TURNING THE WHEELS

How SUVs Are Impacting Our Climate &
What We Can Do to Drive Sustainable Change

This report highlights the environmental, safety, and urban challenges posed by the increasing popularity of SUVs in the Netherlands. SUVs emit on average 20% more CO2 than a medium-sized car. The number of heavy cars on the road in the Netherlands is rising rapidly. Between 2019 and 2024, the number of vehicles heavier than 1,450kg increased by about 630,000, an increase of 50%. The number of vehicles in the highest weight class (over 2,450kg) rose even more sharply over the same period, by 97%. Of all cars sold in the Netherlands in 2023, 27% were SUVs.

Heavier vehicles consume more fuel, emit more CO_2, and involve higher production-related emissions, including electric vehicles due to their larger batteries. SUVs pose a higher risk to pedestrians, cyclists, and smaller cars.

To address these issues, the report proposes an SUV-specific tax based on vehicle weight under the Dutch motorrijtuigenbelasting (MRB) system. This tax would reduce the number of SUV, curb emissions, make polluters pay for environmental and social harm, and generate revenue for green initiatives, potentially raising €1 billion in the first year and reducing CO_2 emissions by 705,948 tonnes over five years.

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INTRODUCTION

Sport Utility Vehicles (SUVs) have become increasingly popular across Europe, including the Netherlands. Despite their popularity, these vehicles pose significant challenges to sustainability, safety, and urban planning. SUVs are characterised by heavier weight, larger dimensions and their elevated ground clearance compared to standard passenger cars. In the automotive market, SUVs generally encompass a range of vehicle types, including compact, midsize, and full-size SUVs, which may vary in weight and engine size.

To be able to conduct the analyses for this report, we needed to use a simplified definition. **For the purpose of this report we define SUVs as vehicles over 1450kg for petrol vehicles and 1850kg for electric vehicles.**

In the following we outline why SUVs are problematic from a climate, environmental, and safety perspective, explain the rationale behind introducing a specific tax on SUVs, and provide a brief overview of the Dutch road tax system and will present the effects of implementing an SUV tax.

WHY SUVS ARE PROBLEMATIC

ENVIRONMENTAL IMPACT

The increasing sale of SUV's is driving climate change. According to the International Energy Agency, in 2023, SUV sales reached around 20 million in advanced economies alone, surpassing a market share of 50% for the first time. Globally there were more than 360 million SUVs were on the roads ni 2023, contributing to 1 billion tonnes of CO2 emission from combustion, an increase of about 100 million tons compared to the previous year. This annual rise in emissions linked to the growing popularity of SUVs represents more than 20% of the overall increase in global energy-related CO2 emissions. In the Netherlands, SUVs made up 27% of total car sales in 2023. And between 2019 and 2024 the number of Dutch vehicles in the highest weight category (2,450kg+) increased by 68,000 (97%).

From a climate and environmental standpoint, SUVs have a disproportionate and increasingly negative impact. Their larger size and weight result in higher fuel consumption compared to smaller vehicles, leading to increased carbon dioxide (CO_2) emissions per kilometer. Research suggests every additional 100kg in weight can lead to an additional 7.5-12.5 grams of CO2 per kilometer emitted by petrol vehicles, and for electric vehicles (EVs) increased weight can lead to additional emission due to their greater use of electricity (which currently may not come from fully renewable energy generation).

