

FORUM: Youth Assembly

QUESTION OF: The Implementation of Alternative Means of Transportation in Cities

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INTRODUCTION

Climate change is a term that has been used very often in the past years, but is transportation one of its main causes? The answer is yes, and in reality, it is the third most polluting human sector, amounting to 16.2%¹ of global Greenhouse Gas (GHG) emissions. Vehicles are polluting the environment due to their engines, which by processing fossil fuels emit GHGs such as carbon dioxide (CO₂) which are very harmful to the environment. Thankfully, nowadays, seeing as technology has developed substantially, there are many ways in which we can stop the increase of GHG emissions, and one of them is the implementation of alternative means of transportation. Some alternative means of transportation include buses and subways, which are designed not only to transport many people at once, but to also emit fewer pollutants, something necessary when addressing climate change. Other means of alternative transportation are bicycles and walking, which do not use any fossil fuels and also provide many benefits to our health. In addition to that, another alternative means of transport which does not require the use of fossil fuels is Electric Vehicles (EVs). Arguably, there are many misconceptions around EVs and their GHG emissions, and the truth is that EVs are not completely emission-free, but are substantially more eco-friendly in comparison to normal means of transport. More precisely, "According to EEA report on electric vehicles², GHG emissions of electric vehicles were about 17-30% lower than the emissions of petrol and diesel cars."³

¹ Ritchie, Hannah. "Sector by Sector: Where Do Global Greenhouse Gas Emissions Come From?" Our World in Data, 18 Sept. 2020, ourworldindata.org/ghg-emissions-by-sector .

² European Environment Agency. "Electric Vehicles from Life Cycle and Circular Economy Perspectives - TERM 2018." European Environment Agency, 22 Nov. 2018, www.eea.europa.eu/publications/electric-vehicles-from-life-cycle .

³"Electric Vehicles." [www.eea.europa.eu, www.eea.europa.eu/en/topics/in-depth/electric-vehicles#:~:text=According%20to%20EEA%20report%20on](https://www.eea.europa.eu/en/topics/in-depth/electric-vehicles#:~:text=According%20to%20EEA%20report%20on) .

This topic, namely, “ The Implementation of Alternative Means of Transportation in Cities” is directly linked to this year’s Conference theme, which is “Ethos vs Progress: Reassessing our Values in a Fragile World”. More specifically, a significant amount of progress is required should we wish to achieve sustainability and create liveable cities, however that cannot happen without respecting and minding the ethicality of our actions based on our moral values.

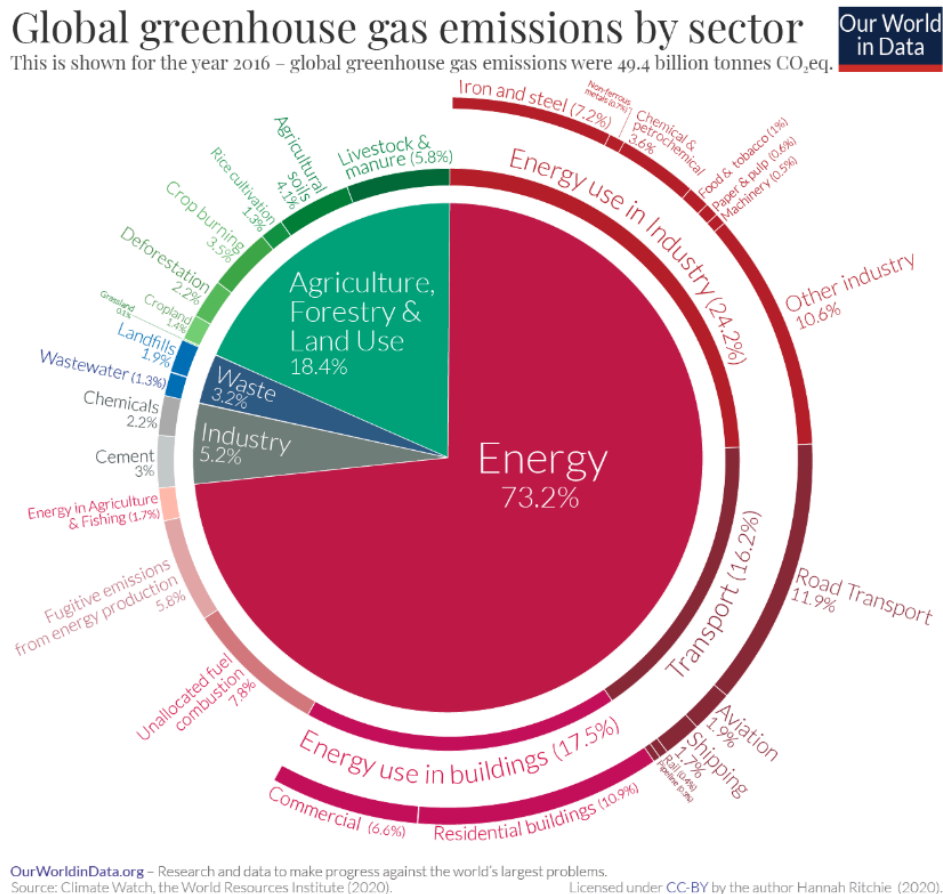


Figure 1: Chart depicting Global Greenhouse Gas emissions by Sector in 2016.⁴

DEFINITION OF KEY TERMS

Alternative Means of Transportation

Alternative means of transportation are any mode of transportation other than the traditional use of the personal car. Alternative means of transportation can be walking,

