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**Summary:**

# The future of electromobility in Norway – some stakeholder perspectives

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*The results of 13 interviews, two meetings and a workshop undertaken in 2014 with a select group of stakeholders within electromobility in Norway, show that the stakeholders are optimistic as to the future of electromobility in Norway, providing that the incentives will be maintained. Almost all stakeholders interviewed support the official policy to reduce the GHG (greenhouse gases) emissions by increasing the number of battery electric vehicles. Nevertheless, the stakeholders realise that the incentives will have to be downsized eventually. However, more charging stations are needed in residential areas without private parking facilities and along the main intercity corridors. Fast-charging stations appear to reduce range anxiety, even though most EV (electric vehicle) owners use them rarely.*

## The COMPETT project and the regional vs national perspective

As a part of the COMPETT project, Competitive Electric Town Transport, this report studies how electric vehicles (EVs) can come into use to a greater degree, by surveying national and regional stakeholders' experiences in electrified transport such as the regional potentials and barriers for EVs and the use of recharging facilities. During the project period, the regional perspective has been extended to a national perspective, especially as most of the electromobility stakeholders are active nationally. Most of the stakeholders acting within the field of electromobility, are national, and so are most of the electromobility incentives, shown to be most important for the development of electromobility in the Oslo – Kongsberg region, though they may be more important in urban than in rural areas. However, charging infrastructure may be more important in rural areas because of longer driving distances.

## Current incentives for electric vehicles in Norway

The present policy and incentives to promote electromobility in Norway are described in Appendix 3. In summary the incentives for *fully* electric vehicles are:

- **Fiscal:** Vehicle registration tax exemption, the lowest annual vehicle licence fee, reduced imposed benefit taxation for company cars, VAT exemption, increased mileage allowance rate.
- **Local:** Access to bus lanes, road-toll exemption, reduced fares on national road ferries, free public parking with or without free charging, charging stations – normal and fast.
- **Other:** Reserved EL number plates.

Only two incentives apply to *plug-in hybrid vehicles*. These are reduced registration tax and free charging at public charging stations, as described in Appendix 3. The incentives make up extensive economic advantages for the users of electric vehicles, as shown in Appendix 3.

## **The stakeholders' knowledge, opinions and behaviour**

Most of the stakeholders see a combination of less travelling, more public transport and zero-emission vehicles as the way forward in reducing greenhouse gas (GHG) emissions from road transport. In general, all stakeholders, except maybe one, seem to accept the objective of reducing GHG emissions from transport, a fact that, at least to a certain extent, may be due to the selection of the stakeholders, i.e. stakeholders mainly within mobility and environmental affairs. The stakeholders' activities in pursuing the objective of reducing GHG emissions are mainly following-up of the existing incentives. As could be expected the specific activities vary according to the roles of the stakeholders. Informing and influencing the authorities is one important type of activity. Facilitating the use of battery electric vehicles (BEVs) is another. Within the government agencies, finding the balance between ideal solutions and politically acceptable initiatives is important. For EV businesses and NGOs dissemination activities make up a crucial part of their EV promotion. Some stakeholders consider the stimulation of the use of EVs as conflicting with the objective of reducing transport volumes in general.

There is no public strategy specifically for electromobility at present, but the present incentives are agreed to be maintained until 2017 or until the number of BEVs has reached 50 000. A strategy for charging infrastructure was drafted and submitted for hearing in early 2014. The results of this hearing are not published when this report is written (December 2014), although the deadline for the hearing was June 1, 2014.

## **Accordance between the stakeholders and the BEV users?**

In general, the stakeholders seem to be well informed about the BEV owners' knowledge, attitudes and behaviour, but some of the stakeholders appear to be more concerned than the BEV owners or buyers about the future of incentives, the second-hand value of BEVs and the vehicle range. In this respect, these stakeholders are more like the general car-owners than BEV owners.

## **Barriers and potentials**

The stakeholders consider uncertainties about the duration of batteries, the second-hand value of the BEVs and the future of the incentives as the main challenges for the future increase in electromobility. However, the car importers and car dealers do not report concern about these uncertainties among their customers. This fact can

perhaps be related to innovators and other early adopters having a higher risk tolerance than later adopters. This issue could still be relevant as the proliferation of EVs move into later adopter groups, not accepting so much uncertainty, but both technological improvements and a larger market will reduce uncertainties.

Convincing potential BEV buyers that BEVs can be used also for longer weekend or holiday trips, may be a challenge in the one-car household market. Most barriers, however, appear to be transitional, i.e. being due to the early stage of electromobility rather than inherent in electromobility itself.

More fast-charging infrastructure has the potential of further reduction of range anxiety. Getting a wide selection of BEVs into the market is also considered a potential. The low operating costs of EVs are seen as a potential for growth in the vehicle fleet market. In general, the potential for EVs appears promising as long as the main incentives are maintained.

## **Incentives and need for changes?**

Most stakeholders consider the present incentives as sufficient for further growth in the BEV sales, but some NGOs have a strategy to improve the EV situation even more. The stakeholders are also considering the costs of the incentives versus other possible GHG reduction initiatives. The economic incentives, especially the VAT (value added tax) and road-toll exemptions, are considered the most important ones. Access to the bus lanes and reduced ferry fares are controversial. So is the VAT exemption for expensive BEVs such as Tesla. Some stakeholders emphasise the fact that BEV access to bus lanes can be denied on specific road sections if the BEVs cause severe bus delays.

