



Method for calculating electricity consumption in electric vehicles in Norway

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Abstract:

In 2020, Norway became the first country where the sale of electric cars exceeded sale of cars powered by petrol, diesel and hybrid engines. About 54 per cent of all first-time registered cars were electric, while 30 per cent were hybrid-cars, of these two thirds chargeable hybrids. Only 13% of all first-time registered cars are powered solely by diesel or petrol, but the aim is that all new cars and car ferries are powered by electricity or hydrogen by 2025. This structural change from petrol and diesel cars to electric cars or hybrid's, is caused by economic benefits that were introduced deliberately to make it more favourable to buy and use electric cars or hybrids. The fact that Norway's electricity production mainly is based on renewables sources, has probably boosted the incentives to increase the use of electric vehicles.

In this presentation we have investigated how well the governmental incentives has worked so far, by using different methods to estimate the annual electricity consumption in these vehicles. For example, we have used data on mileages for different groups of vehicles, which is based on The Register of Vehicles and periodical vehicle controls. Here, both vehicle group and type of fuel are registered, as well as whether the hybrid cars are rechargeable or not. We are also showing which effects the stock of Norwegian-registered electric cars and hybrids has on Norway's energy consumption and greenhouse gas emissions, as well as Norway's renewable share in transport.

In 2020, the energy consumption of electric vehicles totally was estimated to be slightly above 1 TWh. This result was estimated from mileages and estimated energy consumption per km for various electric vehicles and chargeable hybrids. Passenger cars, which represent about 96% of all this consumption, had a total mileage of around 5200 million kilometres in 2020. Thus, the usage of electric vehicles made the total emission of CO₂ and NO_x considerably lower than if all these cars had been using fossil fuels.

There is clearly a connection between the governmental incentives and the great increase in the number of Norwegian electric vehicles. It is important to have good methods and source data to estimate the electricity consumption of these vehicles, as the shift to electric vehicles can help reduce greenhouse gas emissions. Some of the governmental incentives as well as Norway's methods and source data to estimate this consumption, are described in this presentation.

Keywords:

Electric vehicles; Hybrid cars; Electricity consumption; electric ferries; emissions