Vision for Sustainable Mobility

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Introduction

Right now, our global transport systems are not working.[1] They are worsening the environmental crisis, and preventing people from fulfilling their basic needs and accessing opportunities.
We can fight for, and win, better transport systems. Ones that enable everyone to have affordable, accessible, safe, climate-friendly, connected and socially just mobility. This should be our right and is an essential part of reducing greenhouse gas (GHG) emissions and air pollution and securing a sustainable future.

Climate and transport

The transport sector is responsible for around 60% of the total global oil demand according to the Intergovernmental Panel on Climate Change (IPCC), and accounts for approximately 15% of global GHG emissions.[2,3]

The IPCC highlights that North America, Europe and Eastern Asia stand out as the main regional contributors to global transport GHG emissions and together account for 50% of the sector's total. It also notes that transport-related GHG emissions in developing regions of the world have increased more rapidly than in Europe or North America and says this trend is expected to continue in coming decades.[4]

In 40% of countries, transport is the largest energy consuming sector.[5] Since 2010, says the IPCC, the sector's emissions have increased faster than for any other end-use sector, averaging +1.8% annual growth in the last decade.[6]

Reducing emissions, creating jobs

We urgently need to change direction.

Ahead of the 2023 United Nations Climate Change Conference (COP28), a coalition of mayors, unions, transport authorities, regulators and partners called on national governments to collectively double public transport journeys in cities by 2030 and advance a just transition to zero-emissions public transport. The coalition said using public transport is "one of the most cost-effective actions that people can take to help stop the climate crisis - but not one that is yet accessible to everyone."[7]

"Doubling public transport usage as part of a green recovery would, by 2030, create tens of millions of jobs in cities around the world, cut urban transport emissions by more than half, and reduce air pollution from transport by up to 45%".

C40 Cities.[8]

Investment in transport increases the variety of jobs available and improves skills in the sector. It also creates jobs in the wider economy as people have new transport options and greater access. One estimate is that greening transport could create up to 15 millions jobs worldwide.[9]

Public and Active Transport

A sustainable transport system for moving people where they need to go includes public transport, walking and cycling as the main modes. Public transport will take different forms in different places, but when it's affordable, accessible, safe, connected, climate friendly and socially just, it has huge benefits to passengers and wider society.

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Singapore buses © 2p2play / Shutterstock

The IPCC notes that, along with electrification, "shifts to public transport can enhance health, employment, and can elicit energy security and deliver equity".[10]

Improving public transport, and walking and cycling options, can not only significantly reduce emissions;[11] it is associated with increased levels of physical activity,[12] it can increase wages,[13] create jobs,[14] improve social connections[15] and is also associated with reduced loneliness.[16]

A vision for sustainable mobility

This document sets out and explains Greenpeace's global vision for sustainable mobility with a focus on the transport of people and getting everyone where they need to go.

These 6 concepts – accessible, affordable, safe, climate-friendly, connected and socially just – combine to create better, cleaner mobility and more freedom for everyone.

The concepts reinforce each other and are interdependent – for example, if a transport system is not accessible, it cannot be socially just – and many elements cross over multiple concepts.

This vision was produced after research, consultation and interviews with experts on a variety of topics in transportation, with emphasis on a justice, equity, diversity, inclusion, and safety lens. The concepts are defined in broad terms and each will vary depending on local and regional contexts.

Despite the issues with our current transport systems, travel can be a joyful experience and can connect people to opportunities which improve their lives. We believe this offering of a positive vision will help us win a better transport system for everyone.

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Affordable

Transport affordability has been defined by the World Bank as being able to "make necessary journeys to work, school, health and other social services, and make visits to other family members or urgent other journeys without having to curtail other essential activities".[17]

Everyone should have the right to travel to fulfil their basic needs and enable opportunities. Yet, for many, transport costs are a huge burden. On average, transport accounts for almost 15% of a household's budget in the EU[18] and an average of 16.9% in the US, with the lowest income households spending as much as 30.2% of their after-tax income on transport.[19]

In other cases, household spend figures may not even capture the affordability problem for low-income groups either because they may be restricted to cycling and walking options[20] or because unaffordable costs of public transport reduces or

Greenpeace and Campact travel through Berlin demanding the continuation of the discounted ticket. © Gordon Welters / Greenpeace

prevents travel altogether.[21] For example, a survey undertaken in the Brazilian city of Sao Paulo in 2018 showed 34% of people "always" or "sometimes" missed medical appointments, 26% missed school or university and 51% missed leisure activities because of the cost of the transport fare.[22] The survey also found a clear profile among Sao Paulo's commuters worst affected by these issues: black and brown women, with low income and only basic education.[23] In many cases, what is not paid in money is covered in time spent, which is one reason why many families on low incomes are also time-poor.[24]

When transport is made cheaper, it can make a huge difference especially for families on lower incomes. In Europe, Greenpeace organisations have been campaigning for 'climate tickets'; cheap public transport tickets to encourage more sustainable travel, while reducing pressure on household budgets.[25] Many countries are implementing this idea.[26] For example, a climate ticket has been introduced in Austria,[27] while an affordable monthly pass has been enormously popular in Germany.[28]

Transport and Inequality

The costs of transport disproportionately impact many marginalised groups.[29] The affordability of transport is gendered, as women have a higher risk of poverty than men[30] and often make more complex, multi-stop journeys relating to employment, household and caregiving responsibilities, which can increase costs when travelling by public transport.[31] This can mean women are more impacted by public transport costs than men.

