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# Eight billion people — how many billion cars?

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When Heather Thompson wants to explain what is often wrong with the global transport revolution, she thinks of a road she saw in Sharm al-Sheikh not far from the conference center: wide lanes and only a few cars, with a bike lane at the edge of the road. This had apparently been painted on only recently, probably because of the UN Climate Change Conference, to which the American had also traveled.

"A long stretch of open desert, no trees, no one there. It's not inviting," says Thompson, who works to promote more sustainable mobility as executive director of the Institute for Transportation & Development Policy (ITDP). "No matter how many times you tell people to ride bikes no one is going to ride bikes here." But on a street with bike parking, with a rental station and more shade, there they are more likely to.

Climate lobbyist Thompson's impressions from the Egyptian resort are unlikely to translate to other megacities around the world. But the message is universal: If you want to get people to move around in a more environmentally friendly way, simply encouraging them to do so and offering questionable infrastructure is of little use. Instead, those responsible would have to create the right conditions for it. Just as Egyptians are already doing in other places, she stresses.

Transport plays a key role in global climate protection: the sector blows almost eight billion tons of CO2 equivalents into the atmosphere every year, and apart from a small corona bend, the trend continues to point in the wrong direction, namely upward.

The gap between target and reality is widening: If the world wants to limit global warming to 1.5 degrees, vehicles should emit no more than two billion metric tons of CO2 equivalents by 2050. But traffic is not decreasing, it is increasing. If everything continues as before, experts predict that freight and passenger traffic will triple by 2050, increasing greenhouse gas emissions to over twelve billion metric tons.

So how can the world get closer to the desired goal? This will be decided not least in the developing and emerging countries. In Europe and North America, transport emissions have at least remained relatively stable in recent decades (although they should be falling dramatically).

By contrast, they have exploded in China, where CO2 emissions have increased tenfold since 1990. In India, transport emissions have also risen at a lower level, from 64 to around 300 million metric tons of CO2, although this of course has a lot to do with the sheer size of the population: Per capita emissions in India are still only 0.2 metric tons of CO2, compared with 4.7 metric tons in the U.S. If Indians were to move around in the future in the same way that Americans are doing to achieve the zero-emissions transportation of the future, things would look bad. By 2021, there would already be 1.25 billion passenger cars worldwide.

The problem affects many emerging regions. "There are challenges in transport that many emerging countries have in common: rising emissions, air pollution, congestion," says Ernst Döring, who works for the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) in India.

It's worth taking a look there to see how emerging countries are countering the threat of traffic collapse and how they want to make mobility more climate-friendly at the same time. According to transport experts, India is one of the countries where the transformation to climate-friendly mobility will be decided in the future.

**More city dwellers, more emissions**

This is because there are two main factors that determine a country's transport energy consumption: firstly, how developed the country is, and secondly, how its population develops.

In the latter respect, India will probably overtake China as early as next year, according to forecasts: India has a population of around 1.4 billion. The population is growing not only there, but also in the world as a whole. Many people are moving to cities, where they hope to find a job and better opportunities. According to the World Bank, about 70 percent of the nine billion people who will inhabit the earth in 2050 will live in cities.This urbanization is part of the global traffic problem.

These figures alone make it clear that the pedestrian- and bicycle-friendly transformation of developed cities such as Paris, Amsterdam or Berlin will not be nearly enough to solve the problem.

How people get around in cities will determine whether humanity as a whole achieves the goal of climate-neutral mobility. "That's why it's so important to make urban transport climate-friendly, because transport is the fastest-growing source of greenhouse gas emissions," says Heather Thompson. If everything stays the same in cities, if cars, gasoline and diesel continue to dominate, then urbanization would add another 26 percent to global CO2 emissions, according to calculations by the OECD's International Transport Forum.

But all the urbanites of the future will want to drive to work, to school, to their families, and who would want to deny them that? Less mobility does not seem to be a solution. So the task seems huge: to enable more mobility in developing and emerging countries while reducing energy consumption and bringing emissions down to zero.

Part of the solution, however, is public transportation in a different way than it is known in developed countries. The backbone of public transportation in many megacities are so-called bus rapid transit systems. These are rapid buses that can transport many passengers and drive past traffic jams in their own bus lanes, often separated from the rest of the traffic by construction. In this respect, they are very reminiscent of streetcars, and they also look very similar. The advantage is that they are cheaper, because no rails are needed. One of the showcase examples of this idea can be found in Jakarta, Indonesia.

