Accelerating Sweden's climate action in transportation

By Carolina Yang on 31 May 2023

Decarbonisation of Sweden's transport sector is core to its net zero emissions, yet current policies suggest an increase in transport emissions.

This perspective uses interactive graphs to underscore the potential of passenger cars, public transport and active mobility to reduce Sweden's transport emissions, exploring the just transition solutions focusing on the interplay between car use and other transport modes.

One third of Sweden's emissions stems in transport. Policies that take into account fairness and the vulnerable population could effectively support a just transition in meeting its net-zero goals. Photo: Maskot / Getty Images.

Sweden's journey to net zero emissions will be significantly influenced by the decarbonization of the transport sector. However, contrary to expectations, the Swedish government's own assessment suggests that current policy trajectories may lead to increased transport emissions, hindering the 2030 goals.

Globally, the transport sector is responsible for two-fifths of greenhouse gas emissions, while domestically, transport in Sweden accounts for a third of national emissions. Emissions within the sector fluctuate unevenly based on accessibility and lifestyle choices influenced by

socioeconomic contexts. Consequently, there is an urgent need to forge new pathways to address transport emissions across all societal groups. To remain on track with Sweden's target of slashing transport emissions by 70% by 2030 compared to the 2010 levels, we must galvanize society towards more sustainable modes of transport for a just transition.

Taking stock of the status quo

Sweden is a global and European leader in renewable energy within the transport sector, with a fossil fuel dependency rate of 68% in 2021, in stark contrast to the 91% global average. Despite last year's strong increase in fuel prices, transport fuel volumes remained largely unchanged, with a slight dip in Stockholm and Gothenburg due to available alternatives like public transport and cycling. Preliminary data suggests that Sweden's road transport decreased by 5% in 2022, largely due to the growth in electric cars and improved energy efficiency, despite an increase in the number of vehicles on the road (Figure 1).