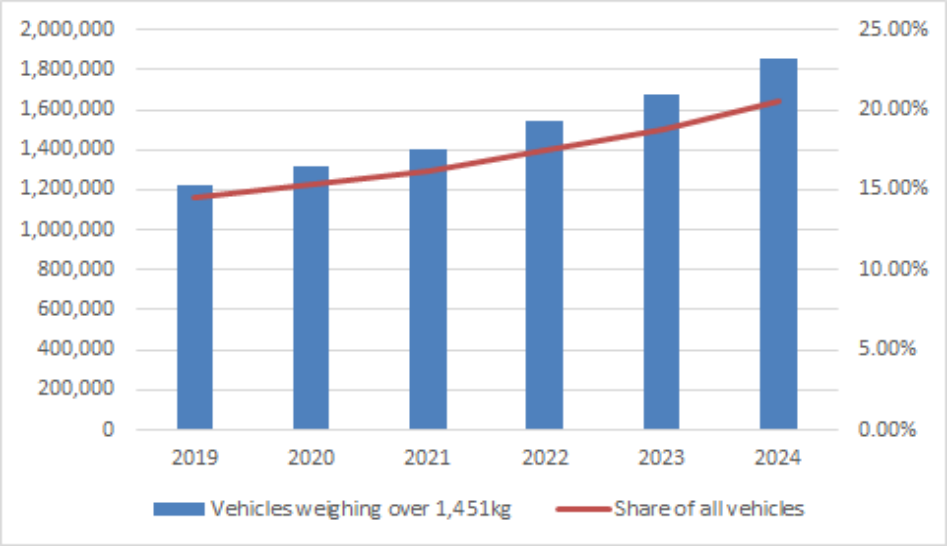

Figure 1: Market share and count of vehicles weighing over 1,450kg on the road in the Netherlands (includes all fuel types)

Beyond the higher emissions from the increased combustion of fossil fuels or electricity use of SUVs, the production of SUVs (incl. Electric Vehicle SUVs) involves the use of more raw materials, including metals, plastics, critical raw-materials and energy-intensive components such as larger batteries for electric or hybrid models. For both petrol cars and EVs the additional weight increases the emissions from the production and supply chain. The resource-intensive nature of manufacturing SUVs contributes to broader environmental degradation, including deforestation, mining, and water use. Vehicle life-cycle emissions increase relative to the vehicle curb weight and peak motor power with the heaviest electric vehicles having production and supply chain emissions over three times higher than the lightest electric vehicles.

SUVS MAKE ROADS MORE DANGEROUS

In terms of safety, SUVs present higher risk to other road users. They pose a significantly greater danger to pedestrians, cyclists, and smaller vehicle occupants in the event of collisions. A large-scale Belgian study found that in accidents involving SUVs, the risk of death for cyclists or pedestrians increases by 200%. There is also an increased risk of death for drivers of smaller, lighter vehicles that are hit by an SUV. A lighter vehicle that is hit by a vehicle that is 450kg heavier generates a 40-50% increase in fatality risk. The higher profile and weight of SUVs increase the likelihood of serious injury or death in crashes involving vulnerable road users, which is a particular concern in dense urban environments like Dutch cities, where cycling and walking are common.

URBAN PLANNING AND CONGESTION

From an urban perspective, the rise of SUVs challenges the goals of compact and efficient city design. SUVs, being larger, require more space on our roads, parking space, contribute to congestion, and make city centers less accessible for other forms of transport. They also increase the cost of road maintenance.

WHY TAXING SUVS

Given the environmental, safety, and urban challenges associated with SUVs, there is a growing rationale for targeted taxation on these vehicles. An SUV tax could serve multiple purposes.

- It would act as a financial disincentive for purchasing large, high-emission vehicles, encouraging consumers to opt for smaller, more efficient cars.
- Such a tax would internalise the external costs that SUVs impose on society, such as pollution, road wear, and increased accident risks.
- Implementing such a tax could influence car manufacturers' production strategies. With higher taxes on larger vehicles reducing consumer demand, manufacturers may be incentivised to shift production towards smaller, more eco-friendly models, which are both cheaper to produce and less harmful to the environment.
- Revenue from an SUV tax could be used to fund green infrastructure projects or subsidies for electric vehicles, aligning with broader climate goals.

DUTCH ROAD TAX

In the Netherlands, vehicle owners are required to pay a road tax known as motorrijtuigenbelasting (MRB). The MRB applies to motor vehicles used on public roads. The tax is calculated based on several factors, including the vehicle's weight, fuel type, province of registration, and emissions category. Below is a detailed breakdown of how the Dutch road tax works, including the treatment of electric vehicles (EVs).

Key Components of the Dutch Road Tax (MRB)

Vehicle Weight - A key factor in motorrijtuigenbelasting (MRB) is the vehicle's weight. Vehicles are grouped into weight categories (in 100 kg increments), with tax rates increasing as the vehicle's weight rises.