People of colour and vulnerable groups are also burdened by more cumbersome travel patterns and a history of social segregation and inequality. Transport service costs can increase that burden when longer trips are more costly - in time and money - and areas such as city outskirts are poorly served by public transport.[32]

A study by the World Resources Institute found that in Johannesburg, only 9% of residents can be classified as "well located," with low transport costs and good access to jobs. In Mexico City the number is even lower at 7%. The study found a "significant proportion of residents are 'stranded' without adequate access to opportunities and lacking the ability to spend more on transport (17% in Johannesburg, 31% in Mexico City)."[33]

Safety concerns can also increase transport costs. Fear of violence and harassment, especially that directed at LGBTQIA+ people and women,[34] may lead to paying additional transport costs in order to ensure travelling more safely, for example using taxis or taking less direct routes on public transport.[35]

Following a Greenpeace India campaign, in 2023 the government of Karnataka introduced fare-free buses for women across the State with the aim of increasing employment opportunities for women.[36] The government is reported to have said the free buses for women in Karnataka led to a 23% increase in bus passengers in the first 2 weeks.[37] A similar scheme was introduced for women in Delhi in 2019 and, later, following campaigning by Greenpeace India and allies, it was extended to trans people.[38,,39]

Fare-free travel

Not only in India, but in many parts of the world there is considerable support and campaigning for fare-free public transport. Several successful schemes already exist, for example, in cities and towns in Brazil[40] and Europe[41]. The impact is dependent on context but there have been many benefits observed, including increasing opportunities for low income households in particular.[42] In other places, public transport is free for the elderly.[43] In South Korea,[44] fare-free subway travel has encouraged older adults to travel more leading to increasing social connections, helping reduce rates of suicide and depression, and reducing medical fees.[45]

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Funding

Where public transport is not fully or significantly subsidised, there can be challenges in achieving high-quality reliable transport service.[46] In order to ensure there are no negative impacts on issues like reliability and safety, other funding sources must be provided to enable the reduced fares.

The need for funding public transport includes both infrastructure funding ("capital costs") - building train stations, for example - and operational funding to ensure ongoing day-to-day costs of the transport sector such as the payment of wages.[47]

Paradoxically, while public transport remains critically underfunded, unsustainable modes of transport such as private car travel and aviation are often subsidised by governments, either directly or indirectly.[48] For example, Greenpeace's EU Unit has shown how EU policies incentivise people to fly rather than take the train, as airlines have fuel tax exemptions which railways do not, leading to cheaper plane tickets.[49] Ending subsidies for unsustainable mobility and redistributing funds to public and active transport, is essential for a **socially just** and more sustainable transport system.

Everyone should be able to get where they need to go without spending more than they can reasonably afford. Lowering the costs of sustainable transport, especially for marginalised groups, including those on the lowest incomes, is **socially just**; it opens up opportunities and improves lives.

Clarification on terms used

In the recommendation sections throughout this vision, "governments" refers to urban, local, national and regional depending on the appropriate entity relating to transport and mobility in a given territory.

"Transport operators" refer to organisations who deliver transport and mobility services and may be public and/or private bodies depending on who holds responsibility in a location.

Key recommendations for affordable mobility

- **Governments must make public transport as affordable as possible to create opportunities (e.g. in employment and education) and reduce pressure on household budgets. This should include introducing low-cost 'climate tickets' on public transport, which also helps take cars off the road and reduces emissions.**
- **Governments must end direct and indirect subsidies which make unsustainable transport modes like private car travel and aviation cheaper than sustainable alternatives. These funds should then be redistributed to public and active transport.**
- **Transport operators and governments need to ensure that fare reductions or fare-free transport do not degrade the service, the protections for workers and safety measures for passengers.**

Accessible

An accessible transport system allows all people to access climate friendly transport where they want, when they want, without impediment and within their budget.

Mobility advocates in Malabon City, Metro Manila, Philippines. © Basilio Sepe / Greenpeace

If we want a transport system that is open and inclusive to all, then accessibility is critical. There are different ways that access to destinations and opportunities can be restricted or prevented altogether.

Allowing everyone to travel

Access to transport networks and infrastructure differs a great deal across the globe and even within the same country or city. Only half the world's urban population has convenient access to public transportation, according to 2019 data from 610 cities in 95 countries.[50] There are also inequalities in access within urban areas. The lack of access to services, or connection to transport networks, in urban locations often relates to issues of race and class.[51,52] For example, research in the US suggests transport barriers to access healthcare disproportionately affect socioeconomically disadvantaged and racially minoritised populations.[53]

In many rural areas around the world, people do not have access to public transport networks at all.[54] In Spain, according to one study, 36.3% of people living in rural locations use public transport, while the figure is 88.4% for those living in metropolitan areas.[55] In other rural areas, public transport options may exist but be limited to certain times of the day, or lack reliable schedules. Given nearly half of the world's population live in rural areas, this lack of access has huge consequences.[56]

Even in areas where services are available, getting to the stop or station may be inaccessible or difficult for people with limited mobility or people with disabilities. Research has found that older adults, often defined as people aged 65 and over, frequently report challenges in accessing mobility.[57] In one study, one third of older adults reported unmet travel needs.[58] Leisure trips, including visiting friends and family, is the most commonly reported type of trip that goes unfulfilled.

Globally, we need transport systems that accommodate every community, and every need. To achieve this, governments need to invest in the accessibility of public and active transport systems, improving the reach and availability of services. When everyone can travel easily using public transport, passenger numbers will rise and the demand for private cars will decrease.