⁴ “Global Greenhouse Gas Emissions by Sector.” *Our World in Data*, 2020, ourworldindata.org/ghg-emissions-by-sector.

bicycling, public transport, carpooling as well as electric vehicles. They are often more sustainable, environmentally friendly, economical and efficient than the traditionally preferred vehicle.⁵

Public Transport

“A system of vehicles such as buses and trains that operate at regular times on fixed routes and are used by the public”⁶

Greenhouse Gas

The term Greenhouse gas encompasses “any gas that has the property of absorbing infrared radiation emitted from Earth’s surface and reradiating it back to Earth’s surface, thus contributing to the greenhouse effect.”⁷ Some Greenhouse gasses are carbon dioxide (CO₂), methane, and water vapor.

Electric Vehicle

“A type of vehicle that runs on electricity, usually one that does not use any other source of power”⁸

Fossil Fuels

“Fossil fuel is a generic term for non-renewable energy sources”.⁹ Fossil fuels may be coal, gas, and oil, and their use contributes to greenhouse gas emissions.

Sustainability

“Meeting the needs of the present without compromising the ability of future generations to meet their own needs.”¹⁰

Civil Aviation

⁵“Alternative Transportation Definition.” Law Insider, www.lawinsider.com/dictionary/alternative-transportation .

⁶ “PUBLIC TRANSPORT | Meaning in the Cambridge English Dictionary.” Dictionary.cambridge.org, dictionary.cambridge.org/dictionary/english/public-transport .

⁷ Mann, Michael E. “Greenhouse Gas | Definition, Emissions, & Greenhouse Effect.” Encyclopædia Britannica, 19 Mar. 2019, www.britannica.com/science/greenhouse-gas .

⁸ Cambridge Dictionary. “Electric Vehicle.” @CambridgeWords, 31 May 2023, dictionary.cambridge.org/dictionary/english/electric-vehicle .

⁹ Eurostat. “Glossary:Fossil Fuel.” Ec.europa.eu, 9 Sept. 2019, ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Fossil_fuel .

¹⁰ United Nations. “Sustainability.” United Nations, 1987, www.un.org/en/academic-impact/sustainability .

“The business of transporting passengers and goods by aircraft, rather than the use of aircraft for military purposes”¹¹

BACKGROUND INFORMATION

The History of Transportation ¹²

Transportation nowadays plays an important role in our society, as it has been implemented in our everyday life to cover many distances easily. Nevertheless, its usage can be traced many years ago; throughout human history, the development of transportation can be seen to revolutionize and continuously grow.

Historically, the first signs of the usage of other transportation modes other than walking, which was the most common way to transport, were about in 4000 BC., when people started using animals like horses and camels to cover long distances for the transportation of goods and to move from one place to another. For almost 5 centuries, the usage of animals as a means of transport had posed many challenges, as their never-ending employment had led to their exhaustion and them being injured, due to the poor quality of the existing road network. This situation clearly indicated that animals were not a sustainable and reliable means of transport. A few decades later, another important landmark invention altered land transportation. More precisely, the fixed wheels which were placed on carts to make the trade of goods easier revolutionized once and for all the transportation sector. The first wheels were created by three wooden carved planks, which were puzzled with transverse struts¹³. By 3500 BC., chariots had been invented, which combined the use of animals and wheels. Chariots not only benefited passengers as they were able to carry items, but also facilitated the trade of goods. Nevertheless, despite the seeming success of the chariot, the issue of the tiredness of animals had not been tackled yet, and therefore continued to pose a practical problem.

¹¹ “Civil Aviation | Meaning of Civil Aviation in Longman Dictionary of Contemporary English | LDOCE.” Ldoceonline.com, 2023, www.ldoceonline.com/dictionary/civil-aviation#:~:text=From%20Longman%20Business%20Dictionary%20%CB%8Ccivil

¹² “History of Transportation: Introduction, Types, Evolution.” Collegedunia, 31 Jan. 2022, collegedunia.com/exams/history-of-transportation-physics-articleid-3905 .

¹³ The Editors of Encyclopaedia Britannica. “Wheel.” Encyclopædia Britannica, 2019, www.britannica.com/technology/wheel .

