



# Future of Transportation

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## Abstract

What will the transport of the future look like? If we think about it, several pictures from science fantasy and Hollywood films appear in our minds. The ideas like flying taxis, uncrewed cars, and flights to other planets are some, but what fantastic ideas may become a reality?

Over the next three decades technological improvements will radically transform the way we are transported today. More people will be living in urban areas, demanding clean energy. Electric vehicles using clean energy for charging will be widespread; we will be driving on smart highways and road systems. Hyperloops and high-speed trains will provide viable alternatives to the current airplane flights. For intercontinental travel we will see the development of point-to-point suborbital flights.

## Interviewees

Asanga Abeyagoonasekera

Maurizio Bussi

Soulaima Gourani

Tristan Lecomte

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**Image 1** Future of transportation. Original photo: Herrengasse Graz, Austria. Illustrated by: Astghik Kyurumyan, used with permission

Bob MacMahon  
Serj Tankian  
Mark Turrell  
Arnaud Ventura  
Alexis Von Hoensbroech

“If we can drive down the cost of transportation in space, we can do great things.”—  
Elon Musk

What will the transport of the future look like? If we think about it, several pictures from science fantasy and Hollywood films appear in our minds. The ideas like flying taxis, uncrewed cars, and flights to other planets are some, but what fantastic ideas may become a reality? In addition to our expert predictions, I suggest looking into the nearest future transport through research laboratories and services currently working on market innovation and testing new models. We consider patterns of development transport spheres, learn about the latest achievements of science and technology, look into our experts’ predictions, and then predict what to expect from the future and how portable and transportable the future humans will be. Is there a significant change? Let us see (Image 1).

At first, I thought of the security of future transportation: clash flying cars with an owner-reactive knapsack—it looks like we once will have business with such

accidents. We are talking about future travel, travel in the city, between cities, countries and continents, and even planets and galaxies and transporting cargo.

Before the climatic Summit in Glasgow, the IEA published a road map, “Net Zero by 2050,” which contains radical methods to progress carbon neutrality worldwide. For example, experts advise entirely against gasoline-powered cars by 2035. But the most natural alternative is electric cars (IEA, 2022). In the last 35,000 years, humanity had at least 20 vehicle revolutions, including the invention of ropes, bridges, wheels, etc. Total digitalization brings the technological displacement of people and goods to a new coil history, on which individual transport and engine’s internal combustion may stay in the past. World sales of cars in 2020 fell by 14.8% to 77.7 million pieces, based on data from LMC Automotive (SGL Carbon, 2020). Care about ecology and digital breakthroughs in sharing economics (collaborative economy consumption using Internet platforms) forced many consumers to question whether they generally want to own a car. We passed the peak popularity of owning a car and driving now less. There is also a significant difference in habits between millennials and baby boomers, between different generations. The youth more often refuse to possess a car.

Private transport is becoming more public; we see the rise of phenomena like CarSharing, drive buddies, and, last but not least, Uber. We see vehicles, not more as goods but as services. New mobility and transport in future cities include not only such phenomena as carsharing or carpooling (services for trips with fellow travelers like BlaBlaCar) but also digital platforms that allow passengers to find the optimal route using all possible species of urban transport and use them with a single ticket. Some regions already have implemented that kind of ticket for most public transportation (see Graz, Styria, Austria). In the coming years, per synergy with the technology of autonomous transport funds, public transport may completely oust personal.

At the beginning of 2022, the number of carsharing users in big metropolises of Europe exceeded 3.4 million people, and it is expected to rise to 19.7 million by 2027 (Statista, 2022).

Micromobility is also a future-prone movement: movement at a small distance using compact transport means (unicycle, segway, electric scooter, bicycle, or e-bike). Also, this is one of the fast-growing development trends in city transport networks. Investment in this sector since 2015 exceeded \$5.2 billion, comparable to the total volume investment in telematics and intelligent systems to regulate traffic, as calculated by McKinsey (McKinsey 2019/2020) (Möller et al. 2019).

