Report

# DNB Electric Vehicles Portfolio – Impact Assessment

**CLIENT**

DNB Bank ASA

**SUBJECT**

Portfolio of Nordic Electric Vehicles

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Multiconsult

# Report

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# 1 Introduction

On assignment from DNB, Multiconsult has assessed the impact of electric vehicles (EVs) in Norway, Denmark, Finland, and Sweden[1] on climate gas emissions. The DNB EV portfolio is primarily composed of Norwegian and Swedish vehicles. Based on the number of EV loans, Danish and Finnish vehicles constituted 12 percent of the portfolio in 2024, or 20 percent by loan balance in NOK. They are, for simplicity, considered to have an impact like Norwegian vehicles.

In this document, we briefly describe DNB's qualification criteria for Green Financing Instruments, the evidence for the criteria and the result of an analysis of the loan portfolio of DNB. For more information related to the eligibility criteria, we refer to DNB's website[2].

The eligibility criteria are formulated in line with the Climate Bonds Initiative (CBI) criteria. [1] The eligible EVs/zero tailpipe-emission vehicles in the portfolio are also automatically eligible according to the climate change mitigation criteria in the EU Taxonomy Climate Delegated Act. [2]

The bank's portfolio is assessed regarding direct emissions (Scope 1) and indirect emissions related to electric power production (Scope 2). A baseline is established as the emission of the average new vehicles introduced to the market, EVs excluded.

# 2 Electric Vehicle Eligibility Criteria

This report investigates the electric vehicle portfolio relevant under the "Zero carbon vehicles" criterion in DNB's Green Finance Framework:

- Fully electric, hydrogen or otherwise zero direct (tailpipe) CO2 emissions vehicles for the transportation of passengers or freight.

The portfolio examined includes solely electric vehicles financed by the bank, and the calculations include passenger vehicles, light- and heavy-duty vehicles. Making up low volumes in the portfolio, buses and heavy freight trucks are considered heavy-duty vehicles.

# 3 EV Policies and Regulations

This chapter summarises trends in personal mobility, EV and biofuel policies in Norway and Sweden, relevant for the subsequent Scope 1 and Scope 2 assessments.

## 3.1 Personal Mobility and the Car Fleet in Norway and Sweden

Personal mobility in Norway and Sweden is high, among the highest in Europe, with privately owned passenger vehicles making up the largest share of the passenger transportation work.

Figure 3-1 shows the nature of passenger transport in Norway and Sweden compared to other selected countries. The passenger transport in Finland is comparable to that in Sweden, while Denmark has a lower share of private car transport.

[1] In this report, the Nordic countries are Norway, Sweden, Finland and Denmark
[2] See https://www.ir.dnb.no/funding-and-rating/green-bond-framework

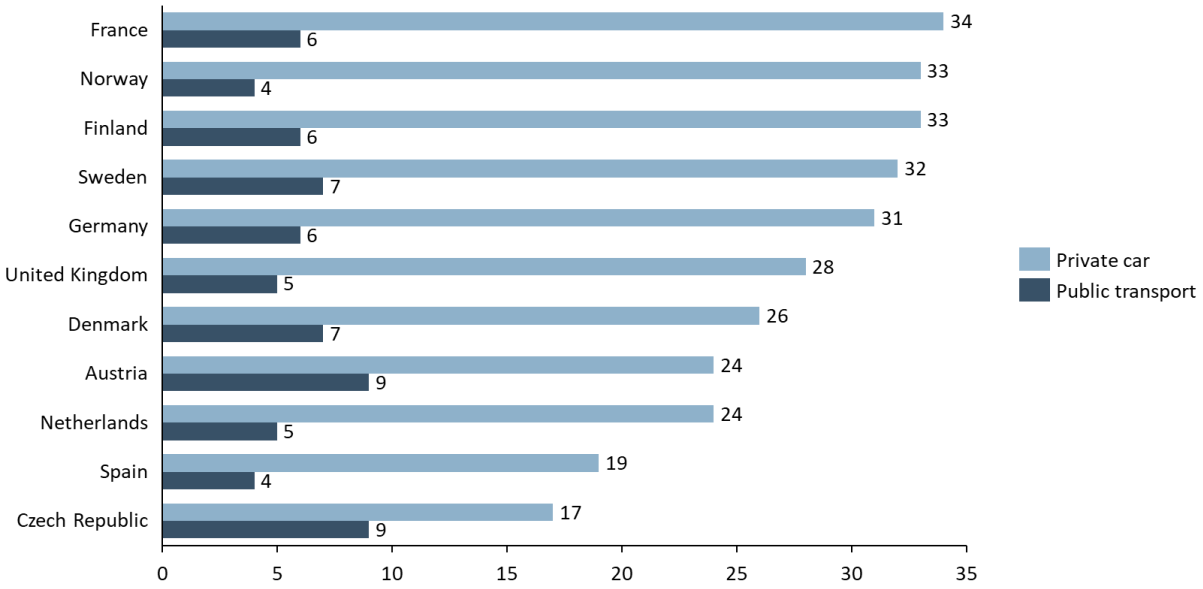


*Figure 3-1 Passenger transport in selected countries [passenger-kilometre per person per day] Source: [3]*

Historical data indicate that the average distance driven annually by passenger vehicles in Norway and Sweden has been declining since 2007 and 2008. [4, 5] During these peak years, passenger vehicles in Norway were driven an average of 14,000 km annually, while in Sweden, the average was 13,000 km. The development of distance travelled on average has, in general, been similar in Norway and Sweden, except for a higher starting point in Norway and a more rapid reduction over the years.