At around the same period, the harnessing of boats marked the birth of waterborne transport. Over time, transportation continued to develop and become a more and more indispensable part of people's lives while constantly adapting to the ever-changing needs of humans. 1662 was a year that marked the beginning of public transportation in Paris with the creation of horse-drawn public coaches. Horse-drawn public coaches are similar to chariots, but the difference is that they also combine public transport. More precisely, instead of using a chariot which has very limited space, the coaches that were created could fit far more people. A few years later, in the 18th century, one of the most significant inventions on this aspect were made, as in 1783 the first hot-air balloon came up. It is considered to be one of the most important inventions, as it happened to be the opening of a new sector, which was civil aviation. A few years later in 1814, the steam-powered train was invented; consequently, land transport also changed greatly with long distances being covered more quickly. Not long after that, in 1816, came the primitive bicycle, giving people an inexpensive and attainable form of personal transportation.

A few years later, another great invention is made which permanently alters the transportation sector once and for all: the first automobile is created in 1885 by Carl Benz¹⁴. The automobile marked the dawn of a new era in transportation, more precisely that of independent transit. Since the creation of the automobile, transportation has become more accessible than ever, as everyone has the ability to go anywhere at any time. This way individuals progressively got their own vehicles while the road network began to flood with various four, three and two-wheelers. Following the invention of the automobile, another period of significant development in the transportation domain was the 20th century, when there were multiple great inventions in transportation methods, particularly in civil aviation. For instance, the first motor-driven airplane (1904) and airship (1900) opened up a new era in aviation that revolutionized global movement of people and goods.

Taking all of the above into consideration, it is obvious that transportation has not ceased to develop. Humans, inspired by their ever-changing needs, have always found an alternative, more optimal way to transport. Nowadays, climate change combined with people's need for public transport has directed the industry towards creating more sustainable and environmentally friendly ways to transport.

¹⁴ Mercedes-Benz Group. "Benz Patent Motor Car: The First Automobile (1885–1886)." Mercedes-Benz Group, group.mercedes-benz.com/company/tradition/company-history/1885-1886.html#:~:text=On%20January%2029%2C%201886%2C%20Carl .

Importance of Alternative Means of Transport

To transport constitutes an indispensable daily endeavor as people use either their cars or alternative means of transport to cover their everyday distances and go on about their daily tasks. These alternative means of transportation may be public transport, carpooling and ridesharing. That being said, it is logical to wonder; Since all different modes of transport (alternative or not) serve the same purpose; traveling, why is the use of alternative means of transport particularly important? As a matter of fact, there are multiple reasons why someone may opt for an alternative way to transport, ranging from financial and practical conveniences to environmental concerns.

It goes without saying that using an alternative way to transport from one place to another poses multiple benefits for its users. Firstly, as far as public transport is concerned, all passengers have the opportunity to profit from its services with comfortability and ease, as vehicles such as buses, trams, and trains are accessible to everyone¹⁵. This means that all people, regardless of their age, color, race, sex, and mobility difficulties, should be able to use public transport. Additionally, multiple alternative forms of transportation constitute a more economical option compared to cars and other conventional vehicles. More specifically, public transport tickets are affordable which can be of great help to people that are not financially independent, especially college students, the elderly and children.

As previously mentioned, electric vehicles are also considered an alternative means of transportation. Electric vehicles are considered to be more sustainable than conventional vehicles as they do not use fossil fuels that contribute to emissions. Also, by not using fossil fuels, as an extent, non renewable sources of energy are not used as well, which can be extremely beneficial for the betterment of our air quality and overall promote the sustainability of our environment. At this point, it is worth mentioning that the implementation of alternative means of transport can have many financial advantages to someone, as by just walking or purchasing a bike, users can save up money seeing as they do not need to cover the costs of fuels and gasses for their vehicles. Furthermore, the application of certain alternative means of transportation such as buses and trams will not

¹⁵ "Alternative Means of Transport - European Commission." Road-Safety.transport.ec.europa.eu, road-safety.transport.ec.europa.eu/eu-road-safety-policy/priorities/safe-road-use/elderly-drivers/older-drivers/safety-versus-mobility-and-quality-life/alternative-means-transport_en .

only help the society economically, but it will also bring the society together, by providing commuters with the opportunity to form new connections and make daily interactions with people of all ages and nationalities.

Finally, by adopting sustainability into the transportation agenda, the society can also start advocating and assimilating sustainable norms and ideas. Generally, the way each person chooses to transport has a corresponding impact on the environment. In fact, the usage of cars and vans has amounted to almost 10% of all greenhouse gas emissions just from 2010 until 2022¹⁶. Considering those unsettling statistics, it is evident that the transportation sector majorly contributes to atmospheric pollution. Nevertheless, this does not indicate that the other way around is not feasible; there are many ways in which alternative means of transportation can benefit the environment. By using an alternative form to transport, the amount of greenhouse gasses and harmful chemicals that are being emitted are minimal. This happens as alternative vehicles produce less greenhouse gas emissions than other vehicles either because their use is shared and as a result their emissions per person are less (public commute, carpooling, etc.), or because they produce little to no greenhouse gas emissions during their operation (bikes, scooters, Electric Vehicles, etc.). To add to that, according to a UCLA article,¹⁷ “Taking public transportation reduces CO2 emissions by 45%, decreasing pollutants in the atmosphere and improving air quality”. Another important fact to consider is that the use of fewer vehicles (seeing as many people use one shared vehicle to transport; eg. buses, trains, airplanes, etc.) reduces the need for more roads. As a result, if there is less need for the creation of roads, then more land is not polluted and less green is lost.¹⁸.

