



Myths around the transport turnaround

The promise of clean skies

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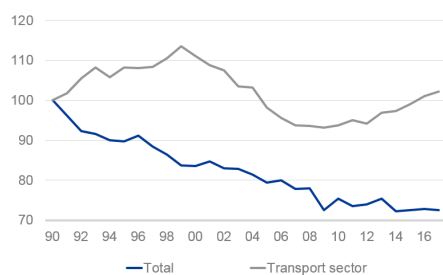
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So far, Germany's efforts to arrive at a more sustainable energy profile (the 'Energiewende') have focused on the electricity sector. However, attention is increasingly shifting towards the transport sector and its steadily rising carbon emissions. Decades-old demands, such as replacing road by railway transport, are being repeat-ed once again, even though they have been found impossible to realise. And some new concepts are being presented, such as micro e-mobility. However, their contributions to transport reform are negligible at best; they may even prove counterproductive. Ultimately, the solution is simple, if uncomfortable: long-term climate protection goals (i.e. virtual carbon neutrality) can only be reached by a considerable decline in traffic, unless technology makes significant progress. Policymakers will find it difficult to convey this message, seeing that individual mobility is one of the key concepts of a liberal society.

Transport emissions have been rising again for a few years now

Greenhouse gas emissions in Germany, CO₂-equivalent, 1990=100



Source: German Environment Agency

While German carbon emissions are trending downwards, the country will miss its climate protection goals, at least in 2020. This is partly due to higher emissions in the transport sector. While overall greenhouse gas emissions in Germany were down by almost 28% in 2017 compared to 1990, they rose by more than 2% in the transport sector. In fact, above-average growth in traffic emissions is a global phenomenon.

There are many reasons for the increase in traffic. Individual mobility is a basic human need, and people are willing to pay for it. The number of cars is steadily growing, their engines are becoming stronger, and cars are more comfortable and more efficient today. More and more people can afford to fly due to fierce competition among the airlines and technical progress. The national and international division of labour, just-in-time production and the rising importance of e-commerce cause additional freight transports. By now, politics, the economy and the media have started to realise that a transport turnaround is a key issue.

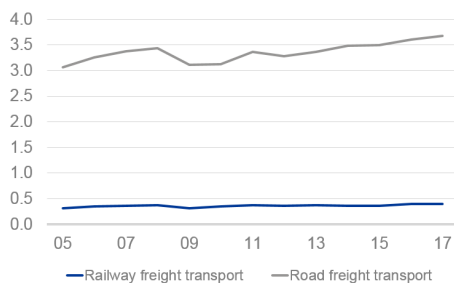
While a number of new concepts and technologies are being presented, many of them are not yet sufficiently advanced, require state subsidies or are simply impossible to implement in practice. As of now, there is no convincing solution for a thorough transport reform (yet). We will go on to debunk some myths in this article.



Myths around the transport turnaround

Railway far behind road transport

Freight traffic volume in Germany, bn tons



Source: *Verkehr in Zahlen*

Myth 1: It is possible to replace road by railway freight transport

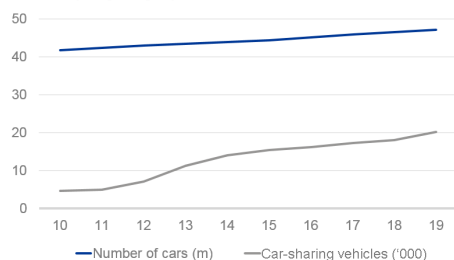
For many years now, people have called for replacing road by railway transport. However, not much has happened in this respect. In 2017, road traffic made up almost 84% of total traffic in Germany – just as it did in 2000. During this time, the share of railway transport rose by 1 pp, from 8% to 9%, at the expense of inland waterway transport. It is simply unrealistic to expect a major shift in transport flows. Just take a look at the figures: If only 10% of the current total transport volume were to be shifted from the road to railways, railway capacities would need to be increased by 90%. Germany's railway network capacities are already heavily used, which means that they cannot take much additional transport volume without major infrastructure improvements. These, however, are unlikely to happen, as financial resources are limited, policymakers have other priorities and people living near potential new railways organise resistance against such projects. In real terms, German railway network assets were only marginally higher in 2017 than in 2007. For structural reasons (numerous smaller deliveries, more individual parcels and processed goods instead of bulk goods) and due to the fact that trucks promise quicker and more flexible delivery, roads will remain the backbone of the freight transport sector.

Myth 2: E-mobility will deliver climate protection

Recently, there have been controversial discussions about the carbon footprints of electric and traditional cars. Most studies find that, across the whole value creation chain, electric cars really emit less carbon than diesel or petrol-fuelled cars. While the production (including raw materials for batteries) and recycling of electric cars cause higher emissions, emissions are lower during their lifetime, particularly if a large share of the electricity consumed comes from renewable sources. Still, the gap is smaller than e-mobility supporters in the political, economic and media arenas like to claim. The result will depend on the overall mileage, the size of the battery, the electricity mix etc. Traditional cars may be better in some cases. In any case, the carbon emissions of battery-powered cars are not equal to zero, as assumed by the EU regulation on CO₂ limits for cars. Overall, one should not be surprised if the climate-protection effects of e-mobility are smaller than expected, both on a national and on a global scale.