In 2023, the average passenger vehicle travelled about 11,300 km in both Norway and Sweden. For light-duty vehicles, the average travelled distance in both countries was 13,300 km. Heavy-duty vehicles in Norway travelled about 35,900 km. [4, 5] The expected yearly travelled distance for the vehicles in the portfolio is in this analysis estimated based on an expectation of a continuing trend of reduced yearly travelled distance, and as an average over the vehicles' lifetime.

The average age of passenger vehicles scrapped for refund in Norway in 2023 was 18 years, while in Sweden it was 17 years when statistics were last updated for 2020. [6] The average age for vans scrapped in Norway was 16 years in 2023. [7] The history of modern EVs is short, and there is yet no evidence for the lifetime of EVs being different from other vehicles. Due to uncertainties related to the expected lifetime of new vehicles sold between 2013 and 2024, the average lifetime for passenger vehicles and light-duty vehicles in this analysis are set to 18 and 16 years, respectively. These assumptions apply to both Sweden and Norway, independent of fuel type. The average lifetime for heavy-duty vehicles is estimated to be 14 years, for both Sweden and Norway, independent of fuel type. [8]

## 3.2 Electric Vehicle Policy in Norway

The Norwegian government has, over time, with different administrations, had high ambitions both regarding electric vehicles and biofuel to reduce CO2 emissions. There were 690,000 electric passenger vehicles on Norwegian roads by the end of 2023, which accounts for 24 percent of the total passenger vehicle stock. [9] The Norwegian Government's targets are that all new light-duty and passenger vehicles sold should be zero-emission from 2025, and that new heavy-duty vehicle sales should be zero-emission or biogas by 2030. [10]

The Norwegian EV policy, one of the world's most ambitious EV policies, was effectively put into motion by a series of green incentives, including tax exemption on VAT and registration tax, free fares on the many toll roads and ferries, and free parking and charging in cities.

In 2023, the Norwegian government adjusted the previous VAT exemption to only be applicable up to 500,000 NOK of the purchase price. Additionally, EV vehicles now need to pay a registration fee, to the same degree as fossil fuel vehicles. Many of the other benefits have been reduced but EVs are still currently paying up to a maximum, by law, of 70 percent of the standard tariffs for toll roads, and 50 percent of standard tariffs for parking and ferries.

### 3.3 Electric Vehicle Policy in Sweden

Sweden is experiencing growth in the EV fleet. By the end of 2023, almost 290,000 electric passenger vehicles were in traffic in Sweden, not including hybrids. That amounts to six percent of the total passenger fleet. [11] The share of electric vehicles in the passenger car portfolio has increased from two percent at the end of 2021.

The 2017 policy document "Klimapolitiska ramverket" targets a 70 percent reduction in emissions from domestic travel (except for air travel) between 2010 and 2030. [12] One of the incentives to achieve the target was a bonus system for environmentally friendly vehicles. The first bonus system was established in 2007 and lasted until January 2012. In July 2018, a new initiative called *Klimatbonus* was introduced, giving buyers of "climate-friendly vehicles" a refund, depending on the expected emissions from the vehicle. [13] The *Klimatbonus* initiative was discontinued from 2024. More than SEK 14 billion was disbursed under the scheme. [14] The current *Klimatpremie* initiative targets electric light- and heavy-duty vehicles, not passenger vehicles. Among the support schemes are premiums for companies, municipalities and regions purchasing electric trucks. [15]

### 3.4 Biofuel Policy in Norway

Norway has an ambitious biofuel policy. From 2018, legislation required all petrol retailers to sell fuel containing biofuels to road traffic. The policy has since evolved. The current government platform has an emphasis on avoiding the usage of biofuels with a high risk of increasing deforestation and strengthens the obligations to utilize second-generation biofuels in the fuels sold. [16]

In 2024, the overall quota obligation of biofuels to road traffic was 19 percent, whereof the advanced biofuel requirement was set at 12.5 percent. To incentivise the use of advanced biofuels, one litre of advanced biofuels is counted as two litres of conventional biofuel, for every litre that exceeds the 12.5 percent advanced biofuel requirement. [17] Subsequently, the overall use of advanced biofuel has increased. Biofuels made up 15 percent of fuels consumed by domestic road traffic in 2023, up from 12 percent in 2022. Due to the increased use of EVs, the total volume of fuels sold in Norway has decreased in recent years. The overall volume of biofuel has therefore been relatively stable, since the percentage of biofuels has increased. [18]

Road taxes (no; veibruksavgift) for all biofuels were introduced in 2020. The taxation of bioethanol is around 50 percent lower than that on standard gasoline. The road tax for biodiesel is similar to that for conventional diesel, with biodiesel taxes being 10 percent higher in 2024. [19] Legislation passed in 2016 mandates that biofuels and liquid biofuels must have a minimum of 50 percent lower life cycle greenhouse gas (GHG) emissions than fossil fuels. [17]

In 2023, more than 80 percent of the advanced biofuels in the Norwegian transportation sector derived from used frying oil and animal fat, mostly imported from USA and China. There were no reports of biofuels sold in Norway containing soy or palm oil in 2023, aligning with the goal to reduce the use of raw materials with a high risk for deforestation. [18]