Challenges of Alternative Means of Transport¹⁹

¹⁶ Tiseo, Ian. “Global CO2 Emissions from Cars and Vans.” Statista, 22 Sept. 2023, www.statista.com/statistics/1388092/carbon-dioxide-emissions-cars-vans-transport/ .

¹⁷ Pei, Andy. “5 Environmental Benefits of Sustainable Transportation.” UCLA Transportation, 7 Oct. 2021, transportation.ucla.edu/blog/5-environmental-benefits-sustainable-transportation .

¹⁸ Pei, Andy. “5 Environmental Benefits of Sustainable Transportation.” UCLA Transportation, 7 Oct. 2021, transportation.ucla.edu/blog/5-environmental-benefits-sustainable-transportation .

¹⁹ “Public vs. Private Transport – Which Should You Prefer?” Wwww.hulldobbsfordbirmingham.com, www.hulldobbsfordbirmingham.com/public-vs-private-transport-which-should-you-prefer.html .

Alternative means of transport undeniably have multiple benefits, but there are still some basic problems that need to be resolved in order to ensure their value-efficient usage.

There are many challenges that society has to face regarding the usage of alternative means of transport, and more specifically, public transport. Firstly, people that are traveling by buses, trams and subways are mostly spending valuable time of their day and get tired because in most cases the pauses that the vehicles make so as to let passengers get on and off the vehicle at the layover points are often not on the exact spot that a person wants to go to. The great demand of public services leads to them being very often crowded which can become an unpleasant and unbearable moment of the day. To add to that, it is very often contested that numerous personal items get robbed or are lost.

Health is a sector which can be affected by the environment we are located in in many ways. Firstly, exposure to a polluted environment filled with smoke and GHG emissions that are produced by vehicles' engines can be the cause of breathing and heart problems. Secondly, the fact that public commutes are usually overcrowded, introduces a high risk of people getting exposed to viruses, which is a particularly negative thing when vulnerable groups end up getting infected. Another factor that could pose threats to commuters' health is the air quality inside the vehicles which is considered really poor due to the fact that it is not recycled very often. Air recycling is the procedure in which the air of an interior space is being renewed. Having an interior space in which the air is not recycled leads to the gathering of many microbes and bacteria which can ultimately introduce various risks to those getting exposed.

Generally there are two main types of vehicles; those that incinerate fossil fuels (Internal Combustion Engine Vehicles ICEVs) and those that run on electricity (Electric Vehicles EVs). Unfortunately, the incineration of fossil fuels, which powers a vehicle's engine, means that they emit greenhouse gasses. Thanks to technology's advancements, in comparison to a few decades ago, the overall pollution per person is less. More specifically, a vehicle has a certain amount of greenhouse gasses that are emitted per kilometer/mile, so when the same vehicle is used by one person, the emissions per passenger are considered all of the pollutants that are emitted. If the same vehicle however, is used by more than one passengers, then the emissions per person are less.

Impact of Non-Alternative Means of Transportation²⁰

The usage of non-alternative means of transportation started taking up a huge part of people's lives around 105 years ago²¹, when the Vintage Car Era started²². The Vintage Car Era's impact has since then never diminished in size or extent as more and more people and companies are channeling their attention towards alternative means of transportation. Recent studies indicate that in 2022²³ the CO₂ produced from cars amounted to 3.53 billion metric tons. All these greenhouse gasses degrade air quality. Greenhouse gas emissions are created through the destruction of gasses or fuels which are burnt that are used to power their function. On average, in the United States of America, a registered car uses 489 gallons of fossil fuels every year²⁴ which means that 8.79 million barrels of fossil fuels are being bought each day.²⁵ This creates an extremely concerning problem as many non-renewable natural resources are being used, which leads to their waste and loss.

The utilization of non-alternative means of transportation can also have a harmful effect on human health. This happens for two main reasons. Firstly, the human body is being exposed to greenhouse gasses that have been emitted by cars. Just as it was mentioned above, this constitutes a major problem as those greenhouse gasses can cause lung and heart diseases.²⁶ That means that all people, but especially those in vulnerable, high risk groups, such as young children and pregnant women, should not be exposed to polluted air very often. Secondly, the use of non-alternative means of transportation can contribute to

²⁰ "ShieldSquare Captcha." lopscience.iop.org, lopscience.iop.org/collections/1748-9326_focus_issue_Transportation_and_the_Environment .

²¹ Robinson, Dick. "Timeline of the Vintage Car Era: 1920 - 1945." Antiquecar.com, 2019, www.anticquecar.com/history/vintage-car-history.php .