Popular transport

Popular transport, also known as informal transport,[59] is unregulated or partially-regulated transport that operates mainly in the Global South, run by private operators with no official stops or timetables.[60]

Popular transport provides mobility options to many people around the world, particularly where formal public transport options might be inaccessible, unaffordable or simply unavailable.[61] Popular transport must, at a minimum, cover its costs as it often does not receive any financial support from the government. While the private sector has filled this gap, this can result in lack of investment in vehicles, poor working conditions and limited service.[62]

Improving and integrating popular transport with other transport modes and ensuring they are complementary, rather than competitive, can create a larger, more flexible transport network that increases mobility options.[63]

Over the long term, worker-led formalisation can help ensure job security[64] and better working conditions, and - alongside other steps such as integration - can benefit passengers by ensuring more regular, reliable services. This needs to be achieved alongside a move towards more sustainable transport.

Minibus taxis, a form of popular transport, in Addis Ababa, Ethiopia. © Carlosfelipe Pardo

Travelling without Impediment

There are many vehicles, stations, transport modes and spaces that cannot be physically accessed by people with limited mobility (PLM)[65]. Examples of this include restrictions such as a lack of space for wheelchairs or pushchairs/prams on vehicles, or a lack of ramps.[66]

Popular transport networks can present additional accessibility challenges.[67,68] This is because there is often very little standardisation between vehicles of the same type (e.g. local buses), meaning access can be unpredictable for people with restricted mobility.

Yet some places are getting it right. In a large 2022 survey, Singapore was voted one of the most accessible cities in the world,[69] where the Mass Rapid Transport System (MRT) is fully wheelchair accessible and all stations have a barrier-free route.[70]

Transport and Disability

According to World Health Organisation estimates, 1.3 billion people in the world have some form of significant disability.[71]

Inaccessible transport systems can inhibit lives and opportunities, particularly for people with disabilities. One study of 29 African countries concluded that people with disabilities live less integrated, more isolated lives due to lack of accommodation in infrastructure and services and a lack of acknowledgement in transport policy frameworks.[72] In 2019, disabled adults in England made 26% fewer trips than those without a disability.[73]

People with disabilities - who are more likely to be living in poverty than those without disabilities[74] - may have to pay more for transport. This is because some people with disabilities need to use more expensive modes such as taxis or specialized vehicles, paying transport fares for caregivers and support people or being charged additional fees for wheelchair use.[75] Higher costs can mean that regular journeys, such as commuting, are not an option in the long-term. The **affordability** of transport is an essential part of ensuring access for non-disabled and disabled people alike.

Moreover, women with disabilities are among those who

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suffer most on public transport. They face what has been called "double discrimination"[76] – a combination of an increased risk of violence and harassment and as people with disabilities.[77] This is an example of how **safety** and security issues can impact access.

It is essential for a **socially just** transport system that people with limited mobility, such as people who live at the edge of urban areas or in rural areas, people travelling with young children and people with disabilities, are at the heart of transport decision making and planning. This ensures the system is as accessible as possible, while upholding the dignity and rights of all passengers.

Barriers to Use

There are accessibility challenges which do not prevent a journey but can still make it inconvenient or unappealing, particularly for repeat journeys.[78] These may stop passengers choosing sustainable travel options or discourage people from travelling altogether.

Practical barriers include confusing maps and signs,[79] a lack of audio signals for road crossings,[80] overcrowding or restrictive shared spaces[81] or long walking distances between transport stations.[82] When information can only be accessed digitally, or through using machines, rather than with people, this can reduces accessibility and inclusion.[83] In an Inter American Development Bank study in four Latin American cities, researchers found there are physical and other obstacles throughout a traveller's trip that include the preparation of the trip, travelling to a station or stop, entering the system, paying fare, waiting for the vehicle, entering the vehicle, travelling, preparing for exit, leaving the vehicle, leaving the system and travelling to the destination. All of these stages had different levels of discomfort for travellers and particularly those with disabilities.[84]

In particular, people who use wheelchairs and people with prams or pushchairs can find pedestrian spaces restrictive and narrow. This can become a safety risk, especially if they need to move into the road to navigate. Changes to create more pedestrian space, or slow traffic, can make it easier for everyone to move around.[85]

We need a transport system that is open to everyone, and inclusive of all needs.

Key recommendations for accessible mobility

- **Governments and transport operators should invest in the accessibility of public and active transport systems in urban and rural areas and between them. This includes improving their reach, frequency and reliability, as well as physical accessibility for those with limited mobility.**
- **Transport operators must invest in and promote public transport and active and shared mobility rather than individual motorised transport modes.**
- **Where popular transport exists, governments and transport operators should invest in improving and integrating it with other transport modes. This helps to ensure better quality, affordability and accessibility of these services. They should also commit to worker-led formalisation.**

As of 2023, road crashes are the leading cause of death of people aged between 5 and 29 years old.[98]

Safe

Mobility should be safe and inclusive. Everyone should be able to work, or enjoy travelling, on any mode of transport without fear, threat or risk. This includes personal safety issues such as theft, intimidation or harassment, and road safety priorities such as reducing injuries and crashes.