### 3.5 Biofuel Policy in Sweden

Sweden has been working towards a 70 percent emission reduction in the transport sector by 2030 [12], and among other measures implemented legislation contributing to a high mix of biofuels in the total fuel sold. In 2023, the renewable biofuel share was 26.4 percent of the fuel mix. [20] According to the Swedish fuel regulation, all fuel retailers were obliged to reduce the emissions from fuel sold to maximum 88.5 gCO2-eq/MJ by 2020. [21] The EU Commission has approved Sweden's continuation of tax exemption for highly blended biofuels. [22]

From 2020 to 2022, the regulations requiring retailers to increase the biofuel content in their fuel mix were progressively strengthened to achieve a linear reduction in emissions from transport fuel. The requirement was 7.8 percent emission reduction for gasoline and 30.5 percent for diesel in 2022 and 2023, compared to conventional fossil fuels. [23] Following increased cost of living and fuel prices, the new government decided in 2023 to drastically reduce the requirements for 2024-2026 and temporarily removed the requirements for 2027-2030. [24, 23] Emissions from road transport were in sum unchanged from 2022 to 2023. [25]

# 4 Climate Gas Emissions (Scope 1 and 2)

Categorizing the emissions, we have chosen to use the CBI guidelines for the emission calculations. CBI's *Land Transport Background Paper* underlines the focus on tailpipe emissions because of their dominance, the need to send strong signals to vehicle purchasers, and the need to promote technologies and infrastructure that have the potential to radically shift emissions trajectories and avoid fossil fuel lock-in. [26] We do however include information on indirect emissions related to power production.

## 4.1 Emission Indicators

In this analysis we are using two relevant climate gas emission indicators for vehicles:

- Emissions per kilometre [gCO2/km]
- Emissions per passenger-kilometre [gCO2/pkm] or tonne-kilometre [gCO2/tkm]

The vehicle fleet composition and emissions from the different types of vehicles is used to calculate the emissions per kilometre.

A passenger-kilometre, abbreviated as pkm, is the unit of measurement representing the transport of one passenger over one kilometre. Passenger-kilometres are found by multiplying the number of passengers by the corresponding number of kilometres travelled.

A vehicle occupancy of 1.7 persons in passenger vehicles and 1.5 persons in a light-duty vehicle have been adopted in this analysis. [27, 28] Swedish light-duty vehicles statistics include lorries with maximum load weight of up to 3.5 tonnes, in which only the smaller vehicle segment is relevant for EV substitution. An occupancy of 1 has been estimated for Swedish light-duty vehicles [28], but we assume similar driving patterns and transport work performed by the light-duty EVs in Norway and Sweden.

For heavy-duty vehicles, a more relevant factor is the tonne-kilometre, abbreviated as tkm. This unit represents the transportation of one tonne over one kilometre. Freight in heavy-duty vehicles in both Norway and Sweden are assumed to be 10.09 tonnes per vehicle, in line with Norwegian statistics. [29]

## 4.2 Direct Emissions (Tailpipe) - Scope 1

### 4.2.1 Baseline of Fossil Fuel Combustion Vehicles and Avoided Emissions from EVs

Under scope 1 emissions, we calculate the "Direct tailpipe CO2 emissions from fossil fuels combustion" avoided [30].

The estimation of the baseline is performed through three steps:

1. Estimating the gross CO2 emissions per km (c) from the average vehicle that is being substituted by the zero-emission vehicle.
2. Multiplied by the number of km (d) the vehicle is estimated to travel.
3. Multiplied by the number (n) of vehicles substituting fossil vehicles in the portfolio.

This can be described in the following equation:

$$E_{baseline} = c_{weighted\ average} \cdot d_y \cdot n_{total} = E_{avoided} \qquad (1)$$

All EVs and fuel cell vehicles are considered eligible with zero tailpipe emissions. Therefore, for scope 1 calculations, the emissions from these vehicles are set to zero, and the baseline will amount to the total avoided emissions.

To estimate the annual emissions avoided by the eligible assets, projections are made for direct tailpipe CO2 emissions from fossil fuel combustion in the national vehicle fleets.

For the substituted fossil-fuelled vehicles, emission data are retrieved from recognized test methods and not actual registrations of emissions in a Nordic climate.

Biofuels are already to some degree mixed with fossil fuels in both Norway and Sweden. The reduced emissions due to these contributions are considered in the emission calculations from fossil fuel vehicles. As fossil fuel vehicle emissions are the baseline for EV emission calculation, the biofuels are in effect reducing the impact of the EVs.

Both Norway and Sweden aim to reduce emissions from fossil fuelled vehicles by using biofuel in the fuel sold before 2030. The marginal emission reduction possibly obtained through these political goals between 2024-2030 have been accounted for in the analysis. It is assumed that the biofuel share in the fuel mix will remain constant between 2030 and the end of the vehicles' lifetime, assumed to be in 2041, 2039 and 2037 for passenger vehicles, light-duty vehicles and heavy-duty vehicles registered in 2024, respectively.

To estimate the weighted average of emissions per fossil vehicle ($c_{weighted\ average}$) we use the average annual emission from new vehicle models from 2011-2024[3]. [31, 32] For heavy-duty vehicles, emission factors for diesel vehicles are applied. [33]

To estimate the distance travelled by the average vehicle we assume that EVs drive the average of the total vehicle portfolio for each vehicle type in each country each of the years it is used in its lifetime. Statistics of annual driven distance by electric, diesel and gasoline cars younger than 10 years builds up under this assumption. [4] Figure 4-1 shows the average yearly distance travelled by passenger cars and light-duty vehicles in Norway and Sweden.