²² Robinson, Dick. "Timeline of the Vintage Car Era: 1920 - 1945." Antiquecar.com, 2019, www.anticquecar.com/history/vintage-car-history.php .

²³ Tiseo, Ian. "Global CO₂ Emissions from Cars and Vans." Statista, 22 Sept. 2023, www.statista.com/statistics/1388092/carbon-dioxide-emissions-cars-vans-transport/ .

²⁴ Smith, Lem. "Top Numbers Driving America's Gasoline Demand." Wwww.api.org, 26 May 2022, www.api.org/news-policy-and-issues/blog/2022/05/26/top-numbers-driving-americas-gasoline-demand .

²⁵ Smith, Lem. "Top Numbers Driving America's Gasoline Demand." Wwww.api.org, 26 May 2022, www.api.org/news-policy-and-issues/blog/2022/05/26/top-numbers-driving-americas-gasoline-demand .

²⁶ Nunez, Christina. "Carbon Dioxide in the Atmosphere Is at a Record High. Here's What You Need to Know." National Geographic, National Geographic, 13 May 2019, www.nationalgeographic.com/environment/article/greenhouse-gases .

the decrease of physical activity, which is important for the human body. People, by preferring their cars and other vehicles over walking, biking or scootering, neglect their physical well being without profiting of that beneficial exercise that those forms of transportation would provide.

MAJOR COUNTRIES AND ORGANIZATIONS INVOLVED

Norway

Norway has played an important role in the implementation of alternative means of transport as the government has implemented the alternative means of transportation by setting goals for the decrease of greenhouse gas emissions, such as the one that envisions a reduction of 50% in transport sector emissions by 2030²⁷. In addition to that, the transition to electrical vehicles, for which a goal was set to sell only zero-emission vehicles by 2025²⁸, exemplifies Norway's level of engagement on the matter. Moreover, the Norwegian government is also offering financial support to citizens so as to implement electrical vehicles. More precisely, Norway's 80% of cars are electric, while "road transport is still the dominant mode of transport for domestic travel, including bus travel, which is the most common mode of public transport".²⁹

²⁷ "National Transport Plan 2022–2033." Government.no, Government.no, 25 June 2021, www.regjeringen.no/en/dokumenter/national-transport-plan-2022-2033/id2863430/?ch=6#:~:text=The%20National%20Transport%20Plan%202022%E2%80%932033%20will%20contribute%20to%20the .

²⁸ AFP. "In 2025 Norway Is Expected to Reach a World Record of Selling 100% New Electric Cars." Fortune Europe, Fortune, 2 Sept. 2024, fortune.com/europe/2024/09/02/in-2025-norway-is-expected-to-reach-a-world-record-of-selling-100-new-electric-cars/#:~:text=The%20Scandinavian%20country%2C%20a%20major

²⁹ "Topic: Transport Industry in Norway." Statista, Statista, 2024, www.statista.com/topics/12188/transport-industry-in-norway/#topicOverview .