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Personal safety

Concern around personal safety and security is a huge barrier for public transport passengers and those who walk or cycle, particularly women, LGBTQIA+ communities and racially minoritised communities. In many countries and major cities, women are the majority of public transport passengers and pedestrians, yet around the world they face disproportionate threats to safety and security on public transport and in public space more broadly.[86,87]

In a study of cities around the world, women were 10% more likely than men to feel unsafe on metro (underground) trains and 6% more likely than men to feel unsafe on buses.[88] Feeling unsafe can lead to social, professional, economic, and health challenges for those affected. Women who feel unsafe on public transport might turn down shift work at certain times of day, or avoid social or work events that require travelling a certain route. Safety fears can also limit the times that women can travel due to concerns around waiting at bus stops and train stations in the evenings.[89] This also links to the **affordability** of transport as women might choose more expensive transport, or not to travel at certain times or to certain places, to ensure their safety.[90]

Surveys in the US and the UK suggest that safety concerns on public transport are also shared by LGBT+ communities, and trans people.[91] Another survey revealed that 49% of LGBTQIA+ Brazilians have suffered some form of violence or discrimination when using public transport,[92] especially in crowded conditions.[93]

Greenpeace India has worked to address safety issues for women and the LGBTQ community in using public transport.[94] A Midnight Bus Tour in October 2023 highlighted hindrances to night-time travel for women, primarily due to concerns around safety and accessibility of public transport.[95]

Action to address security and harassment concerns improves transport for everyone. There have been some successful interventions in improving safety on public transport. For example in Quito, Ecuador, a system was introduced which pairs a rapid reporting system for threats or harassment on board with legal support for victims and training on how bystanders can intervene.[96]

Road safety

The World Health Organisation has said "the burden of road traffic injuries and deaths is disproportionately borne by vulnerable road users and those living in low- and middle-income countries, where the growing number of deaths is fuelled by transport that is increasingly motorized".[97]

The key risk factors are known - speed,[99] alcohol and drugs, the use of mobile phones while driving, the failure to use motorcycle helmets, seat-belts and child restraints.[100] Yet even though evidence shows that action on these factors substantially reduces injuries and deaths, in many places action is rarely taken with the decisiveness that is needed.[101] We are far from the UN target of preventing at least 50% of road traffic deaths and injuries by 2030, from 2021 levels.[102] When improved mass transit systems are implemented, significant road safety improvements have been achieved. For example, Transmilenio in Bogotá reduced fatalities along its corridors by 60% within the first year.[103]

We need a transport system that protects the most vulnerable and marginalised. For road safety, this means addressing the five risk factors and keeping pedestrians and cyclists protected from traffic.[104]

Safety for walking and cycling

In many places, pedestrians do not have access to safe sidewalks or pavements.[105] This can be because motorised vehicles use the sidewalk or because the sidewalk is non existent, not continuous or is uneven. For example, in Jakarta, rates of walking are reportedly very low partly due to the poor sidewalk provision and the dangerous environment for pedestrians.[106] Large cars and trucks have also become a major factor in pedestrian deaths, for example in the United States where, according to studies, the number of deaths involving SUVs increased by 120% in the 10 years up to 2022.[107] One study suggested children are eight times more likely to die when struck by a SUV as compared to those struck by a passenger car.[108]

Walking more often as a mode of transport can provide enormous benefits to our health and wellbeing.[109] If more journeys and streets can be made safe and comfortable for walking, people will be healthier and happier.

Cycling also offers huge health benefits, however the fear and risks of crashes prevent many people from cycling.[110] Segregated bike lanes, which protect cyclists from traffic, have been found to increase rates of cycling as they address people's fears and, when properly planned, increase road safety.[111] The IPCC highlighted the importance of protecting pedestrians and bikes from traffic, to encourage the shift away from motor traffic to walking and cycling.[112] Meanwhile, cyclists, pedestrians and all road users are at risk of exposure to air pollution coming from motor traffic, although the health benefits of active travel can be larger than the risk from inhaling pollution.[113]

For both walking and cycling, there is clear evidence that people need to feel safe to use these modes of travel, both from on-street issues like harassment, and protected from traffic.[114] Investing in, and improving, bike and pedestrian infrastructure will reduce crashes, injuries and deaths,[115] and by making people feel safe using active transport, it will also reduce greenhouse gas emissions.

Safety of workers

The safety and security of public transport workers, such as drivers, conductors and ticket officers is essential to providing a high-quality, socially just public transport network. This includes freedom from harassment and violence,[116] as well as ensuring the safety of vehicles, equipment and infrastructure. Popular transport workers also often face precarious working conditions and are vulnerable to various risks including road safety.[117]

Climate change is also a safety issue for workers. A climate friendly transport network, which minimises GHG emissions and air pollution, must have vehicles and infrastructure that can withstand extreme weather events and ensure transport workers are kept safe.

To ensure a transport system that is open and inclusive to all, we need to make sure it is safe for workers, passengers and all road users.

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Key recommendations for safe mobility

- **Transport operators must ensure the safety of passengers and workers from violence and harassment.**
- **Governments must take action on the key risk factors for road safety, including lowering speed limits, mandatory seat belts and child restraints and restrictions on phone use.**
- **Governments should protect all road users by designing safer roads, introducing segregated bike lanes and protecting pedestrians from traffic.**

Tram and Bicycle Path in Freiburg © André Hemstedt & Tine Reimer / Greenpeace

Climate-Friendly

A climate friendly mobility system is one that minimizes energy-related GHG emissions and air pollution. It has a high quality public transport network at its heart, run on renewable energy, and is supported by effective cycling and pedestrian infrastructure. The system is resilient to extreme weather events.