Kick-sharing also supports micromobility: scooter and bike rentals serve residents and tourists in major cities to get to necessary locations inside cities, bypassing plugs. According to McKinsey, about 60% of automotive trips on all transportation means in the world is on distances less than 8 km, and many people could save time and money instead of cars, choosing to rent bicycles or scooters (McKinsey 2019/2020) (Möller et al. 2019). Dense urban development and shortage of places for parking make usage of own transport irrational: time spent on searching parking places starts to exceed the time of travel. In addition, mini electric transport measures are more environmentally friendly: per 1 kWh of energy, petrol automobiles may drive 1.3 km; electric automobiles, approximately 6.6 km; and

electric scooters, around 133 km. According to forecasts by 2030, market-rolled micromobility transport funds in China, the EU, and the USA will reach a minimum of \$300 billion up to \$500 billion.

Transport generates approximately 15.9% of the world's emissions of greenhouse gases, and the lion share accounts for cars (11.9%), calculated by the World Resources Institute. Aviation and maritime transportation generate 1.9% and 1.7%, respectively, of the world emission volume (WRI, 2021). There is global agreement on seeking alternative and more eco-friendly kinds of fuel: like an alternative to gasoline and diesel—electricity or solar energy. The carbon track of electric cars, even taking into account all stages of production and CO<sub>2</sub> emissions, is 19–69% lower than motorized vehicles of internal combustion, according to the International Council on Clean Transportation (ICCT) (Biker, 2021). Buyers of electric cars are captivated not only by the thought of taking care of nature but also the potential related savings.

In 2004 the agency of advanced developments of the US Department of Defense (DARPA, 2014) announced the first competition for autonomous cars. Cars must drive a 230-kilometer track without the intervention of people, but they had no winner that year. The first winner was honored only in 2005. Since developing microelectronics, technologies like computer vision and artificial intelligence have allowed developers of autopilots to make colossal breakthroughs and send unmanned transport on roads. Unmanned cars and trucks, robot taxis, courier robots, and delivery drones are already a reality—their development was supported by technological giants (Apple, Google, etc), automakers (Tesla, VW, Audi, BMW, etc.), banks, and even Uber.

This development is also proper for delivery robots and transport drones. By the forecasts of BCG, in 2025, about 600,000 drone devices will be produced in the world, and by 2035 their volume will increase to 21.1 million. By 2035 more than a third of machines produced will be autonomous, considers BCG (Amoukteh et al., 2017).

Artificial intelligence, machine learning, and big data analytics will make future transport smarter: these technologies will lead to fundamental changes in the transport sector. By leaning on virtual tools and analytics, cities will be able to optimize transport flows and logistical companies—routes of delivery. Political regulation will favorably affect sales of electric cars. By 2030 US President Joe Biden intends to equalize the number of electric vehicles and vehicles with the internal combustion engine. Norway has more ambitious plans to stop the sale of petrol and diesel cars as early as 2025. For this, electric vehicles are promoted through generous political and fiscal preferences: e.g., exemptions from VAT, registration fees, and free parking. Sales growth contributes to including innovation and the development of novel technologies in transportation.

The distribution of electric cars will only help reach complete carbon neutrality once their charging does not use electricity generated from coal, oil, and natural gas, in connection with this expected increase in shares of renewable sources, including energy from the sun and wind, up to 80% by 2050 (see chapter “Future of Energy”).

Some startups develop electric car solar elements that generate electricity for trips on distances up to 70 km after a day spent in the sun.

Cities in the future will become more comfortable for cyclists. Cars on roads will meet less often—especially in large cities. Madrid, Copenhagen, and Hamburg apply political pressure to become maximum green capitals, car-free and smart cities. In addition, automotive trails will become superfast between cities if more electric vehicles are included. The roads will change, too, in parallel to transport and will provide inhabited points of energy. Public transport in the future will go on renewable resources that are unusual. Authorities in London have already started transferring urban buses on biofuel, which is partially made from coffee shop thick. Coffee waste will be collected from factories, bars, coffee shops, and restaurants in the city and then sent to processing. New fuel reduces the number of harmful emissions by 10–15% (Stilwell, 2022). Lack of coffee waste is not expected—the population of London annually produces 200 thousand tons of coffee waste. Urban buses in the future will become green not only in terms of fuel sources but also in a direct sense—on rooftops, public transport will be gardens with living plants. Such change can improve the ecological situation in the cities and lead to reduction of harmful emissions in the air.