Number of car-sharing vehicles rising – in a niche market

Number of cars (m) and car-sharing vehicles ('000) in Germany, beginning of year



Source: *Bundesverband Carsharing e.V., Federal Motor Transport Authority*

Myth 3: Shared mobility will reduce traffic and protect the climate

Car and ride sharing are becoming increasingly popular among city dwellers. At the same time, spontaneous and comfortable e-scooter leasing opportunities are mushrooming all over the place. But will these new mobility concepts (which are doubtlessly quite attractive for customers) really help to reduce inner-city traffic and pollution? Probably not. Studies have found that car-sharing subscribers in Germany tend to own cars themselves; only 3% really give up their own car. Only 5% regard car sharing as an alternative to having their own car. Even if user numbers rose rapidly, car sharing will remain a niche market for now. In addition, people often use car sharing for a trip which they would have undertaken by public transport, by bike or on foot otherwise. Commercial ride sharing often serves as an alternative to a taxi journey. And initial studies



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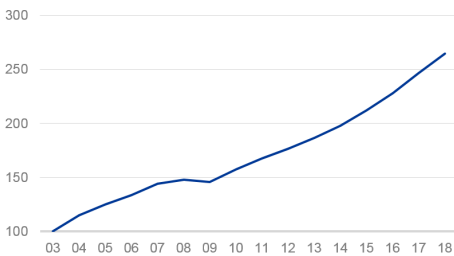
suggest that e-scooter trips rarely replace a car trip either. In most cases, users would have walked, used public transport or cycled. In addition, the production, life cycle and recycling of e-scooters raise environmental problems. While customers may enjoy the experience, the new mobility concepts actually tend to increase traffic and damage the climate if they simply replace greener alternatives.

Myth 4: Synthetic fuels may (soon) replace fossil fuels

Synthetic fuels are one of the big hopes for transport. Their supporters argue that it may be possible to produce low-carbon fuels from renewable energy sources. They hope to make fuel-powered cars even more climate-friendly than e-cars. However, there are several obstacles to the market introduction of synthetic fuels. Their production (including conversion losses) is quite energy-intensive. Driving an e-car over a given distance takes less energy than producing the synthetic fuel needed for the same distance. Moreover, producing synthetic fuels is quite expensive and will remain so for the foreseeable future. For these two reasons, synthetic fuels are unlikely to be a success on the broad market in the near future.

Air traffic continues to increase

Global air traffic volume (passenger kilometers), 2003=100



Source: IATA

Myth 5: Flight shame will reduce the number of flights

“Flight shame” is a relatively new expression. Expectations or hopes that the number of flight passengers would decline due to the climate change risks have not materialised yet. Global air traffic will continue to increase in 2019. During the past decade, passenger numbers rose by almost 7% p.a. While the number of domestic flights is stagnating in Germany, the number of flights and passengers to destinations in Europe and beyond is rising. A turnaround at the global level is not in sight either. Quite the contrary; investments in newer, bigger airports and modern aircraft are rising around the world.

What will happen next with regard to the transport turnaround?

The short answer is: either alternative driving technologies and low-carbon fuels make considerable technical progress or less traffic, or the emissions targets will be missed.

However, let us take a closer look at the situation. The transport sector will obviously need to make a contribution to climate protection. As we have outlined above, there are no simple solutions in sight. There are, of course, options for making transport more efficient and climate-friendly. Digital technologies can help to improve the overall flow of traffic. Better public transport opportunities might make people use buses, trams or trains instead of their own cars. However, this will cost money. Working from home will reduce commuting. In the area of freight transport, natural gas engines for trucks might help to reduce emissions for a transition period. Synthetic fuels may be a solution for those areas of transport where electricity is not a viable replacement for fossil fuels, for example in air transport. In marine transport, the focus will shift to low-pollution fuels and more efficient engines.



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However, based on the currently available technology and global traffic growth, the transport sector clearly cannot become (largely) climate-neutral. Due to their high energy density, fossil fuels are hard to beat right now. Meanwhile, policymakers are employing a number of instruments to reduce transport-related carbon emissions. These include fuel and vehicle taxes, CO₂ limits for cars and emissions-related or other road fees. Many countries subsidise certain technologies, such as e-mobility. As a rule, public transport also receives state subsidies.

Everything else being equal, making transport more expensive will dampen traffic growth. However, it is also true that poorer people will suffer more from such a development, which is why policymakers are thinking about redistribution. To some extent, it is another myth about the transport turnaround that it may be possible to make traffic more expensive without hitting those who need to be mobile and do not belong to high-income households. At the same time, compensation payments would reduce the steering effect of taxes. There is really no easy solution to the problem. From an economic point of view, the most efficient solution would be to use an upstream approach to integrate the transport sector into emissions trading. Doing so would take into account the fact that it is quite expensive to avoid carbon emissions from transport. Right now, such a solution does not seem to be on the cards.

Individual mobility is one of the key concepts of a liberal society. In fact, dictatorial regimes have been overthrown because they excessively limited mobility and the freedom to travel. The question is whether technological progress is quick enough to allow people and companies to satisfy their mobility needs in a more climate-friendly way than today. If it is not, there are two alternatives. Either the government intervenes to such an extent that the absolute volume of traffic declines sufficiently to reach the climate goals. This will be a difficult political endeavour. Or the government misses or changes its goals in the time-honoured way it has of doing so.

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