The impact of transport on our planet

The transport sector currently relies on oil for over 90% of its energy according to IEA[118] and is responsible for around 60% of total global oil demand.[119] The IPCC 6th Assessment report on Mitigating Climate Change states that in 2019, the transport sector accounted for around 15% of global greenhouse gas emissions.[120] IEA reports that road transport makes up nearly three quarters of those transport emissions and it is one of the fastest growing (+1.7% per year) among all energy using sectors.[121] Meanwhile, IPCC found that between 2010-2019 international aviation had one of the fastest growing GHG emissions (+3.4% per year) among all the transport segments.[122]

We need to change direction. We can build transport systems that are not destructive or restrictive, but offer a sustainable future with mobility options for everyone. One study estimated that doubling public transport use by 2030 would - in addition to creating millions of jobs in cities around the world - cut urban transport emissions by more than half, and reduce air pollution from transport by up to 45%.[123]

"Drastic reductions in transport emissions and improved access to integrated transport systems worldwide are urgently required to achieve decarbonised pathways. Doing this will require not only adequate investments in transport adaptation and resilience, but also the repurposing of funds currently going into fossil fuel subsidies as well as an acceleration of investments aimed at achieving transport system transformation."[124]

SLOCAT Partnership

"Transport CO_2 emissions can be cut by almost 70% over the 2015-50 period with the right policies. A reduction of this magnitude will bring the goal of the Paris Agreement to limit global warming to 1.5˚C into reach."[130]

International Transport Forum

The air we breathe

Traffic isn't only worsening the climate crisis but fumes from fossil fuel powered vehicles are disastrous for human health. The International Council on Clean Transportation found that, in 2015, engine emissions from traffic were responsible for an estimated 5.38 deaths per 100,000 people globally.[125] In addition, $PM_{2.5}$ and ozone concentrations from transportation tailpipe emissions resulted in approximately $1 trillion in health damages[126]. Another study in 2019, found that the harms from traffic fumes fall disproportionately on Asian American, Black, and Latino residents in the United States.[127] Often, marginalised communities live in close proximity to pollution sources. For example, in the US, some highways were routed directly through, or adjacent to, Black and brown communities, displacing populations and exposing remaining residents to higher levels of traffic emissions, and severing their access to large portions of cities.[128]

Reducing journeys, reducing emissions

It is possible to achieve reductions in climate emissions if effective action is taken.[129]

Some of the key ways we can reduce emissions from transport are by reducing the need to travel altogether, for example, by discouraging or disincentivising business travel and moving more meetings online[131], as well as by building a culture that better interrogates the need for travel whether in a professional or a personal capacity. For example, in a personal context, this might include encouraging more climate friendly holidays closer to home.

Reducing journey times can also play an important role, for example, by bringing services and amenities closer to people, as well as by providing and encouraging the use of public and active modes of transport to access services wherever possible.[132] Integrating land use with transport planning is critical to enabling this. When people live, work, shop and spend time together in the same area, it reduces the need for longer journeys and the use of private vehicles.[133,134] In addition, when private car journeys can be avoided, it reduces road traffic and congestion which helps public transport avoid delays. Terms like '15-minute cities' or '20 minute neighbourhoods' are used to refer to such areas that bring services closer to people.[135,136]

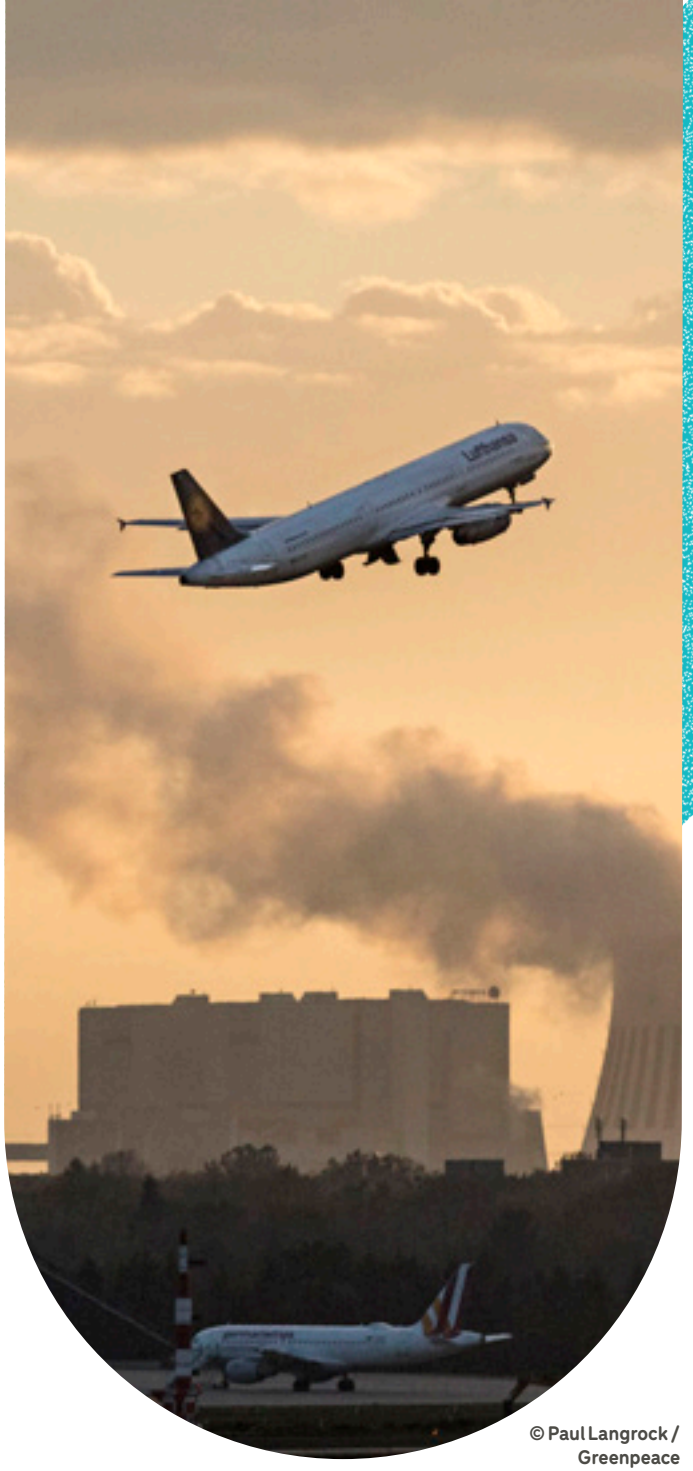
Another effective way to lower transport emissions is to disincentivise and reduce private car traffic in urban areas. For example, the Ultra Low Emission Zone in London which charges a fee for polluting vehicles to access the centre of the city, and the Superblocks in Barcelona which divert traffic away from public space through design.[137]