In the cities, those who want to use neither public buses as convenient means of transport, nor bicycles, in the future flying taxis will be available. Uber already promised to run flying taxis in 2025 with small light-engine aircraft equipped with an electric engine. The company plans to introduce quiet airplanes in large cities. Also, passenger drones will be able to transport people, sure in the beginning, with some restrictions in weight, maximum speed, distance, and time in the air. Trains will speed up, posing a robust competition to aircrafts. Vacuum trains will be two times faster than aircraft. Hyperloop already showed trains and passenger cabins, passed the first tests, and clocked trains up to 310 kilometers per hour on a test tube way in Nevada. And, of course, future trains will only ride on energy from renewable sources.

Aircraft is the most customary modern travelers' choice of transport, although it is not the most eco-friendly due to enormous CO<sub>2</sub> emissions. However, in the near future, aircrafts flying on biofuel will fulfill the first step towards reduced ecological footprint (Johnson, 2021). An example is the flight between the USA and Australia using biofuels produced from unique varieties of mustard seeds (Gohd, 2018). By data, these decrease emissions of carbon dioxide gas per flight by 18 tons compared to using ordinary kerosene. Another option is the airplane on solar batteries. Such aircraft called Solar Impulse 2 already completed the first ever flight on solar batteries through the Atlantic Ocean. The way of car or aircraft production will also change. We will be able to print our transport measures on a 3D printer.

Inter- and intragalactic flights will become possible only with technological change into renewable solar energy and will be in the near future. Nevertheless, I hope to see more exceptional transportation methods like “warp engine” or “beam” technology (Abrams, 2009).

Emerging technologies will continue to evolve and change. But there are customer trends in ways that are hard to predict. With novel technology, which has become an integral part of transport planning, we must be intelligent and innovative. The future plan is for a wide variety of options, each with its opportunities and challenges. Through a series of technological developments, we will be able to change transport providers' mobility capabilities. This includes:

- Navigation with technological support
- International public transport for diverse customers
- More service possibilities with connected and automated system vehicles
- New dedicated devices for short journeys
- The use of drones to support future transport missions
- Transport using alternative fuels

In conclusion, over the next three decades, these technological improvements will radically transform the way we are transported today. More people will be living in urban areas, demanding clean energy. Electric vehicles using clean energy for charging will be widespread; we will be driving on smart highways and road systems. Hyperloops and high-speed trains will provide viable alternatives to the current airplane flights. For intercontinental travel we will see the development of point-to-point suborbital flights (e.g., New York to Sydney in 30 minutes). In order to arrive there, the currently aging infrastructure (including roads, bridges, highways) will require a significant upgrade around the world, keeping future sustainability and cost-efficiency in mind. We may see super tall buildings emerging, with their sky-bar offering a unique viewpoint at mind-bending heights of 10 kilometers (height of Mount Everest) or even up to 30 kilometers. This will be possible with the development of superstrong carbon-based materials. On the very top of these magnificent constructs, we may see spaceports, offering a more cost-effective way to launch spacecrafts. We may not be able to say "beam me up Scotty" just yet, but we could very well be able to ask our autonomous elevator "bring me up" to the top of this giant high-rise building to savor a special Star Trek cocktail before sunrise.

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## 1 Input from Interviewees

**Asanga Abeyagoonasekera**

**Foreign policy specialist; founding director general of the Institute of National Security Studies Sri Lanka**

Electric cars and alternative energy sources will have big breakthroughs, in the next 30 years.

**Maurizio Bussi****UN diplomat and director at the International Labour Organization**

Superfast transportation, shot as a bullet from London to New York. Some generations ago it was a boat, now a plane, bringing down travel time from 3 weeks to 6 hours—shortening it to 10 minutes will not be such a radical shift.

**Soulaima Gourani****Entrepreneur, author, and keynote speaker; CEO and co-founder of Happioh**

We will drive electric cars and own driverless automobiles. We will not experience traffic accidents anymore. Robots will control the traffic, and cars will be able to run faster, closer together, and safer.

**Tristan Lecomte****Chief executive officer, Pur Projet**

Decarbonated life for 12 billion people? You won't be able to travel unless you are allowed by your state. If half of the population starts traveling, there would be hell. So the value will not be in moving around, but staying in your space, with your family, and close to your home.

Travel will be more regulated, and from home everything will be possible, including work; get whatever you want; services will be better organized to cater for this new reality.

