

Summary

Mapping the possibilities for emission regulation for taxis in the Buskerud, Telemark and Vestfold regions

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Emissions from taxis in the Buskerud, Telemark and Vestfold region can be reduced. The reasons for the fact that taxis are lagging private cars and scheduled public transport in the transition towards less environmentally harmful vehicles, including zero emission vehicles, is related to several factors. Differences compared with these other modes differences can be found in the availability of suitable vehicles, the accessibility for infrastructure related to alternative fuels; combined with requirements faced by the taxi industry, and the lack of economic incentives for making such a transition. Looking towards the period 2020-2023 this situation is likely to change. We expect the availability of suitable zero emission vehicles to increase, and with this the necessary infrastructure for these technologies. To what extent these new technologies will be used for taxis will depend in part upon the policy path chosen by the regional governments. The change in the Professional Transport Act (Yrkestransportlova) of 24 March 2017, allow the regional governments to set local environmental standards for vehicles used for taxi transport. The challenge in creating such a local regulation, is related to formulate the regulation in such a way that it promotes the use of zero or low emission vehicles without transferring traffic to other modes that are not subject to the same regulation.

Environmentally friendly taxi vehicles

In the period between 2013 and 2018 the emissions from the Norwegian local public transport sector, and for private cars, has been reduced significantly. For public transport this is mostly due to the phasing in of Euro VI diesel engines and the use of biofuels for busses. For the private car market this is mostly due to the largescale introduction of battery electric vehicles. A similar development has not occurred for taxis, with the relatively minor exceptions of hybrid vehicles (mostly Toyota Prius) and the use of Euro 6 engines. The emissions have been reduced, but not to the same extent as in the rest of the sector. An important factor in explaining this is the difference in the economic structure of the taxi industry compared to public transport and the use of private cars. Local public transport, with busses, is conducted on tendered contracts from the local public transport authorities. When these contracts are re-tendered, there is usually introduced a requirement for using new busses, complying with the most recent emission standards. The cost of this is in practice paid by the public transport authority as they purchase the service on gross contracts. The introduction of battery electric vehicles in the Norwegian market is facilitated by generous tax exemptions on taxes that are not levied on the taxi industry. As a consequence, the price difference between a conventional fueled vehicle and a battery electric vehicle for taxi use, is in favor of the conventional fueled vehicle.

The change in the professional transport act from 24 March 2018, allow the regional governments to set local emission standards for vehicles used on a taxi license. These have to take the form of maximum emission levels and will have to be uniform across the region

they are implemented in (but, this region can be a sub-segment of the region administrated by the regional governments). There is also a requirement for an implementation period lasting a minimum of four years. The main challenges facing the introduction of such a requirement today is related to both the lack of availability of suitable vehicles (many taxi contracts require four wheel drive), and there are only a few companies presently providing suitable vehicles for taxi use, these do not have the same levels of service infrastructure in-place for using these vehicles as taxis as conventional fueled vehicles have, resulting in long garage times, lack of spare parts et cetera, and in extension lower utilization rates. However, towards 2020-2023, we expect this situation to change. We also expect the charging infrastructure for battery electric vehicles to improve in the region.

Taxis and technology

For the taxi industry, it is necessary that the vehicle requirements introduced by the regional governments of Buskerud, Telemark and Vestfold are such that they allow for vehicles that are economically sound in a life time perspective. This should be interpreted to mean that the total cost, including capital, fuel, service etc. of such a vehicle is comparable to that of conventionally fueled vehicles, if the range and availability of the vehicles is similar. If the range and availability results in lower income per vehicle, this must be compensated by lowering the cost of operating the vehicles (so that the number of vehicles can be increased).

Battery electric cars, with a real range of 300 km under winter conditions, will most likely be available for use as taxis in Buskerud, Telemark and Vestfold before or during 2023. These vehicles will gradually become more competitive as taxis towards 2025.

Low emission vehicles, that are suitable for taxi use, will also most likely be better, cheaper and less environmentally harmful towards 2025. We expect that vehicles that comply with the Euro 6 regulation and have a CO₂ emission level of less than 30 grams per kilometer will be available on the market and suitable for taxi use in this period. If one assume a hydrogen optimistic scenario, hydrogen fueled vehicles can also be available, and suitable at least for some taxi use if the necessary infrastructure is made available. In the Vestfold region biogas is produced locally, and can be an acceptable alternative to low emission vehicles, if suitable vehicles become available and the cost level associated with such vehicles is competitive.

The authors of this report conclude that a requirement for the use of vehicles that have CO₂ emission levels of less than 30 grams per kilometer will be economically acceptable for the taxi industry in 2023. This requirement can be filled either by battery electric, hydrogen or low emission vehicles. In addition, biogas fuels, which will have zero CO₂ emissions according to the current climate impact accounting system can be an alternative. With such a requirement, there will be enough different vehicles available for the taxi owner to take their own purchasing decisions and find a vehicle that both comply with his or her use and the emission standard set.

The main challenge for this type of regulatory intervention in this market is related to the lack of opportunity to enforce this regulation on vehicles operating under different license categories, that at least in part compete in the same market as the taxis. In particular, the minibus industry, is in direct competition with the taxi industry on public contracts. But, if the professional transport act is further changed, in line with the signals sent by the Ministry of Transport and communication, there will probably be a larger overlap in the market between taxis and private hire vehicles (selskapsvogner) as well. This is a challenge

as the regional governments do not have the possibility to introduce the same emission standards for these license categories within the existing professional transport act.

Secondary challenges are related to the connection between a license and a physical vehicle. This is a problem, as most of the battery electric vehicles available on the market today have too little range to function as fully adequate alternatives to conventionally fueled taxis. This issue can be solved by decoupling the link between a license and a vehicle, so that the license holder can switch vehicles during a working day. Two Nissan LEAF cars are cheaper than one Tesla, and will give higher reliability. This challenge is expected to become less relevant within a few years, as more battery electric vehicles with longer ranges become available in the market.