Such urban planning reduces energy demand and emissions with one study estimating that these kinds of measures can "reduce affected vehicle travel and emissions by 30-60%".[138]

Phasing out unsustainable modes

Alongside reducing the need for travel and the length of journeys, we urgently need to phase out unsustainable transport modes. Critical to this is the need for governments to halt the sale of new Internal Combustion Engine (ICE) vehicles. For example, Norway's goal is to halt sales of new ICE cars from 2025,[139] whilst the EU has set a slower pace of 2035.[140]

Another particularly worrying - and growing - aspect of private car use is the climate impact of heavy and resource intensive sports utility vehicles (SUVs).[141] The IEA estimated that SUVs were responsible for 1 billion tonnes of CO_2 emissions in 2022,[142] and if SUVs were an individual country, they would rank



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Electric Vehicles

Electric cars are a part of the solution but not the whole solution. They cause significantly less CO_2 emissions over their lifetime than conventional ICE cars,[145] significantly less toxic tailpipe emissions, and can be used to support the integration of renewable energy through smart-changing and vehicle-to-grid solutions.[146] However, critically, we need many fewer vehicles on the road if we are to avoid continuing many of today's problems, such as traffic crashes, road deaths, air pollution from tyres and brakes,[147] unequal land use and congestion. In addition, the mining for minerals in electric vehicle batteries can have significant environmental and social impacts.[148] Consequently, some of the biggest emissions reductions will be made by societal change away from private vehicles to public transport.

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sixth in the world for CO_2 emissions.[143] Governments should urgently put limits on SUVs, alongside halting the sale of new ICE vehicles.

We also need to address aviation emissions. For example in Europe, Greenpeace organisations have been campaigning for EU governments to ban short haul flights where viable alternatives (e.g. rail) exists.[144] This would be a great step toward a more climate friendly future.

Well-funded, low cost and safe local, national and regional public transport systems will reduce the need and demand for short haul flights and private vehicles. It will also help avoid the "like for like" replacement of internal combustion engine cars with electric ones.

Changing public attitudes to car ownership and short haul flights, and persuading people to adapt their behaviour is essential[149] – whether this is people using public transport with greater frequency or choosing to ride a bike for shorter trips. Similarly, shifting mindsets from private to shared vehicle ownership is helpful. Car sharing schemes make better use of scarce resources as fewer materials are required for fewer cars, meaning a reduction in energy needed for production. Space may also be also freed up on roads and fewer parking spaces are required[150] – privately owned cars are estimated to be parked around 95% of the time.[151] Shifts in attitudes and personal decision making is a necessary complement to improving and maintaining local, national and international public and active transport networks.[152,153]

Alongside ICE phase out, addressing aviation emissions and the other actions outlined above, we need to electrify and significantly expand public transport fleets, and prioritise infrastructure investments and ensure the promotion of walking, cycling and public transport.

Resilience

The impacts of climate change are already causing huge threats to safety by damaging or destroying infrastructure.[154] Extreme weather conditions risk the lives of transport workers and passengers and also incur huge costs, with one estimate that direct damages to transport systems worldwide from natural hazards costs $15 billion annually.[155]

First and foremost, governments must do everything they can to

"This transformation of transport is an enormous opportunity for more inclusive, prosperous, healthier, greener and resilient communities."[158]

SLOCAT Partnership

In Banglore, the women of Greenpeace India's PowerThePedal campaign are taking charge of their mobility with bicycles, saving money and time. © Greenpeace India/Touchroot

minimise emissions and mitigate the impacts of climate change, but adaptation is also essential. Although making infrastructure resilient to climate change can be costly, it saves huge amounts of money in the long-term. For example, (underground) metro systems can be vulnerable to flooding, which can cause huge damage to the network, and need to be redesigned to reduce flooding risk. The same holds true for bridges, roads and supporting infrastructure such as stormwater drainage systems.[156] In Japan a number of disaster-resilience measures are already put in place, ranging from the use of slopes and embankments to minimise damage from landslides, to using highway toll data to quickly assess the number of people in a given area at any one time.[157]

Countries need to invest in the maintenance of existing networks, alongside expansion of public transport.[159] Greater resilience in the transport sector will also be possible through using transport modes that are more flexible and require less infrastructure for their use, such as walking or cycling.