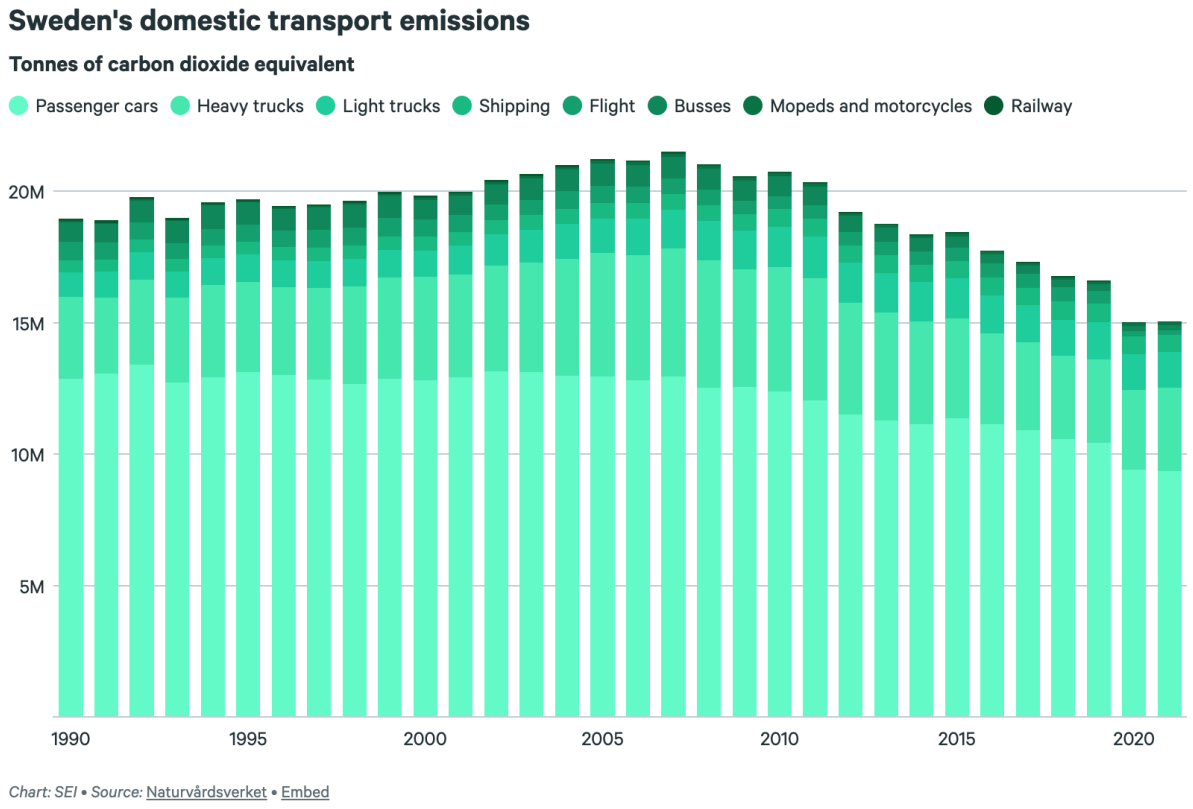

Figure 1. Sweden's domestic transport emissions in tonnes of carbon dioxide equivalent between 1990 and 2020 based on Swedish Environmental Protection Agency's data.

Sven Hunhammar, Head of Environment at the Transport Administration spoke to Radio Sweden, acknowledging that "We have still a far way to go since we have a national target for

domestic transport to decrease by 70% by 2030 compared to 2010. We have decreased by 31%, and there is still a long way to 70% by 2030,". However, a reversal of this declining trend might be looming. The current government's decision to pause the reduction mandate could lead to an increase of up to 1 million tons of emissions by 2030, spurred on by reduced taxes on diesel and petrol last March and the withdrawal of a SEK 50 000 subsidy for purchasing electric cars in November 2022. The policy shift's impact has already begun to show in the decline of electric vehicle (EV) registrations. This could potentially derail Sweden's climate goals by slowing down the electrification of transport.

The SUV quandary

Despite the drop in global passenger car sales in 2022, there has been an increase in demand for SUVs globally. One billion tonnes of carbon dioxide emissions generated from SUVs is equivalent to 20 times of Sweden's national emissions. A growth in SUV can also be observed in Sweden. Photo: Maskot / Getty Images

In recent years, sport utility vehicles (SUVs) have been marketed as essential for an outdoor lifestyle that brings people closer to nature. However, driving an SUV often inflicts more environmental harm due to its higher emissions compared to a regular passenger car. The International Energy Agency (IEA) reported in late March that despite a decrease in overall passenger car sales, the popularity of SUVs is increasing, and a simple transition to electric alternatives will not suffice.

While the decrease in global passenger car sales in 2022 is noteworthy, the demand for SUVs has seen a significant rise, now constituting nearly 46% of global car sales, up from 16% in 2010 (Figure 2). Consequently, there are now 330 million SUVs on the road, contributing to an annual production of 1 billion tonnes of carbon dioxide emissions. To put this into perspective, this amount is roughly equivalent to a third of the total emissions of the EU and 20 times that of Sweden's national emissions in 2021. This level of pollution positions SUVs as the sixth-highest emitter when compared with national emissions. Sweden itself has seen a similar rise in the popularity of SUVs. In 2022, cars weighing between 2001-3000 kg, typically the weight range for SUVs, accounted for over a quarter of all car models produced after 2020. In contrast, cars weighing between 901-1200 kg, produced after 2020, made up only a fifth of the car models made before 1999. (Figure 3).

