

# Briefing Big car, little car: the sustainability implications of growing vehicle sizes

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## Overview

The recent rise of Sports Utility Vehicles (SUVs) has been a defining feature of the car market in the UK as it has across the world.

SUVs pose environmental challenges; petrol and diesel SUVs use more energy than their smaller counterparts, keeping greenhouse gas emissions high. Battery electric SUVs create unnecessary demand for critical raw materials and generate higher emissions from the manufacturing of excessively large batteries and bigger bodywork when compared to smaller vehicles.

Cities like Washington D.C, as well as countries like Norway and France, are starting to intervene to slow the trend, introducing weight taxes on vehicle purchases.

We propose that the UK government should follow suit with a new weight tax on cars to incentivise the purchase of smaller vehicles. This should be banded to provide different weight thresholds for electric vehicles (EVs) over petrol, diesel and hybrid models, accounting for the higher average weight of an electric drivetrain.

## Cars are getting bigger

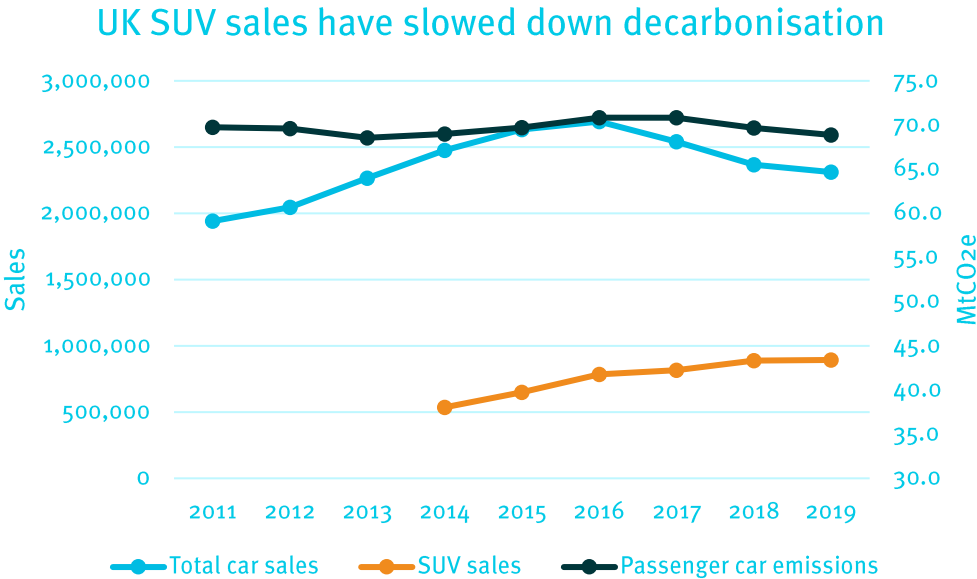
The growth in SUVs stems from regulatory changes in the US during the 1970s. Car industry lobbying resulted in SUVs being exempt from fuel efficiency regulations. This allowed manufacturers to design to lower efficiency standards, which were cheaper and increased their profits, with sales growing rapidly in the following decades. Vehicle sizes around the world have followed suit.<sup>1</sup>

Between 2014 and 2019, the UK SUV market grew from 22 per cent of new car sales up to 39 per cent. Despite the short term instability of the Covid-19 pandemic, UK SUV sales are projected to rise again in the coming years from 520,000 expected new sales in 2023 to 680,000 in 2027.<sup>2</sup>

## The environmental impact of big cars

Transport is the largest emitting sector in the UK economy. Passenger cars alone contributed 13 per cent of the UK's 2021 greenhouse gas emissions.<sup>3</sup> While emissions from other sectors have fallen in recent decades, those from cars have remained stubbornly high.

In 2019, car emissions were less than five per cent below 1990 levels, as increased drivetrain efficiency was offset by more and bigger vehicles on the road.<sup>4</sup> On average, petrol and diesel SUVs emit around a quarter more greenhouse gas emissions than medium sized vehicles.<sup>5</sup>



Globally, SUVs sales are booming, even as the wider car market struggles in the aftermath of the pandemic. If global SUV emissions were measured as a country, they would be the sixth highest in the world, equal to the emissions of the UK and Germany combined.<sup>6</sup> Between 2010 and 2018, global SUVs led to an additional 3.3 million barrels of oil demand per day from passenger cars. If this growth rate were to continue to 2040, SUV oil demand would offset the emissions savings from nearly 150 million EVs, which equals the current total number of cars in the UK, Germany, France and Spain added together.<sup>7</sup>

While electric SUVs are zero emission from the tailpipe, there are challenges associated with electrifying bigger vehicles, including the higher pressure on resources to make ever larger batteries.