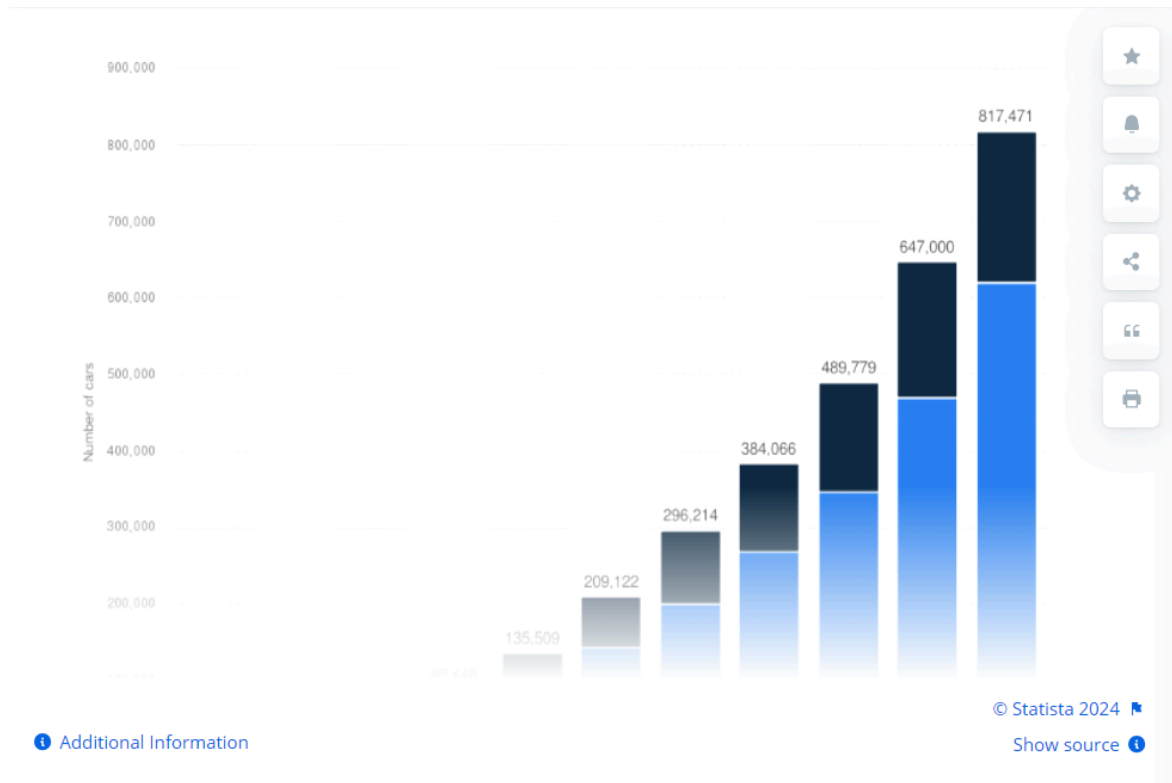


Figure 2: “Number of battery-electric cars and plug-in electric hybrids in Norway from 2012 to 2022”³⁰

Brazil

Brazil has been facing many problems with transportation and the pollution created by it. For instance, in Brazil’s largest cities, such as São Paulo, cars caused 75% of carbon monoxide in 1997³¹, while even now the quality of the road system has been constituting a major strain for drivers. Nowadays, the most common means of transport for the population of Brazil are buses and bicycles³², as the country’s government has increasingly emphasized the need and benefits of cycling and transporting by foot, by enhancing the quality of pedestrian and cycling zones.

³⁰ “Norway: Electric and Hybrid Cars Number 2010-2020.” Statista, www.statista.com/statistics/696187/electric-and-hybrid-cars-number-in-norway/.

³¹ Ferraz, Claudio, and Ronaldo Seroa da Motta. “Automobile Pollution Control in Brazil.” SSRN Electronic Journal, 1999, <https://doi.org/10.2139/ssrn.183811>.

³² “Transport and Driving in Brazil | Expat Arrivals.” Wwww.expatarrivals.com, www.expatarrivals.com/americas/brazil/transport-and-driving-brazil#:~:text=Buses%20are%20by%20far%20the.

India

India is a country which has been facing many challenges with transportation, particularly with their transport infrastructure. More specifically, citizens are facing a problem with the quality of both railway and road systems, while roads carry the 85% of people that are transporting daily³³. In response to this situation, the Indian government has initiated the Sustainable Urban Transport Project, which “improves the usage of environment friendly transport modes through piloting of demonstration projects in select cities with a focus on priority to public transport and non motorized transport”³⁴. Nevertheless, there is plenty of room for improvement and betterment in this particular sector.

Japan

Japan is a technologically advanced country in which the transportation sector is contemporary. Technology has helped in the development of Japan's public transport, as most of the population uses trains as their main way of transportation. Also, it is worth mentioning that Japan has systems in which every citizen has a card called IC (Integrated Circuit) cards that can be used for every public means of transport by storing the cardholder's information and freeing people from the need to constantly print new tickets.

Kenya

Transportation in Kenya seems to differ from other countries, as there is a problem faced with public transportation as the increasing car ownership combined with their excessive use has caused issues in both traffic control and air quality. A measure that the Kenyan government has made is the investment on the creation of a pedestrian friendly infrastructure, which is shown to be helpful as nowadays the 45% of the population³⁵ are covering everyday distances by foot.

³³ The World Bank. “India Transportation.” World Bank, 23 Sept. 2011, www.worldbank.org/en/news/feature/2011/09/23/india-transportation .

³⁴ The World Bank. “India Transportation.” World Bank, 23 Sept. 2011, www.worldbank.org/en/news/feature/2011/09/23/india-transportation .

³⁵ Environment, U. N. “Kenya.” UNEP - UN Environment Programme, 24 July 2017, www.unep.org/topics/transport/active-mobility/kenya .

C40 cities

“C40 is a global network of nearly 100 mayors of the world’s leading cities that are united in action to confront the climate crisis.”³⁶ Its actions such as influencing the global agenda have helped many cities to become more green, especially in the sector of transportation by supporting the development and the creation of policies. Also, it supports financially the implementation of programs such as the creation of a sustainable public transport network globally³⁷, the implementation of a zero emission vehicle network in most countries around the world³⁸ as well as the creation of a walking and bicycling network³⁹.

ITDP (Institute for Transportation and Development Policy)

The Institute of Transportation and Development Policy is an organization which was created in 1984. According to its principles, the “ITDP was created by sustainable transport advocates in the U.S. to counteract the export to developing countries of costly and environmentally damaging models of dependence on the private automobile.”⁴⁰ Just in 1989, ITDP hit one of their first goals, which was the donation of 10,000 bicycles to people that live in Nicaragua⁴¹

International Transport Forum (ITF)

“The International Transport Forum at the OECD is an intergovernmental organization with 69 member countries. It acts as a think tank for transport policy and organizes the Annual Summit of transport ministers, which is a summit that gathers all transportation ministers for the creation of policies, and finding solutions to tackle

³⁶ C40 Cities. “About C40.” C40 Cities, 2024, www.c40.org/about-c40/ .