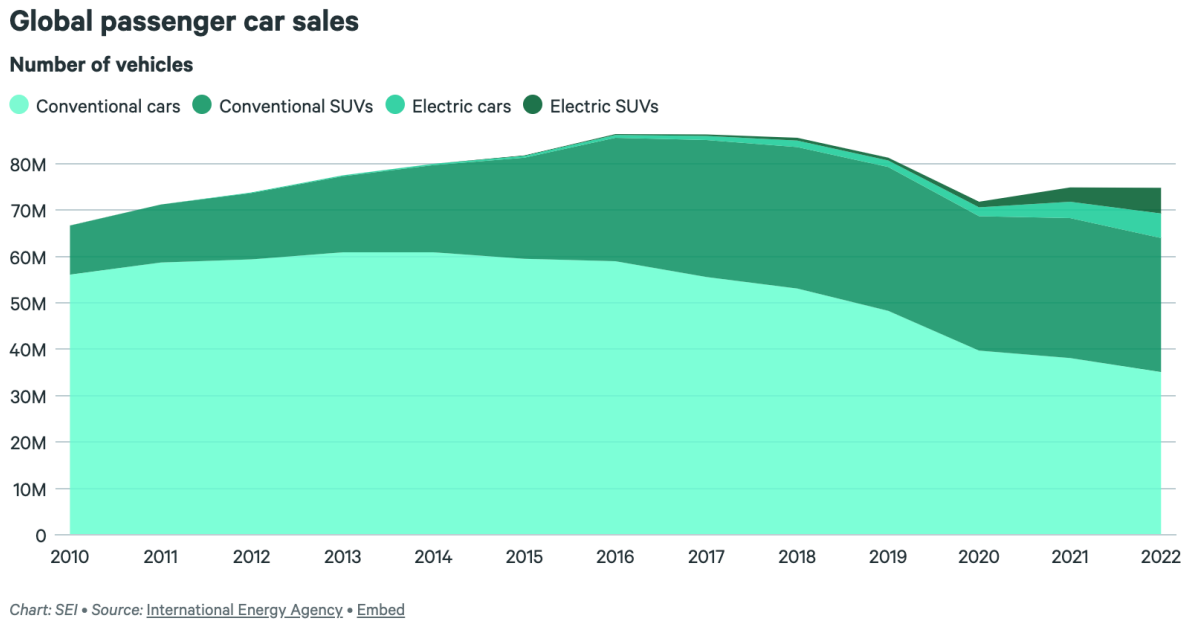

Figure 2. Breakdown of global passenger car sales by the number of vehicles from 2010 to 2022, based on International Energy Agency's data.

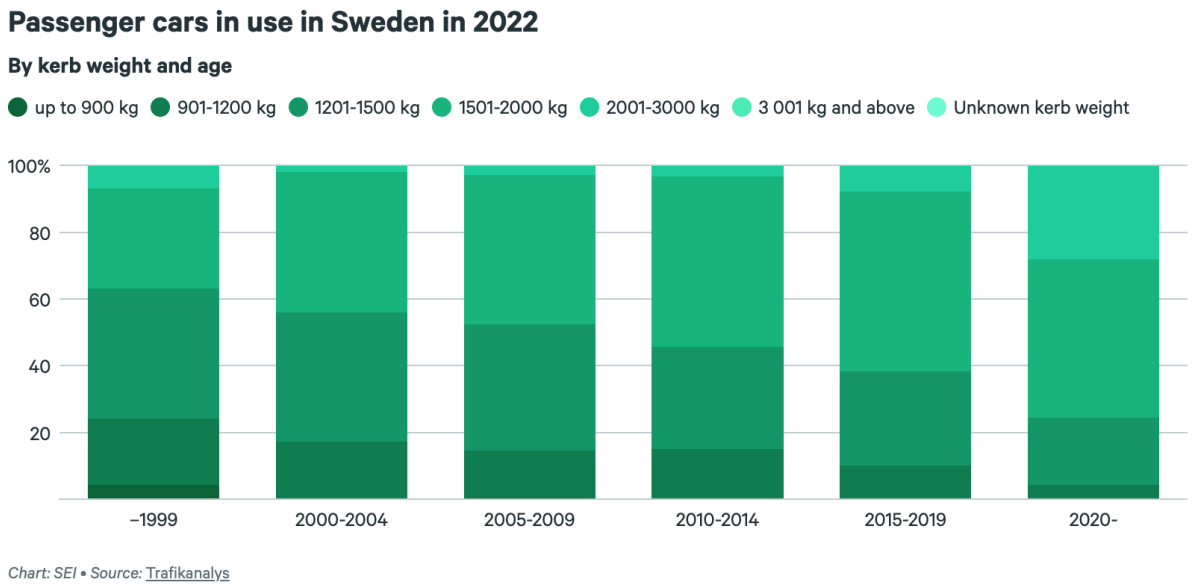

Figure 3. Overview of passenger cars in use in Sweden in 2022, categorized by kerb weight and age, based on Transport Analysis' data.

Even with the surge in popularity of electric SUVs, they only represented 16% of the total SUVs sold in 2021. As the authors of the commentary highlight, "Electric SUVs are growing in popularity, but not quickly enough to offset the increasing oil consumption and emissions of the wider fleet." Interestingly, a shift has been observed within the electric vehicle market itself – for the first time in 2022, electric SUVs accounted for more than half, or 51%, of all EV sales. Factors fueling this trend include a lifestyle marketed by the automobile industry that is focused on nature, and an increased supply-side production of SUVs. In fact, about 55% of the 400 electric car models available globally in 2022 were SUVs.