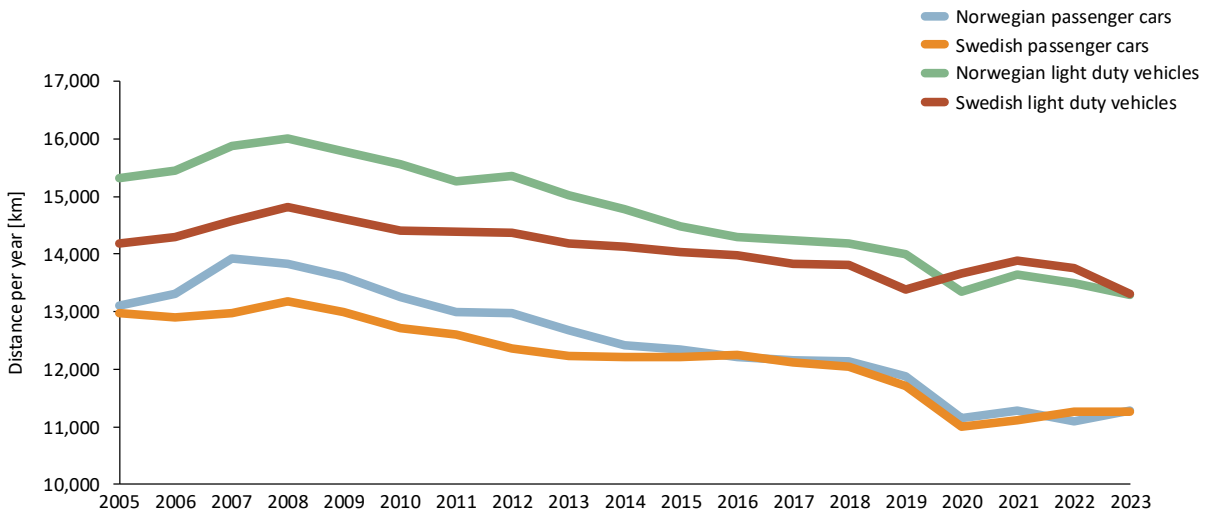


*Figure 4-1 Average travelled distance per passenger vehicles 2005-2023 [km]. Source: [4, 5]*

As Figure 4-1 shows, traffic volumes per passenger vehicle and light-duty vehicle have shown a historic decline. We use linear regression on the publicly available datasets and extrapolate until 2041. This is a conservative approach as it is likely, at some point, to see flattening. Swedish vehicles saw a slight

[3] For Sweden, 2023-numbers are the most recent available.

increase from 2022 to 2023. Traffic volumes for heavy-duty vehicles have shown a similar trend, but on a higher level, with Norwegian heavy-duty vehicles driving on average 35,900 km in 2023.

### 4.2.2 Emission Factors - Scope 1

Table 4-1 through Table 4-3 present the calculated emission factors and CO2 emissions in a year for the relevant vehicle categories. The numbers are based on calculated gross tailpipe CO2 emissions for the average vehicle produced in each of the years between 2011-2024, biofuel and fossil fuel content in petrol/diesel pumped in each year between 2024-2041, as well as the travelled annual distance for the average vehicle.

*Table 4-1 Passenger vehicles: Greenhouse gas emission factors (CO2-equivalents), average direct emissions.*

| | Direct emissions substituted fossil passenger vehicles – Average Norway[4] | Direct emissions substituted fossil passenger vehicles - Average Sweden[5] | Direct emissions EVs |
|---|---|---|---|
| Emissions per passenger-km | 57 gCO2/pkm | 57 gCO2/pkm | 0 gCO2/pkm |
| Emissions per km | 97 gCO2/km | 96 gCO2/km | 0 gCO2/km |
| Emissions per vehicle per year | 844 kgCO2/vehicle/year | 891 kgCO2/vehicle/year | 0 kgCO2/vehicle/year |

*Table 4-2 Light-duty vehicles: Greenhouse gas emission factors (CO2-eq), average direct emissions[6].*

| | Direct emissions substituted fossil light-duty vehicles – Average Norway | Direct emissions substituted fossil light-duty vehicles - Average Sweden[7] | Direct emissions EVs |
|---|---|---|---|
| Emissions per passenger-km | 133 gCO2/pkm | 123 gCO2/pkm | 0 gCO2/pkm |
| Emissions per km | 199 gCO2/km | 185 gCO2/km | 0 gCO2/km |
| Emissions per vehicle per year | 2,136 kgCO2/vehicle/year | 2,115 kgCO2/vehicle/year | 0 kgCO2/vehicle/year |

*Table 4-3 Heavy-duty vehicles: Greenhouse gas emission factors (CO2-eq), average direct emissions for Norway.*

| | Direct emissions substituted fossil heavy-duty vehicles – Average Norway | Direct emissions EVs |
|---|---|---|
| Emissions per tonne-km | 101 gCO2/tkm | 0 gCO2/tkm |
| Emissions per km | 1,021 gCO2/km | 0 gCO2/km |
| Emissions per vehicle per year | 33,409 kgCO2/vehicle/year | 0 kgCO2/vehicle/year |

[4] Increase from previous year since estimated emissions [g/km] per fossil fuel car sold in 2024 is higher than in 2023, and the 2024 number is projected forward in vehicle lifetime.
[5] Increase from previous year due to changes in Swedish biofuel policy and implementation of the policy in the analysis.
[6] The portfolio includes 91 heavy-duty vehicles for Sweden, which is included in the statistic for light-duty vehicles because the data collected from Sweden does not differentiate between heavy and light-duty vehicles in the same way as Norway.
[7] Increase from previous year due to changes in Swedish biofuel policy and implementation of the policy in the analysis.