³⁷ “Public Transport Network.” C40 Cities, www.c40.org/networks/public-transport-network/ .

³⁸ “Zero Emission Vehicles (ZEV) Network.” C40 Cities, www.c40.org/networks/zero-emission-vehicles-network/ .

³⁹ “Walking and Cycling Network.” C40 Cities, www.c40.org/networks/walking-cycling-network/ .

⁴⁰ “History of ITDP.” Institute for Transportation and Development Policy - Promoting Sustainable and Equitable Transportation Worldwide, 28 July 2014, itdp.org/who-we-are/history-of-itdp/ .

⁴¹ “History of ITDP.” Institute for Transportation and Development Policy - Promoting Sustainable and Equitable Transportation Worldwide, 28 July 2014, itdp.org/who-we-are/history-of-itdp/ .

transportation problems. ITF is the only global body that covers all transport modes throughout their policies.”⁴² The ITF has contributed to the creation of policies that have to do with safety in public transport, which is a reason that the number of people using alternative means of transport is increasing.

TIMELINE OF EVENTS

Date	Description of Event
1662	Starting of public transport.
1783	Creation of the hot air balloon.
1885	The first car is invented.
17 October 1953 ⁴³	Founding of International Transport Forum (ITF).
2005 ⁴⁴	C40 cities is founded.
20-22 June 2012 ⁴⁵	Idea of Sustainable Development Goals discussed for the first time.
September 2015 ⁴⁶	Adoption of Sustainable Development Goals by world leaders.
12 December 2015	Paris Agreement is adopted.
26-27 November 2016	1st UN Global Sustainable Transport Conference.
2017	Norway sets the goal of “all new cars sold by 2025 should be zero-emission” ⁴⁷ .

UN INVOLVEMENT: RELEVANT RESOLUTIONS, TREATIES AND EVENTS

Paris Agreement

⁴² Ronan. “About ITF.” ITF, 8 Oct. 2015, www.itf-oecd.org/about-itf.

⁴³ Ronan. “History of ITF.” ITF, 4 June 2020, www.itf-oecd.org/history-itf.

⁴⁴ “Our History.” C40 Cities, www.c40.org/about-c40/our-history/.

⁴⁵ United Nations Development Programme. “Background on the Goals.” UNDP, 2023, [www.undp.org/sdg-accelerator/background-goals#:~:text=The%20Sustainable%20Development%20Goals%20\(SDGs](http://www.undp.org/sdg-accelerator/background-goals#:~:text=The%20Sustainable%20Development%20Goals%20(SDGs).

⁴⁶ United Nations. “THE 17 GOALS | Sustainable Development.” United Nations, 2023, sdgs.un.org/goals#history.

⁴⁷ Norsk elbilforening. “Norwegian EV Policy.” Elbil.no, 2023, elbil.no/english/norwegian-ev-policy/.

The Paris Agreement is a “legally binding international treaty on climate change”⁴⁸ which was created on the 12th December 2015, and officially started on the 4th November 2016, and it consists of 196 Parties. Its main purpose is to decrease the speed in which the temperature of Earth is increasing, and it also focuses on transportation as it compels Member States to decrease the greenhouse gas emissions that are emitted, so as to develop a sustainable environment.

Sustainable Development Goals

The Sustainable Development Goals or the 2030 Agenda are 17 goals that are linked to a sustainable future. This initiative, as an idea was firstly put into the table in 2012, but its adoption by the world leaders was in September 2015. The agenda consists of 17 goals, from which the 11th, namely “Sustainable Cities and Communities”⁴⁹, is mainly related to the implementation of alternative means of transport, as it talks about achieving sustainability, which can be eco-friendly cities in not only high populated environments, but also smaller communities.

UN Global Sustainable Transport Conference

The United Nations Global Sustainable Transportation Conference is a recurring conference of the United Nations (UN) that first took place ⁵⁰ in Ashgabat, Turkmenistan, during the 26th and 27th of November, 2016. The aim of the conference is to combine the decrease in the greenhouse gasses caused by transportation and ensure safety in all means of transportation. It has brought together governments so as to find solutions like “Encouraging increased ambition in areas of strategic importance for the achievement of the

⁴⁸ UNFCCC. “The Paris Agreement.” United Nations Climate Change, United Nations, 2015, unfccc.int/process-and-meetings/the-paris-agreement .

⁴⁹ United Nations. “Goal 11 | Department of Economic and Social Affairs.” United Nations, United Nations, 2023, sdgs.un.org/goals/goal11 .

⁵⁰ “Global Sustainable Transport Conference .. Sustainable Development Knowledge Platform - United Nations Partnerships for SDGs Platform.” Un.org, 2016, sustainabledevelopment.un.org/partnerships/transport#:~:text=Recognizing%20the%20fundamental%20role%20of

Sustainable Development Goals (SDGs) and the Paris Agreement in the transport sector”⁵¹ on environmental problems that are connected with transportation.