However, electrifying SUVs is not a magic solution. While some argue that SUVs' higher oil consumption could be counteracted through electrification, the production of electric vehicles requires six times the mineral inputs, such as lithium and cobalt, compared to conventional cars. Larger batteries for electric SUVs further increase the demand for these critical materials, straining supply chains. Furthermore, despite SUVs' perceived safety, studies have shown that larger, heavier cars pose a higher risk of injury and fatality to pedestrians and cyclists.

Improving access to public transport

Transport policies need to consider the just aspects for effective transition. Our study finds the average distance to public transport options for rural dwellers at a higher risk of social exclusion is more than four times than that for their urban counterparts. Photo: olaser / Getty Images.

The pandemic has redefined norms, promoting remote work opportunities while simultaneously raising health and safety concerns around public transport use. Sweden has set a target for public transport to constitute 40% of motorized journeys by 2030. However, in 2022, public transport use was only at 28%, a significant drop from 32% in pre-pandemic 2019, dipping as low as 20% in 2021 (Figure 4). In 2021, of all the major domestic journeys in Sweden, only 12% of the total number and 13% of the total distance involved public transport (Figure 5 & Figure 6). Additionally, a recent policy decision to reallocate SEK 750 million originally intended for railway maintenance to road maintenance in the 2023 state budget could further jeopardize the goal of reaching 40% public transport usage.

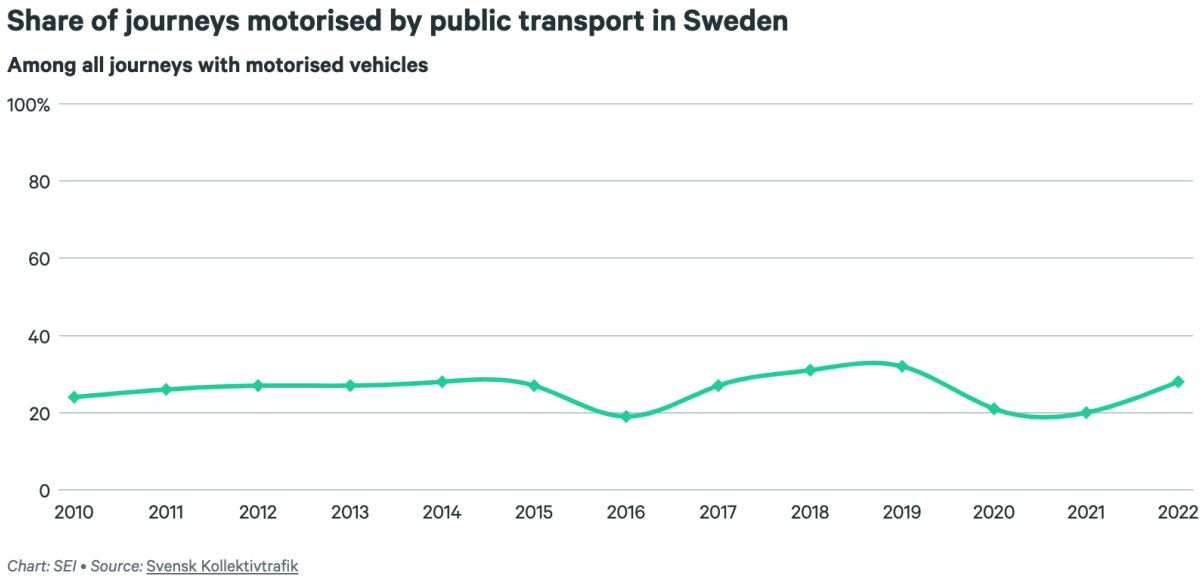

Figure 4. Proportion of motorized journeys undertaken via public transport in Sweden, expressed in percentage, from 2010 and 2022, based on Swedish Public Transport's data.

Increasing public transport adoption necessitates addressing disparities in access. Our analysis reveals that the average distance to public transport varies considerably. Urban residents typically live less than 500 meters from public transport options, while those in rural areas, who are at a higher risk of social exclusion, face more than four times this average distance.

Active mobility and its potential

Substituting one car trip with biking could reduce the emission by 67% — one of the major benefits of active mobility besides improved air quality and enhanced physical health. Photo: Maskot / Getty Images

On average, Swedes travel 11 kilometres per day for work or school, and 4 kilometres for services and shopping. Cars are used as the dominant mode of transport, making up 80% of the total distance travelled and 55% of the total number of journeys in 2021 (Figures 5 & Figure 6). Comparatively, active transport methods such as cycling and walking account for only about 32% of all journeys (Figure 6).