Green Alliance analysis shows that, in 2035, if half of the UK's battery EV sales were SUVs, there would be around a 16 per cent increase in critical raw material (CRM) use (namely lithium, nickel and cobalt), compared to a fleet with just ten per cent SUV market share. If, however, the UK were to bear

down on battery sizes so that half of its EV sales had smaller batteries of around 30kWh capacity (approximately 25 per cent lower than the current average battery size), the UK's consumption of CRMs for EV batteries could fall by 61 per cent per year compared to the high SUV scenario.

Government commissioned research shows that, in 2020, production emissions for an EV can be up to 50 per cent greater than those from a petrol car, in large part due to the energy and materials needed to produce batteries.<sup>8</sup> While EVs quickly make up for this with significantly lower running emissions, it is still important to do as much as possible to decarbonise vehicle production. The current global warming potential of batteries is broadly in proportion to its size, so a doubling of battery capacity almost doubles a battery's cumulative global warming potential.<sup>9</sup> Continuing to prioritise larger vehicles means committing to larger batteries, reducing the decarbonisation potential of switching to EVs.

Our analysis shows that, if by 2050 the entire UK car fleet were electrified and half of those vehicles were SUVs, annual lifecycle car emissions would be 20 per cent higher than if the fleet included only ten per cent SUVs.

## **Future vehicle trends**

In 2022, SUVs made up 45 per cent of global car sales and the market is expected to grow from \$886 billion in 2022 to \$1,222 billion in 2027.<sup>10, 11</sup>

According to the International Energy Agency (IEA), around five times more SUVs are sold in advanced economies than in emerging markets.<sup>12</sup> But those markets may increase their sales of SUVs if their incomes rise in future. The IEA describes the trend towards SUVs as “universal”, noting that they are considered status symbols in China and are increasing in popularity in India.<sup>13</sup>

## **Time to move to smaller vehicles**

The IEA suggests in its Net Zero Emissions Scenario that the global trend towards SUVs should be reversed before 2030.<sup>14</sup>

The car market is already in a period of transition with the move to electric drivetrains. Over the next two decades, cars in the UK will switch from being mostly petrol and diesel fuelled to mostly electric, as new sales of pure internal combustion engine cars are to be banned from 2030 with all new car sales being fully zero emission by 2035.

During this transition, car manufacturers will be under pressure to secure CRMs for their vehicles and increase efficiencies and reduce inputs to save costs. While SUVs are a source of profit, a concerted move towards smaller vehicles and battery sizes is also a major opportunity to reduce demand for resources and cut emissions. And action on SUVs does not have to be

unpopular. YouGov polling shows that 40 per cent of people have a negative view of SUVs, almost double the proportion with a positive view.<sup>15</sup> To achieve environmental benefits, government needs to take action to reverse the trend towards larger vehicles.

## Global action on vehicle size

Increasingly, cities and countries are taking action to limit vehicle size. For example:

- In 2023, **Norway** introduced a vehicle weight tax of 12.5NOK (£0.93) per kilogram over 500kg for new vehicle sales. EV owners tend to pay between 14,000 – 20,000NOK (approximately £1,000 – £1,500) in this additional tax.<sup>16</sup> Norway continues to financially incentivise the purchase of EVs over petrol and diesel vehicles in other ways.
- **France** introduced a €10 (£8.55) car weight tax in 2022 for every kilogram above 1,800 kg, exempting electric vehicles.<sup>17</sup>
- **Paris** recently voted to increase parking fees for the heaviest and most polluting vehicles. The changes are expected to come into force in 2024.<sup>18</sup>
- In 2022, **Washington DC** introduced a tax based on a vehicle's unladen weight and fuel efficiency, with charges reaching ten per cent of the vehicle value for the heaviest and most polluting vehicles.<sup>19</sup>

SUVs tend to be more expensive to buy. The addition of a weight tax is unlikely have much impact on low income households, who either do not drive or run cheaper vehicles.

While not explicitly focused on SUVs, several cities have banned cars from large areas, including Ljubljana in Slovenia, Pontevedra in Spain and Ghent in Belgium.<sup>20,21,22</sup> Several others are taking significant action, such as Amsterdam which aims to remove 11,000 of its urban parking spaces.<sup>23</sup>

## Recommendations

The government should strategically review its approach to passenger vehicles. Previously, Green Alliance has called for clarification of the UK's approach to battery and vehicle manufacturing, transport tax reform and the introduction of a UK wide target to reduce miles driven.<sup>24, 25, 26</sup>

To encourage the uptake of smaller vehicles and reduce the environmental impacts of transport specifically, the government should:

- Consider tax reforms that account for a vehicle's weight. Any reform should include a charge set at one rate for zero emission vehicles and a higher rate for other vehicles. As such, the heaviest petrol and diesel cars

would be charged more than the heaviest EVs, but smaller versions of each would be charged proportionally less.

- Ban SUV advertising. Research shows that higher exposure to adverts is closely correlated with higher rates of SUV ownership.<sup>27</sup> Limiting advertising of SUVs would do more to tackle SUV demand than wider sustainable travel messaging.

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## Endnotes

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<sup>4</sup> Ibid

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