Fuel Type - The fuel type also affects MRB rates. Diesel vehicles are taxed the most due to higher air pollution, with an additional diesel surcharge to offset environmental damage. LPG vehicles are taxed at a slightly lower rate, while petrol vehicles are taxed at the lowest rate of fossil-fuel powered vehicles.

Provincial Surcharge - In addition to the base MRB, provinces apply a surcharge that varies by region. An overview of provincial surcharges can be found here.

CO_2 Emissions - The MRB also factors in CO_2 emissions. Higher-emission vehicles, especially older models, are taxed at a higher rate to encourage the adoption of cleaner, low-emission cars, supporting the Netherlands' climate goals.

SPECIAL TREATMENT FOR ELECTRIC VEHICLES (EVS)

Electric vehicles (EVs) benefit from tax incentives to promote sustainable transportation. The Dutch government offers exemptions and reductions in the motorrijtuigenbelasting (MRB) to make EVs more attractive (also hydrogen-powered vehicles, with zero emissions, also qualify for MRB exemptions). From 2025 the exemptions on electric and hydrogen-fuelled passenger cars will start to be phased out, with all discounts fully removed by 2030.

- **Full MRB Exemption for EVs:** Fully electric vehicles (BEVs) are exempt from road tax until at least 2025. This encourages the shift to zero-emission vehicles, supporting the Netherlands' goal of phasing out the sale of fossil fuel cars by 2030.

- **Plug-in Hybrid Vehicles (PHEVs):** PHEVs, which use both electric and combustion engines, receive partial MRB discounts based on emissions and weight.

UNINTENDED CONSEQUENCES OF EXEMPTING EVS FROM THE *MOTORRIJTUIGENBELASTING* (MRB)

Heavier vehicles have higher social costs. Through its weight-contingent design the MRB represents one of the primary ways in which this social cost is recharged to a vehicle owner. However, the exemption of EVs from the MRB has meant that individuals purchasing EVs were not provided with this price signal. As a result, sales of electric vehicles which might be considered SUVs, i.e. larger and heavier cars, have surged in the past five years. As of June 2024 six of the top ten most bought EVs in the Netherlands clearly had an SUV body type.

Primarily as a result of the rise in EV ownership and the lack of price incentives to minimise size and weight, the number of heavy cars on the road in the Netherlands has been rising rapidly. Between 2019 and 2024 the number of vehicles weighing over 1,450kg rose by around 630,000 (+50%).

MRB CAN AND SHOULD ACT ON SOCIAL COST OF VEHICLES

There is precedent for action via the MRB system on vehicles which have a disproportionate social cost. Diesel vehicles pay around double the annual rate paid by petrol (benzine) fuelled cars, with the highest rates paid by diesel vehicles with the worst air pollution standards. This differential has been a contributor to the rapid decline in diesel vehicle ownership in the Netherlands. Between 2019 and 2024 the number of diesel vehicles on the road declined by 500,000 (-40%).

TAXING SUVS POLICY PROPOSAL

We propose that a new tax band of the MRB is developed for vehicles with excessive weight. While the tax might colloquially be called an 'SUV tax' it would actually apply on a weight-class basis.

Petrol vehicles: This tax new band would see the annual tax rate paid by petrol vehicles increase more rapidly once a threshold weight is passed. For non-fully-electric vehicles the weight charge would begin from 1,450kg. Once vehicle weight reaches 1,850kg the tax rate paid has aligned with the rate paid on diesel vehicles.

Electric vehicles: As there is a societal imperative to continue the transition towards electric vehicles we are proposing a separate tax band schedule for fully electric vehicles to ensure that modest EVs remain competitively priced despite their higher average weight. For unnecessarily oversized/overweight electric EVs, an additional surcharge should also apply. For electric vehicles it would begin at 1,850kg. Our proposed surcharge sees the tax rate rise as weight rises using the same accelerated increment as for the new petrol vehicle charge.