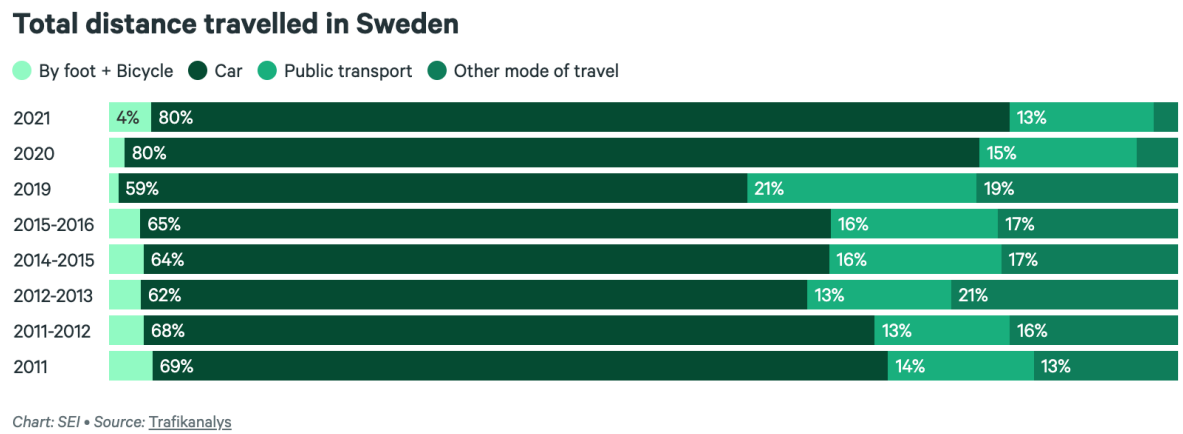

Figure 5. Breakdown of total distance travelled in Sweden by various modes of transport, in percentages, from 2011 to 2021, based on Transport Analysis' data.

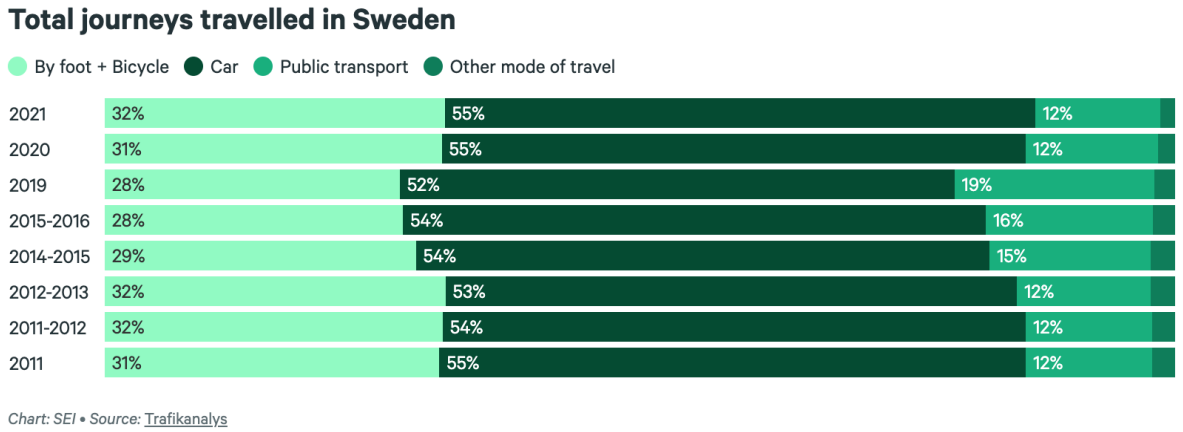

Figure 6. Breakdown of total journeys made in Sweden by various modes of transport, in percentages, from 2011 and 2021, based on Transport Analysis' data.

Switching to active mobility has multiple benefits, including a 67% decrease in emissions when replacing a car trip with cycling, improved air quality and enhanced physical health. However, the infrastructure to support active transport needs to be implemented, particularly for those most at risk.

Our study indicates that individuals living in the suburban areas tend to have higher vehicle emissions (Figure 7) due to limited access to alternative transport modes such as public transport or active mobility. Furthermore, the study identifies disparities in access to cycling lanes; compared to city dwellers, rural residents at risk of social exclusion have access to less than one-fourth the length of cycling lanes.