India's major cities also have express trains and metros. Compared with other emerging countries, public transport there is doing well, says Rupa Nandy. She heads the India office of the International Association of Public Transport. Even those who could afford a car would often take the metro in megacities like Delhi. "Because they can't find a parking space by car, and because the metro is much faster with all the traffic jams."

But that advantage, Nandy says, is not offered by regular buses. "That's why buses remain a mode of transportation here for those who can't afford their own vehicle." Some rapid-transit bus systems have also existed in India, he says, but they have not been very successful and some have been scaled back.

**Greater prosperity, more cars**

Owning a vehicle, climate or not, remains the dream of many. And in the emerging markets, more and more can afford it for the first time.

It's something of a regularity that has already become apparent in the industrialized countries: the greater the prosperity, the more individual mobility, i.e. more cars.

An observation that Nandy confirms for India: "The car is a status symbol," she says. "If you don't have a car at a certain age, you probably can't afford one. It's hard to imagine someone belonging to the middle class, let alone the upper class, and not having a car."

The problems described follow: traffic jams and air pollution. And one can see a certain regularity in the answer to these as well. "So far, the answer has been: let's just build more roads, more lanes. But it's been proven over and over again that more roads don't solve the problem," says Heather Thompson. "Because with more roads, you just create more cars, more congestion."

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When experts talk about mobility in emerging markets, they resonate with the hope that they may learn from the mistakes of industrialized countries, that they may not go down the road to these problems in the first place. This is what scientists call "path dependency": once a path with serious consequences has been taken, it is difficult to leave it again. The Germans know this well, having long relied on the car as the main means of transport and now finding it difficult to reverse the trend.

So it's better if developing countries don't take the path to mass individual mobility in the first place. Will that work? That is still unclear, and when this demand is heard in the developed and fully motorized West, it also seems presumptuous. Either way, metropolises outside the West are also trying to push back the car, for example Mexico City or Rio de Janeiro, by limiting parking space. At the same time, the car is not losing its appeal.

**Electromobility but different**

The number of motor vehicles in India has risen consistently over the past few decades, to about 296 million in 2019. Cars still make up only a small part of that. A survey commissioned by the Ministry of Health concluded that only about eight percent of families had a car, with more than half riding bicycles, motorcycles and scooters. In countries such as India, two- and three-wheelers are the individual means of mass transport - they are more affordable than cars, and in the congested megacities they are often faster.

In developing and emerging countries, this could help reduce traffic emissions. That's because two- and three-wheelers are easier to electrify than cars, they can also be charged at home, and they don't necessarily require a public charging infrastructure.Already, the fleet is becoming more electric: "In many countries around the world, people are already switching to e-bikes and e-scooters as an alternative to cars," Thompson says. Jakarta and other cities in

Southeast Asia are seeing a huge increase in e-two-wheelers-a trend that some would like to see in Europe as well.

Experts also see electric mobility as a promising solution for rural regions in developing countries. There, paved roads are often lacking, the level of motorization is still low, and access to gasoline and diesel is poor. Here in particular, people could skip the internal combustion technology right away and switch directly to e-mobility thanks to solar power, for example, whose share of India's electricity mix is growing steadily.

In public transport, too, operators are gradually switching to electric drive. In the next few years, India plans to put 50,000 e-buses on the road. That may not sound like much, since about 13,000 buses are registered in the largest city of Mumbai alone, "but it's quite a figure," says Ernst Döring of GIZ.

The German development projects that he oversees as local coordinator also have to do with the electrification of local transport, among other things. But it is also important to talk about renewable energies, he says. "Coal is still the main power supplier in India, and that's not going to change anytime soon."

When it comes to reducing emissions in the transport sector to zero, hopes are often pinned on these technologies. But technology alone won't cut it, experts say; it will also take a different kind of mobility: less individual, less motorized.

According to Heather Thompson, it's up to the world's transport planners, city councillors and mayors - the people who set the conditions - to make the difference. Ultimately, they can also ensure that there is not so much traffic in the first place, especially in the megacities of the emerging markets: "It's also a matter of these cities being able to accommodate their residents centrally instead of growing further and further into the countryside."

The newcomers in particular, the low-income people, are the ones who live on the outskirts of cities and have to commute maybe 50 kilometers into the city every day, he said. "The best solution is to create affordable housing in the center of cities rather than in the outskirts," Thompson says.

Short commutes, public transportation and fuel-efficient electric vehicles-these solutions to ever-growing transportation emissions are also available in emerging markets like India. But whether they catch on depends largely on whether they can hold their own against the allure of the private car.