**Bob Macmahon****International affairs journalist; managing editor, Foreign Affairs Magazine, Council on Foreign Relations**

Shortening radically the time travel would be nice to have in the future.

**Serj Tankian****Singer of System of a Down**

Although carbon-neutral travel will likely be implemented in the future, most communications will be done in likely a holographic type of environment. This technology is already being used by Cisco systems for business in its earlier stages and was originally developed by a company named Musion in London.

**Mark Tankian****Strategist, educator, and entrepreneur; founder and CEO of Orasci**

Future is pointing towards space. We want to go up! It will drive technology and thinking. We will be on another planet in 50 years (would be great if that be outside of our galaxy with us on the spaceship, as regenerated 90-year-olds looking young, as today).

### Arnaud Ventura

#### Financial inclusion specialist; co-founder and vice president of Positive Planet Group

Many big inventions will redefine the world in the next 50 centuries, but the leading ones I would like to mention will be in the field of travel both on the planet and in space, in the field of communication as one will be able to communicate with anyone on the planet whatever their language is as well as in the field of energy. Those innovations will help the world to become an even smaller place than it is today allowing most citizen to move and communicate freely with one other.

### Alexis Von Hoensbroech

#### CEO Westjet Airlines

Transportation needs to become sustainable: In 2050 we will fly across the globe with zero carbon footprint. New technologies and sustainable aviation fuels will allow us to discover the world without polluting the planet. Airlines connect people, cultures, and economies. They play a vital role in spreading wealth around the globe, foster friendship between different cultures, and facilitate the economies in their home countries. Aviation will further grow across the globe and we will be able to fly without worrying about our CO<sub>2</sub> emission.

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## References

- Abrams, J. J. (2009). *Star Trek*. Paramount Pictures.
- Amoukته, A., Janda, J., & Vincent, J. (2017). *Drones go to work*. PDF file. [https://web-assets.bcg.com/img-src/BCG-Drones-Go-to-Work-Apr-2017\\_tcm9-151218.pdf](https://web-assets.bcg.com/img-src/BCG-Drones-Go-to-Work-Apr-2017_tcm9-151218.pdf)
- Bieker, G. (2021). A Global Comparison of the life-cycle greenhouse gas emissions of combustion engine and electric passenger cars. *ICCT*, July 20.
- DARPA. (2014). *The DARPA grand challenge: Ten years later*. Accessed January 13, 2023, from <https://www.darpa.mil/news-events/2014-03-13>
- Gohd, C. (2018). The world's first US-to-Australia biofuel flight was powered by Mustard seeds. *Futurism*. Accessed January 13, 2023, from <https://futurism.com/mustard-seed-biofuel-us-australia-flight>
- IEA. (2022). *Net zero by 2050: A roadmap for the global energy sector*. PDF File. [https://iea.blob.core.windows.net/assets/deebef5d-0c34-4539-9d0c-10b13d840027/NetZeroBy2050-ARoadmapfortheGlobalEnergySector\\_CORR.pdf](https://iea.blob.core.windows.net/assets/deebef5d-0c34-4539-9d0c-10b13d840027/NetZeroBy2050-ARoadmapfortheGlobalEnergySector_CORR.pdf)
- Johnson, E. M. (2021). Boeing says its fleet will be able to fly on 100% biofuel by 2030. *Reuters*, January 22.
- Möller, T., Pahdi, A., & Tschiesner, A. (2019). *The future of mobility is at our doorstep*. McKinsey & Company. Accessed January 13, 2023, from <https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/the-future-of-mobility-is-at-our-doorstep>
- SGL Carbon. (2020). *Annual Report 2020*. PDF File. [https://www.annualreports.com/HostedData/AnnualReportArchive/s/sgl-carbon\\_2020.pdf](https://www.annualreports.com/HostedData/AnnualReportArchive/s/sgl-carbon_2020.pdf).
- Statista. (2022). *Car-sharing – Europe*. Accessed January 13, 2023, from <https://www.statista.com/outlook/mmo/shared-mobility/shared-rides/car-sharing/europe>
- Stilwell, B. (2022). Coffee grounds are being used to reduce emission from London buses. *COFFEE OR DIE Magazine*, June 4.
- World Resources Institute. (2021). *World greenhouse gas emissions: 2018*. Accessed January 13, 2023, from <https://www.wri.org/data/world-greenhouse-gas-emissions-2018>



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