## 4.3 Indirect Emissions (Power Consumption) - Scope 2

Under scope 2 emissions, we calculate the "Indirect emissions from electricity consumption" [30].

### 4.3.1 Electricity Production Mix

In 2023, renewables accounted for 98 percent of the total (154 TWh) Norwegian electricity production. [34] Swedish electricity production has a renewables and nuclear share of almost 92 percent of the total production (173 TWh). [35]

As shown in Figure 4-2, the Norwegian production mix in 2023 (91 percent hydropower and 9 percent wind power) resulted in emissions of 0 gCO2/kWh, as calculated by the Association of Issuing Bodies (AIB). In Sweden, the electricity production mix (40 percent hydropower, 21 percent wind and 29 percent nuclear) gave specific emissions of 6.5 gCO2/kWh. [36] In the figure, the production mix is included for other selected European states for illustration.

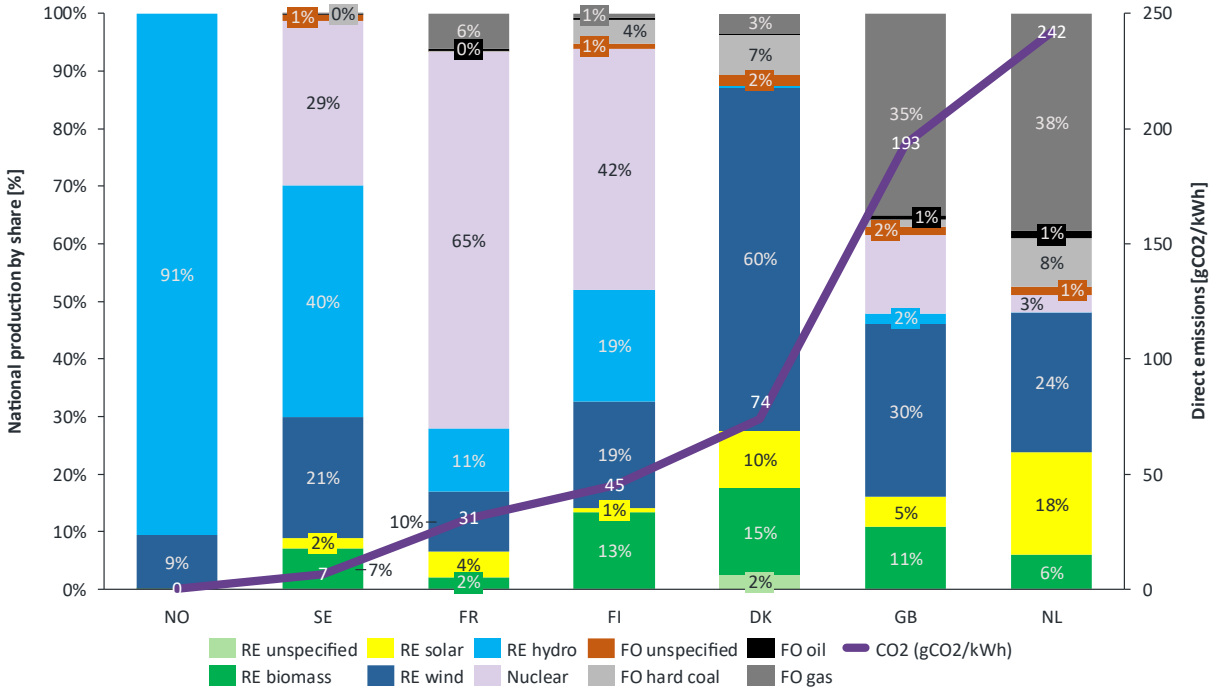


*Figure 4-2 National electricity production mix in selected European countries. Source: [36]*

### 4.3.2 CO2 Emissions Related to Electricity Demand

Power is traded internationally in an interconnected European electricity grid. For impact calculations of all power consumption, and even electrification of transportation, the regional or European production mix is more relevant than the national power production mix and is the basis for the main analysis. We have, however, also included calculations of indirect emissions from power production, setting the system boundary at national borders.