UN General Assembly Resolution 78/148

The UN General Assembly Resolution 78/148, entitled “Strengthening the links between all modes of transport to achieve the Sustainable Development Goals”⁵² has called among the Member States to have a UN Decade on Sustainable Transportation, which starts from 2026 until 2035 and the Third UN Global Sustainable Transport Conference which will take place on the 26th November, 2024.

PREVIOUS ATTEMPTS TO SOLVE THE ISSUE

Netherlands Cycling Infrastructure

The Dutch government has invested in the cycling infrastructure. Cycle lanes have been created and traffic signals have been made for the cyclists, which prevents accidents. Also, bike parking facilities have been installed that render transportation easier for the people. It is estimated that in 2019, 28% of all distances were covered by bike.⁵³

Norway Electric Vehicle Adoption

Norway implemented policies which combined the transition from fossil fuel-powered vehicles to EV’s and the usages of incentives in one solution. More precisely, the Norwegian Government offered lower taxes, lower tolls and vouchers to the citizens who transition to EV’s. This policy has been successful, as nowadays more than 80%⁵⁴ of cars are electric, with Norway being the country with the highest percentage in EVs.

⁵¹ “Commitments & Partnerships.” Un.org, www.un.org/en/conferences/transport2021/commitments

⁵² “Implementing the UN Decade of Sustainable Transport | HLPF 2024 Side Event | Department of Economic and Social Affairs.” Un.org, 2024, sdgs.un.org/events/implementing-un-decade-sustainable-transport-hlpf-2024-side-event-55973 .

⁵³ De Haas, Mathijs, and Marije Hamersma. Cycling Facts: New Insights Netherlands Institute for Transport Policy Analysis | KiM. 2020

⁵⁴ “Topic: Transport Industry in Norway.” Statista, Statista, 2024, www.statista.com/topics/12188/transport-industry-in-norway/#topicOverview .

Germany's Public Transportation Investments

Germany has invested heavy amounts of money on public transport, especially in cities like Berlin, and has implemented policies like integrating fare systems, and improving both reliability and frequency of the vehicles, while including more economical prices in monthly packages. All these policies have increased the number of people using public transport daily.

India's Delhi Bus Rapid Transit (BRT) System

In 2008, Delhi implemented the BRT System which focused on the improvement of busses' punctuality as well as the reduction of greenhouse gas emissions and the traffic congestions caused by buses. Its aim was to attract the citizen's usage of public transport. The BRT System faced multiple issues, as its design turned out to be unsuitable. This happened because of the lack of bus lanes which caused multiple problems in traffic management. After the failure of the BRT System, Delhi decided to dismantle it 8 years later, in 2016.

POSSIBLE SOLUTIONS

Provision of Incentives

A great way in which alternative means of transportation can be implemented is by creating policies and regulations which provide incentives to the citizens who use alternative means of transport. More precisely, these financial benefits can be the reduction of taxes, avoidance of certain tolls, as well as the provision of vouchers to the citizens that use alternative means of transport. Providing incentives has seemed to be an effective solution, as the Norwegian government, who has adopted this initiative on EVs, has seen a huge increase in the number of the vehicles purchased.

Creation of lanes and charging spots

This solution can be characterized as a crucial one, as many people, especially pedestrians and cyclists need to transport safely, without having to feel insecure. By creating zones not only for pedestrians, but also for alternative means of transport will help reduce traffic jams and accidents in the transportation sector. Also, the installation of charging spots is required as by transitioning to EVs, recharging cars, especially while covering huge distances, is a necessity that needs to be covered regardless of the effect that it will have on each country's economy.

Advancement of governmental vehicles

The transition of governmental vehicles that use fossil fuels to electric ones can contribute to the decrease of greenhouse gas emissions. This happens as vehicles such as ambulances, patrol cars, fire trucks etc. consume a significant portion of fossil fuels, which are estimated to amount to 489 gallons per year.⁵⁵ This way, more and more citizens will become sensitized to alternative means of transportation by taking after their countries' examples whose cities are developing by becoming sustainable, even though it has an economical disadvantage as many countries have a large number of vehicles.

Fabrication of mobility plans

The creation of mobility plans is very crucial, as the implementation of them in public transport can bring positive results, and "aims to increase mobility as much as possible while preserving safety and welfare"⁵⁶. This happens as through a mobility plan the challenges faced can be addressed effectively and achieve sustainability, while more and more people will be urged to use public transport.

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⁵⁵ Smith, Lem. "Top Numbers Driving America's Gasoline Demand." Wwww.api.org, 26 May 2022, www.api.org/news-policy-and-issues/blog/2022/05/26/top-numbers-driving-americas-gasoline-demand .

⁵⁶ "Mobility Planning." Weho.org, www.weho.org/city-government/city-departments/community-development-department/long-range-planning/mobility-planning .

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