The Norwegian EV Success

Christina Bu, Secretary General,
Norwegian EV Association.
christina@elbil.no
www.elbil.no
The Norwegian EV Association

• NGO and member organization promoting renewable electric transport
• 35,000 members (car owners)
• 11 employees
• Unique experience in small market with the largest share of battery electric vehicles in the world
• Valuable input to policy makers and EV industry
Norway

- System of Government: constitutional monarchy, Parliamentary democracy
- 19 counties, 429 municipalities
- Area (mainland): 323 278 km²
- Population: 5 million people
- Cars: 2.5 million
- High income country, population fast implementers of new technologies
- 95% hydroelectric electricity production, in balance today, surplus expected up to 2020
Almost 100,000 EVs in Norway

BEV Market share:
- 2011: 1.4 %
- 2012: 2.9 %
- 2013: 5.5 %
- 2014: 12.5 %
- 2015: 17.1 %

Source: OFV
Electric cars spread all over Norway

NORWEGIAN EV MARKET SHARE 2015 (22 %)

- SVALBARD
- TROMS | 11%
- FINNMARK | 6%
- NORDLAND | 18%
- NORD-TRØNDELAG | 16%
- MØRE OG ROMSDAL | 17%
- SOGN OG FJORDANE | 14%
- HORDALAND | 34%
- ROGALAND | 24%
- TELEMARK | 17%
- AUST-AGDER | 22%
- VEST-AGDER | 23%
- VESTFOLD | 22%
- OSLO | 29%
- ØSTFOLD | 15%
- AKERSHUS | 24%
- OPPLAND | 14%
- SØR-TRØNDELAG | 27%
- HEDMARK | 13%
- BUSKERUD | 19%
From early movers to early mass market

- Incentives speed introduction
  - Helps competitiveness
  - But also eye-opener
- 34% share in the county Hordaland
Norway: still highest EV numbers in Europe, but..
Norwegian EV policy

- No purchase taxes (extremely high for ordinary cars)
- Exemption from 25% VAT on purchase and leasing
- Low annual road tax
- No charges on toll roads or ferries
- Free municipal parking
- Access to bus lanes
- 50% reduced company car tax
## Prices and market shares in Nordic countries

<table>
<thead>
<tr>
<th></th>
<th>SWEDEN</th>
<th></th>
<th>DENMARK</th>
<th></th>
<th>NORWAY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Price starting at (SEK)</td>
<td>Registrations 2015</td>
<td>Price starting at (DKK)</td>
<td>Registrations 2015</td>
<td>Price starting at (NOK)</td>
</tr>
<tr>
<td>Market size, Golf</td>
<td></td>
<td>23057</td>
<td></td>
<td>4760</td>
<td></td>
</tr>
<tr>
<td>VW Golf</td>
<td>174,900</td>
<td>22779</td>
<td>209,177</td>
<td>4668</td>
<td>265,900</td>
</tr>
<tr>
<td>VW e-Golf</td>
<td>346,900</td>
<td>278</td>
<td>309,624</td>
<td>92</td>
<td>262,000</td>
</tr>
<tr>
<td>e-Golf price vs. fossil Golf</td>
<td>98%</td>
<td></td>
<td>48%</td>
<td></td>
<td>-1%</td>
</tr>
<tr>
<td>e-Golf’s share of all Golf</td>
<td>1%</td>
<td></td>
<td>4%</td>
<td></td>
<td>55%</td>
</tr>
</tbody>
</table>
Degree of expressed disadvantages with BEVs

- Uncertainty about incentives: 37% (regular car-owners), 31% (EV-owners)
- Second-hand value uncertainty: 26% (regular car-owners), 15% (EV-owners)
- Vehicle range: 74% (EV-owners)
- Access to charging stations: 62% (EV-owners)
- Time to charge: 51% (EV-owners)
- Vehicle size: 25% impractical (EV-owners)
- Impractical with cables: 20% (EV-owners)

Source: Institute of Transport economics 2014,
Why BEV incentive scheme and success?

- Climate emissions
- Own production of BEVs 1990-2011.
- The car tax system
- The consumers
- Broad support
- Clean energy
CO2-emissions Norway 2014 (CO2-equivalents)

Norway total

- Oil and gass: 14.7 mill.
- Transport: 15.4 mill.
- Industry: 11.6 mill.
- Other mobile sources: 2.0 mill.
- Shipping and fishing (national): 2.9 mill.
- Aviation (national): 1.4 mill.
- Motorbikes: 0.1 mill.
- Railway: 0.05 mill.
Emission reductions = main reason

• Goals:
  • 40% emission reductions by 2030
  • Transport is biggest polluter, and outside EU emission trading scheme.

• How:
  • ZEVs biggest potential
  • 2,7 million tons reduction by 2030 if only ZEVs are sold after 2025.
  • High carbon price on petrol (ca 73 NZD pr. ton CO2). To achieve substantial reductions with this measure, price will at least have to be increased to NZD 520-690 per ton, or fuel price up 50% (Norwegian research).
Electrification essential for GHG reductions

- Electrifying the passenger car fleet is the single most effective GHG abatement measure in Norway.
- But it works slowly – only as fast as car fleet renewal.
- Only battery electric vehicles (BEVs) pull down the average CO2 emission rate. The emission reduction ‘recorded’ for petrol and diesel driven cars is for the most part fictitious.
- Electrification is essential to large-scale GHG abatement in transport – a sine qua non.
9 out of 10 EV owners are very satisfied

The Norwegian EV owner survey 2015: How satisfied are you as an EV owner?
The EV positively surprised me

THE ELECTRIC CAR POSITIVELY SURPRISED ME
91% AGREE

I OFTEN EXPERIENCE RANGE ANXIETY
22% AGREE

The Norwegian EV owner survey 2015: How much do you agree or disagree?
EV ambassadors

For every happy EV owner there will be 3 more

The Norwegian EV owner survey 2015:
How many in your social circle do you think you have inspired to buy an EV?
Charging infrastructure lagging behind

Charging points
EVs
Fast chargers
New: 2 multistandard charging stations every 50 km on main roads by 2017 (public tender).
Norwegian early adopters

Norway Rest of world

Innovators

Early Majorities

Early adopters

Late Majority

Laggards

2.5% 13.5% 34% 34% 16%

Norwegian EV Association
Norway’s competitive advantage

• Market 5 – 10 years ahead
• Early adopters with unique user experiences
• New services for EV owners required

→ Knowledge and services in a new and growing market can be exported
250,000 BEVs in Norway by 2020?

BEVs 2016-2020

- 2016
- 2017
- 2018
- 2019
- 2020
The future is electric..

..it is just a matter of time.