The direct emissions in power production in Europe (EU27+UK+Norway) are expected to be dramatically reduced in the coming decades. Figure 4-3 illustrates the emission trajectory used as the basis for scope 2 emission calculations for EVs. Due to urgency, the trajectory takes into consideration the 1.5 °C scenario and a substantial reduction of emissions in the power sector that will have close to zero emissions in 2050. This is in line with the EU's ambitious decarbonisation of the power sector. [37]

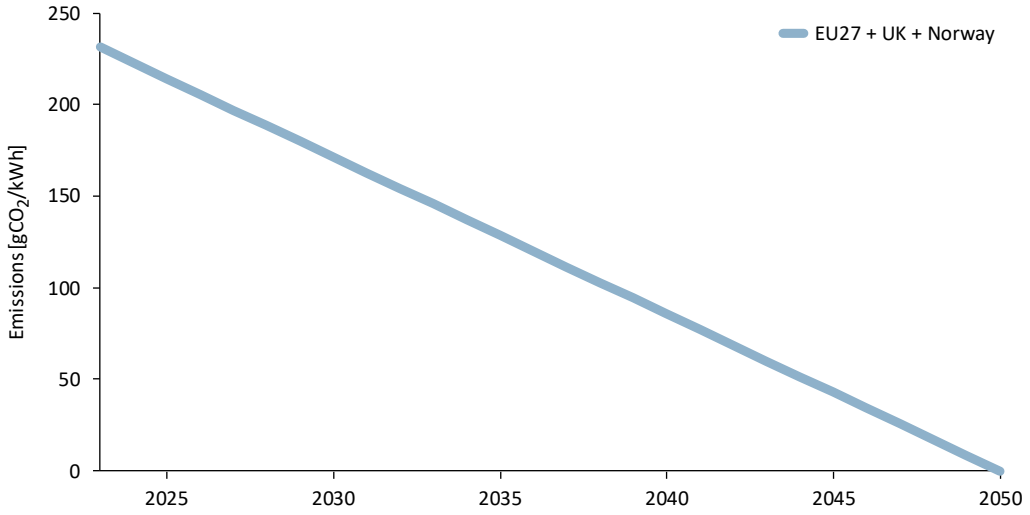


*Figure 4-3 Direct CO2 emissions in the European electricity production mix, trajectory from 2023 to a zero target in 2050. Source: Multiconsult, [36]*

The national power production mixes are also likely to change somewhat in the period. For context, Figure 4-4 similarly illustrates an assumed linear projection from 2024 to 2050 of Norwegian and Swedish electricity production mixes towards 2050.

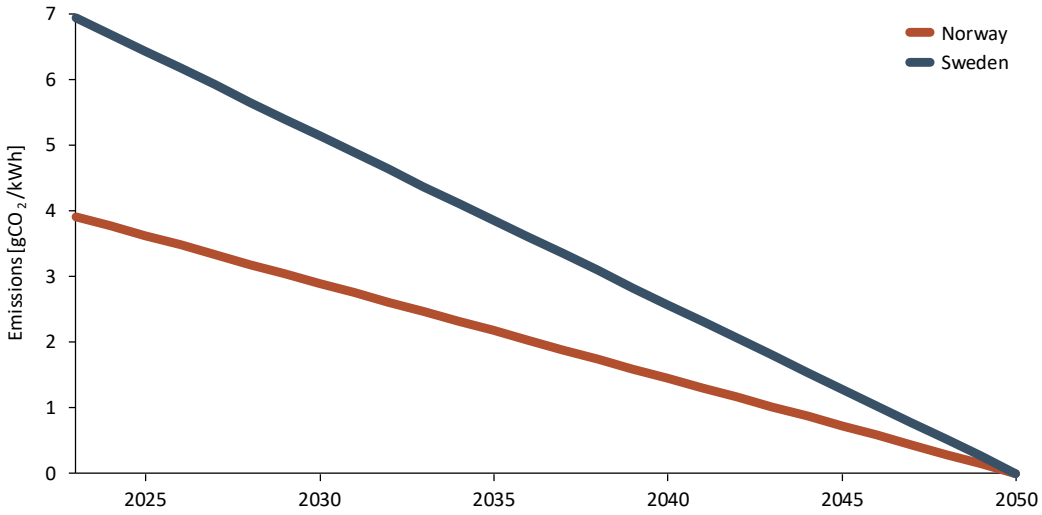


*Figure 4-4 Direct CO2 emissions in Norwegian and Swedish electricity production mix, trajectory from 2023 to a zero target in 2050. Source: Multiconsult, [36]*

The GHG emission intensity baseline for power consumption depends on system boundaries. The table below illustrates the emission factor for the European production mix as an average of the last three years with available data. This value will vary from year to year.

Finans Norge has released a guidance document for the calculation of financed greenhouse gas emissions, including recommendations for grid factors to be used. [38] To demonstrate how emissions vary depending on grid factor, and for clarity when comparing avoided emissions from the green portfolio with total portfolio calculations, two additional grid factors are included. That is the Norwegian physically delivered electricity for 2023 from the Norwegian Water Resources and Energy Directorate (NVE) [39] and the Norwegian residual mix for 2023, as calculated by the AIB [36].

The corresponding Swedish residual mix for 2023 from AIB is used for Swedish emissions. To represent current emissions from Swedish electricity production, including export/import, a factor from the

Swedish Energy Agency recommended when calculating emissions from biofuel emissions has been used. The mentioned grid factors are included in Table 4-4.