The stakeholders agree that there is presently no strategy for incentive downsizing, and nobody knows what will happen to the incentives after 2017 or the number of BEVs reaches 50 000. With the present sales of BEVs, this number may be achieved in early 2015. An inquiry into motor vehicle taxation in general is announced to be presented in the revised Government budget for 2015 in May 2015. Agreeing that the present incentives are expensive and realising that a downsizing will have to come, most stakeholders emphasise that the downsizing will have to be gradual and predictable.

Plug-in hybrid electric vehicles (PHEVs) do not benefit from the BEV incentives, except for some reduction in the registration tax and free parking in public parking facilities. PHEVs have a greater potential as the only car in the family, but being costly to produce, PHEVs cannot compete in price with BEVs under the present BEV incentives. Thus, the future for PHEVs in Norway remains uncertain, although the sales have been increasing in 2014. Some reduction of the PHEV registration tax is agreed in the 2015 Government Budget. However, some stakeholders say that the incentives should be technologically neutral.

Charging at home and at work are the most important ways of charging, but charging infrastructure is still an important incentive for people living in apartment buildings without private parking facilities and for long-distance travel, and thus for BEVs as the only car in the household. Standards for charging and payment need to be developed, especially for fast charging. Being tested now, inductive charging can make charging much easier.

## **Other issues**

In general, the stakeholders are not concerned by possible increases in traffic volumes caused by the expected further increase in the sales of BEVs, but some emphasize the need to reduce transport volumes. The stakeholders expect a variety of transport modes and technologies to be applied in order to avoid further increase in fossil-fuel based vehicle transport and to reduce GHG emissions from transport. Some stakeholders point to complementary measures needed to limit the growth of transport volumes.

Many stakeholders are active in dissemination and communication. The main target groups are the authorities and the potential EV buyers. The EV buyers appear to be active in information search and sharing of EV experiences. As the EV sales grow, this “neighbour effect” is likely to become even stronger, thus having a potential to affect the EV sales even more.

EV safety is not a great concern among the stakeholders, but some stakeholders claim that EVs require a different safety thinking than do the ICE (internal combustion engine) vehicles. Some stakeholders have disseminated safety information to EV owners and to emergency personnel.

Norway can be an international EV test arena. Other countries may learn that incentives are necessary and effective for the introduction of EVs. Sufficient renewable electricity, 97% is produced in hydroelectric power plants, is an advantage for the use of EVs in Norway. High motor vehicle taxation makes possible the use of tax exemptions to stimulate the purchase and use of environmentally friendly vehicles. The affluence of the country and its population render possible the fast adoption of new technology even though a certain economic risk is implied. The cold climate in Norway contributes to longer battery duration, but limits the driving range. Long driving distances and the widespread ownership of holiday homes may be important barriers to BEVs in single-car households.

Some of the stakeholders are concerned that the industrial potential in the EV market in Norway is not realised. One stakeholder even claims that the BEV incentives can be considered a subsidy to the Japanese car industry. The early, but unsuccessful national industrial efforts in the BEV market in Norway, may be a barrier to future realisation of the industrial potential.

## **Stakeholders, users and potential buyers**

There is a good degree of agreement concerning the importance of the incentives between the stakeholders and the most important motives for buying a car among the three categories of vehicle owners. The stakeholders should perhaps be more conscious of the differences between the present BEV owners, the potential BEV owners and the ICE-car owners who do not want to buy a BEV next time, especially concerning the perceived BEV disadvantages in the latter two groups. Time needed to recharge a BEV, access to charging stations and vehicle range are the factors considered big disadvantages among the ICE-car owners. Disseminating more BEV information to those who have not yet bought a BEV, appears important to increase the percentage of BEVs in the total number of motor vehicles.

## **Discussion**

The share of EVs is still less than 2 per cent of the total number motor vehicles in Norway. Even though BEV sales in Norway are high compared to most other countries, the question of how to increase the EV share rapidly is still important. Maintaining the BEV incentives, especially the economic ones, is crucial, until mass production and further technological development have made BEVs economically competitive without economic incentives. However, mass production, further technological development and consequent lower production prices, do depend on considerable sales in larger markets than Norway. When downsizing the BEV incentives, it is important to do so in a gradual and predictable way.

Putting more efforts into the sales of BEVs to private businesses and public bodies is another possibility. Increasing the marketing efforts emphasising the low operational costs of BEV could be effective in the fleet market according to some of the stakeholders.

The PHEV sales in Norway have been quite limited. Introducing some economic incentives, like halving the VAT to 12.5 per cent compared to 25%, could stimulate the sales. New PHEV models and more PHEV brands coming into the market may also stimulate the sales. However, if PHEVs should receive so many incentives that they become considerably less expensive than ICE vehicles of the same size, there is a risk that some people will buy PHEVs for economic reasons, not bothering to charge them, i.e. running them mostly on fossil fuels. However, the lower fuel costs for electric operation would perhaps motivate PHEV owners to charge their vehicles.

## **Conclusions**

All stakeholders are aware of the political objective of reducing the GHG emissions from transport. All but one stakeholder appear to accept this objective and to try to comply with it and adapt to it. Most stakeholders consider the present incentives positive and even sufficient to continue the high sales of BEVs in Norway. The “neighbour effect” may become stronger as the number of BEVs increases, giving an extra increase in the BEV sales.

The stakeholders appear to agree that the incentives are expensive and will have to be downsized sometime in the future. Apart from asking for gradual and predictable downsizing, most stakeholders seem to think that the main incentives should be maintained until BEVs achieve competitive production prices. If BEV bus-lane access causes congestion in the bus lanes, this access can be denied in the road sections where such problems appear. The potentials of EVs in businesses and public bodies, i.e. in the fleet market, have not been fully utilised yet. Neither has the potential of using PHEVs for reduction of GHG emissions been utilised.