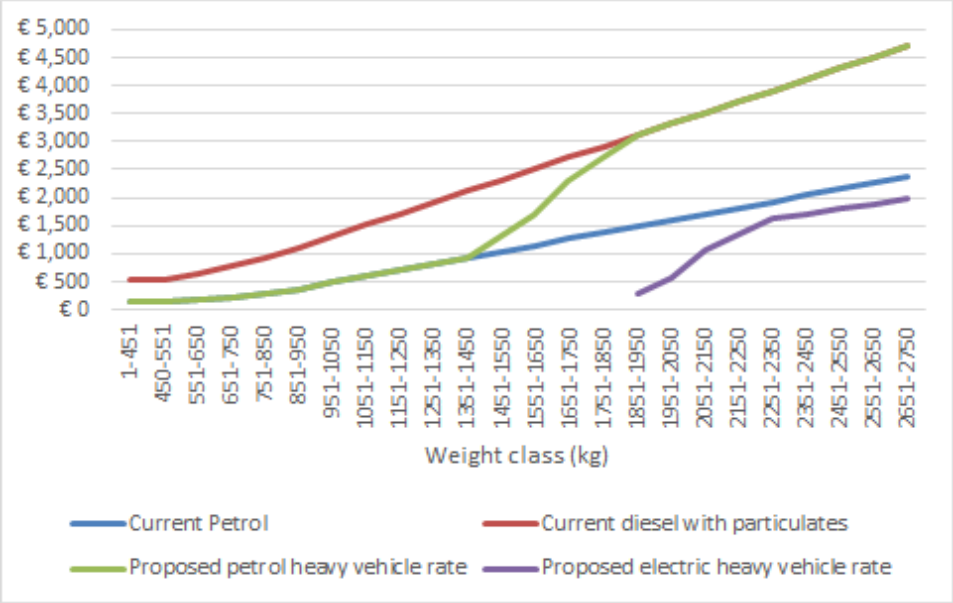

Figure 2: Proposed annual tax schedule

POLICY IMPACT

Reduce the number of SUV, curb emissions, make rich polluters pay for environmental and social harm, and generate revenue for green initiatives

BENEFITS OF REDUCING THE NUMBER OF SUVS

The increase to the MRB rate on heavy vehicles significantly increases the total cost of ownership excessively heavy cars (SUVs). As a result, households experience a significant financial incentive to shift to lower-weight vehicles and ownership rates decline rapidly from the point of policy implementation. Emissions savings accumulate annually as increasing numbers of heavy vehicles are switched for lighter models. Conversely, tax-take starts from a high of around € 1bn in year one, and declines year-on-year as the number of vehicles paying the higher MRB rate declines over time. The change in vehicle ownership and the resulting increase in tax take are shown in Table 1.

	Cumulative change in heavy vehicle count versus 2024	Additional annual tax revenue raised
Policy year 1	-109,000	€ 1,086,000,000
Policy year 2	-208,000	€ 979,000,000
Policy year 3	-298,000	€ 879,000,000
Policy year 4	-380,000	€ 789,000,000
Policy year 5	-454,000	€ 709,000,000
Five year totals	-454,000	€ 4,442,000,000

Table 1: Summary of policy impacts on the number of heavy vehicle numbers and the tax revenue raised

REDUCING CARBON EMISSIONS

Significant carbon savings arise from the improved efficiency of petrol vehicles resulting from the decline in heavy vehicles on the road (Column 1). Over five years these savings accumulate to 227,000 ton.

Additional carbon savings would also be expected to arise from the reduction in the average weight of electric vehicles sold. This saving would arise from two factors, first, a reduction in the emissions resulting from the generation of electricity used to operate the vehicles (Column 2), and second, reduction in emissions involved in the production and supply chain of heavier vehicles (Column 4).

Based on the current greenhouse gas intensity of the vehicle production and

electricity generation processes, and assuming improvements in efficiency over time, we have produced crude estimates of the implied emissions savings in the short-term. Over five years, emissions savings from EVs are estimated to amount to around 480,000 ton. This comprises primarily of supply chain emissions meaning these savings may occur within the emissions accounting of foreign nations.