*Table 4-4 Electricity greenhouse gas factors (CO2-eq). Source: [36, 39, 40], Multiconsult*

| Scenario | Description | Emission factor [gCO2/kWh] |
|---|---|---|
| European (EU27+UK+Norway) production mix average 2021-2023 | Location-based production mix with wide system boundary of EU countries, UK, and Norway | 231 |
| Norwegian physically delivered electricity 2023 | Location-based production mix with narrow system boundary, including net export/ import only to neighbouring countries, and average annual emission factors | 15 |
| Swedish Energy Agency electricity mix | Location-based production mix with narrow system boundary, adjusted to include export/import | 26 |
| Norwegian residual mix 2023 | Market-based residual mix with a European marketplace represents electricity not covered by Guarantees of Origin | 599[8] |
| Swedish residual mix 2023 | Market-based residual mix with a European marketplace, represents electricity not covered by Guarantees of Origin | 68[8,9] |

For the average production mix, the following calculations use the emission factor as an average from a baseline in 2023 (Table 4-4) and the expected lifetime for each type of vehicle, following the trajectory of the European production mix in Figure 4-3. For instance, for passenger vehicles with an expected lifetime of 18 years, the emission factor will then be an average of the emission factor presented in Figure 4-3 in the period from 2023-2041. The projected trajectories for declining CO2 emissions related to power production for European (EU27 incl. UK and Norway), from 2023 and forward, will impact the indirect emissions and avoided emissions from the vehicle portfolio. The same method is not used to estimate the emission factor based on the other mixes.

The energy consumption of EVs is very much dependent on size and outdoor temperature. There is not sufficient available data to ensure an accurate estimation of energy consumption for the average EV. In these calculations, we are using the average for all currently available EV models in the EV Database, 0.189 kWh/km. [41] For the energy consumption of light-duty vehicles, 0.26 kWh/km is applied. [42] For heavy-duty vehicles, an average for recent EV trucks of 1.25 kWh/km has been used. [43]

### 4.3.3 Emission Factors - Scope 2

Indirect emission factors are presented in Table 4-5 in both emissions per kilometre and per passenger-kilometre/tonne-kilometre, used to calculate indirect emissions for the portfolio based on European (incl. UK and Norway) production mix. Similar factors have been computed based on the Norwegian and Swedish factors in Table 4-4 and used in the corresponding calculations of impact.

[8] Note that the individual residual mixes, as published by AIB, are based on country-specific production data, consumption data, exchange with third countries, GO tracking data and CO2 emissions per fuel type and may vary from year to year. Residual mixes were 502 gCO2/kWh for NO and 39 gCO2/kWh for SE in 2022. See [36] for calculation details.

[9] Lower than Norwegian residual mix due to larger share of electricity usage covered by Guarantees of Origin.

*Table 4-5 Annual average GHG emission factors (CO2-eq) per distance for all electric vehicles, based on **EU + UK + NO** average power production mix 2021-2023.*

| | Indirect emissions electric passenger vehicle | Indirect emissions electric light-duty vehicle | Indirect emissions electric heavy-duty vehicle |
|---|---|---|---|
| Emissions per passenger-km or tonne-km, indirect emissions from power production | 16.7 gCO2/pkm | 27.5 gCO2/pkm | 20.7 gCO2/tkm |
| Emissions per km, indirect emissions from power production | 28.3 gCO2/km | 41.2 gCO2/km | 208.9 gCO2/km |

*Table 4-6 Electricity annual average consumption emission factors per distance (CO2-eq) **fossil fuelled alternatives**.*

| | Indirect emissions fossil passenger vehicle | Indirect emissions fossil light-duty vehicle | Indirect emissions fossil heavy-duty vehicle |
|---|---|---|---|
| Emissions per passenger-km or tonne-km, indirect emissions from power production | 0 gCO2/pkm | 0 gCO2/pkm | 0 gCO2/tkm |
| Emissions per km, indirect emissions from power production | 0 gCO2/km | 0 gCO2/km | 0 gCO2/km |

Note that there are indirect emissions related to fossil fuel as well, but scope 3 emissions are not included in this analysis. Scope 3 emissions differ between fossil and electric vehicles mostly due to the batteries where there is rapid technology development.

# 5 Portfolio Analysis and Impact Assessment

## 5.1 Eligible Vehicles

The 164,789 eligible vehicles in DNB's YE-2024 portfolio are estimated to drive 1.5 billion km per year. The available data from the bank includes the current number of contracts and related portfolio volume. Table 5-1 through Table 5-3 show the number of eligible vehicles and corresponding calculated mileage for vehicles in Sweden, Norway, Denmark and Finland, and in total, respectively.

*Table 5-1 Number of eligible vehicles and estimated yearly mileage **Swedish vehicles**.*

| | No. of vehicles | Sum km/yr | Sum passenger-km/yr |
|---|---|---|---|
| Passenger vehicles | 51,385 | 476 mill. | 809 mill. |
| Light-duty vehicles | 2,336 | 27 mill. | 40 mill. |
| Sum Swedish portfolio | **53,721** | **503 mill.** | **849 mill.** |

*Table 5-2 Number of eligible vehicles and estimated yearly mileage **Norwegian** (82%)**, Danish and Finnish vehicles**.*

| | No. of vehicles | Sum km/yr | Sum passenger-km/yr or tonne-km/yr |
|---|---|---|---|
| Passenger vehicles | 105,691 | 917 mill. | 1,558 mill. |
| Light-duty vehicles | 5,138 | 55 mill. | 83 mill. |
| Heavy-duty vehicles | 239 | 8 mill. | 79 mill. |
| Sum Norwegian, Danish and Finnish portfolio | **111,068** | **980 mill.** | **1,720 mill.** |

*Table 5-3 Total number of eligible vehicles and estimated yearly mileage in total, **Nordic countries**.*

| | No. of vehicles | Sum km/yr | Sum passenger-km/yr or tonne-km/yr |
|---|---|---|---|
| Passenger vehicles | 157,076 | 1,393 mill. | 2,367 mill. |
| Light-duty vehicles | 7,474 | 82 mill. | 123 mill. |
| Heavy-duty vehicles | 239 | 8 mill | 79 mill. |
| Sum entire Nordic portfolio | **164,789** | **1,483 mill.** | **2,569 mill.** |

