Congestion tax (non for EVs)
Not only private EVs
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Grazie Thanks
Danke Merci Gracias
Ευχαριστώ multumesc
Takk dziękuję dakujem hvala
Obrigado dziękować
tānan kiitos köszönöm aciu
Tack dēkuiji palūies
nižžik ǧajr dank u wel