	(1) Emission savings from operation of petrol vehicles (tCO2)	(2) Emission savings from operation of EVs (tCO2)	(3) Total Dutch territorial emission savings (tCO2)	(4) EV production & supply chain emissions avoided (tCO2)	(5) Total emission savings (tCO2)
Policy year 1	-17,000	-3,277	-20,277	-112,000	-132,277
Policy year 2	-33,000	-5,526	-38,526	-100,800	-139,326
Policy year 3	-47,000	-6,914	-53,914	-89,600	-143,514
Policy year 4	-59,000	-7,582	-66,582	-78,400	-144,982
Policy year 5	-71,000	-7,649	-78,649	-67,200	-145,849
Five year totals	-227,000	-30,948	-257,948	-448,000	-705,948

Table 2: Modelled policy impacts on greenhouse gas emissions in different domains

MAKING RICH POLLUTERS PAY

Heavier vehicles are overwhelmingly owned by the wealthiest households in the Netherlands. Only 3.5% among the bottom half of households (the bottom 50% of household by income) own a vehicle of weight over 1,500kg (i.e. a vehicle likely to be affected by the proposed policy). This compares with over 18% of households among the wealthiest 10%. This data also suggests that ownership of EVs is concentrated among higher income households.

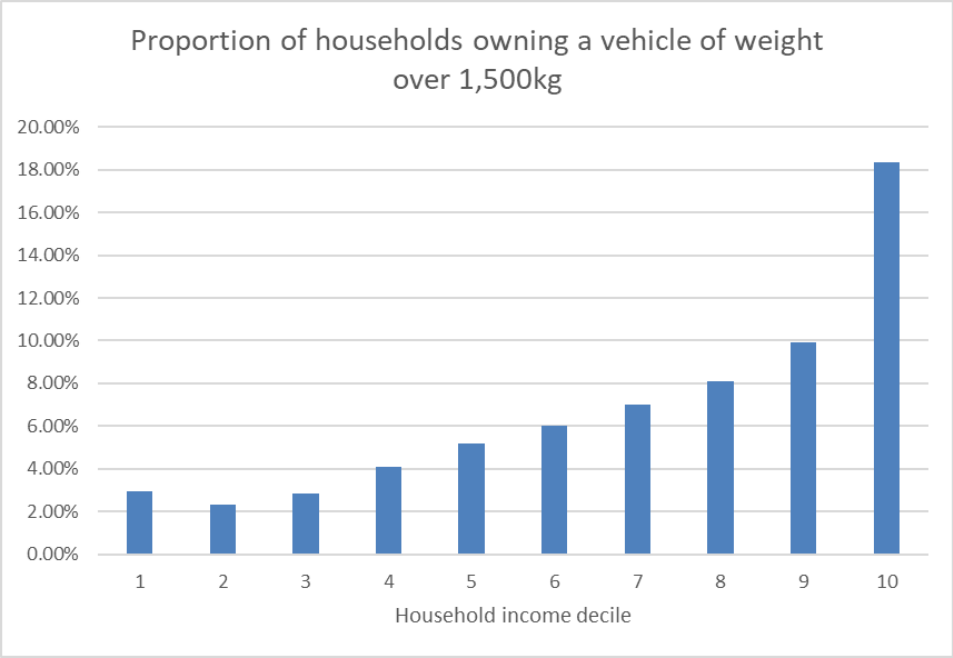

Figure 3: Share of household by income decile owning a vehicle of weight over 1,500kg (2019)

As a result of this bias in the ownership of heavy vehicles, we estimate that 32% of the emissions savings and revenue raising comes from the highest income 10% of households. And an estimated 79% of the policy impacts (revenue and emissions savings) come from households in the top 50% by income.

METHODOLOGY NOTE

Unless otherwise stated all statistics are derived from the Central Statistics Bureau in the Netherlands. The analysis presented herein is exploratory in nature and figures presented should be understood to be indicative of potential policy impacts and not precise forecasts.

An elasticity connecting the total cost of vehicle ownership with rates of replacement of heavy vehicles for lighter vehicles was developed based on secondary literature and historic evidence on the impact of the increased MRB rate for diesel vehicles. Estimates of vehicle lifecycle emissions derive from Buberger et al. (2022) and estimates of the variation in fuel consumption by weight in petrol vehicles derive from Fontaras et al. (2017) in both cases figures are adjusted for modern improvements in efficiency.

The model we have designed looks at the impact of a marginal increase in the annual road tax rate. Calculations are made independent of any future changes in road tax regimes. In future years, the exemption of EVs from road tax will be progressively withdrawn. The road tax policy changes modelled here are therefore assumed to be additional to any future increases in EV road tax rates. No assumptions are made about potential future shift to road user charging.