## 5.2 Avoided Emissions for Eligible Vehicles

Table 5-4 to Table 5-6 summarises the lower CO2 emissions compared to the baseline for the eligible assets in the portfolio in an average year in the lifetime of the vehicles in the portfolio, presented as reductions in direct emissions and indirect emissions in rounded numbers. Table 5-4 present results based on the European power production mix. Table 5-5 is based on Norwegian and Swedish electricity mixes, considering export/import and Table 5-6 on Norwegian and Swedish residual mixes for 2023. Finally, Table 5-7 shows the sum of direct and indirect avoided emissions for all grid factors mentioned in Table 4-4.

Note that the indirect emissions are only calculated for EVs and not for fossil-fuelled vehicles.

Direct emissions in the following tables are calculated by multiplying distance travelled [km] by the vehicles in the portfolio in a year from Table 5-1 through Table 5-3, by the specific emission factors [gCO2/km] in Table 4-1 to Table 4-3. Indirect emissions are calculated by multiplying the distance travelled [km] by the vehicles in the portfolio in a year by the specific emission factors [gCO2/km] in Table 4-5

and equivalents for the other emission factors in Table 4-4.

*Table 5-4 The portfolio's estimated impact on GHG emissions, indirect emissions based on the **European power production** mix 2021-2023.*

| | Avoided emissions compared to baseline – NO (incl. DK+FI) [tonnes CO2-eq/year] | Avoided emissions compared to baseline – Sweden [tonnes CO2-eq/year] | Avoided emissions sum entire Nordic portfolio [tonnes CO2-eq/year] |
|---|---|---|---|
| Direct emissions only (Scope 1) | 108,190 | 50,740 | **158,930** |
| Indirect emissions only (Scope 2, EU prod. mix) | -29,890 | -14,580 | **-44,470** |
| Sum direct and indirect | **78,300** | **36,160** | **114,460** |

*Table 5-5 The portfolio's estimated impact on GHG emissions, indirect emissions based on **Norwegian and Swedish electricity mixes,** considering export/import.*

| | Avoided emissions compared to baseline – Norway (incl. DK+FI) [tonnes CO2-eq/year] | Avoided emissions compared to baseline – Sweden [tonnes CO2-eq/year] | Avoided emissions sum entire Nordic portfolio [tonnes CO2-eq/year] |
|---|---|---|---|
| Direct emissions only (Scope 1) | 108,190 | 50,740 | **158,930** |
| Indirect emissions only (Scope 2, NO phys. del. el. 2023 and SE el. mix) | -2,960 | -2,520 | **-5,480** |
| Sum direct and indirect | **105,230** | **48,220** | **153,450** |

*Table 5-6 The portfolio's estimated impact on GHG emissions, indirect emissions based on **Norwegian and Swedish residual mixes** for 2023.*

| | Avoided emissions compared to baseline – Norway (incl. DK+FI) [tonnes CO2-eq/year] | Avoided emissions compared to baseline – Sweden [tonnes CO2-eq/year] | Avoided emissions sum entire Nordic portfolio [tonnes CO2-eq/year] |
|---|---|---|---|
| Direct emissions only (Scope 1) | 108,190 | 50,740 | **158,930** |
| Indirect emissions only (Scope 2, NO/SE residual mix) | -118,130 | -6,610 | **-124,740** |
| Sum direct and indirect | **-9,940** | **44,130** | **34,190** |

Note that the high residual mix for Norway leads to net negative NO+DK+FI avoided emissions. The same is not found for Sweden, which has a large share of nuclear energy in the electricity usage not covered by Guarantees of Origin. A residual mix calculated for the Nordic countries is 524 gCO2/kWh for 2023 [44], which in sum would give avoided emissions of 4,770 tonnes CO2-eq/year for the entire Nordic portfolio.

The reduction in Scope 1 direct emissions for the entire Nordic portfolio above corresponds to 66.5 million litres of gasoline saved per year.

In Table 5-7 below, the sums of direct and indirect avoided emissions for the whole Nordic portfolio are shown based on all indirect emission grid factors mentioned in Table 4-4. Direct emissions are the same for all mixes, only indirect emissions are dependent on the choice of electricity factor. The table enables comparison with the bank's impact reporting on other green bond asset classes and financed emissions across all assets – green and others.

*Table 5-7 Sum of direct emissions and indirect emissions (CO2-eq) for the Nordic portfolio. Based on the European average power production mix, NO/SE electricity mixes considering export/import and NO/SE residual mixes.*

| | Indirect emission factor electricity[10] [gCO2/kWh] | Avoided emissions sum entire Nordic portfolio [tonnes CO2/year] |
|---|---|---|
| Sum direct and indirect European mix 2021-2023 | 231[11] | 114,460 |
| Sum direct and indirect NO physically delivered el. 2023 and SE electricity mix | NO: 15<br>SE: 26 | 153,450 |
| Sum direct and indirect NO/SE residual mixes 2023 | NO: 599<br>SE: 68 | 34,190 |

[10] Used to calculate emissions per driven distance as shown in section 4.3.3, which is then used in emission calculation.
[11] Projected towards net zero and averaged over vehicle lifetime.

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