A transport system that works for everyone will reduce emissions, improve air quality, and be resilient to weather events.

Key recommendations for climate-friendly mobility

- **Governments and car companies must stop the sale of new ICE vehicles, by 2028 in the EU and 2030 elsewhere. SUVs should also be restricted and short haul aviation should be replaced by train travel where viable alternatives exist.**
- **Governments must disincentivise private car use, and must prioritise and invest in walking, cycling, shared mobility & public transport run on renewable energy.**
- **Transport operators must invest in the maintenance and resilience of transport networks and infrastructure to climate change.**

Integrating bikes and buses in San Antonio, USA. © Carlosfelipe Pardo

Connected

Everyone should be able to access a variety of easy-to-use, safe and climate-friendly transport options that take them where they want to go. These different modes should link together seamlessly through a transport network that is reliable, offers frequent and timely service provision and effectively connects urban, suburban and rural areas.

We need transport systems that effectively link together different types of mobility seamlessly. They also need to be easy to understand, flexible and be able to take you both short journeys and long distances. As a practical example, bicycle parking at stations and the ability to take bikes on trains helps integrate the flexibility of cycling with the long distances that public transport can provide.

First mile, Last mile

The 'first mile, last mile' issue in public transport refers to how people get from their home to the transport stop and how they travel from their final transport stop to their destination. This issue is often cited as "the most important factor determining whether an individual will choose public transport".[160]

Public transport needs to be close to where people live and where they want to go. It also needs to be safe and enjoyable to travel to and from the transport stop.

This can be achieved with better cycle infrastructure, bike sharing schemes and safer pedestrian spaces.[161] For example, the Netherlands has many large bicycle parking stations at transport hubs, making the first and last mile as connected as possible to the public transport network.[162]

Connecting transport systems effectively has a number of different dimensions including physical, information, and monetary integration.[163] An example of good physical integration is placing a bus stop beside a train station whilst an example of information integration is ensuring timetables of different modes are coordinated. Aligning timetables allows passengers to change modes easily.[164] This reduces the waiting time which can be off-putting for passengers who want to use public transport.[165] In a project aimed at improving the connection between different transport modes in Pittsburgh, USA by providing online tools and mobility hubs with easy access to bikes and electric scooters - residents made more sustainable choices as a result. The scheme particularly benefited lower income residents.[166] Meanwhile, monetary, or smart fare integration ensures that travelers can move from their origin to destination with one farecard and ideally at the same cost regardless of the distance or mode within a certain region. Cities such as Hong Kong,[167] London[168] and Bogotá operate single farecards allowing passengers to easily pay and change modes.[169]

Another approach called "transit-oriented development[170] integrates land policy with urban transport planning in places like Curitiba[171] in Brazil, Seoul[172] in South Korea and Tokyo in Japan.[173,174] In these cities, a designated main route for public transport has stations that are planned in coordination with the surrounding urban area so that many amenities and functions are within a walking distance.

© Carlosfelipe Pardo

Existing inequalities

The ease (or not) of navigating our transport systems is often predicated on existing inequalities. For example, due to cost, caring responsibilities and time constraints, women often travel shorter distances than men. One study of Latin American cities found that working women with children tend to have jobs within a radius that involves 20% less than the distances travelled by men.[175] A better connected transport network can therefore increase the radius people can travel without it taking more time. This opens up new opportunities and helps to reduce gender inequalities in transport.

Where you live and what you can access

For a connected transport system, the services must properly connect rural, suburban and urban areas together and services must be reliable, frequent and timely for people to both want and be able to use them.

Poor connectivity also exists in some urban areas, often related to race and class.[176] In Brazil, research by the Institute for Transportation and Development Policy (ITDP) showed that Black, brown and low-income Brazilians pay higher fares, use more overcrowded buses and trains, and have fewer transport options available to help them reach essential destinations.[177] We need to dismantle these structural barriers and achieve freedom of mobility for all.

How our public space is divided

Currently, in many towns and cities a significant proportion of urban space is allocated to cars.[178] However, if we change how our public space is allocated, we can improve transport options and make it easier for everyone to move around. A fairer allocation which gives more space for pedestrians, cyclists and public transport than cars is more equitable, increasing safety for all road users and increasing social interactions.[179].

Infrastructure such as dedicated busways, where private cars are not permitted, makes public transport journeys faster and timetables more reliable for daily commuting.[180]

There are great examples in places like Bogotá where 630 km of bikeways and more than 100 km of busways were built in avenues that were previously car-only[181] – and where bicycle use reportedly saw an increase from 0.58% in 1996 to 6% in 2014.[182] Similarly, in Paris, major avenues were reallocated from cars to bicycles.[183] As a result, the number of bicycle trips increased by 54% in one year, according to one study, after a massive investment in cycling infrastructure.[184]

Critically though, for a connected, socially just transport system, these infrastructure changes need to benefit all communities, not only those who live in wealthier areas.

Costs and (dis)connections

In many places today, mobility can be reduced to a question of car ownership – if you have a car you can go places and if not, you can't. A transport system dominated by cars is neither connected nor affordable.

Charges for owning, using and parking cars should be directly related to their real costs – such as the emissions, air pollution and use of public space.[185] These funds can be used to improve the affordability of public and active transport. For example, in San Francisco, the price to park on-street is assigned according to the actual demand of parking spaces, which reduces congestion and generates revenue for other purposes.[186]

If our transport system is more connected, it expands people's mobility and opens up different opportunities. People are able to pursue job and study options in different geographical areas, and engage in new recreational activities.