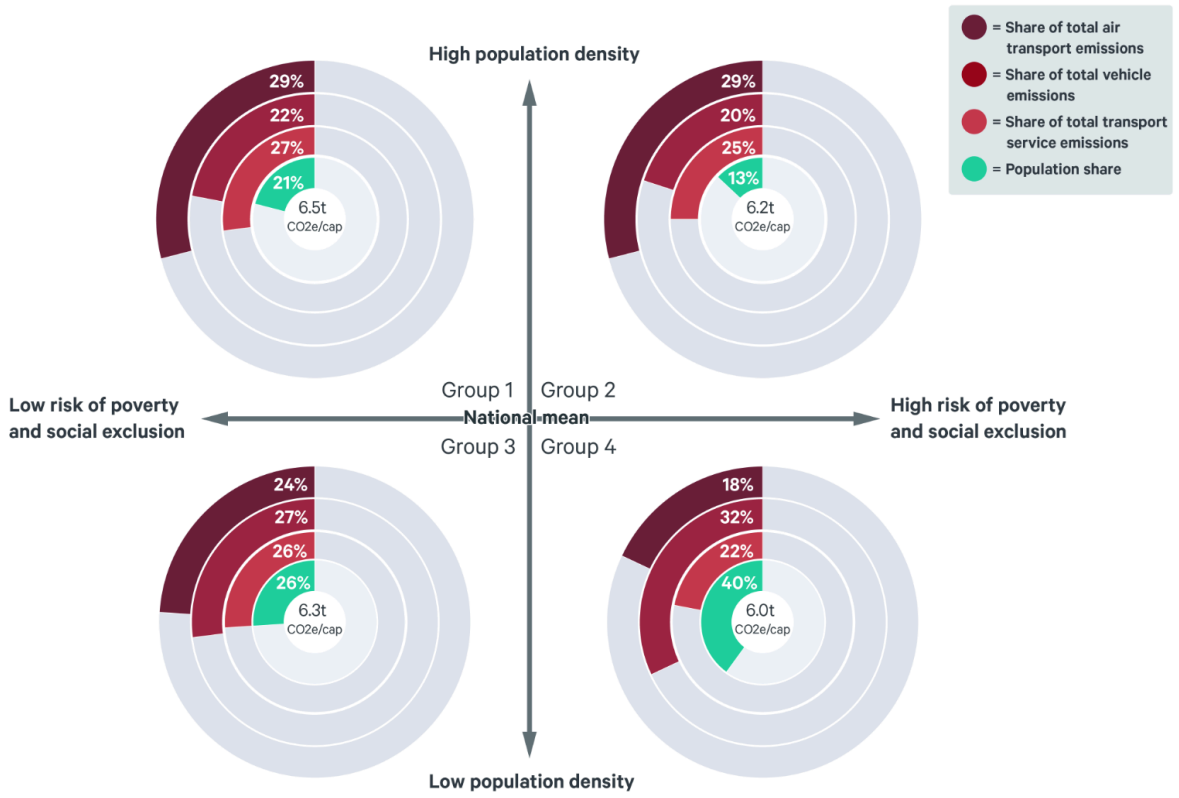

Figure 7. Distribution of transport-related emissions across population groups with differing population densities and risks of poverty and social exclusion, based on our research.

Going Forward

To successfully meet Net Zero targets, we need to reduce consumption-based emissions to 1 tonne per capita by 2050. Transport emissions, which account for 17% of Sweden's 7.6 tonnes per capita, can only be effectively reduced if we implement policies that consider social aspects.

Moreover, Sweden's strategies for reducing transport emissions need to encourage the public to adopt more sustainable mobility habits. Our study suggests that municipalities, often tasked with urban and transport planning, have a substantial role to play in creating an environment conducive to a fair transition. This can be achieved by:

1. Investing in place-based public goods and services to decrease the reliance on cars and encourage active transport methods such as walking or cycling;
2. Regional authorities increasing access to cycling lanes or public transport services, particularly for vulnerable groups, to promote low-emission travel; and

3. The national government should consider imposing a weight-based tax on SUVs, similar to what has been implemented in France, to curb the ever-increasing demand for heavy personal vehicles.

Discussion Qns:

1. *What are the impacts of transportation on sustainability?*
2. *In the article, what are some of the measures adopted by Sweden to improve sustainability of transport?*