Key recommendations for connected mobility

- **Governments must prioritise public and active transport, for example by reallocating space to sustainable transport infrastructure such as the rail network, bus lanes and cycle paths over space for private cars.**
- **Governments and Transport Operators must ensure the transport network is synchronised in terms of its ticketing system and timetables, allowing passengers to change between modes and operators quickly and easily. It must also ensure it is easy for people to connect to and from public transport, in the first and last mile travelled.**
- **Governments must ensure a fair price is put on carbon-intensive transport, to include all the negative externalities. They should invest revenue from car use and parking into public and active transport.**

Activists at Amsterdam Schiphol Airport, the second biggest in the EU, stop private jets from landing and taking off © Marten van Dijl / Greenpeace

Socially just

A socially just transport system provides quality mobility options for all, with a focus on marginalised groups, including those on the lowest incomes. It should also mitigate the destructive travel patterns of the wealthiest. Such a system must centre under-represented communities in decision-making and ensure a fair deal for workers, including in a just transition to sustainable mobility.

Mobility for those on the lowest incomes

Transport financing is skewed towards subsidies for higher income households through the whole economy, from subsidies for oil and fuel at the national level,[187] to government budgets focused on infrastructure for private cars[188], huge aviation subsidies,[189] free (or low cost) parking charges,[190] and greater space devoted to car-based mobility.

Meanwhile, public transport is usually seriously underfunded and walking and cycling infrastructure is either poorly funded or not funded at all. This is despite the greater cost-benefit of investments with all these modes.[191] Instead of policy decisions disproportionately benefiting people on higher incomes, public and active transport should be at the heart of transport policy ensuring it is affordable and accessible for everyone.

Destructive travel habits of the wealthiest

A socially just transport system must put limits in place on the most unequal and most polluting forms of transport. We know that the richest individuals and countries are responsible for more GHG emissions, with the climate impacts disproportionately borne by people in the global south and that inequalities in emissions are linked with inequalities in mobility.[192] Wealthier people are also more likely to own a car and travel by plane.[193] While many people in Global North countries fly regularly, it is reported that 80% of the world's population have never flown.[194]

Additionally, there is a small group of very wealthy individuals who travel by private jet. The GHG emissions-per-person-per-journey makes private jet travel the most destructive mode of transport by a wide margin. One report estimates that private jets are 5 to 14 times more polluting than commercial planes (per passenger), and 50 times more polluting than trains.[195] Other unsustainable forms of transport used by the super rich which have hugely disproportionate GHG emissions compared to other forms of transport include helicopters and super yachts.[196]

Greenpeace activists have taken action around the world against the injustice of private jets[197,198] and are pushing for governments to ban them.[199]

Centering marginalised communities in decision making

To achieve a socially just transport system, it is necessary to have active participation of a wide range of stakeholders - particularly marginalised groups - from the beginning. Their input should not only be heard but it should also drive decision making. This should ensure their perspectives are effectively integrated into transport policies and projects, resulting in a fair transition to more sustainable transport.[200]

Communities are the most powerful advocates for the mobility solutions which are right for their neighbourhoods. For example, Amsterdam's protest of "Stop de kindermoord" (stop the child deaths - by cars) supported by the Dutch Cyclist Union in 1971, was a big factor in the major change of the country towards more cycling-inclusive planning.[201]

A fair deal for workers and a just transition

A socially just transport system is one where the voices of workers are valued, they are well-trained, work reasonable hours, are permanently employed, and receive fair pay for the important jobs they do to keep society moving.

Crucially, when improving transport services and making it more affordable for passengers, this must be achieved without impacting the equality of transport operations, wages or vehicle maintenance.[202]

A fair deal for workers also needs to include protecting them from violence and harassment and from inadequate infrastructure. Workers are put at greater risk where transport does not receive sufficient investment, including from the impacts of climate change.[203]

Clean transport will be a huge industry in the future which could create jobs for workers from today's high-polluting industries.[204] One estimate from the International Transport Workers Federation and C40 Cities is that the investment needed to stay within 1.5 degrees would create 4.6 million new jobs in transport in the world's largest cities alone.[205] We need to build up an alternative mobility industry focused on producing trains, buses, e-bikes and other sustainable transport vehicles.[206]

"A just transition needs to be perceived as a move out of inequalities, not only out of the carbon crisis".[207]

International Transport Workers' Federation

A just transition to new transport systems will not be possible without the inclusion of transport workers and their representative bodies.[208] Both must be involved to ensure their rights are protected and that sustainable transport delivers decent jobs. This could include measures such as worker seats on the boards of public transport authorities.[209] In cities such as Johannesburg and Jakarta, popular transport services have transitioned to formal public transport services in processes led by workers.[210] Formalised networks mean workers have more clarity and security (and sometimes own shares in operating companies), and passengers can benefit from a more connected service.

If workers, communities and marginalised groups are placed at the centre of mobility decision-making, we can build transport networks which open up opportunities for all.

Greenpeace saying thank you to transport workers for keeping people moving during Covid-19 restrictions. © Getty Images

Key recommendations for socially just mobility

- **Governments, car manufacturers and airlines must ensure a just transition, with workers and communities at the centre.**
- **Governments and transport operators should expand democratic processes to ensure workers, passengers and marginalised communities are part of transport planning and decision making.**
- **Governments must ban private jets and other harmful transport modes of the super rich.**

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